

INTRODUCTION

How to Use This Manual

This manual is divided into 24 sections. The first page of each section is marked with a black tab that lines up with its corresponding thumb index tab on this page and the back cover. You can quickly find the first page of each section without looking through a full table of contents. The symbols printed at the top corner of each page can also be used as a quick reference system.


Each section includes:

1. A table of contents, or an exploded view index showing:
 - Parts disassembly sequence.
 - Bolt torques and thread sizes.
 - Page references to descriptions in text.
2. Disassembly/assembly procedures and tools.
3. Inspection.
4. Testing/troubleshooting.
5. Repair.
6. Adjustments.

Safety Messages

Your safety, and the safety of others, is very important. To help you make informed decisions, we have provided safety messages, and other safety information throughout this manual. Of course, it is not practical or possible to warn you about all the hazards associated with servicing this vehicle. You must use your own good judgment.

You will find important safety information in a variety of forms including:

- **Safety Labels** — on the vehicle.
- **Safety Messages** — preceded by a safety alert symbol  and one of three signal words, DANGER, WARNING, or CAUTION. These signal words mean:

- ⚠ DANGER** You WILL be KILLED or SERIOUSLY HURT if you don't follow instructions.
- ⚠ WARNING** You CAN be KILLED or SERIOUSLY HURT if you don't follow instructions.
- ⚠ CAUTION** You CAN be HURT if you don't follow instructions.

- **Instructions** — how to service this vehicle correctly and safely.

All information contained in this manual is based on the latest product information available at the time of printing. We reserve the right to make changes at anytime without notice. No part of this publication may be reproduced, or stored in a retrieval system, or transmitted, in any form by any means, electronic, mechanical, photocopying, recording, or otherwise, without the prior written permission of the publisher. This includes text, figures, and tables.

As you read this manual, you will find information that is preceded by a **NOTICE** symbol. The purpose of this message is to help prevent damage to your vehicle, other property, or the environment.

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Specifications apply to U.S.A. and Canada

HONDA MOTOR CO., LTD.

Service Publication Office

As sections with * include SRS components;
special precautions are required when servicing.

2005 Honda Accord Hybrid

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*Heating, Ventilation and Air Conditioning	
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SUPPLEMENTAL RESTRAINT SYSTEM (SRS)

The Accord Hybrid SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.





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General Information

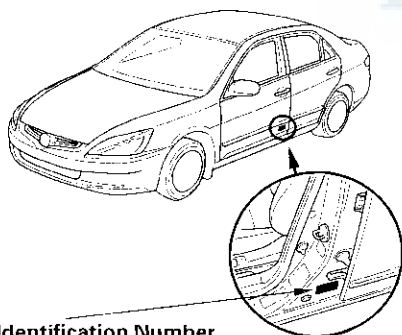
Chassis and Paint Codes

Vehicle Identification Number

JHM CN3 6 4 * 5 C 000001

a b c d e f g h

- a. **Manufacturer, Make and Type of Vehicle**
JHM: HONDA MOTOR CO., LTD.
HONDA passenger vehicle
- b. **Line, Body and Engine Type**
CN3: ACCORD/JNA1
- c. **Body Type and Transmission Type**
6: 4-door Sedan/5-speed Automatic
- d. **Vehicle Grade (Series)**
4: V6 IMA
5: V6 IMA with Navigation
- e. **Check Digit**
- f. **Model Year**
5: 2005
- g. **Factory Code**
C: Saitama Factory in Japan
- h. **Serial Number**
000001—: U.S. model
800001—: Canada model



Vehicle Identification Number
and Federal Motor Vehicle
Safety Standard Certification
and COLOR LABEL.

Vehicle Identification Number
and Canadian Motor Vehicle
Safety Standard Certification
and COLOR LABEL.

Engine Number

JNA1 - 1000001

a b

- a. **Engine Type**
JNA1: 3.0 L SOHC VTEC Sequential Multiport
Fuel-injected engine
- b. **Serial Number**

Motor Number

MF4 - 1000001

a b

- a. **Motor Type**
MF4: 1000001
- b. **Serial Number**

Transmission Number

MURA - 1000001

a b

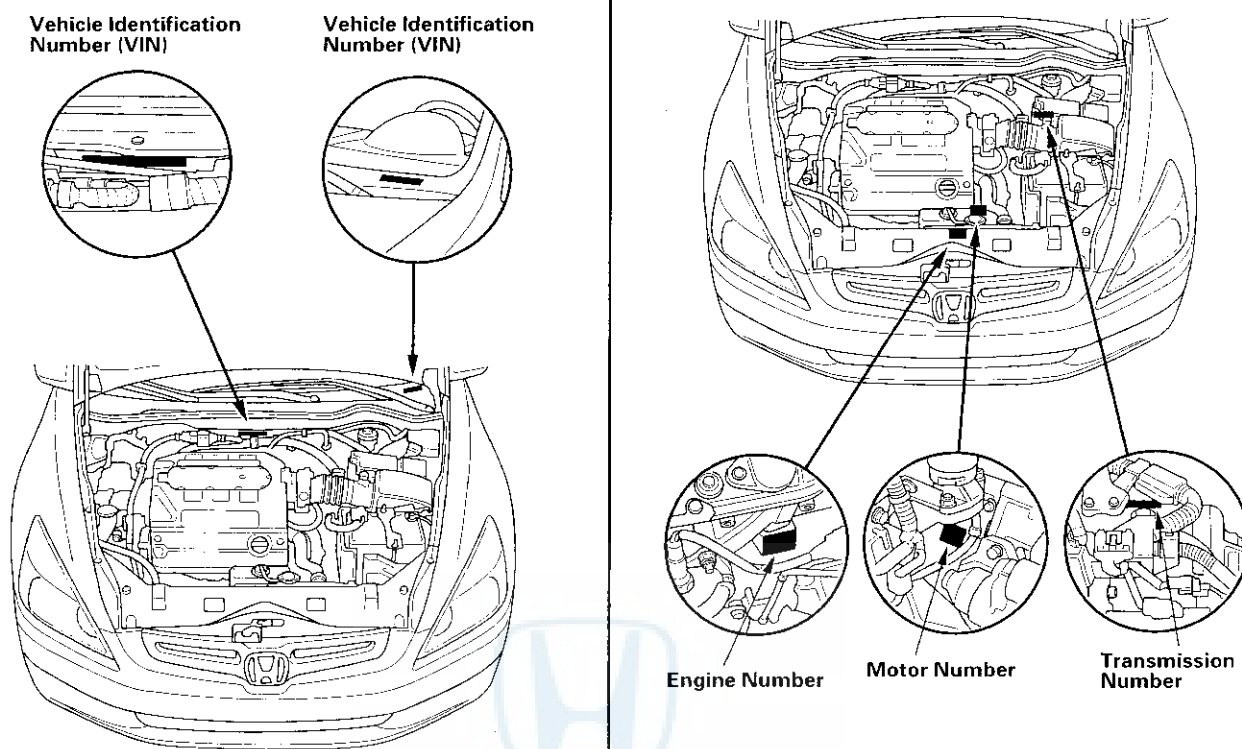
- a. **Transmission Type**
MURA: 5-speed Automatic
- b. **Serial Number**

Paint Code

Code	Color	U.S.	Canada
B-92P	Nighthawk Black Pearl		○
NH-578	Taffeta White	○	
NH-623M	Satin Silver Metallic		○
NH-658P	Graphite Pearl	○	
NH-695M	Silver Frost Metallic	○	○
YR-538M	Desert Mist Metallic	○	



Identification Number Locations

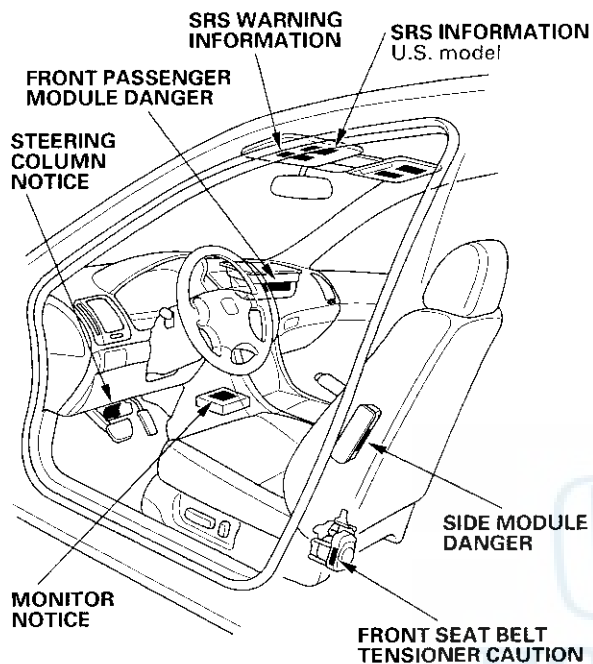


General Information

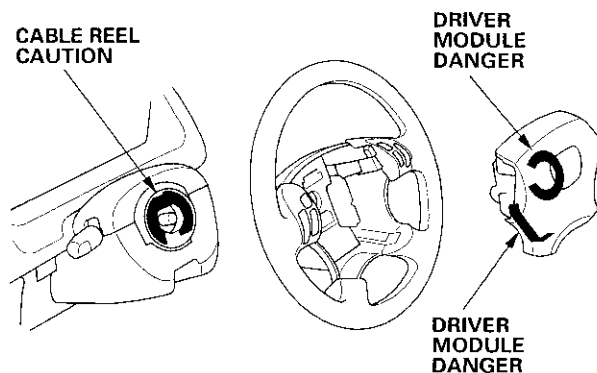
Warning/Caution Label Locations

NOTE: FRONT PASSENGER (CHILD SEAT) AIRBAG WARNING TAG is installed on the glove box on the U.S. model.

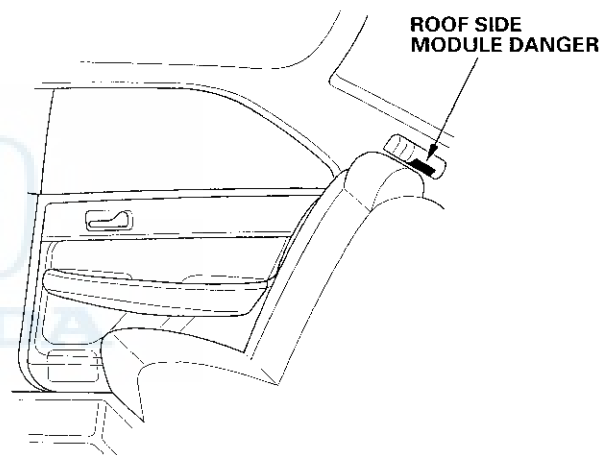
Passenger's Compartment:

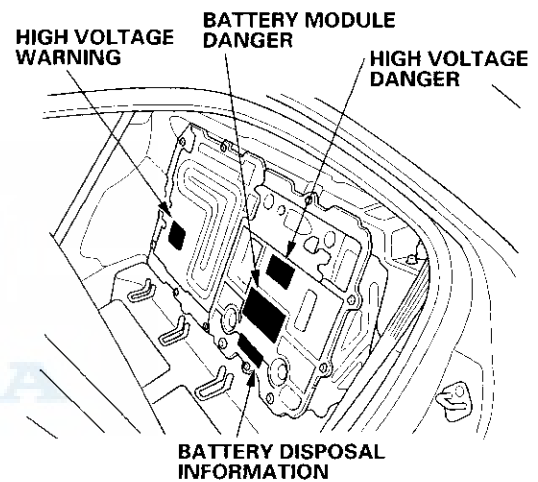
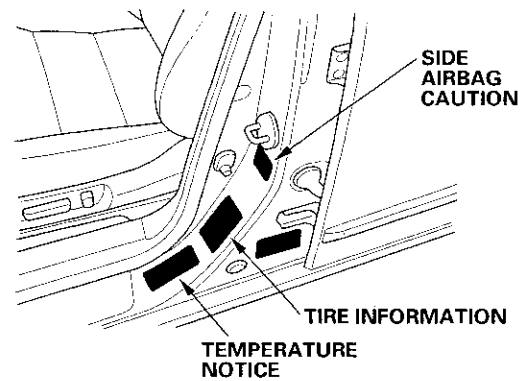
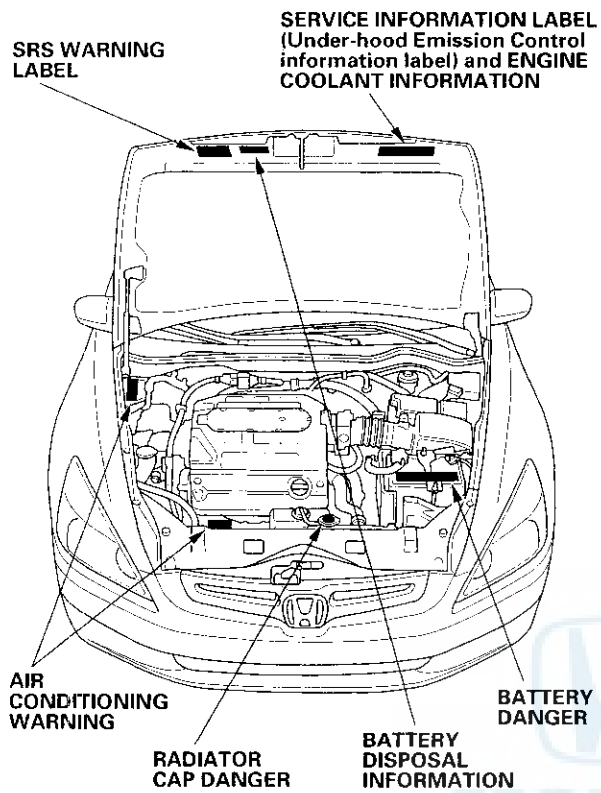


Steering Wheel:



Rear Compartment:



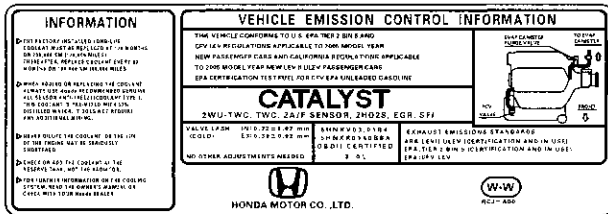


General Information

Under-hood Emission Control Label

Emission Group Identification

Example:



THIS VEHICLE CONFORMS TO U.S. EPA TIER 2 BIN 5
AND CFV LEV REGULATIONS APPLICABLE TO 2005
MODEL YEAR NEW PASSENGER CARS AND
CALIFORNIA REGULATIONS APPLICABLE TO 2005
MODEL YEAR NEW LEV II ULEV PASSENGER CARS.
EPA CERTIFICATION TEST FUEL FOR CFV: EPA
UNLEADED GASOLINE.

Engine and Evaporative Families

Engine Family:

5 HNX V 03.0 1B4

a b c d e

- a. **Model Year**
5: 2005
- b. **Manufacturer Subcode**
HNX: HONDA
- c. **Family Type**
V: LDV
- d. **Displacement Group**
- e. **Sequence Characters**

Evaporative Family:

5 HNX R 0140 BBA

a b c d e

- a. **Model Year**
5: 2005
- b. **Manufacturer Subcode**
HNX: HONDA
- c. **Family Type**
R: EVAP/ORVR
- d. **Canister Work Capacity**
- e. **Sequence Characters**

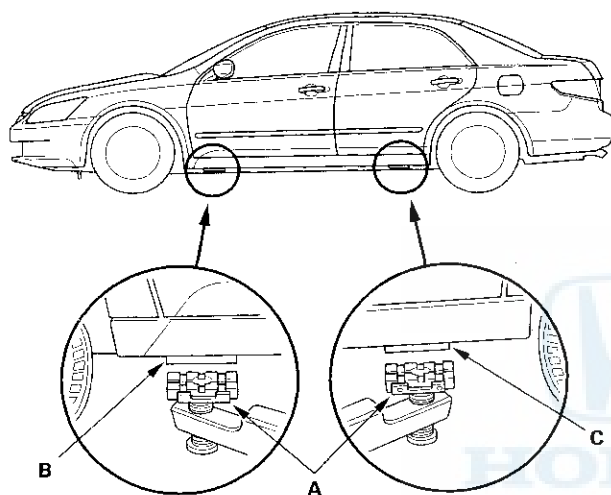


Lift and Support Points

NOTE: If you are going to remove heavy components such as suspension or the fuel tank from the rear of the vehicle, first support the front of the vehicle with tall safety stands. When substantial weight is removed from the rear of the vehicle, the center of gravity can change and cause the vehicle to tip forward on the hoist.

Frame Hoist

1. Position the hoist lift blocks (A), on safety stands, under the vehicle's front support points (B) and rear support points (C).



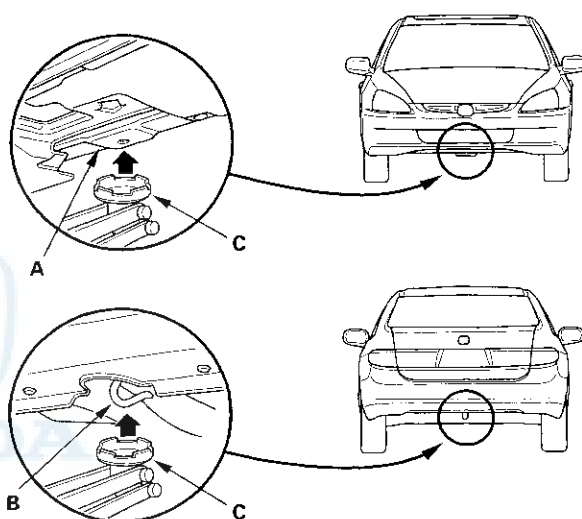
2. Raise the hoist a few inches, and rock the vehicle gently to be sure it is firmly supported.
3. Raise the hoist to full height, and inspect the lift points for solid contact with the lift blocks.

Safety Stands

To support the vehicle on safety stands, use the same support points (B and C) as for a frame hoist. Always use safety stands when working on or under any vehicle that is supported only by a jack.

Floor Jack

1. When lifting the front of the vehicle, set the parking brake. When lifting the rear of the vehicle, put the gearshift lever in the P position.
2. Block the wheels that are not being lifted.
3. Position the floor jack under the front jacking bracket (A) or rear jacking bracket (B), center the jacking bracket in the jack lift platform (C), and jack up the vehicle high enough to fit the safety stands under it.



4. Position the safety stands under the support points and adjust them so the vehicle is level.
5. Lower the vehicle onto the stands.

General Information

Towing

If the vehicle needs to be towed, call a professional towing service. Never tow the vehicle behind another vehicle with just a rope or chain. It is very dangerous.

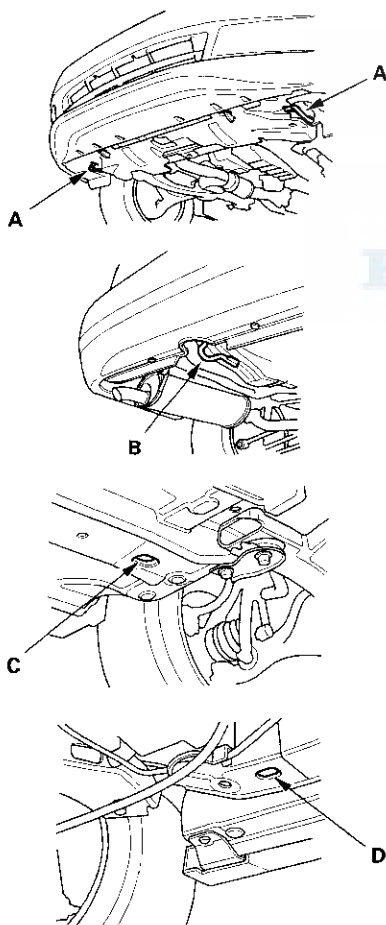
Emergency Towing

There are three popular methods of towing a vehicle.

Flat-bed Equipment — The operator loads the vehicle on the back of a truck. **This is the best way of transporting the vehicle.**

To accommodate flat-bed equipment, the vehicle is equipped with front towing hooks (A), rear towing hook (B), front tie down hook slots (C), and rear tie down hook slots (D).

The towing hook can be used with a winch to pull the vehicle onto the truck, and the tie down hook slots can be used to secure the vehicle to the truck.



Wheel Lift Equipment — The tow truck uses two pivoting arms that go under the tires (front or rear) and lifts them off the ground. The other two wheels remain on the ground. This is an acceptable way of towing the vehicle.

Sling-type Equipment — The tow truck uses metal cables with hooks on the ends. These hooks go around parts of the frame or suspension and the cables lift that end of the vehicle off the ground. The vehicle's suspension and body can be seriously damaged if this method of towing is attempted.

If the vehicle cannot be transported by flat-bed, it should be towed with the front wheels off the ground. If due to damage, the vehicle must be towed with the front wheels on the ground, do the following:

- Release the parking brake.
- Start the engine.
- Shift to D position, then to the N position.
- Turn off the engine.

It is best to tow the vehicle no farther than 50 miles (80 km), and keep the speed below 35 mph (55 km/h).

NOTICE

- Improper towing preparation will damage the transmission. Follow the above procedure exactly. If you cannot shift the transmission or start the engine (automatic transmission), the vehicle must be transported on a flat-bed.
- Trying to lift or tow the vehicle by the bumpers will cause serious damage. The bumpers are not designed to support the vehicle's weight.



Parts Marking

To deter vehicle theft, certain major components are marked with the vehicle identification number (VIN). Original parts have self-adhesive labels. Replacement body parts have generic self-adhesive labels. These labels should not be removed. The original engine or transmission VIN plates are not transferable to the replacement engine or transmission.

NOTE: Be careful not to damage the parts marking labels during body repair. Mask the labels before repairing the part.

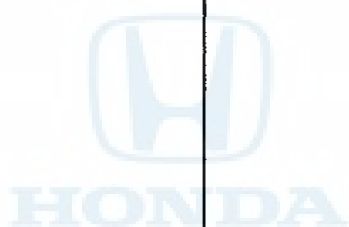
Service Precautions

IMA System

The Accord Hybrid has an Auto-Stop system that shuts the engine off under certain conditions to improve fuel economy while the vehicle is at a stop. In Auto-Stop mode, driver input, such as releasing the brake pedal, will cause the engine to restart.

Before servicing the Accord Hybrid, turn the ignition switch OFF and remove the key so the engine cannot be started.

Before performing any service on the Accord Hybrid's IMA system, make sure to turn the battery module switch OFF and wait five minutes before working on the vehicle (see page 12-3).



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specs

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Standards and Service Limits

Engine Electrical

Item	Measurement	Qualification	Standard or New	Service Limit
Ignition coil	Rated voltage		12 V	
	Firing order		1—4—2—5—3—6	
Spark plug	Type		NGK: IZFR6K11 DENSO: SKJ20DR-M11	
	Gap		1.0—1.1 mm (0.039—0.043 in.)	—
Ignition timing	At idle Check the <i>red</i> mark	In N or P position	10±2° BTDC	
Starter	Output		1.6 kW	
	Commutator mica depth		0.4—0.5 mm (0.016—0.020 in.)	0.20 mm (0.003 in.)
	Commutator runout		0.05 mm (0.002 in.) max.	0.10 mm (0.004 in.)
	Commutator O.D.		29.3—29.5 mm (1.154—1.161 in.)	28.8 mm (1.134 in.)
	Brush length		7.7—8.0 mm (0.30—0.31 in.)	0.9 mm (0.04 in.)
	Brush spring tension (new)		15.9—19.5 N (1.62—1.99 kgf, 3.57—4.39 lbf)	

Engine Assembly

Item	Measurement	Qualification	Standard or New	Service Limit
Compression	Pressure	Minimum	930 kPa (9.5 kgf/cm ² , 135 psi)	—
	Check the engine with the starter cranking	Maximum variation	200 kPa (2.0 kgf/cm ² , 28 psi)	—



Cylinder Head

Item	Measurement	Qualification	Standard or New	Service Limit
Head	Warpage		—	0.05 mm (0.002 in.)
	Height		120.95—121.05 mm (4.762—4.766 in.)	—
Camshaft	End play		0.05—0.20 mm (0.002—0.008 in.)	0.20 mm (0.008 in.)
	Camshaft-to-holder oil clearance		0.050—0.089 mm (0.0020—0.0035 in.)	0.15 mm (0.006 in.)
	Total runout		0.03 mm (0.001 in.) max.	0.04 mm (0.002 in.)
	Cam lobe height (Front bank)	Intake	36.146 mm (1.4231 in.)	—
		Exhaust	35.864 mm (1.4120 in.)	—
	Cam lobe height (Rear bank)	Intake	35.406 mm (1.3939 in.)	—
		Exhaust	37.035 mm (1.4581 in.)	—
Valve	Clearance (cold)	Intake	0.20—0.24 mm (0.008—0.009 in.)	—
		Exhaust	0.28—0.32 mm (0.011—0.013 in.)	—
	Stem O.D.	Intake	5.485—5.495 mm (0.2159—0.2163 in.)	5.455 mm (0.2148 in.)
		Exhaust	5.450—5.460 mm (0.2146—0.2150 in.)	5.420 mm (0.2134 in.)
	Stem-to-guide clearance	Intake	0.020—0.045 mm (0.0008—0.0018 in.)	0.08 mm (0.003 in.)
		Exhaust	0.055—0.080 mm (0.0022—0.0031 in.)	0.11 mm (0.004 in.)
Valve seat	Width	Intake	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
		Exhaust	1.25—1.55 mm (0.049—0.061 in.)	2.00 mm (0.079 in.)
	Stem installed height	Intake	46.75—47.55 mm (1.841—1.872 in.)	47.80 mm (1.882 in.)
		Exhaust	46.68—47.48 mm (1.838—1.869 in.)	47.73 mm (1.879 in.)
Valve spring	Free length	Intake	51.54 mm (2.069 in.)	—
		Exhaust	52.55 mm (2.010 in.)	—
Valve guide	I.D.	Intake	5.515—5.530 mm (0.2171—0.2177 in.)	5.55 mm (0.219 in.)
		Exhaust	5.515—5.530 mm (0.2171—0.2177 in.)	5.55 mm (0.219 in.)
	Installed height	Intake	21.20—22.20 mm (0.835—0.874 in.)	—
		Exhaust	20.63—21.63 mm (0.812—0.852 in.)	—
Rocker arm	Arm-to-shaft clearance (Front bank)	Intake	0.019—0.067 mm (0.0007—0.0026 in.)	0.067 mm (0.0026 in.)
		Exhaust	0.019—0.058 mm (0.0007—0.0023 in.)	0.058 mm (0.0023 in.)
	Arm-to-shaft clearance (Rear bank)	Intake	0.015—0.046 mm (0.0006—0.0018 in.)	0.046 mm (0.0018 in.)
		Exhaust	0.015—0.046 mm (0.0006—0.0018 in.)	0.046 mm (0.0018 in.)

Standards and Service Limits

Engine Block

Item	Measurement	Qualification	Standard or New	Service Limit
Block	Warpage of deck		0.07 mm (0.003 in.) max.	0.10 mm (0.004 in.)
	Bore diameter		86.000—86.015 mm (3.3858—3.3864 in.)	86.065 mm (3.3884 in.)
	Bore taper		—	0.05 mm (0.002 in.)
	Reboring limit		—	0.5 mm (0.02 in.)
Piston	Skirt O.D. at 16.0 mm (0.63 in.) from bottom of skirt		85.975—85.985 mm (3.3848—3.3852 in.)	85.965 mm (3.3844 in.)
	Clearance in cylinder		0.015—0.040 mm (0.0006—0.0016 in.)	0.08 mm (0.003 in.)
	Ring groove width	Top	1.240—1.250 mm (0.0488—0.0492 in.)	1.27 mm (0.050 in.)
		Second	1.220—1.230 mm (0.0480—0.0484 in.)	1.25 mm (0.049 in.)
		Oil	2.805—2.825 mm (0.1104—0.1112 in.)	2.85 mm (0.112 in.)
Piston ring	Ring-to-groove clearance	Top	0.055—0.080 mm (0.0022—0.0031 in.)	0.15 mm (0.006 in.)
		Second	0.030—0.055 mm (0.0012—0.0022 in.)	0.13 mm (0.005 in.)
	Ring end gap	Top	0.20—0.35 mm (0.008—0.014 in.)	0.60 mm (0.024 in.)
		Second	0.40—0.55 mm (0.016—0.022 in.)	0.70 mm (0.028 in.)
		Oil	0.20—0.70 mm (0.008—0.028 in.)	0.80 mm (0.031 in.)
Piston pin	O.D.		21.962—21.965 mm (0.8646—0.8648 in.)	21.954 mm (0.8643 in.)
	Pin-to-piston clearance		−0.0050 to +0.0010 mm (−0.00020 to +0.00004 in.)	0.004 mm (0.0002 in.)
Connecting rod	Pin-to-rod clearance		0.005—0.014 mm (0.0002—0.0006 in.)	0.019 mm (0.0007 in.)
	Small-end bore diameter		21.970—21.976 mm (0.8650—0.8652 in.)	—
	Large-end bore diameter		56.0 mm (2.20 in.)	—
	End play installed on crankshaft		0.15—0.35 mm (0.006—0.014 in.)	0.45 mm (0.018 in.)
Crankshaft	Main journal diameter		71.976—72.000 mm (2.8337—2.8346 in.)	—
	Rod journal diameter		52.976—53.000 mm (2.0857—2.0866 in.)	—
	Rod/main journal taper		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	Rod/main journal out-of-round		0.005 mm (0.0002 in.) max.	0.010 mm (0.0004 in.)
	End play		0.10—0.35 mm (0.004—0.014 in.)	0.45 mm (0.018 in.)
	Runout		0.025 mm (0.0010 in.) max.	0.030 mm (0.0012 in.)
Crankshaft bearing	Main bearing-to-journal oil clearance		0.020—0.044 mm (0.0008—0.0017 in.)	0.050 mm (0.0020 in.)
	Rod bearing clearance		0.020—0.044 mm (0.0008—0.0017 in.)	0.050 mm (0.0020 in.)

Engine Lubrication

Item	Measurement	Qualification	Standard or New	Service Limit
Engine oil	Capacity	Engine overhaul	5.0 L (5.3 US qt)	
		Oil change, including filter	4.3 L (4.5 US qt)	
		Oil change, without filter	4.0 L (4.2 US qt)	
Oil pump	Inner-to-outer rotor clearance		0.04—0.16 mm (0.002—0.006 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor clearance		0.10—0.19 mm (0.004—0.007 in.)	0.20 mm (0.008 in.)
	Pump housing-to-outer rotor axial clearance		0.02—0.07 mm (0.001—0.003 in.)	0.12 mm (0.005 in.)
	Oil pressure with oil temperature at 176 °F (80 °C)	At idle	70 kPa (0.7 kgf/cm ² , 10 psi)	
		At 3,000 rpm	490 kPa (5.0 kgf/cm ² , 71 psi)	

Cooling

Item	Measurement	Qualification	Standard or New
Radiator	Coolant capacities (including engine, heater, hoses, and reservoir) Use Honda All Season Antifreeze/ Coolant Type 2	Engine overhaul	8.4 L (2.22 US gal)
		Coolant change	6.7 L (1.77 US gal)
Reservoir	Coolant capacity		0.6 L (0.16 US gal)
Radiator cap	Opening pressure		93—123 kPa (0.95—1.25 kgf/cm ² , 14—18 psi)
Thermostat	Opening temperature	Begins to open	169—176 °F (76—80 °C)
		Fully open	194 °F (90 °C)
	Valve lift at fully open		10.0 mm (0.39 in.) min.

Fuel and Emissions

Item	Measurement	Qualification	Standard or New
Fuel pressure regulator	Pressure with fuel pressure gauge connected		380—430 kPa (3.9—4.4 kgf/cm ² , 55—63 psi)
Fuel tank	Capacity		64.7 L (17.1 US gal)
Engine idle	Idle speed with no load		680±50 rpm
	Idle speed with high electric load (A/C switch ON, temperature set to Max Cool, blower fan on High, rear window defogger ON, and headlights on high beam)		680±50 rpm

Standards and Service Limits

Automatic Transmission and A/T Differential

Item	Measurement	Qualification	Standard or New	Service Limit
ATF (Automatic Transmission Fluid)	Capacity Use Honda ATF-Z1	Fluid change	3.4 L (3.6 US qt)	
		Overhaul	7.8 L (8.2 US qt)	
ATF pressure	Line pressure	At 2,000 rpm in N or P position	900—960 kPa (9.2—9.8 kgf/cm ² , 130—140 psi)	850 kPa (8.7 kgf/cm ² , 120 psi)
	5th clutch pressure	At 2,000 rpm in D position	890—970 kPa (9.1—9.9 kgf/cm ² , 130—140 psi)	840 kPa (8.6 kgf/cm ² , 120 psi)
	4th clutch pressure	At 2,000 rpm in D position	890—970 kPa (9.1—9.9 kgf/cm ² , 130—140 psi)	840 kPa (8.6 kgf/cm ² , 120 psi)
	3rd clutch pressure	At 2,000 rpm in D3 position	890—970 kPa (9.1—9.9 kgf/cm ² , 130—140 psi)	840 kPa (8.6 kgf/cm ² , 120 psi)
	2nd clutch pressure	At 2,000 rpm in 2 position	890—970 kPa (9.1—9.9 kgf/cm ² , 130—140 psi)	840 kPa (8.6 kgf/cm ² , 120 psi)
	1st clutch pressure	At 2,000 rpm in 1 position	890—970 kPa (9.1—9.9 kgf/cm ² , 130—140 psi)	840 kPa (8.6 kgf/cm ² , 120 psi)
	1st-hold clutch pressure	At 2,000 rpm in 1 position	789—868 kPa (8.05—8.85 kgf/cm ² , 114—126 psi)	740 kPa (7.55 kgf/cm ² , 107 psi)
Torque converter	Stall speed Check with vehicle on level ground		1,900 rpm	1,750—2,050 rpm
Clutch	Clutch end-plate-to-top-disc clearance	1st	—	1.20—1.35 mm (0.047—0.053 in.)
		2nd	—	1.10—1.25 mm (0.043—0.049 in.)
		3rd	—	0.85—1.00 mm (0.033—0.039 in.)
		4th	—	0.80—0.95 mm (0.031—0.037 in.)
		5th	—	0.80—0.95 mm (0.031—0.037 in.)
		1st-hold	—	0.6—1.0 mm (0.024—0.039 in.)
	Clutch return spring free length	1st	68.3 mm (2.69 in.)	66.3 mm (2.61 in.)
		2nd	48.3 mm (1.90 in.)	46.3 mm (1.82 in.)
		3rd	52.0 mm (2.05 in.)	50.0 mm (1.97 in.)
		4th	37.7 mm (1.48 in.)	35.7 mm (1.41 in.)
		5th	37.4 mm (1.47 in.)	35.4 mm (1.39 in.)
	Clutch disc thickness		1.94 mm (0.076 in.)	—
	Clutch plate thickness	1st	1.6 mm (0.06 in.)	When discolored
		2nd	1.8 mm (0.07 in.)	When discolored
		3rd, 4th, 5th	2.0 mm (0.079 in.)	When discolored
		1st-hold	1.8 mm (0.07 in.)	When discolored
	1st clutch end plate thickness	Mark 1	3.1 mm (0.122 in.)	When discolored
		Mark 2	3.2 mm (0.126 in.)	When discolored
		Mark 3	3.3 mm (0.130 in.)	When discolored
		Mark 4	3.4 mm (0.134 in.)	When discolored
		Mark 5	3.5 mm (0.138 in.)	When discolored
		Mark 6	3.6 mm (0.142 in.)	When discolored
		Mark 7	3.7 mm (0.146 in.)	When discolored
		Mark 8	3.8 mm (0.150 in.)	When discolored
		Mark 9	3.9 mm (0.154 in.)	When discolored
	1st-hold clutch plate B thickness		5.0 mm (0.197 in.)	When discolored

Item	Measurement	Qualification	Standard or New	Service Limit
Clutch (cont'd)	2nd, 3rd, 4th, and 5th clutch end plate thickness	Mark 1	2.1 mm (0.083 in.)	When discolored
		Mark 2	2.2 mm (0.087 in.)	When discolored
		Mark 3	2.3 mm (0.091 in.)	When discolored
		Mark 4	2.4 mm (0.094 in.)	When discolored
		Mark 5	2.5 mm (0.098 in.)	When discolored
		Mark 6	2.6 mm (0.102 in.)	When discolored
		Mark 7	2.7 mm (0.106 in.)	When discolored
		Mark 8	2.8 mm (0.110 in.)	When discolored
		Mark 9	2.9 mm (0.114 in.)	When discolored
Stator shaft	I.D. at needle bearing contact area	Torque converter side	27.000—27.021 mm (1.063—1.064 in.)	When worn or damaged
		ATF pump side	31.000—31.025 mm (1.220—1.221 in.)	—
	I.D. at mainshaft sealing ring contact area		31.000—31.025 mm (1.220—1.221 in.)	31.05 mm (1.222 in.)
ATF pump	Gear-to-body thrust clearance		0.03—0.06 mm (0.001—0.002 in.)	0.07 mm (0.003 in.)
	Gear-to-body clearance	Drive gear	0.210—0.265 mm (0.008—0.010 in.)	—
		Driven gear	0.070—0.125 mm (0.003—0.005 in.)	—
	Driven gear I.D.		14.016—14.034 mm (0.5518—0.5525 in.)	When worn or damaged
	Driven gear shaft O.D.		13.980—13.990 mm (0.5504—0.5508 in.)	When worn or damaged
Reverse shift fork	Fork finger thickness		5.90—6.00 mm (0.220—0.236 in.)	5.4 mm (0.213 in.)
Park gear and pawl	—		—	When worn or damaged
Regulator valve body	Shift fork shaft bore I.D.		14.000—14.010 mm (0.5512—0.5516 in.)	—
	Shift fork shaft/servo valve bore I.D.		37.000—37.039 mm (1.4567—1.4582 in.)	37.045 mm (1.4585 in.)
	Mainshaft sealing ring contact I.D.		31.000—31.025 mm (1.220—1.221 in.)	31.05 mm (1.222 in.)
Main valve body	Intermediary shaft sealing ring contact I.D.		35.000—35.025 mm (1.3780—1.3789 in.)	35.05 mm (1.3799 in.)
ATF guide collar	Secondary shaft sealing ring contact I.D.		29.000—29.021 mm (1.1417—1.1426 in.)	29.05 mm (1.1437 in.)
Mainshaft	Diameter at stator shaft needle bearing contact area		22.984—23.000 mm (0.9049—0.9055 in.)	When worn or damaged
	5th gear collar diameter at needle bearing contact area		39.975—39.991 mm (1.5738—1.5744 in.)	When worn or damaged
	5th gear collar length		48.7—48.8 mm (1.917—1.921 in.)	—
	5th gear collar flange thickness		5.15—5.30 mm (0.203—0.209 in.)	When worn or damaged
	5th gear I.D.		46.000—46.016 mm (1.8110—1.8116 in.)	When worn or damaged
	5th gear axial clearance		0.10—0.22 mm (0.004—0.009 in.)	—
	Sealing ring thickness		1.90—1.96 mm (0.074—0.077 in.)	1.85 mm (0.073 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)

(cont'd)

Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Countershaft	Diameter at bearing contact area	Torque converter housing bearing	40.505—40.515 mm (1.5947—1.5951 in.)	When worn or damaged
		5th gear	34.975—34.991 mm (1.3770—1.3776 in.)	When worn or damaged
	Diameter of 2nd gear at needle bearing contact area		56.975—56.991 mm (2.2431—2.2437 in.)	When worn or damaged
	Reverse gear collar O.D.		39.979—40.000 mm (1.5740—1.5748 in.)	When worn or damaged
	Reverse selector hub O.D.		55.885—55.900 mm (2.200—2.201 in.)	When worn or damaged
	Cotter thickness		1.99—2.02 mm (0.078—0.080 in.)	—
	I.D. of gears	5th gear	41.000—41.016 mm (1.6142—1.6148 in.)	When worn or damaged
		Idler gear	65.000—65.019 mm (2.5590—2.5598 in.)	When worn or damaged
		Reverse gear	46.000—46.016 mm (1.8110—1.8116 in.)	When worn or damaged
	Axial clearance of gears	2nd gear	0.005—0.040 mm (0.0002—0.0016 in.)	—
		5th gear	0.12—0.27 mm (0.0047—0.0106 in.)	—
		Idler gear	0.005—0.040 mm (0.0002—0.0016 in.)	—
		Reverse gear	0.10—0.25 mm (0.0039—0.0098 in.)	—
	56 mm washer thickness	A	1.525 mm (0.0600 in.)	When worn or damaged
		B	1.505 mm (0.0593 in.)	When worn or damaged
		C	1.485 mm (0.0585 in.)	When worn or damaged
		D	1.465 mm (0.0577 in.)	When worn or damaged
		E	1.445 mm (0.0569 in.)	When worn or damaged
		F	1.425 mm (0.0561 in.)	When worn or damaged
		G	1.405 mm (0.0553 in.)	When worn or damaged
	50.2 mm washer thickness	A	3.95 mm (0.1555 in.)	When worn or damaged
		B	3.97 mm (0.1563 in.)	When worn or damaged
		C	3.99 mm (0.1571 in.)	When worn or damaged
		D	4.01 mm (0.1579 in.)	When worn or damaged
		E	4.03 mm (0.1587 in.)	When worn or damaged
		F	4.05 mm (0.1594 in.)	When worn or damaged
		G	4.07 mm (0.1602 in.)	When worn or damaged
		H	4.09 mm (0.1610 in.)	When worn or damaged
		I	4.11 mm (0.1618 in.)	When worn or damaged
		J	4.13 mm (0.1626 in.)	When worn or damaged
		K	4.15 mm (0.1634 in.)	When worn or damaged
		L	4.17 mm (0.1642 in.)	When worn or damaged
		M	4.19 mm (0.1650 in.)	When worn or damaged
		N	4.21 mm (0.1657 in.)	When worn or damaged
		O	4.23 mm (0.1665 in.)	When worn or damaged
		P	4.25 mm (0.1673 in.)	When worn or damaged
		Q	4.27 mm (0.1681 in.)	When worn or damaged
		R	4.29 mm (0.1689 in.)	When worn or damaged
		S	4.31 mm (0.1697 in.)	When worn or damaged
		T	4.33 mm (0.1705 in.)	When worn or damaged
		U	4.35 mm (0.1713 in.)	When worn or damaged
	35 x 47 mm thrust washer thickness		5.97—6.00 mm (0.2350—0.2362 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft	Diameter at bearing contact area	2nd gear	43.986—43.999 mm (1.7317—1.7322 in.)	When worn or damaged
		Torque converter housing bearing	32.002—32.015 mm (1.2599—1.2604 in.)	When worn or damaged
		Torque converter housing bearing (shaft end side)	28.592—28.608 mm (1.1257—1.1263 in.)	When worn or damaged
	Diameter of 1st gear collar at needle bearing contact area		38.975—38.991 mm (1.5344—1.5351 in.)	When worn or damaged
	I.D. of gears	1st gear	44.000—44.016 mm (1.7323—1.7329 in.)	When worn or damaged
		2nd gear	50.00—50.02 mm (1.9685—1.9693 in.)	When worn or damaged
	Axial clearance of gears	1st gear	0.085—0.130 mm (0.0033—0.0051 in.)	—
		2nd gear	0.06—0.23 mm (0.0024—0.0091 in.)	—
	52 mm thrust washer thickness	A	2.405 mm (0.095 in.)	When worn or damaged
		B	2.430 mm (0.096 in.)	When worn or damaged
		C	2.455 mm (0.097 in.)	When worn or damaged
		D	2.480 mm (0.098 in.)	When worn or damaged
		E	2.505 mm (0.099 in.)	When worn or damaged
		F	2.530 mm (0.100 in.)	When worn or damaged
		G	2.555 mm (0.101 in.)	When worn or damaged
		H	2.580 mm (0.102 in.)	When worn or damaged
		I	2.605 mm (0.103 in.)	When worn or damaged
		J	2.630 mm (0.104 in.)	When worn or damaged
		K	2.655 mm (0.105 in.)	When worn or damaged
		L	2.680 mm (0.106 in.)	When worn or damaged
		M	2.705 mm (0.106 in.)	When worn or damaged
	1st gear collar length		63.3—63.4 mm (2.4921—2.4961 in.)	—
	2nd gear splined washer thickness		8.966—9.01 mm (0.353—0.355 in.)	—
	Sealing ring thickness		1.91—1.97 mm (0.075—0.078 in.)	1.86 mm (0.073 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)
	ATF feed pipe O.D.	1st clutch	11.47—11.48 mm (0.4516—0.4520 in.)	11.45 mm (0.4508 in.)
		1st-hold clutch	5.97—5.98 mm (0.2350—0.2354 in.)	5.95 mm (0.2343 in.)
	Feed pipe bushing I.D.	1st clutch	11.518—11.530 mm (0.4535—0.4539 in.)	11.545 mm (0.4545 in.)
		1st-hold clutch	6.018—6.030 mm (0.2369—0.2374 in.)	6.045 mm (0.2380 in.)

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Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New	Service Limit
Secondary shaft (cont'd)	65 mm thrust shim thickness	0A	0.80 mm (0.031 in.)	When worn or damaged
		A	0.84 mm (0.033 in.)	When worn or damaged
		B	0.88 mm (0.035 in.)	When worn or damaged
		C	0.92 mm (0.036 in.)	When worn or damaged
		D	0.96 mm (0.038 in.)	When worn or damaged
		E	1.00 mm (0.039 in.)	When worn or damaged
		F	1.04 mm (0.041 in.)	When worn or damaged
		G	1.08 mm (0.043 in.)	When worn or damaged
		H	1.12 mm (0.044 in.)	When worn or damaged
		I	1.16 mm (0.046 in.)	When worn or damaged
		J	1.20 mm (0.047 in.)	When worn or damaged
		K	1.24 mm (0.049 in.)	When worn or damaged
		L	1.28 mm (0.050 in.)	When worn or damaged
		M	1.32 mm (0.052 in.)	When worn or damaged
		N	1.36 mm (0.054 in.)	When worn or damaged
		O	1.40 mm (0.055 in.)	When worn or damaged
		P	1.44 mm (0.057 in.)	When worn or damaged
		Q	1.48 mm (0.058 in.)	When worn or damaged
		R	1.52 mm (0.060 in.)	When worn or damaged
		S	1.56 mm (0.061 in.)	When worn or damaged
		T	1.60 mm (0.063 in.)	When worn or damaged
		U	1.64 mm (0.065 in.)	When worn or damaged
		V	1.68 mm (0.066 in.)	When worn or damaged
		W	1.72 mm (0.068 in.)	When worn or damaged
		X	1.76 mm (0.069 in.)	When worn or damaged
		Y	1.80 mm (0.071 in.)	When worn or damaged
		Z	1.84 mm (0.072 in.)	When worn or damaged
		AA	1.88 mm (0.074 in.)	When worn or damaged
		AB	1.92 mm (0.076 in.)	When worn or damaged
		AC	1.96 mm (0.077 in.)	When worn or damaged
		AD	2.00 mm (0.079 in.)	When worn or damaged
		AE	2.04 mm (0.080 in.)	When worn or damaged
		AF	2.08 mm (0.082 in.)	When worn or damaged
		AG	2.12 mm (0.083 in.)	When worn or damaged
		AH	2.16 mm (0.085 in.)	When worn or damaged
		AI	2.20 mm (0.087 in.)	When worn or damaged
		AJ	2.24 mm (0.088 in.)	When worn or damaged
		AK	2.28 mm (0.090 in.)	When worn or damaged
		AL	2.32 mm (0.091 in.)	When worn or damaged

Item	Measurement	Qualification	Standard or New	Service Limit
Intermediary shaft	I.D. of 3rd gear		36.000—36.016 mm (1.4173—1.4179 in.)	When worn or damaged
	Axial clearance of 3rd gear		0.005—0.045 mm (0.0002—0.0018 in.)	—
	Cotter thickness		2.99—3.02 mm (0.1177—0.1189 in.)	—
	Sealing ring thickness		1.89—1.95 mm (0.0744—0.0768 in.)	1.84 mm (0.0724 in.)
	Sealing ring groove width		2.025—2.060 mm (0.080—0.081 in.)	2.08 mm (0.082 in.)
	53 mm splined washer thickness	A	3.995 mm (0.1573 in.)	When worn or damaged
		B	4.015 mm (0.1581 in.)	When worn or damaged
		C	4.035 mm (0.1589 in.)	When worn or damaged
		D	4.055 mm (0.1596 in.)	When worn or damaged
		E	4.075 mm (0.1604 in.)	When worn or damaged
		F	4.095 mm (0.1612 in.)	When worn or damaged
		G	4.115 mm (0.1620 in.)	When worn or damaged
		H	4.135 mm (0.1628 in.)	When worn or damaged
		I	4.155 mm (0.1636 in.)	When worn or damaged
		J	4.175 mm (0.1644 in.)	When worn or damaged
		K	4.195 mm (0.1652 in.)	When worn or damaged
		L	4.215 mm (0.1659 in.)	When worn or damaged
		M	4.235 mm (0.1667 in.)	When worn or damaged
		N	4.255 mm (0.1675 in.)	When worn or damaged
	26.5 mm washer thickness	A	1.05 mm (0.041 in.)	When worn or damaged
		B	1.13 mm (0.044 in.)	When worn or damaged
		C	1.21 mm (0.048 in.)	When worn or damaged
		D	1.29 mm (0.051 in.)	When worn or damaged
		E	1.37 mm (0.054 in.)	When worn or damaged
		F	1.45 mm (0.057 in.)	When worn or damaged
		G	1.53 mm (0.060 in.)	When worn or damaged
		H	1.61 mm (0.063 in.)	When worn or damaged
		I	1.69 mm (0.067 in.)	When worn or damaged
		J	1.77 mm (0.070 in.)	When worn or damaged
		K	1.85 mm (0.073 in.)	When worn or damaged
		L	1.93 mm (0.076 in.)	When worn or damaged
		M	2.01 mm (0.079 in.)	When worn or damaged
		N	2.09 mm (0.082 in.)	When worn or damaged
Reverse idler gear	Gear shaft O.D.		13.99—14.00 mm (0.5508—0.5512 in.)	When worn or damaged
	I.D. of transmission housing of gear shaft contact area		14.006—14.024 mm (0.5514—0.5521 in.)	—
	I.D.		18.007—18.020 mm (0.7089—0.7094 in.)	When worn or damaged
	Axial clearance		0.07—0.38 mm (0.003—0.015 in.)	—
	Thrust washer thickness	Transmission housing	0.97—1.05 mm (0.038—0.041 in.)	—
		Holder side	0.97—1.05 mm (0.038—0.041 in.)	—

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Standards and Service Limits

Automatic Transmission and A/T Differential (cont'd)

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Main valve body spring (see page 14-296)	Cooler check valve spring		0.6 mm (0.024 in.)	5.8 mm (0.228 in.)	14.5 mm (0.571 in.)	6.8
	Torque converter check valve spring		1.1 mm (0.043 in.)	8.6 mm (0.339 in.)	35.0 mm (1.378 in.)	12.6
	Lock-up shift valve spring		1.0 mm (0.039 in.)	6.6 mm (0.260 in.)	35.5 mm (1.398 in.)	18.2
	Shift valve E spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	42.4 mm (1.669 in.)	17.6
	Shift valve A spring		0.9 mm (0.035 in.)	6.6 mm (0.260 in.)	50.5 mm (1.988 in.)	23.3
	Shift valve B spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	Modulator valve spring		1.6 mm (0.063 in.)	10.4 mm (0.409 in.)	33.5 mm (1.319 in.)	9.8
	CPC valve A spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Servo control valve spring		0.9 mm (0.035 in.)	9.6 mm (0.378 in.)	30.2 mm (1.189 in.)	8.4
	Lubrication control valve spring		0.9 mm (0.035 in.)	8.7 mm (0.343 in.)	25.0 mm (0.984 in.)	7.2
	Lock-up timing valve spring		0.65 mm (0.026 in.)	6.6 mm (0.260 in.)	34.8 mm (1.370 in.)	15.6
	Relief valve spring		1.0 mm (0.039 in.)	9.6 mm (0.378 in.)	28.1 mm (1.106 in.)	7.7
Secondary valve body spring (see page 14-298)	CPC valve C spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Shift valve D spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	42.4 mm (1.669 in.)	17.6
	Reverse CPC valve spring		0.8 mm (0.031 in.)	6.1 mm (0.240 in.)	24.5 mm (0.965 in.)	14.6
	Shift valve C spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
	CPC valve B spring		0.7 mm (0.028 in.)	6.1 mm (0.240 in.)	17.8 mm (0.701 in.)	7.9
	Reverse control valve spring		0.8 mm (0.031 in.)	6.6 mm (0.260 in.)	49.1 mm (1.933 in.)	21.7
Regulator valve body spring (see page 14-299)	3rd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	41.4 mm (1.630 in.)	5.5
	Lock-up control valve spring		0.7 mm (0.028 in.)	6.6 mm (0.260 in.)	42.9 mm (1.689 in.)	14.2
	Regulator valve spring B		1.4 mm (0.055 in.)	8.8 mm (0.346 in.)	44.0 mm (1.732 in.)	12.0
	Regulator valve spring A		1.9 mm (0.075 in.)	14.7 mm (0.579 in.)	80.6 mm (3.173 in.)	16.1
	Stator reaction spring		5.5 mm (0.217 in.)	37.4 mm (1.472 in.)	30.3 mm (1.193 in.)	2.1

Item	Measurement	Qualification	Standard or New			
			Wire Diameter	O.D.	Free Length	No. of Coil
Accumulator body spring (see page 14-300)	4th accumulator spring		3.3 mm (0.130 in.)	19.6 mm (0.772 in.)	39.1 mm (1.539 in.)	5.8
	2nd accumulator spring		3.1 mm (0.122 in.)	19.6 mm (0.772 in.)	53.4 mm (2.102 in.)	7.5
	1st accumulator spring A		2.3 mm (0.091 in.)	19.6 mm (0.772 in.)	60.8 mm (2.394 in.)	9.5
	1st accumulator spring B		2.5 mm (0.098 in.)	12.8 mm (0.504 in.)	46.0 mm (1.811 in.)	9.5
	5th accumulator spring A		2.4 mm (0.094 in.)	19.6 mm (0.772 in.)	65.5 mm (2.579 in.)	12.0
	5th accumulator spring B		2.6 mm (0.102 in.)	13.2 mm (0.520 in.)	50.5 mm (1.988 in.)	10.1
	1st-hold accumulator spring		2.0 mm (0.079 in.)	13.1 mm (0.516 in.)	42.9 mm (1.689 in.)	9.8

Item	Measurement	Qualification	Standard or New	Service Limit
A/T differential carrier	Pinion shaft contact area I.D.		18.000—18.025 mm (0.7087—0.7096 in.)	—
	Carrier-to-pinion shaft clearance		0.013—0.054 mm (0.0005—0.0021 in.)	0.1 mm (0.004 in.)
	Driveshaft contact area I.D.		30.025—30.055 mm (1.182—1.183 in.)	—
	Carrier-to-driveshaft clearance		0.045—0.096 mm (0.002—0.004 in.)	0.13 mm (0.005 in.)
	Carrier-to-intermediate shaft clearance		0.080—0.126 mm (0.003—0.005 in.)	—
	Tapered roller bearing starting torque (preload)	For new bearing	3.9—5.1 N·m (40—52 kgf·cm, 35—45 lbf·in.)	Adjust
		For used bearing	3.6—4.8 N·m (37—49 kgf·cm, 32—43 lbf·in.)	Adjust
A/T differential pinion gear	Backlash		0.05—0.15 mm (0.002—0.006 in.)	—
	I.D.		18.042—18.066 mm (0.7103—0.7113 in.)	—
	Pinion gear-to-pinion shaft clearance		0.055—0.095 mm (0.0022—0.0037 in.)	0.12 mm (0.005 in.)

Standards and Service Limits

Steering

Item	Measurement	Qualification	Standard or New
Steering wheel	Rotational play measured at outside edge with engine running		0—10 mm (0—0.39 in.)
	Starting load measured at outside edge with engine running		29 N (3.0 kgf, 6.6 lbf)
Gearbox	Angle of rack guide screw loosened from locked position		10 °±5 °

Suspension

Item	Measurement	Qualification	Standard or New	Service Limit
Wheel alignment	Camber	Front	0 ° 00 '±45 '	
		Rear	—1 ° 00 '±30 '	
	Caster	Front	3 ° 15 '±45 '	
		Rear	0±2 mm (0±1/16 in.)	
	Total Toe-in	Front	2±2 mm (1/16±1/16 in.)	
		Rear	38 ° 50 '±2 °	
Wheel	Aluminum wheel runout	Inside wheel	31 ° 40 ' (Reference)	
		Axial	0—0.7 mm (0—0.03 in.)	2.0 mm (0.08 in.)
		Radial	0—0.7 mm (0—0.03 in.)	1.5 mm (0.06 in.)
Wheel bearing	End play	Front	0—0.05 mm (0—0.002 in.)	
		Rear	0—0.05 mm (0—0.002 in.)	

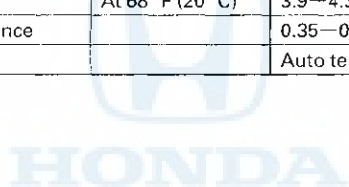


Brakes

Item	Measurement	Qualification	Standard or New	Service Limit
Parking brake lever	Distance traveled when lever pulled with 196 N (20 kgf, 44 lbf) of force		7 to 9 clicks	
Brake pedal	Pedal height (carpet removed)		177 mm (6 31/32 in.)	
	Free play		0.5—2.0 mm (1/64—1/16 in.)	
Brake disc	Thickness	Front	22.9—23.1 mm (0.90—0.91 in.)	21.0 mm (0.83 in.)
		Rear	8.9—9.1 mm (0.35—0.36 in.)	8.0 mm (0.31 in.)
	Runout	Front	—	0.10 mm (0.004 in.)
		Rear	—	0.15 mm (0.006 in.)
	Parallelism	Front and rear	—	0.015 mm (0.0006 in.)
Brake pad	Thickness	Front	10.5—11.5 mm (0.41—0.45 in.)	1.6 mm (0.06 in.)
		Rear	8.9—9.1 mm (0.35—0.36 in.)	1.6 mm (0.06 in.)

Air Conditioning

Item	Measurement	Qualification	Standard or New
Refrigerant	Type		HFC-134a (R-134a)
	Capacity of system		500—550 g (17.6—19.4 oz)
Refrigerant oil	Type		SANDEN SE-10Y (P/N 38899-RCJ-J01)
	Capacity of components	Condenser	25 mL (5/6 fl oz)
		Evaporator	45 mL (1 1/2 fl oz)
		Each line and hose	10 mL (1/3 fl oz)
		Receiver	10 mL (1/3 fl oz)
		Compressor	130—140 mL (4 1/3—4 2/3 fl oz)
Compressor	Starter coil resistance	At 68 °F (20 °C)	3.9—4.3 Ω
	Pulley-to-pressure plate clearance		0.35—0.65 mm (0.014—0.026 in.)
Drive belt	Tension		Auto tensioner



Design Specifications

Item	Measurement	Qualification	Specification
DIMENSIONS	Overall length		4,813 mm (189.5 in.)
	Overall width		1,820 mm (71.7 in.)
	Overall height		1,456 mm (57.3 in.)
	Wheelbase		2,715 mm (106.9 in.)
	Track	Front	1,553 mm (61.1 in.)
		Rear	1,554 mm (61.2 in.)
	Seating capacity		Five (5)
WEIGHT (U.S.A.)	Gross Vehicle Weight Rating (GVWR)		4,453 lbs
WEIGHT (CANADA)	Gross Vehicle Weight Rating (GVWR)		2,020 kg
ENGINE	Type		Water-cooled, 4-stroke SOHC i-VTEC V6 gasoline engine
	Cylinder arrangement		60 ° V6-cylinder, transverse
	Bore and stroke		86 x 86 mm (3.39 x 3.39 in.)
	Displacement		2,997 cm ³ (183 cu in.)
	Compression ratio		10.0
	Valve train		Belt driven, SOHC i-VTEC 4 valves per cylinder
	Lubrication system		Forced, wet sump, with trochoid pump
	Oil pump displacement	At 6,000 rpm	48.9 L (51.7 US qt)/minute
	Water pump displacement	At 6,000 rpm	176 L (186 US qt)/minute
	Fuel required		Unleaded gasoline with 86 pump octane number or higher
STARTER	Type		Gear reduction
	Normal output		1.6 kW
	Normal voltage		12 V
	Hour rating		30 seconds
	Rotation direction		Clockwise as viewed from gear end
MOTOR	Type		DC brushless
MAIN BATTERY	Type		7.2 V Ni-H
	Number		20
	Output		144 V
MOTOR CONTROLLER	Type		Intelligent Power Module (IPM)

Item	Measurement	Qualification	Specification
AUTOMATIC TRANSMISSION	Type		Electronically controlled automatic, 5-speed forward, 1 reverse
	Primary reduction		Direct 1:1
	Gear ratio	1st	2.685
		2nd	1.552
		3rd	1.022
		4th	0.727
		5th	0.520
		Reverse	1.846
STEERING	Final reduction	Type	Single helical gear
		Gear ratio	4.429
	Type		Electric power-assisted rack and pinion
	Overall ratio		15.21
SUSPENSION	Turns, lock-to-lock		2.98
	Steering wheel diameter		380 mm (15.0 in.)
	Type	Front	Independent double wishbone, coil spring, with stabilizer
		Rear	Independent double wishbone, coil spring, with stabilizer
WHEEL ALIGNMENT	Shock absorber	Front	Telescopic, hydraulic, nitrogen gas-filled
		Rear	Telescopic, hydraulic, nitrogen gas-filled
	Camber	Front	0°
		Rear	-1°
BRAKES	Caster	Front	3° 15'
		Rear	3° 15'
	Total Toe-in	Front	0 mm (0 in.)
		Rear	2 mm (1/16 in.)
TIRES	Type of service brake	Front	Power-assisted self-adjusting ventilated disc
		Rear	Power-assisted self-adjusting solid disc
	Type of parking brake		Mechanical actuating, rear wheels
	Pad friction surface area	Front: US model	56 cm ² (8.7 sq in.) x 2
		Front: Canada model	57 cm ² (8.8 sq in.) x 2
	Shoe friction surface area	Rear	28 cm ² (4.3 sq in.) x 2
	Size		P215/60R16 94V M+S
		Spare: Canada model, US model optional	T135/90D15 100M

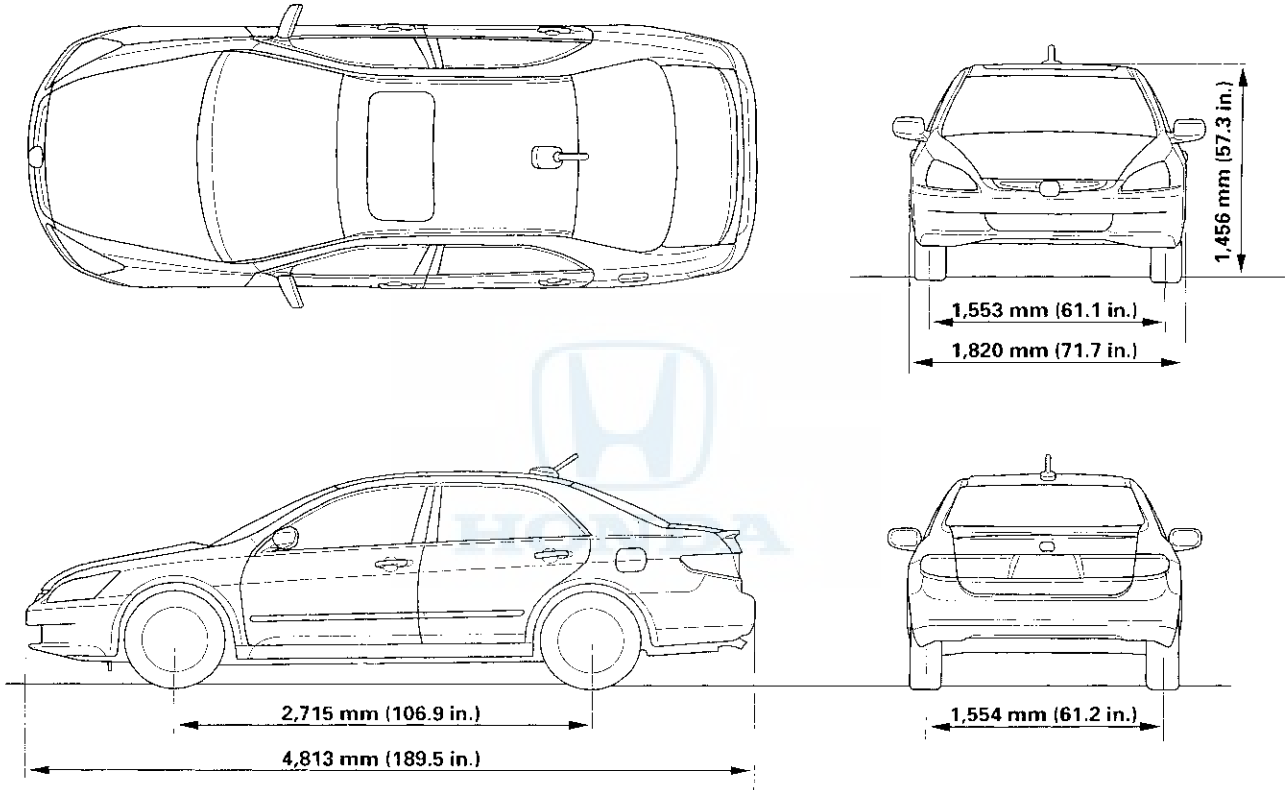
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Design Specifications

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Item	Measurement	Qualification	Specification
AIR CONDITIONING	Compressor	Type	Scroll
		Capacity	75+15 mL (4.58+0.92 cu in.)/rev.
		Maximum speed	Belt: 10,000 rpm/Motor: 5,000 rpm
		Lubricant capacity	130 mL (4 1/3 fl oz)
		Lubricant type	SANDEN SE-10Y
	Condenser	Type	Corrugated fin
	Evaporator	Type	Corrugated fin
	Blower	Type	Radial
		Motor type	258 W/12 V
		Speed control	Infinite variable
		Maximum capacity	530 m ³ /h (18,686 cu ft/h)
	Temperature control		Air-mix type
	Compressor clutch	Type	Dry, single plate, Poly V-belt drive
		Electrical power consumption at 68 °F (20 °C)	42 W maximum at 12 V
	Refrigerant	Type	HFC-134a (R-134a)
		Capacity	500—550 g (17.6—19.4 oz)
ELECTRICAL RATINGS	Battery		12 V—52 AH/5 hours
	Starter		12 V—1.6 kW
	Alternator		12 V—105 A
	Fuses	Under-hood fuse/relay box	100 A, 50 A, 40 A, 30 A, 20 A, 15 A, 10 A, 7.5 A
		Under-dash fuse/relay box	30 A, 20 A, 15 A, 10 A, 7.5 A
	Light bulbs	Headlight high beam	12 V—60 W
		Headlight low beam	12 V—55 W
		Front turn signal/front side marker lights	12 V—21/5 W (two filaments)
		Rear turn signal lights	12 V—21 W Amber color
		Brake/taillights	12 V—21/5 W (two filaments)
		Inner/taillights	12 V—5 W
		High-mount brake light	12 V—21 W
		Back-up lights	12 V—21 W
		License plate light	12 V—5 W
		Ceiling light	12 V—8 W
		Spotlights	12 V—8 W
		Trunk light	12 V—5 W
		Door courtesy lights	12 V—3.8 W
		Glove box light	12 V—3.4 W
		Vanity mirror lights	12 V—1.1 W
		Gauge lights	12 V—LED (non-replaceable)
		Indicator, panel, ambient light	12 V—LED, 14 V—0.56 W, 0.84 W

Body Specifications





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Lubricants and Fluids

For details of lubrication points and type of lubricants to be applied, refer to the illustrated index and various work procedures (such as Assembly/Reassembly, Replacement, Overhaul, Installation, etc.) contained in each section.

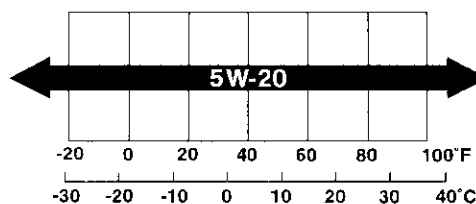
Lubrication Points		Lubricant
A	Engine	Honda Motor Oil: P/N 08798-9023 Use 5W-20 motor oil. Look for the API certification seal on the oil container as shown below. Make sure it says "For Gasoline Engines." SAE Viscosity: See chart below.
B	Automatic transmission	Honda ATF-Z1(ATF): P/N 08200-9001 Always use Honda ATF-Z1. Using a non-Honda ATF can affect shift quality.
C	Brake system (including ABS line)	Honda Heavy Duty DOT 3 Brake Fluid: P/N 08798-9008 Always use Honda Heavy Duty DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and decrease the life of the system.
D	Power steering gearbox	Steering Grease: P/N 08733-B070E
E	Throttle cable end (below dashboard)	Honda Silicone Grease: P/N 08C30-B0234M
F	Brake booster clevis	Multipurpose Grease
G	Battery terminals	
H	Pedal linkage	
I	Fuel fill door	
J	Hood hinges and hood latch	
K	Door hinges: upper and lower	Honda Silicone Grease: P/N 08C30-B0234M
L	Trunk hinges	
M	Caliper piston boot, caliper pins, and boots	Compressor oil: SANDEN SE-10Y (P/N 38899-RCJ-J01) for refrigerant HFC-134a (R-134a)
N	Air conditioning compressor	

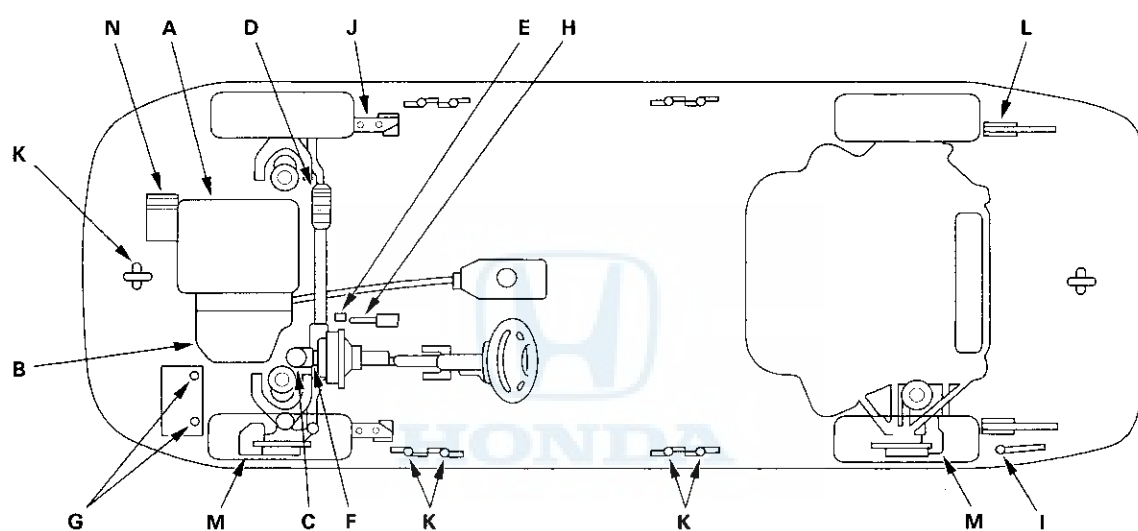
API CERTIFICATION SEAL



Recommended Engine Oil

Engine oil viscosity for ambient temperature ranges





Maintenance Schedule

Listed by Distance/Time for Normal Conditions

This Maintenance Schedule outlines the minimum required maintenance. Service at the indicated distance or time, whichever comes first. Use the Maintenance Schedule for Severe Conditions if the vehicle meets any of the qualifiers in the Severe Conditions schedule, or if the vehicle is normally driven in Canada.

Distance		Time	Maintenance Items
7,500 miles	12,000 km	—	Do items in A.
15,000 miles	24,000 km	1 year	Do items in A and B.
22,500 miles	36,000 km	—	Do items in A.
30,000 miles	48,000 km	2 years	Do items in A, B, and C.
37,500 miles	60,000 km	—	Do items in A.
45,000 miles	72,000 km	3 years	Do items in A and B.
—	—	3 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.
52,500 miles	84,000 km	—	Do items in A.
60,000 miles	96,000 km	4 years	Do items in A, B, and C.
67,500 miles	108,000 km	—	Do items in A.
75,000 miles	120,000 km	5 years	Do items in A and B.
82,500 miles	132,000 km	—	Do items in A.
90,000 miles	144,000 km	6 years	Do items in A, B, and C.
—	—	6 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.
97,500 miles	156,000 km	—	Do items in A.
105,000 miles	168,000 km	7 years	Do items in A, B, and D.
112,500 miles	180,000 km	—	Do items in A.
120,000 miles	192,000 km	8 years	Do items in A, B, C, E, and F.
127,500 miles	204,000 km	—	Do items in A.
135,000 miles	216,000 km	9 years	Do items in A and B.
—	—	9 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.
142,500 miles	228,000 km	—	Do items in A.
150,000 miles	240,000 km	10 years	Do items in A, B, and C.
157,500 miles	252,000 km	—	Do items in A.
165,000 miles	264,000 km	—	Inspect idle speed (see page 11-339). Idle speed: 790±50 rpm in N or P position.
165,000 miles	264,000 km	11 years	Do items in A and B.



Do the items in parts A, B, C, D, E, and F as required for the mileage/time interval listed.

Part	Maintenance Items
A	Replace engine oil (see page 8-7), every 7,500 miles (12,000 km) or 1 year. Engine oil capacity without oil filter: 4.0 L (4.2 US qt).
	Rotate tires, and check tire inflation and condition, every 7,500 miles (12,000 km). Follow the pattern shown in the Owner's Manual.
B	Replace engine oil filter (see page 8-7), every 15,000 miles (24,000 km) or 1 year. Engine oil capacity with oil filter: 4.3 L (4.5 US qt).
	Check front and rear brakes (see page 19-12), every 15,000 miles (24,000 km) or 1 year. • Check pads and discs for wear (thickness), damage, and cracks. • Check calipers for damage, leaks, and tightness of mounting bolts.
	Check parking brake adjustment (see page 19-7), every 15,000 miles (24,000 km) or 1 year. Check the number of clicks (7 to 9) when parking brake lever pulled with 196 N (20 kgf, 44 lbf) of force.
	Inspect tie-rod ends, steering gearbox, and gearbox boot (see page 17-5), every 15,000 miles (24,000 km) or 1 year. • Check rack grease and steering linkage. • Check boots for damage and leaking grease. • Check fluid lines for damage and leaks.
	Inspect suspension components (see page 18-3), every 15,000 miles (24,000 km) or 1 year. • Check bolts for tightness. • Check condition of ball joint boots for deterioration and damage.
	Inspect driveshaft boots (see page 16-3), every 15,000 miles (24,000 km) or 1 year. Check boots for cracks and boot bands for tightness.
	Inspect brake hoses and lines including ABS (see page 19-27), every 15,000 miles (24,000 km) or 1 year. Check the master cylinder and ABS modulator for damage and leakage.
	Inspect all fluid levels and condition of fluids, every 15,000 miles (24,000 km) or 1 year. • Automatic transmission fluid (ATF-Z1) (see page 14-230). • Brake fluid (see page 19-9). • Windshield washer fluid. • Engine coolant (see page 10-6).
	Inspect exhaust system (see page 9-7)*, every 15,000 miles (24,000 km) or 1 year. Check catalytic converter heat shield, exhaust pipe, and muffler for damage, leaks, and tightness.
	Inspect fuel lines and connections (see page 11-358)*, every 15,000 miles (24,000 km) or 1 year. Check for loose connections, cracks, and deterioration; retighten loose connections, and replace damaged parts.

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended intervals to ensure long-term reliability.

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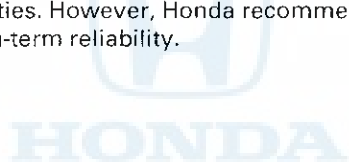
Maintenance Schedule

Listed by Distance/Time for Normal Conditions (cont'd)

Do the items in parts A, B, C, D, E, and F as required for the mileage/time interval listed.

Part	Maintenance Items
C	<p>Inspect drive belts (see page 21-100), every 30,000 miles (48,000 km) or 2 years. Look for cracks and damage, then check the position of the drive belt auto-tensioner indicator.</p> <p>Replace dust and pollen filter (see page 21-85), every 30,000 miles (48,000 km) or 2 years.</p> <ul style="list-style-type: none"> • Replace the filter as often (at 15,000 miles/24,000 km intervals) if the vehicle is driven mostly in urban area that have high concentrations of soot in the air from industry and diesel-powered vehicles. • Replace the filter whenever airflow from the heating and cooling/climate control system is less than normal. <p>Replace air cleaner element (see page 11-382), every 30,000 miles (48,000 km), (independent of time).</p>
D	<p>Inspect the valve clearance (see page 6-10), every 105,000 miles (168,000 km), otherwise adjust only if noisy. Intake: 0.20—0.24 mm (0.008—0.009 in.), Exhaust: 0.28—0.32 mm (0.011—0.013 in.).</p> <p>Replace spark plugs (see page 4-25), every 105,000 miles (168,000 km). Use IZFR6K11 (NGK) or SKJ20DR-M11 (DENSO).</p> <p>Replace timing belt (see page 6-15), and inspect water pump (see page 10-5), every 105,000 miles (168,000 km) or 7 years.</p>
E	<p>Replace automatic transmission fluid (see page 14-231) at 120,000 miles (192,000 km) or 6 years, then every 90,000 miles (144,000 km) or 5 years. Capacity: 3.4 L (3.6 US qt); use Honda ATF-Z1.</p>
F	<p>Replace engine coolant (see page 10-6) at 120,000 miles (192,000 km) or 10 years, then every 60,000 miles (96,000 km) or 5 years. Capacity: 6.7 L (1.77 US gal); use Honda All Season Antifreeze/Coolant Type 2.</p>

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended intervals to ensure long-term reliability.





Listed by Distance/Time for Severe Conditions

Use the Severe Conditions schedule if the vehicle is driven MAINLY in Canada or in any of the following conditions. If only OCCASIONALLY driven in these conditions, use the Normal Conditions schedule.

Severe Driving Conditions

- Driving less than 5 miles (8 km) per trip or, in freezing temperatures, driving less than 10 miles (16 km) per trip.
- Driving in extremely hot over 90 °F (32 °C) conditions.
- Extensive idling, or long periods of stop-and-go driving, such as a taxi or a commercial delivery vehicle.
- Trailer towing, driving with a roof rack, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Distance		Time	Maintenance Items
3,750 miles	6,000 km	—	Do items in A.
7,500 miles	12,000 km	—	Do items in A and B.
11,250 miles	18,000 km	—	Do items in A.
15,000 miles	24,000 km	1 year	Do items in A, B, and C.
18,750 miles	30,000 km	—	Do items in A.
22,500 miles	36,000 km	—	Do items in A and B.
26,250 miles	42,000 km	—	Do items in A.
30,000 miles	48,000 km	2 years	Do items in A, B, C, and D.
33,750 miles	54,000 km	—	Do items in A.
37,500 miles	60,000 km	—	Do items in A and B.
41,250 miles	66,000 km	—	Do items in A.
45,000 miles	72,000 km	3 years	Do items in A, B, and C.
—	—	3 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.
48,750 miles	78,000 km	—	Do items in A.
52,500 miles	84,000 km	—	Do items in A and B.
56,250 miles	90,000 km	—	Do items in A.
60,000 miles	96,000 km	4 years	Do items in A, B, C, D, and E.
63,750 miles	102,000 km	—	Do items in A.
67,500 miles	108,000 km	—	Do items in A and B.
71,250 miles	114,000 km	—	Do items in A.
75,000 miles	120,000 km	5 years	Do items in A, B, and C.
78,750 miles	126,000 km	—	Do items in A.
82,500 miles	132,000 km	—	Do items in A and B.
86,250 miles	138,000 km	—	Do items in A.
90,000 miles	144,000 km	6 years	Do items in A, B, C, D, and E.
—	—	6 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.
93,750 miles	150,000 km	—	Do items in A.
97,500 miles	156,000 km	—	Do items in A and B.

(cont'd)

Maintenance Schedule

Listed by Distance/Time for Severe Conditions (cont'd)

Use the Severe Conditions schedule if the vehicle is driven MAINLY in Canada or in any of the following conditions. If only OCCASIONALLY driven in these conditions, use the Normal Conditions schedule.

Severe Driving Conditions

- Driving less than 5 miles (8 km) per trip or, in freezing temperatures, driving less than 10 miles (16 km) per trip.
- Driving in extremely hot over 90 °F (32 °C) conditions.
- Extensive idling, or long periods of stop-and-go driving, such as a taxi or a commercial delivery vehicle.
- Trailer towing, driving with a roof rack, or driving in mountainous conditions.
- Driving on muddy, dusty, or de-iced roads.

Distance		Time	Maintenance Items
101,250 miles	162,000 km	————	Do items in A.
105,000 miles	168,000 km	7 years	Do items in A, B, C, F, and G.
108,750 miles	174,000 km	————	Do items in A.
112,500 miles	180,000 km	————	Do items in A and B.
116,250 miles	186,000 km	————	Do items in A.
120,000 miles	192,000 km	8 years	Do items in A, B, C, D, E, and H.
123,750 miles	198,000 km	————	Do items in A.
127,500 miles	204,000 km	————	Do items in A and B.
131,250 miles	210,000 km	————	Do items in A.
135,000 miles	216,000 km	9 years	Do items in A, B, and C.
————	————	9 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.
138,750 miles	222,000 km	————	Do items in A.
142,500 miles	228,000 km	————	Do items in A and B.
146,250 miles	234,000 km	————	Do items in A.
150,000 miles	240,000 km	10 years	Do items in A, B, C, D, and E.
153,750 miles	246,000 km	————	Do items in A.
157,500 miles	252,000 km	————	Do items in A and B.
161,250 miles	258,000 km	————	Do items in A.
165,000 miles	264,000 km	————	Inspect idle speed (see page 11-339). Idle speed: 790 ± 50 rpm in P or N position.
165,000 miles	264,000 km	11 years	Do items in A, B, and C.
————	————	12 years	Replace brake fluid (see page 19-9). Use Honda Heavy Duty DOT 3 Brake Fluid.



Do the items in parts A, B, C, D, E, F, G, and H as required for the mileage/time interval listed.

Part	Maintenance Items
A	Replace engine oil (see page 8-7), every 3,750 miles (6,000 km) or 6 months. Engine oil capacity without oil filter: 4.0 L (4.2 US qt).
	Replace engine oil filter (see page 8-7), every 3,750 miles (6,000 km) or 6 months. Engine oil capacity with oil filter: 4.3 L (4.5 US qt).
B	Check front and rear brakes (see page 19-12), every 7,500 miles (12,000 km) or 6 months. • Check pads and discs for wear (thickness), damage, and cracks. • Check calipers for damage, leaks, and tightness of mounting bolts.
	Rotate tires, and check tire inflation and condition, every 7,500 miles (12,000 km). Follow the pattern shown in the Owner's Manual.
	Inspect tie-rod ends, steering gearbox, and gearbox boot (see page 17-5), every 7,500 miles (12,000 km) or 6 months. • Check rack grease and steering linkage. • Check boots for damage and leaking grease. • Check fluid lines for damage and leaks.
	Inspect suspension components (see page 18-3), every 7,500 miles (12,000 km) or 6 months. • Check bolts for tightness. • Check condition of ball joint boots for deterioration and damage.
	Inspect driveshaft boots (see page 16-3), every 7,500 miles (12,000 km) or 6 months. Check boots for cracks and boot bands for tightness.
C	Replace air cleaner element (see page 11-382), every 15,000 miles (24,000 km).
	Lubricate all hinges, locks, and latches, every 15,000 miles (24,000 km) or 1 year.
	Check parking brake adjustment (see page 19-7), every 15,000 miles (24,000 km) or 1 year. Check the number of clicks (7 to 9) when parking brake lever pulled with 196 N (20 kgf, 44 lbf) of force.
	Inspect brake hoses and lines including ABS (see page 19-27), every 15,000 miles (24,000 km) or 1 year. Check the master cylinder and ABS modulator for damage and leakage.
	Inspect all fluid levels and condition of fluids, every 15,000 miles (24,000 km) or 1 year. • Automatic transmission fluid (ATF-Z1) (see page 14-230). • Brake fluid (see page 19-9). • Windshield washer fluid. • Engine coolant (see page 10-6).
	Inspect exhaust system (see page 9-7)*, every 15,000 miles (24,000 km) or 1 year. Check catalytic converter heat shield, exhaust pipe, and muffler for damage, leaks, and tightness.
	Inspect fuel lines and connections (see page 11-358)*, every 15,000 miles (24,000 km) or 1 year. Check for loose connections, cracks, and deterioration; retighten loose connections, and replace damaged parts.
	Check lights and controls, every 15,000 miles (24,000 km) or 1 year. Check function of interior (see page 22-185) and exterior (see page 22-155) lights, and position of the headlights (see page 22-170).
	Inspect vehicle underbody, every 15,000 miles (24,000 km) or 1 year. Check the paint for damage, scratches, stone chipping, and dents.

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended intervals to ensure long-term reliability.

(cont'd)

Maintenance Schedule

Listed by Distance/Time for Severe Conditions (cont'd)

Do the items in parts A, B, C, D, E, F, G, and H as required for the mileage/time interval listed.

Part	Maintenance Items
D	<p>Inspect drive belts (see page 21-100), every 30,000 miles (48,000 km) or 2 years. Look for cracks and damage, then check the position of the drive belt auto-tensioner indicator.</p> <p>Replace dust and pollen filter (see page 21-85), every 30,000 miles (48,000 km) or 2 years.</p> <ul style="list-style-type: none"> • Replace the filter as often (at 15,000 miles/24,000 km intervals) if the vehicle is driven mostly in urban area that have high concentrations of soot in the air from industry and diesel-powered vehicles. • Replace the filter whenever airflow from the heating and cooling/climate control system is less than normal.
E	<p>Replace automatic transmission fluid (see page 14-231) at 60,000 miles (96,000 km) or 3 years, then every 30,000 miles (48,000 km) or 2 years. Capacity: 3.4 L (3.6 US qt); use Honda ATF-Z1.</p>
F	<p>Inspect the valve clearance (see page 6-10), every 105,000 miles (168,000 km), otherwise adjust only if noisy. Intake: 0.20—0.24 mm (0.008—0.009 in.), Exhaust: 0.28—0.32 mm (0.011—0.013 in.).</p> <p>Replace spark plugs (see page 4-25), every 105,000 miles (168,000 km). Use IZFR6K11 (NGK) or SKJ20DR-M11 (DENSO).</p>
G	<p>Replace timing belt (see page 6-15), and inspect water pump (see page 10-5), every 105,000 miles (168,000 km) or 7 years.</p>
I	<p>Replace engine coolant (see page 10-6) at 120,000 miles (192,000 km) or 10 years, then every 60,000 miles (96,000 km) or 5 years. Capacity: 6.7 L (1.77 US gal); use Honda All Season Antifreeze/Coolant Type 2.</p>

NOTE: According to state and federal regulations, failure to do the maintenance items marked with an asterisk (*) will not void the customer's emissions warranties. However, Honda recommends that all maintenance services be done at the recommended intervals to ensure long-term reliability.



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If engine electrical maintenance is required)

The Accord Hybrid SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



INTEGRATED MOTOR ASSIST (IMA) (If engine electrical maintenance is required)

IMA components are located in this area. The IMA is a high-voltage system. The high voltage cables and their covers are identified by orange coloring. The safety labels are attached to high voltage and other related parts (see page 1-4). You must be familiar with the IMA system before working on or around it. Make sure you have read the Service Precautions in the IMA section before performing repairs or service (see page 12-3).

Navigation Tools: Click on the "Table of Contents" below, or use the Bookmarks to the left.



Engine Electrical

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Charging System

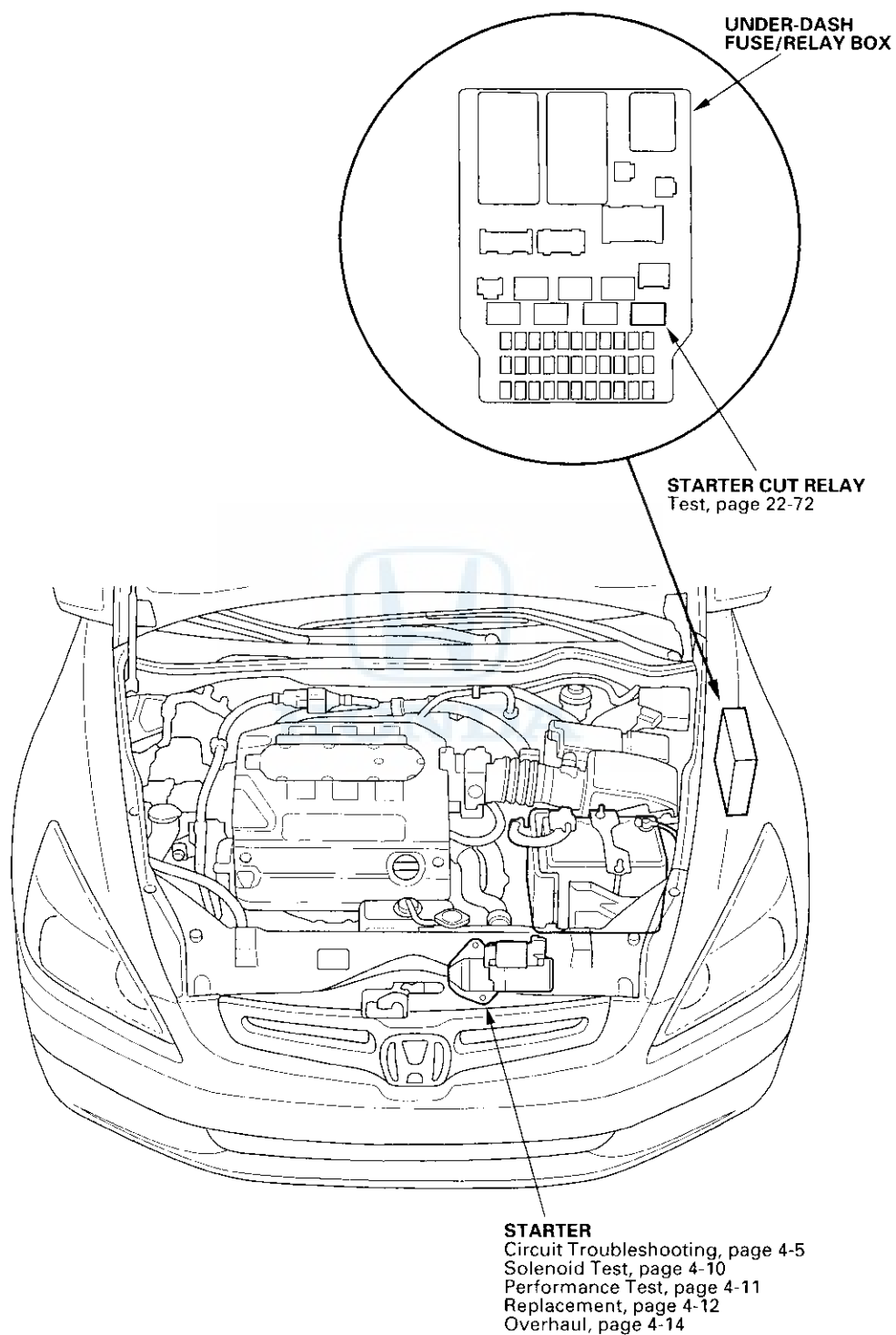
Refer to the IMA section 12

Cruise Control

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Starting System

Component Location Index





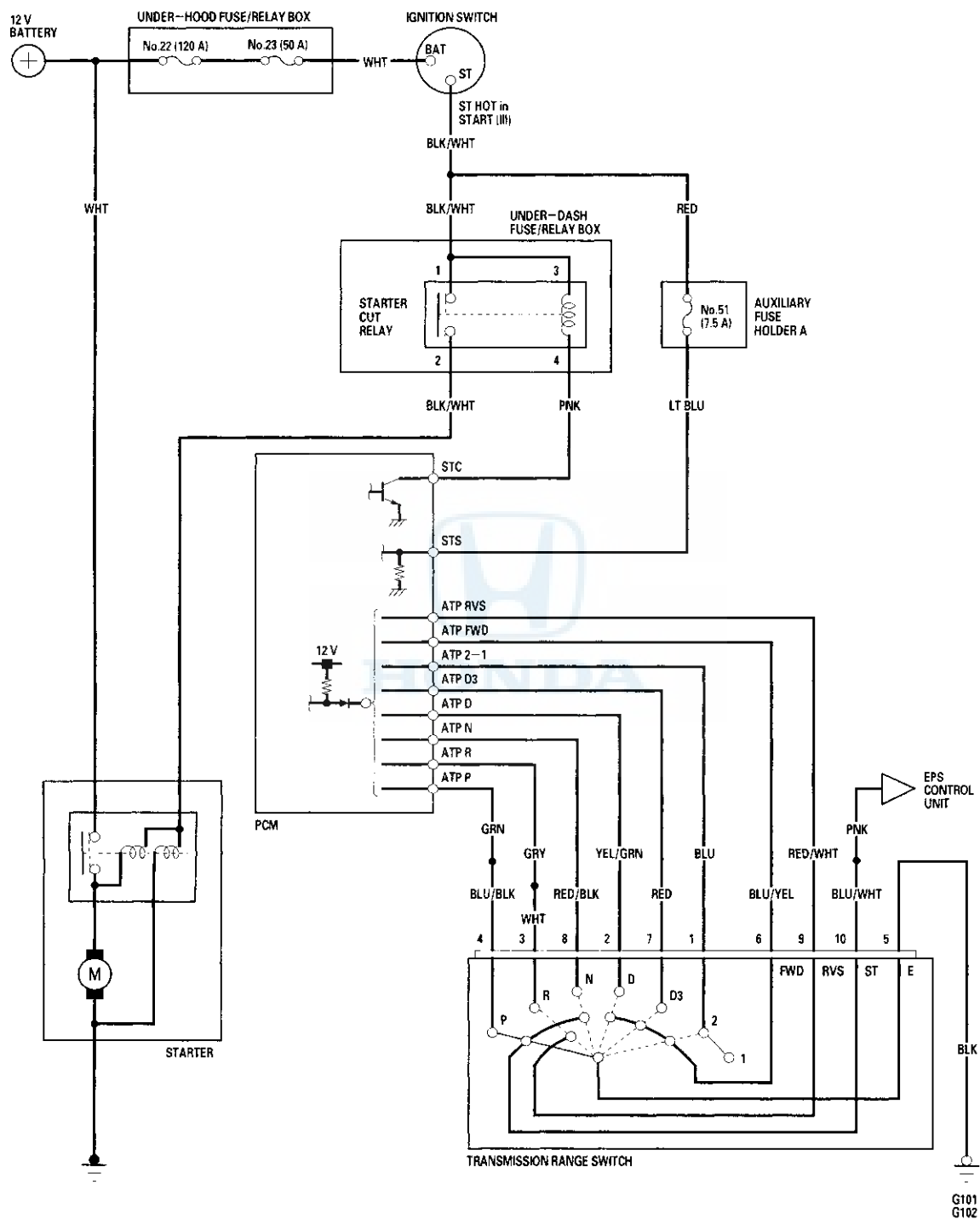
Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Engine does not crank (MIL works OK, no DTCs set)	<ol style="list-style-type: none">1. Check for loose 12 V battery terminals or connections.2. Test the 12 V battery for a low charge (see page 22-71).3. Check the starter (see page 4-5).4. Check the starter cut relay (see page 22-72).5. Check the ignition switch or wire (see page 22-74).	
Engine cranks, but does not start	<ol style="list-style-type: none">1. Check for PGM-FI DTCs.2. Test the fuel pump (see page 11-356).3. Check for a plugged or damaged fuel line (see page 11-358).4. Check for a plugged fuel filter (see page 11-365).5. Check the throttle body (see page 11-381).6. Check for low engine compression (see page 6-7).7. Check for a damaged or broken timing belt.	Fuel level in tank
Engine is hard to start	<ol style="list-style-type: none">1. Check for PGM-FI DTCs.2. Test the fuel pump (see page 11-356).3. Check for a plugged or damaged fuel line (see page 11-358).4. Check for a plugged fuel filter (see page 11-365).	
Engine cranks slowly	<ol style="list-style-type: none">1. Check for loose 12 V battery terminals or connections.2. Test the 12 V battery for a low charge (see page 22-71).3. Check for a binding starter motor (see page 4-14).4. Test for engine binding problems.	



Starting System

Circuit Diagram





Starter Circuit Troubleshooting

NOTE:

- The engine is normally started by the IMA system. The 12 V starter is only used when the IMA system has a problem, such as being very hot or very cold.
- Air temperature must be between 59 and 100 °F (15 and 38 °C) during this procedure.
- After this inspection, you must reset the powertrain control module (PCM), otherwise the PCM will continue to stop the injectors from functioning. Select PCM reset using the Honda Diagnostic System (HDS) (see page 11-4).
- The 12 V battery must be in good condition and fully charged.

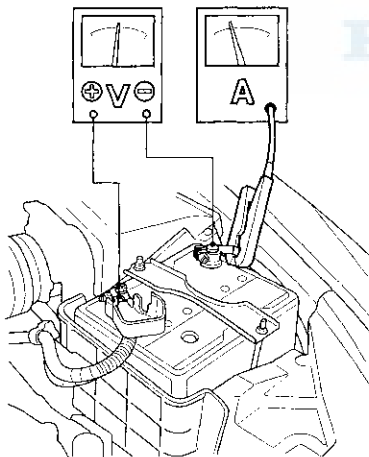
Recommended Procedure

- Use a starter system tester.
- Connect and operate the equipment in accordance with the manufacturer's instructions.
- Turn the IMA battery module switch OFF (see page 12-4).

Alternate Procedure

1. Hook up the following equipment:

- Ammeter, 0—400 A
- Voltmeter, 0—20 V (accurate within 0.1 V)



2. Connect the HDS to the data link connector (DLC) (see step 2 on page 11-3).
3. On the HDS, select PGM-FI, INSPECTION, and then ALL INJECTORS OFF.
4. Turn the IMA battery module switch OFF (see page 12-4).

5. With the shift lever in P or N position, turn the ignition switch to START (III).

Did the 12 V starter crank the engine normally?

YES—The 12 V starting system is OK. Go to step 27.

NO—Go to step 6.

6. Check the 12 V battery condition. Check electrical connections at the battery, the negative battery cable to body, the engine ground cables and the starter for looseness and corrosion. Then try cranking the engine again.

Did the starter crank the engine?

YES—Repairing the loose connection corrected the problem. The starting system is OK. Go to step 27.

NO—Check the following:

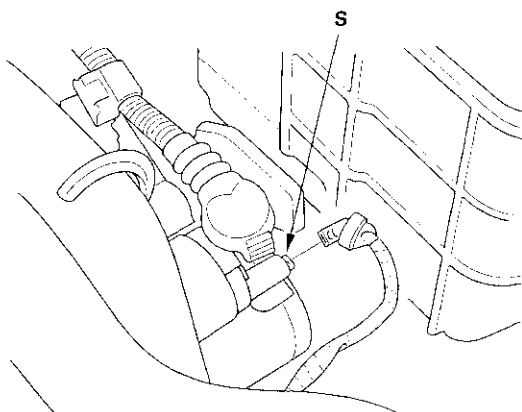
- If the starter will not crank the engine at all, go to step 7.
- If it cranks the engine erratically or too slowly, go to step 24.
- If it does not disengage from the torque converter ring gear when you release the key, replace the starter, or remove and disassemble it, and check for the following:
 - Solenoid plunger and switch malfunction
 - Dirty drive gear or damaged overrunning clutch

(cont'd)

Starting System

Starter Circuit Troubleshooting (cont'd)

7. Make sure the transmission is in park or neutral, and set the parking brake. Disconnect the BLK/WHT wire from the starter solenoid S terminal. Connect a jumper wire from the battery positive terminal to the solenoid terminal.



Did the starter crank the engine?

YES—Go to step 8.

NO—Remove the starter, and repair or replace as necessary. ■

8. Check the No. 51 (7.5 A) fuse in the auxiliary fuse holder A.

Is the fuse OK?

YES—Install the No. 51 (7.5 A) fuse. Go to step 9.

NO—Replace the fuse, and recheck. ■

9. Remove the starter cut relay from the under-dash fuse/relay box, and test it (see page 22-72).

Is the relay OK?

YES—Go to step 10.

NO—Replace the starter cut relay. ■

10. Check the ignition switch (see page 22-74).

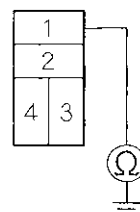
Is the ignition switch OK?

YES—Go to step 11.

NO—Replace the ignition switch. ■

11. Remove the No. 51 (7.5 A) fuse from the auxiliary fuse holder A, and check for continuity between starter cut relay 4P socket terminal No. 1 and body ground.

STARTER CUT RELAY 4P SOCKET



Terminal side of female terminals

Is there continuity?

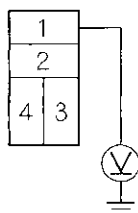
YES—Repair a short in the wire between the under-dash fuse/relay box and ignition switch, or under-dash fuse/relay box and auxiliary fuse holder A. Reinstall the No. 51 (7.5 A) fuse. ■

NO—Go to step 12.



12. Measure the voltage between starter cut relay 4P socket terminal No. 1 and body ground with the ignition switch turned to START (III).

STARTER CUT RELAY 4P SOCKET



Terminal side of female terminals

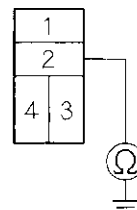
Is there battery voltage?

YES—Go to step 13.

NO—Check for an open in the BLK/WHT wire between the under-dash fuse/relay box and the ignition switch. If the wire is OK, replace the under-dash fuse/relay box. ■

13. Check for continuity between starter cut relay 4P socket terminal No. 2 and body ground.

STARTER CUT RELAY 4P SOCKET



Terminal side of female terminals

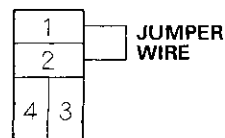
Is there continuity?

YES—Repair a short in the wire between the under-dash fuse/relay box and the starter. ■

NO—Go to step 14.

14. Connect the BLK/WHT wire to the starter solenoid S terminal.
15. Connect the starter cut relay 4P socket terminals No. 1 and No. 2 with a jumper wire, and turn the ignition switch to START (III).

STARTER CUT RELAY 4P SOCKET



Terminal side of female terminals

Did the starter crank the engine?

YES—Go to step 16.

NO—Check for an open or short in the wire between the under-dash fuse/relay box and the starter. ■

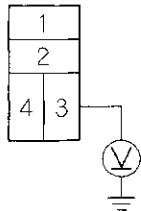
(cont'd)

Starting System

Starter Circuit Troubleshooting (cont'd)

16. Remove the jumper wire.
17. Measure the voltage between starter cut relay 4P socket terminal No. 3 and body ground with the ignition switch turned to START (III).

STARTER CUT RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Replace the under-dash fuse/relay box. ■

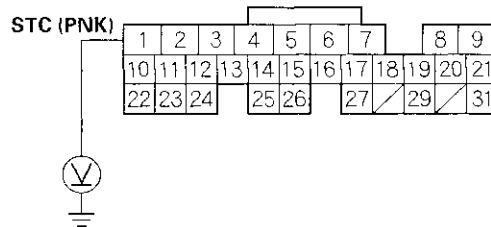
18. Reinstall the starter cut relay.
19. Turn the ignition switch ON (II), and jump the SCS line with the HDS, then turn the ignition switch OFF.

NOTE: This must be done to protect the PCM from damage.

20. Disconnect PCM connector E (31P).

21. Measure the voltage between PCM connector terminal E1 and body ground with the ignition switch turned to START (III).

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

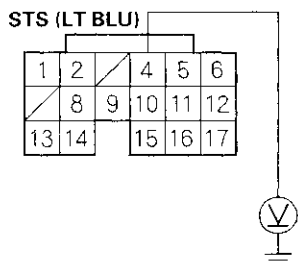
YES—Go to step 22.

NO—Check for an open in the PNK wire between the under-dash fuse/relay box and the PCM. If the wire is OK, replace the under-dash fuse/relay box. ■



22. Disconnect PCM connector D (17P).
23. Measure the voltage between PCM connector terminal D4 and body ground with the ignition switch turned to START (III).

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there battery voltage?

YES—Update the PCM if it does not have the latest software (see page 11-6), or substitute a known-good PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Check for an open in the wire(s) between the ignition switch and the PCM. ■

24. While cranking the engine, check the cranking voltage and current draw.

Is the cranking voltage greater than or equal to 7.7 V and is the current draw less than or equal to 400 A?

YES—Go to step 25.

NO—Replace the starter, or remove and disassemble it, and check for the following: ■

- Drag in the starter armature
- Shorted armature winding
- Excessive drag in the engine

25. Check the engine speed while cranking the engine.

Is the engine speed above 100 rpm?

YES—Go to step 26.

NO—Replace the starter, or remove and disassemble it, and check for the following: ■

- Open circuit in starter armature commutator segments
- Excessively worn starter brushes
- Open circuit in commutator brushes
- Dirty or damaged helical splines or drive gear
- Faulty drive gear clutch

26. Remove the starter, and inspect its drive gear and the flywheel or torque converter ring gear for damage. Replace any damaged parts.

27. Turn the IMA battery module switch ON (see page 12-4).

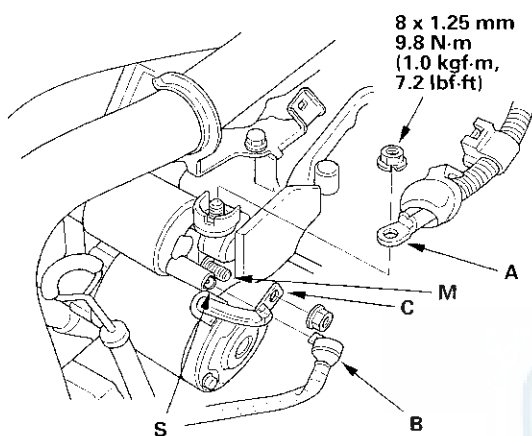
28. Reset the MCM (see page 12-6).

29. Select PCM reset (see page 11-4) to cancel ALL INJECTORS OFF on the HDS.

Starting System

Starter Solenoid Test

1. Make sure you have the anti-theft codes for the radio, and the navigation system, then write down the customer's audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the starter cable (A), BLK/WHT wire (B), and motor cable (C).

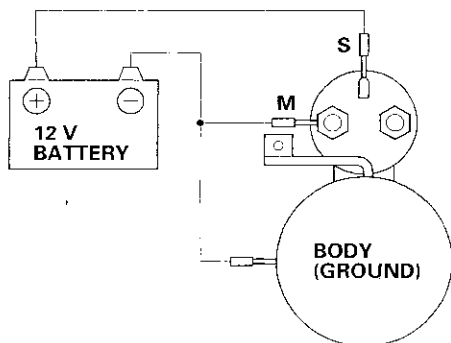


4. Check the hold-in coil for continuity between the S terminal and the armature housing (ground). There should be continuity.
 - If there is continuity, go to step 5.
 - If there is no continuity, replace the solenoid.
5. Check the pull-in coil for continuity between the S terminal and the M terminal. There should be continuity.
 - If there is continuity, the solenoid is OK.
 - If there is no continuity, replace the solenoid.
6. Install in the reverse order of removal.
7. Connect the battery positive cable to the battery first, and then the negative cable.
8. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
9. Do the power window control unit reset procedure (see page 22-200).
10. Set the clock.
11. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

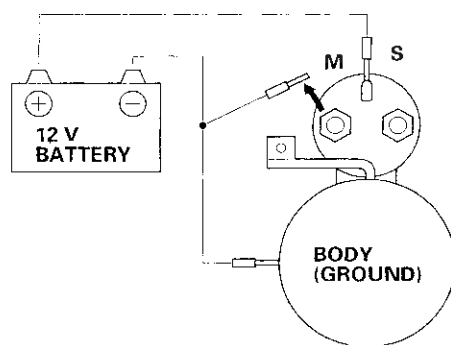


Starter Performance Test

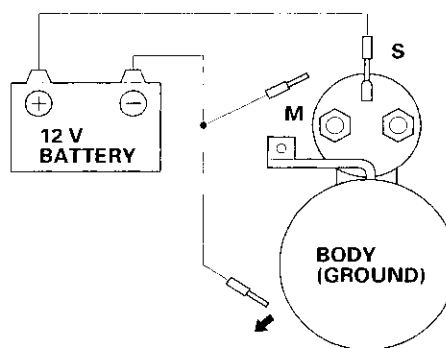
1. Disconnect the wire from the M terminal.
2. Make a connection as shown using as heavy a wire as possible (preferably equivalent to the wire used for the vehicle). To avoid damaging the starter, never leave the battery connected for more than 10 seconds.



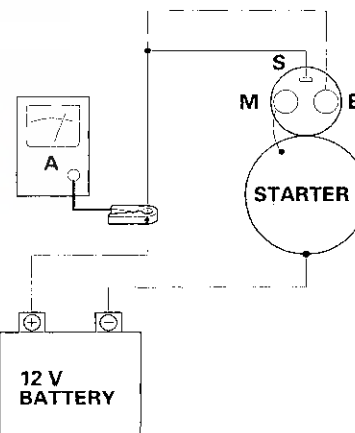
3. Connect the battery as shown. Make sure you disconnect the starter motor wire from the solenoid. If the starter pinion moves out, it is working properly.
4. Disconnect the battery from the M terminal. If the pinion does not retract, the hold-in coil of the solenoid is working properly.



5. Disconnect the battery from the starter body. If the pinion retracts immediately, it is working properly.



6. Clamp the starter firmly in a vise.
7. Reconnect the wire to the M terminal.
8. Connect the starter to the battery as shown, and check that the motor turns and keeps rotating.



9. If the electric current and motor speed meet the specifications when the battery voltage is at least 11 V, the starter is working properly.

Specifications

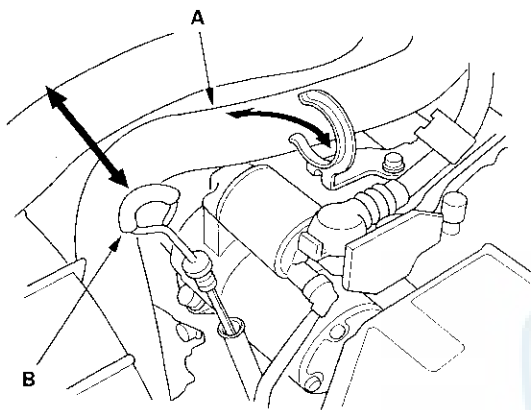
Electric Current: 90 A or less

Motor Speed: 1,427 rpm or more

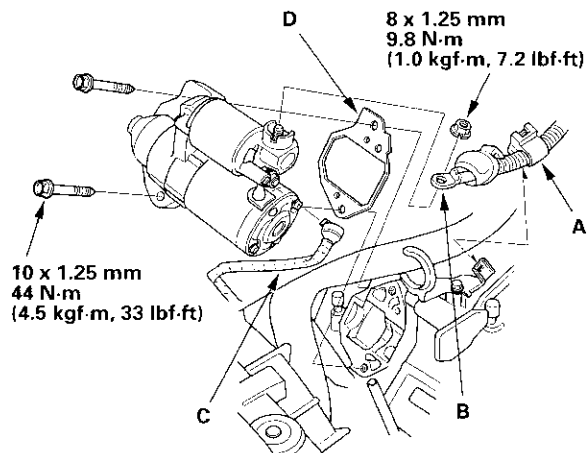
Starting System

Starter Replacement

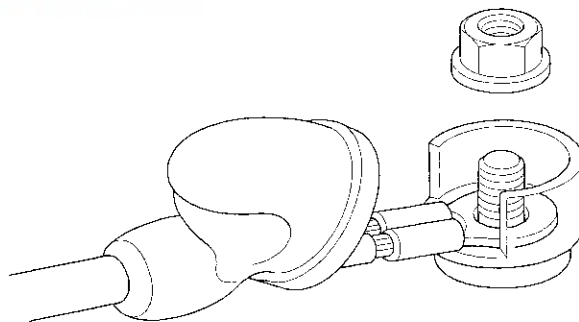
1. Make sure you have the anti-theft codes for the radio, and the navigation system, then write down the customer's audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the battery.
4. Remove the lower radiator hose (A) from its clamp, and remove the transmission dipstick (B).



5. Remove the harness clamp (A).



6. Disconnect the starter cable (B) from the B terminal, then disconnect the BLK/WHT wire (C) from the S terminal.
7. Remove the two bolts holding the starter, then remove the starter and gasket (D).
8. Install in the reverse order of removal with a new gasket. Make sure the crimped side of the ring terminal is facing out.



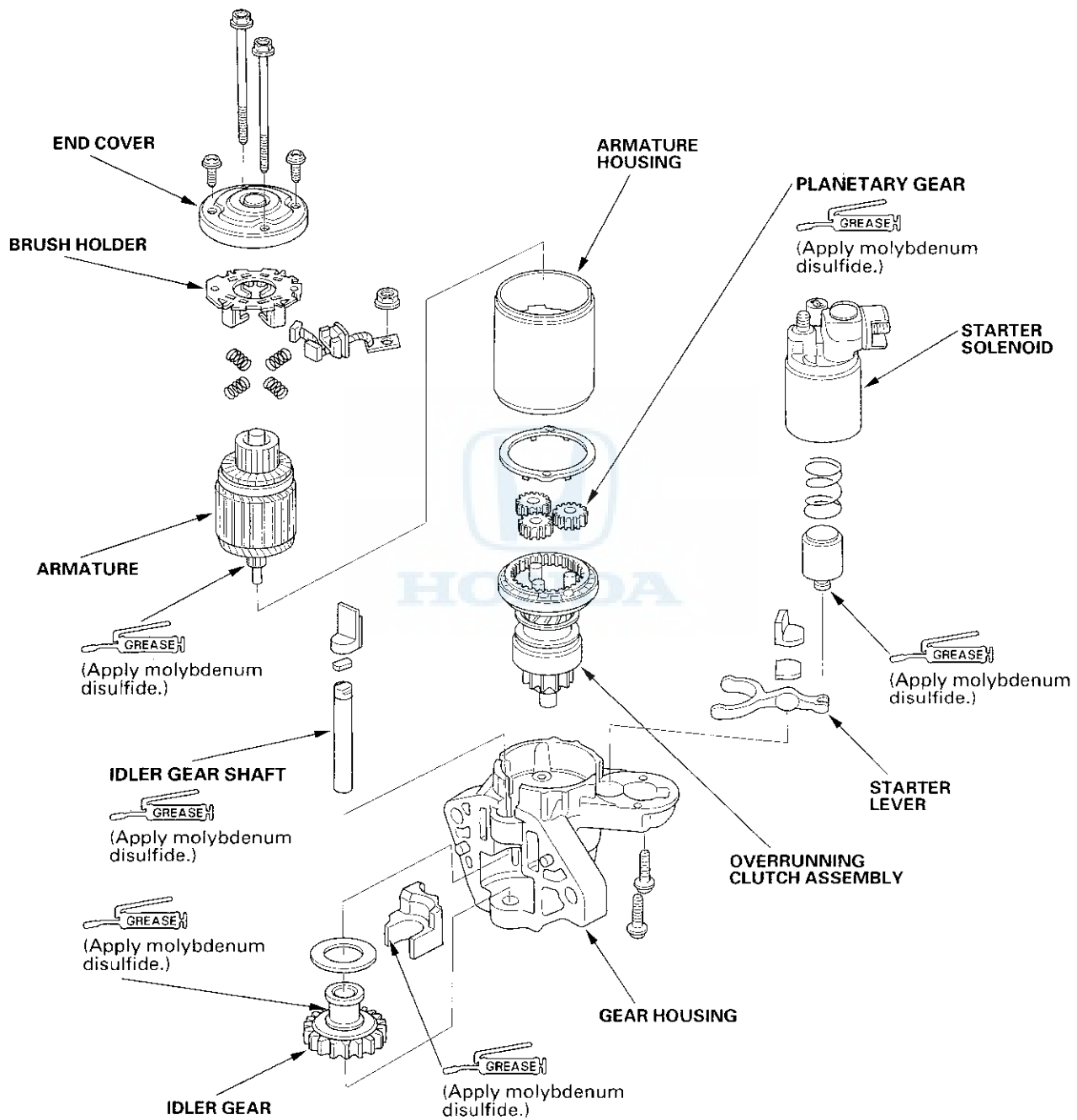


9. Connect the positive cable to the battery first, and then connect the negative cable.
10. Turn the IMA battery module switch OFF (see page 12-4).
11. Start the engine to make sure the 12 V starter works properly.
12. Turn the IMA battery module switch ON (see page 12-4).
13. Reset the MCM (see page 12-6).
14. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
15. Do the power window control unit reset procedure (see page 22-200).
16. Set the clock.
17. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

Starting System

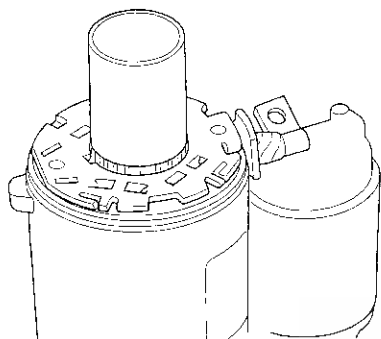
Starter Overhaul

Disassembly/Reassembly

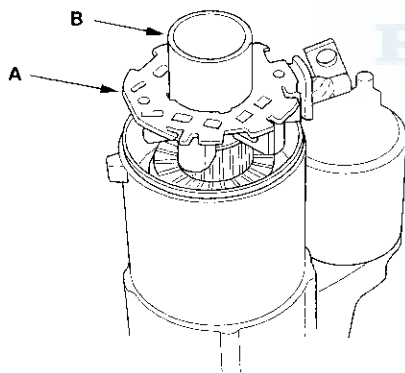


Brush Holder Removal

1. Remove the starter (see page 4-12).
2. Disconnect the wire from the M terminal, and remove the end cover.
3. Place a 29.4 mm (1.16 in.) outside diameter plastic pipe on the armature.

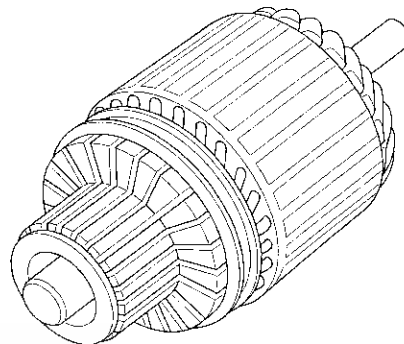


4. Move the brush holder (A) up to the pipe (B) while holding the pipe so the brushes do not pop out from the holder.

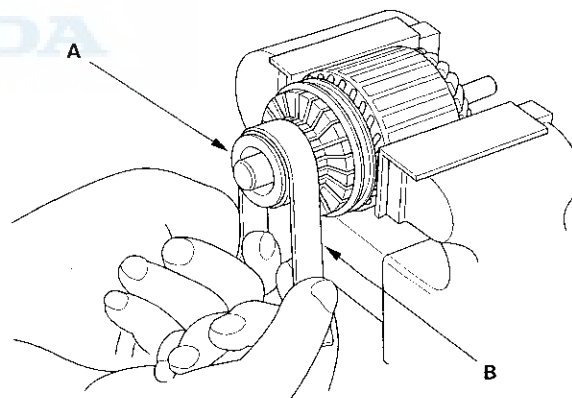


Armature Inspection and Test

5. Disassemble the starter as shown at the beginning of this procedure.
6. Inspect the armature for wear or damage from contact with the permanent magnet. If there is wear or damage, replace the armature.



7. Check the commutator (A) surface. If the surface is dirty or burnt, resurface with emery cloth or a lathe within the following specifications, or recondition with #500 or #600 sandpaper (B).



(cont'd)

Starting System

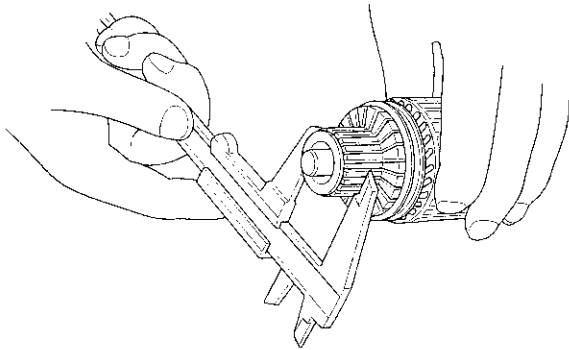
Starter Overhaul (cont'd)

8. Check the commutator diameter. If the diameter is out of the service limit, replace the armature.

Commutator Diameter

Standard (New): 29.3—29.5 mm (1.154—1.161 in.)

Service Limit: 28.8 mm (1.134 in.)



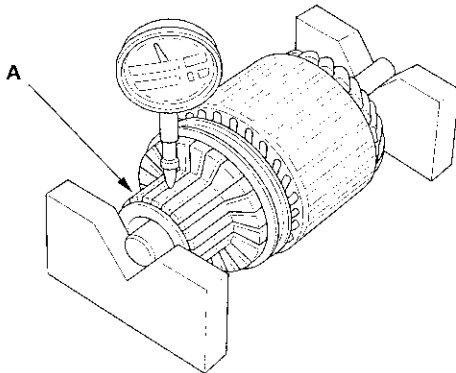
9. Measure the commutator (A) runout.

- If the commutator runout is within the service limit, check the commutator for carbon dust or brass chips between the segments.
- If the commutator runout is not within the service limit, replace the armature.

Commutator Runout

Standard (New): 0.05 mm (0.002 in.) max.

Service Limit: 0.1 mm (0.004 in.)

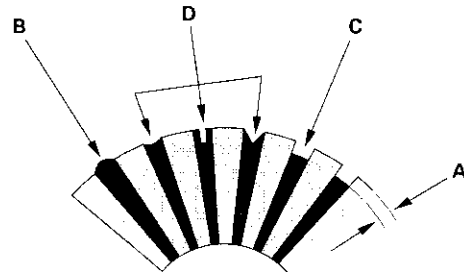


10. Check the mica depth (A). If the mica is too high (B), undercut the mica with a hacksaw blade to the proper depth. Cut away all the mica (C) between the commutator segments. The undercut should not be too shallow, too narrow, or V-shaped (D).

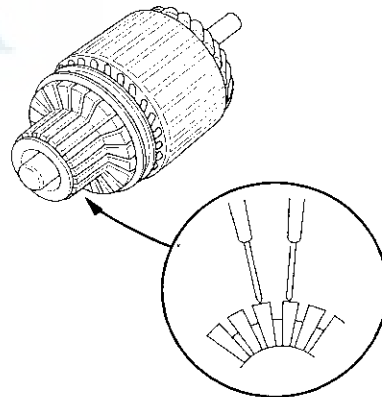
Commutator Mica Depth

Standard (New): 0.40—0.50 mm (0.016—0.020 in.)

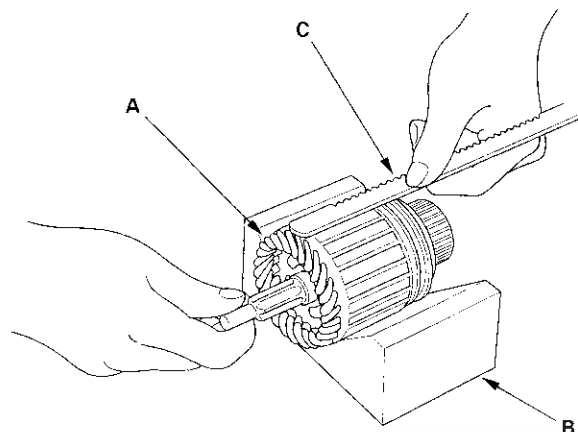
Service Limit: 0.15 mm (0.006 in.)



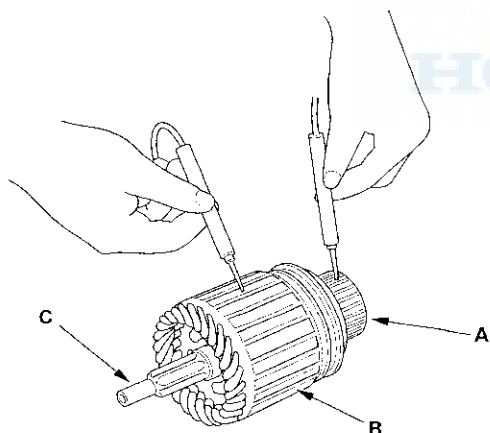
11. Check for continuity between the segments of the commutator. If there is an open circuit between any segments, replace the armature.



12. Place the armature (A) on an armature tester (B). Hold a hacksaw blade (C) on the armature core. If the blade is attached to the core or vibrates while the core is turned, the armature is shorted. Replace the armature.



13. Check with an ohmmeter for continuity between the commutator (A) and armature coil core (B), and between the commutator and armature shaft (C). If there is continuity, replace the armature.



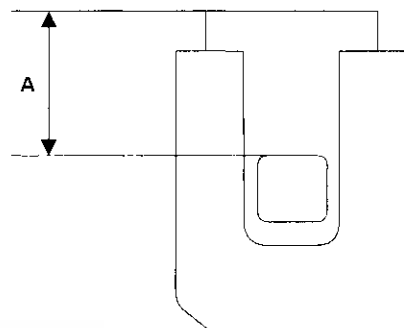
Starter Brush Inspection

14. Measure the brush length (A). If it is shorter than the service limit, replace the brush holder assembly.

Brush Length

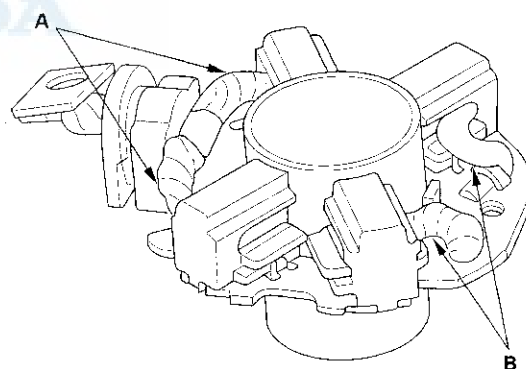
Standard (New): 7.7—8.0 mm (0.30—0.31 in.)

Service Limit: 0.9 mm (0.04 in.)



Starter Brush Holder Test

15. Check for continuity between the (+) brush (A) and (−) brush (B). If there is continuity, replace the brush holder assembly.



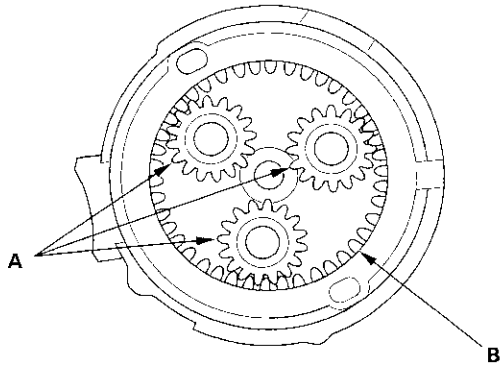
(cont'd)

Starting System

Starter Overhaul (cont'd)

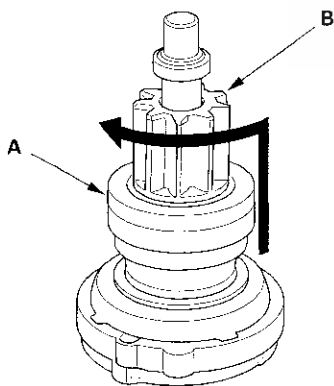
Planetary Gear Inspection

16. Check the planetary gears (A) and ring gear (B). Replace them if they are worn or damaged.



Overrunning Clutch Inspection

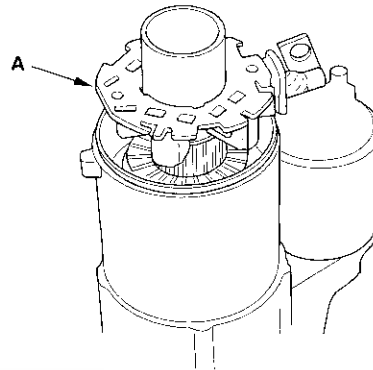
17. Slide the overrunning clutch along the shaft. Replace it if it does not slide smoothly.
18. Rotate the overrunning clutch (A) both ways. Does it lock in one direction and rotate smoothly in reverse? If it does not lock in either direction or it locks in both directions, replace it.



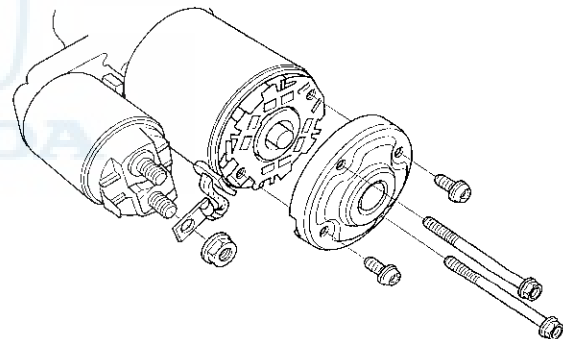
19. If the starter drive gear (B) is worn or damaged, replace the overrunning clutch assembly; the gear is not available separately. Check the condition of the idler gear and drive plate ring gear to see if the starter drive gear teeth are damaged.

Starter Reassembly

20. Install the armature into the housing.
21. Place the brush holder assembly on the armature, then move the brush holder (A) down to the armature.



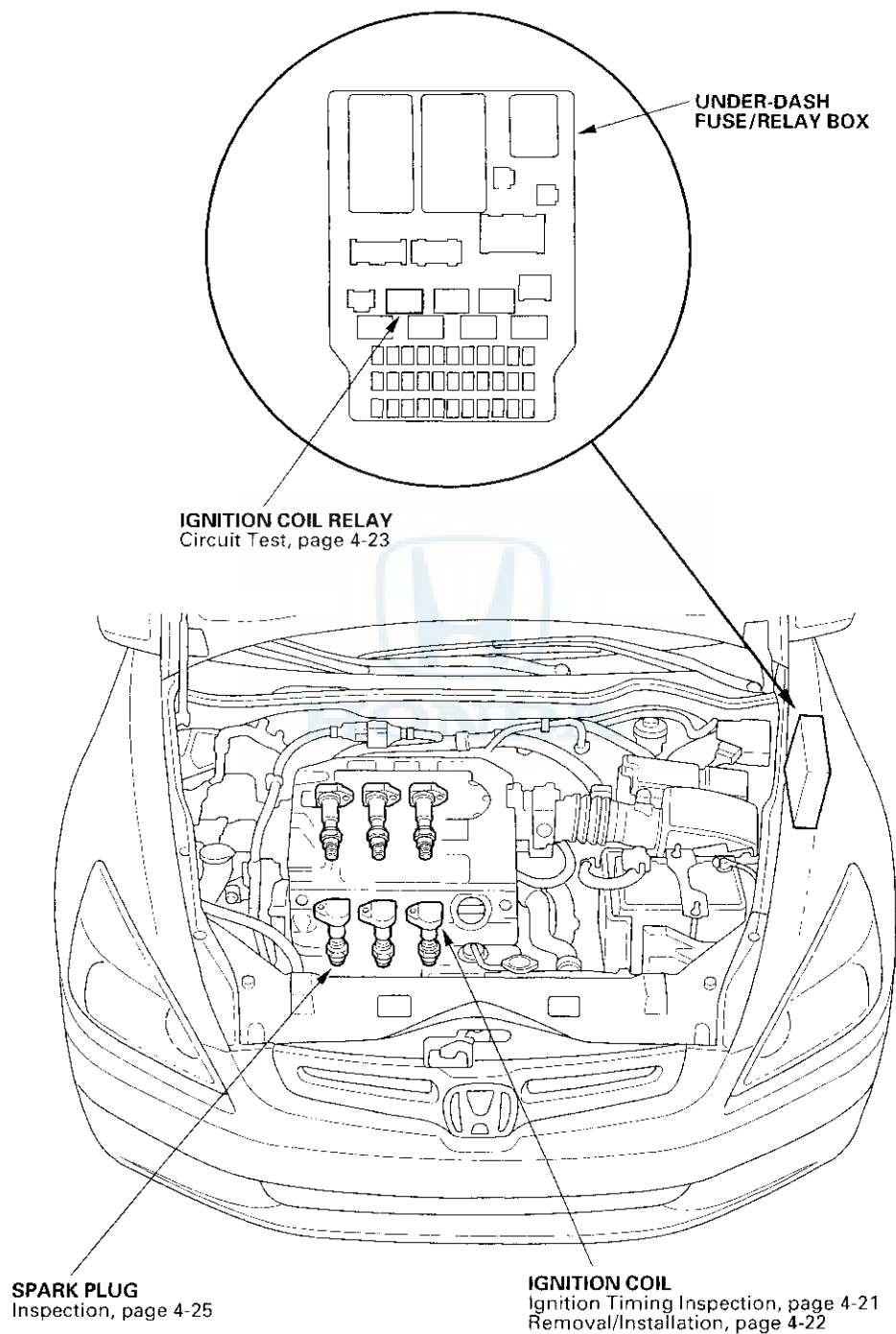
22. Install the end cover to retain the brush holder.



Ignition System

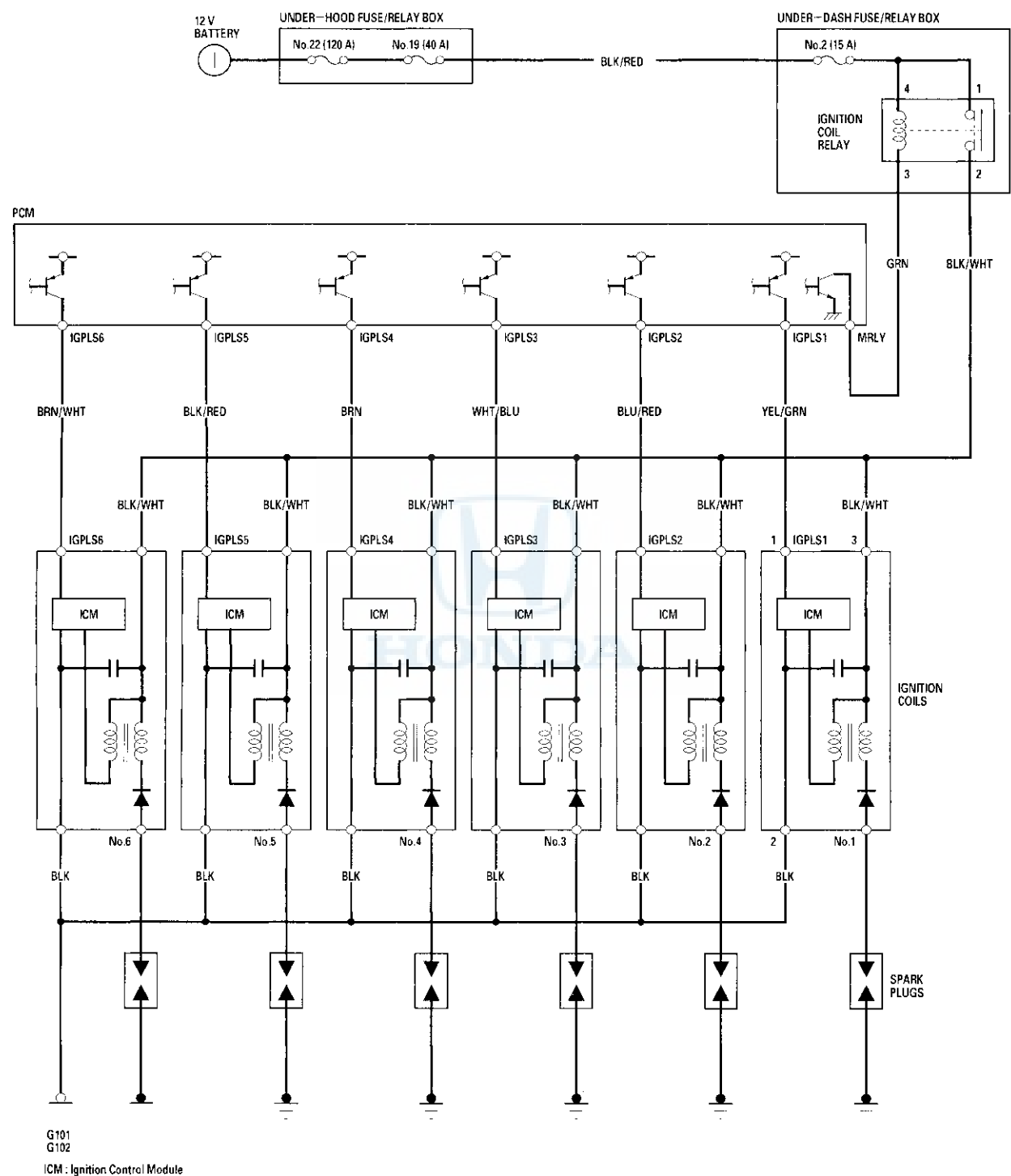


Component Location Index



Ignition System

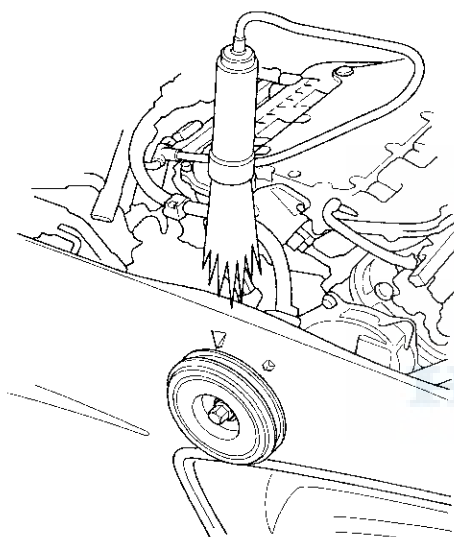
Circuit Diagram





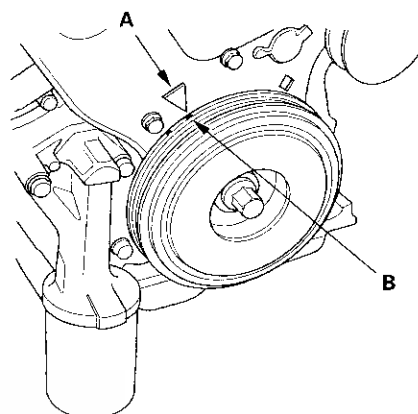
Ignition Timing Inspection

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3), and check for DTCs. If a DTC is present, diagnose and repair the cause before inspecting the ignition timing.
2. Start the engine. Hold the engine at 3,000 rpm with no load (in Neutral) until the radiator fan comes on, then let it idle.
3. Check the idle speed (see page 11-339).
4. Select "SCS" mode using the HDS.
5. Connect the timing light to the service loop.



6. Aim the light toward the pointer (A) on the timing belt cover. Check the ignition timing under a no load condition (headlights, blower fan, rear window defogger, and air conditioner are turned off).

Ignition Timing: $10^{\circ} \pm 2^{\circ}$ BTDC (RED mark (B)) at idle in Park or Neutral

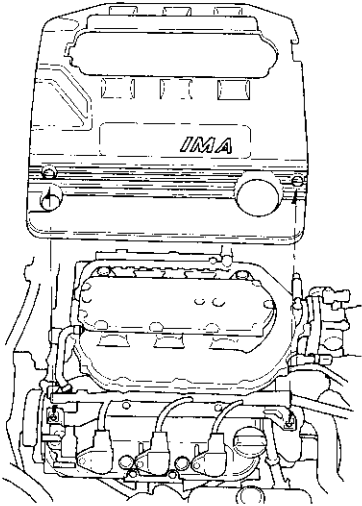


7. If the ignition timing differs from the specification, check the cam timing. If the cam timing is OK, update the powertrain control module (PCM) if it does not have the latest software (see page 11-6), or substitute a known-good PCM (see page 11-7), then recheck. If the system works properly, and the PCM was substituted, replace the original PCM (see page 11-219).
8. Disconnect the HDS and the timing light.

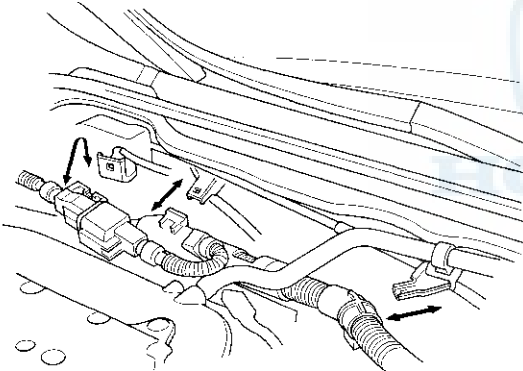
Ignition System

Ignition Coil Removal/Installation

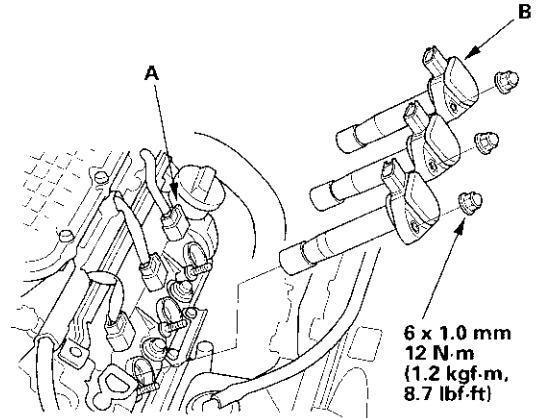
1. Remove the intake manifold cover.



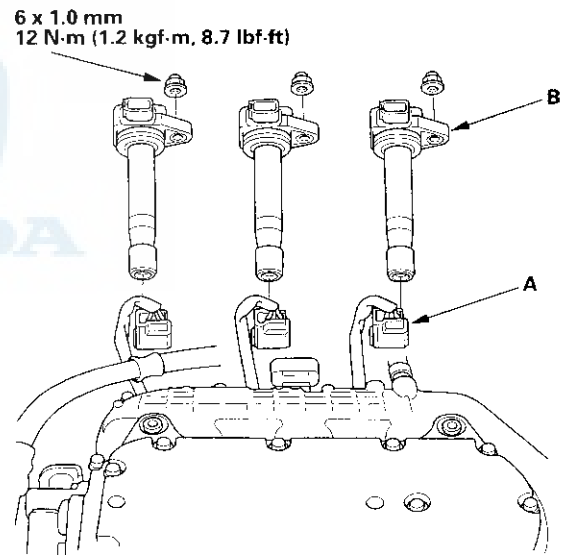
2. Remove the motor power cable clamps.



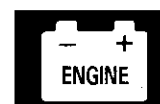
3. Disconnect the ignition coil connectors (A), then remove the front bank ignition coils (B).



4. Disconnect the ignition coil connectors (A), then remove the rear bank ignition coils (B).



5. Install the ignition coils in the reverse order of removal.



Ignition Coil Relay Circuit Troubleshooting

1. Check the No. 2 (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse. ■

2. Remove the ignition coil relay from the under-dash fuse/relay box and test it (see page 22-72).

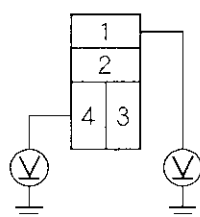
Is the relay OK?

YES—Go to step 3.

NO—Replace the ignition coil relay. ■

3. Measure the voltage between ignition coil relay 4P socket terminal No. 1 and body ground, then terminal No. 4 and body ground.

IGNITION COIL RELAY 4P SOCKET



Terminal side of female terminals

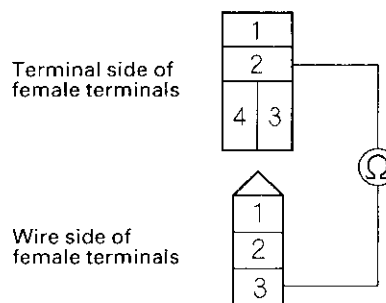
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-dash fuse/relay box. ■

4. Check for continuity between ignition coil relay 4P socket terminal No. 2 and the No. 1 ignition coil 3P connector terminal No. 3.

IGNITION COIL RELAY 4P SOCKET



No. 1 IGNITION COIL 3P CONNECTOR

Is there continuity?

YES—Go to step 5.

NO—Repair an open in the wire between ignition coil relay 4P socket terminal No. 2 and No. 1 ignition coil 3P connector terminal No. 3. ■

5. Turn the ignition switch ON (II), and jump the SCS line with the Honda Diagnostic System (HDS), then turn the ignition switch OFF.

NOTE: This must be done to protect the powertrain control module (PCM) from damage.

6. Disconnect PCM connector E (31P).

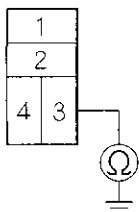
(cont'd)

Ignition System

Ignition Coil Relay Circuit Troubleshooting (cont'd)

7. Check for continuity between ignition coil relay 4P socket terminal No. 3 and body ground.

IGNITION COIL RELAY 4P SOCKET



Terminal side of female terminals

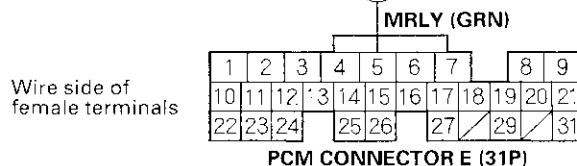
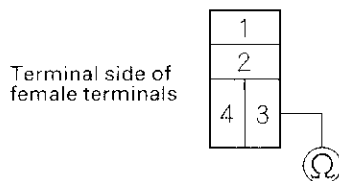
Is there continuity?

YES—Repair a short in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM. ■

NO—Go to step 8.

8. Check for continuity between ignition coil relay 4P socket terminal No. 3 and powertrain control module (PCM) connector terminal E5.

IGNITION COIL RELAY 4P SOCKET



PCM CONNECTOR E (31P)

Is there continuity?

YES—The system is OK at this time. Check for loose or poor connections at the ignition coil relay and the PCM (E5). ■

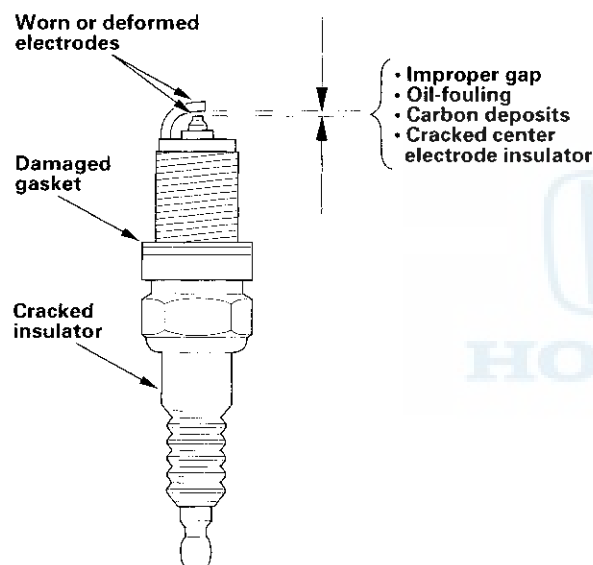
NO—Repair an open in the wire between ignition coil relay 4P socket terminal No. 3 and the PCM (E5). ■



Spark Plug Inspection

1. Inspect the electrodes and ceramic insulator.

- Burned or worn electrodes may be caused by:
 - Advanced ignition timing
 - Loose spark plug
 - Plug heat range too hot
 - Insufficient cooling
- Fouled plug may be caused by:
 - Retarded ignition timing
 - Oil in combustion chamber
 - Incorrect spark plug gap
 - Plug heat range too cold
 - Excessive idling/low speed running
 - Clogged air cleaner element
 - Deteriorated ignition coils



2. If the spark plug electrode is dirty or contaminated, clean the electrode with a plug cleaner.

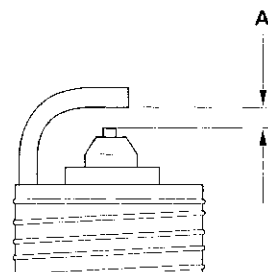
NOTE:

- Do not use a wire brush or scrape the iridium electrode since this will damage the electrode.
- Use a chemical cleaner such as Carb Spray to clean contamination on the electrode.
- When using a sand blaster spark plug cleaner, do not clean for more than 20 seconds to avoid damaging the electrode.

3. Do not adjust the gap (A) of iridium tip plugs; replace the spark plug if the gap is out of specification.

Electrode Gap

Standard (New): 1.0–1.1 mm (0.039–0.043 in.)

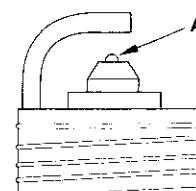


4. Replace the plug at the specified interval or if the center electrode is rounded (A). Use only the spark plugs listed.

Spark Plugs

NGK: IZFR6K11

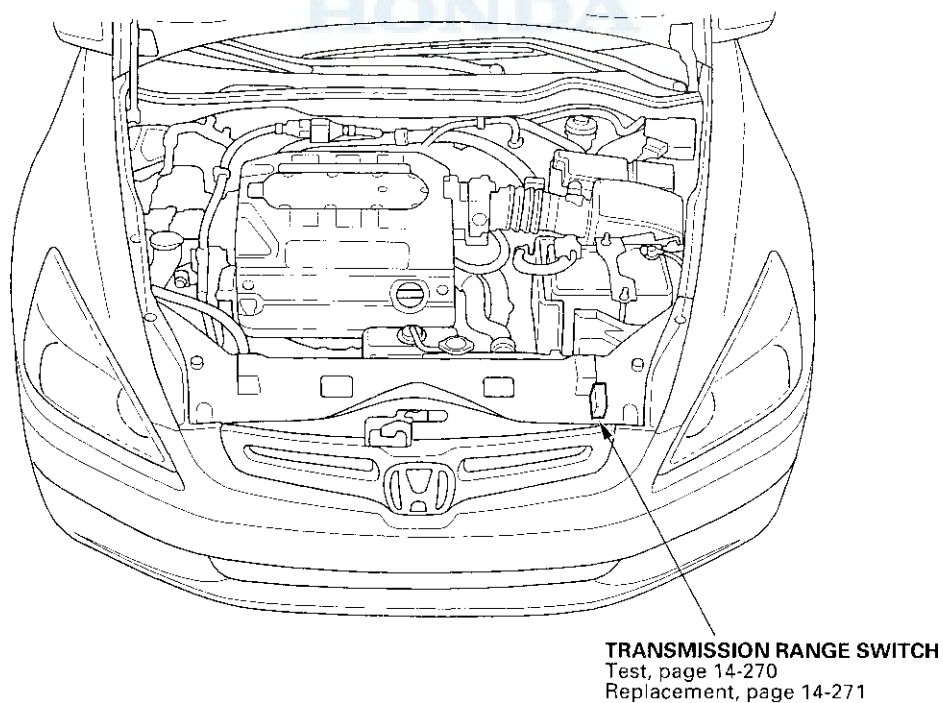
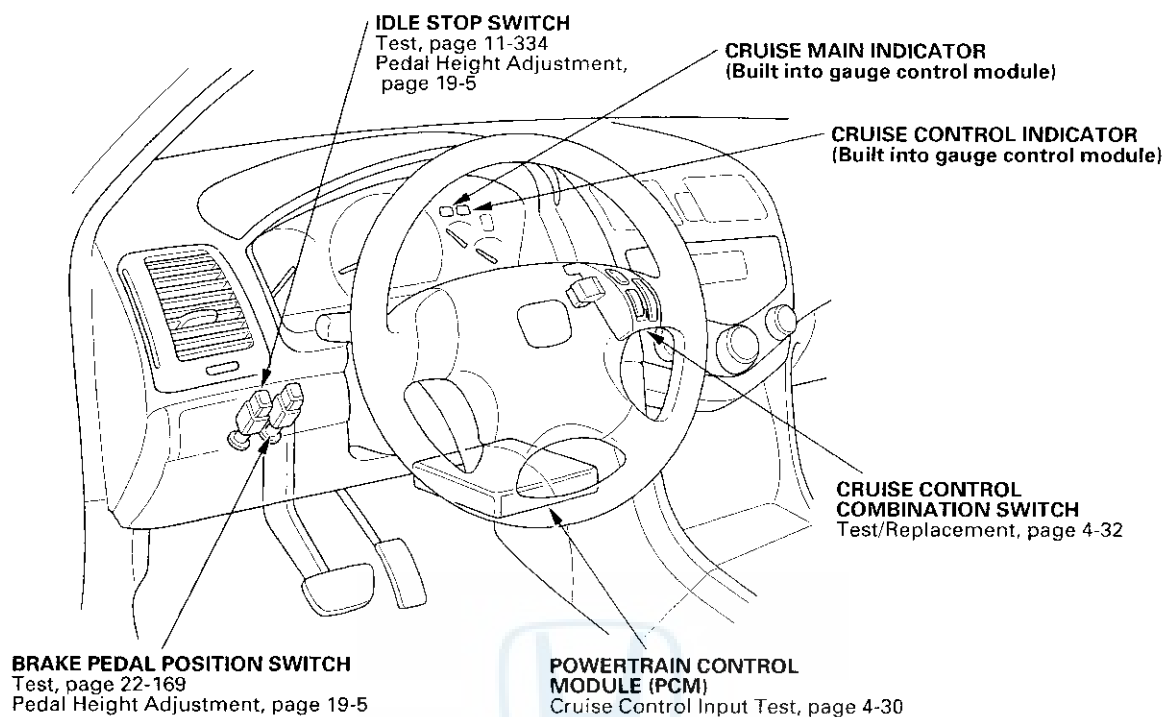
DENSO: SKJ20DR-M11



5. Apply a small amount of anti-seize compound to the plug threads, and screw the plugs into the cylinder head, finger-tight. Then torque them to 18 N·m (1.8 kgf·m, 13 lbf·ft).

Cruise Control

Component Location Index





Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Cruise control cannot be set	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Check the No. 13 (20 A) fuse in the under-hood fuse/relay box. 3. Do the cruise control input test (see page 4-30). 4. Do the cruise control combination switch test (see page 4-32). 	
Cruise control can be set, but the CRUISE MAIN indicator does not come on	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Do the gauge control module self-diagnostic function procedure (see page 22-226). 3. Do the cruise control input test (see page 4-30). Test the cruise control main switch signal input. 	Faulty gauge control module
Cruise control can be set, but the CRUISE CONTROL indicator does not come on	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Do the gauge control module self-diagnostic function procedure (see page 22-226). 3. Do the cruise control input test (see page 4-30). Test the cruise control indicator signal input. 	Faulty gauge control module
Vehicle does not decelerate or accelerate accordingly when the set/decel or resume/accel switch is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-30). Test the cruise control set/decel, resume/accel switch signal input. 3. Do the cruise control combination switch test (see page 4-32). 	Open circuit, loose or disconnected terminals: GRY or LT BLU wire
Set speed does not cancel when the brake pedal is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Check the No. 18 (15 A) fuse in the under-dash fuse/relay box. 3. Do the cruise control input test (see page 4-30). Test the brake pedal position switch signal input. 4. Do the idle stop switch test (see page 11-334). 5. Do the brake pedal position switch test (see page 22-169). 	<ul style="list-style-type: none"> • Short to power on the BRN/BLK wire • Open circuit, loose or disconnected terminals: LT GRN wire • Faulty idle stop switch • Faulty brake pedal position switch
Set speed does not cancel when the cruise control main switch is turned off	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Do the cruise control input test (see page 4-30). Test the cruise control main switch signal input. 3. Do the cruise control combination switch test (see page 4-32). 	Short to ground in the LT GRN wire
Set speed does not cancel when the cancel switch is pressed	<ol style="list-style-type: none"> 1. Check for PGM-FI and body DTCs. 2. Check the No. 13 (20 A) fuse in the under-hood fuse/relay box. 3. Do the cruise control input test (see page 4-30). Test the cruise control cancel switch signal input. 4. Do the cruise control combination switch test (see page 4-32). 	Open circuit, loose or disconnected terminals: GRN/YEL, GRY, or LT BLU wire

(cont'd)

Cruise Control

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Set speed will not resume when the resume/accel switch is pressed (with the cruise control main switch turned on, and set speed temporarily canceled by pressing the brake pedal)	<ol style="list-style-type: none">1. Check for PGM-FI and body DTCs.2. Check the brake pedal position switch adjustment, and idle stop switch adjustment (see page 19-5).3. Check the No. 13 (20 A) fuse in the under-hood fuse/relay box, and No. 18 (15 A) fuse in the under-dash fuse/relay box.4. Do the cruise control input test (see page 4-30). Test the cruise control resume/accel switch signal input. Test the brake pedal position switch signal input.5. Do the cruise control combination switch test (see page 4-32).	<ul style="list-style-type: none">• Faulty idle stop switch• Faulty brake pedal position switch• Open circuit, loose or disconnected terminals: YEL/WHT, or LT BLU wire



Cruise Control

Cruise Control Input Test

1. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) (see step 2 on page 11-3).
2. Go to PGM-FI, and check for DTCs.
3. Turn the ignition switch ON (II).
4. Do the following tests while monitoring parameters in the appropriate DATA LIST with the HDS.

Signal to be tested	Test condition	HDS Data List	Parameter: Desired result	Possible cause if result is not obtained
Transmission range switch signal	Shift in D or D3 position	A/T	A/T D SW should indicate ON in D position, and OFF in any other position. A/T D3 SW should indicate ON in D3 position, and OFF in any other position.	<ul style="list-style-type: none">• Faulty transmission range switch• An open in the wire between the PCM and the transmission range switch• A wire shorted to ground between the PCM and the transmission range switch• Poor ground at G101
Cruise control main switch signal	Cruise control main switch ON and OFF	Body Electrical Gauges	CRUISE CONTROL MAIN SW should indicate ON when the cruise control main switch is turned ON and OFF when the cruise control main switch is turned OFF.	<ul style="list-style-type: none">• Faulty cruise control combination switch• An open in the wire between the gauge control module and the cruise control combination switch• A wire shorted to ground between the gauge control module and the cruise control combination switch• An open in the wire between the cruise control combination switch and ground
Set switch signal	Set/decel switch pressed and released	Body Electrical Gauges	CRUISE CONTROL SET SW should indicate ON when the set/decel is pressed and OFF when the set/decel is released.	<ul style="list-style-type: none">• Faulty cruise control combination switch• An open in the wire between the gauge control module and the cruise control combination switch• A wire shorted to ground between the gauge control module and the cruise control combination switch



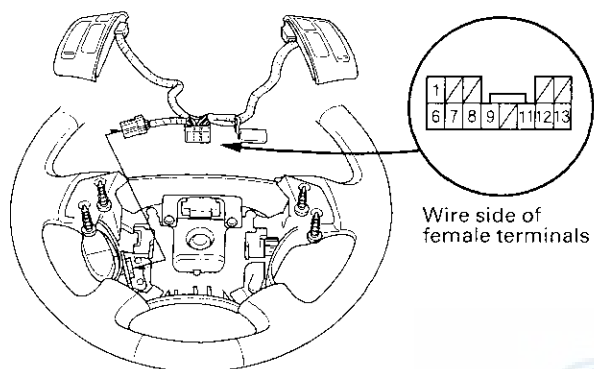
Signal to be tested	Test condition	HDS Data List	Parameter: Desired result	Possible cause if result is not obtained
Resume switch signal	Resume/accel switch pressed and released	Body Electrical Gauges	CRUISE CONTROL RESUME SW should indicate ON when the resume/accel switch is pressed and OFF when the resume/accel switch is released.	<ul style="list-style-type: none">Faulty cruise control combination switchAn open in the wire between the gauge control module and the cruise control combination switchA wire shorted to ground between the gauge control module and the cruise control combination switch
Cancel switch signal	Cancel switch pressed and released	Body Electrical Gauges	CRUISE CONTROL SET SW and CRUISE CONTROL RESUME SW should indicate ON when the cancel switch is pressed and OFF when the cancel switch is released.	<ul style="list-style-type: none">Faulty cruise control combination switch
Cruise control indicator signal	Start the engine, press the cruise control main switch, and drive the vehicle to speeds over 25 mph (40 km/h) with the cruise control set and cancel the cruise control	Body Electrical Gauges	CRUISE SET INDICATOR should indicate ON when the cruise control is set and OFF when the cruise control is canceled.	<ul style="list-style-type: none">Faulty gauge control moduleA burnt cruise control indicator bulb

Cruise Control

Cruise Control Combination Switch Test/Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11), and the precautions and procedures (see page 24-13), before performing repairs or service.

1. Remove the driver's airbag (see page 24-139).
2. Remove the four screws, then disconnect the connectors, and remove the switch.



3. Check for continuity between the terminals in each switch position according to the table.
- If there is continuity, and it matches the table, but switch failure occurred on the cruise control unit input test, check and repair the wire harness on the switch circuit.
 - If there is no continuity in one or more positions, replace the switch.

Terminal Position	8	9	1		6	7
Cruise control main switch (ON)	○	○				
Cruise control main switch (OFF)						
Set/decel (PRESSED)			○	—		○
Resume/accl (PRESSED)			○	—	○	
Cancel (PRESSED)			○	→		○

INTEGRATED MOTOR ASSIST (IMA) SYSTEM (If engine maintenance is required)

IMA components are located in this area. The IMA is a high-voltage system. The high voltage cables and their covers are identified by orange coloring. The safety labels are attached to high voltage and other related parts (see page 1-4). You must be familiar with the IMA system before working on or around it. Make sure you have read the Service Precautions in the IMA section before performing repairs or service (see page 12-3).



Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

Engine Mechanical

Engine Assembly

Engine Removal	5-2
Engine Installation	5-11
Side Engine/Transmission Mount Replacement	5-21
Front Engine Mount Replacement	5-22
Rear Engine Mount Replacement	5-24

Cylinder Head	6-1
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Engine Block	7-1
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Engine Lubrication	8-1
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Intake Manifold and Exhaust System	9-1
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Engine Assembly

Engine Removal

Special Tools Required

- Front subframe adapter VSB02C000016
- Engine support hanger, A and Reds AAR-T-12566 (available through Honda Tool and Equipment program, 888-424-6857)
- Engine hanger balance bar VSB02C000019

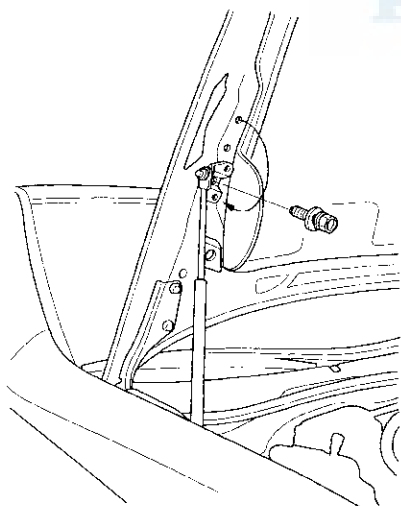
NOTE:

- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring, hoses, or interfere with other parts.

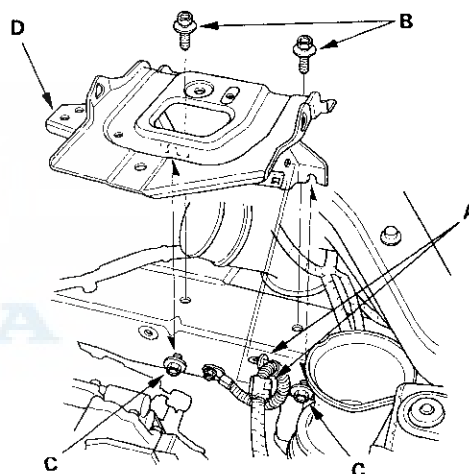
1. Make sure you have the anti-theft codes for the radio and navigation system, then write down the customer's audio presets.

2. Remove the support strut from the engine hood. Move the engine hood to a vertical position, then reinstall the right side support strut as shown.

NOTE: Do not attempt to close the hood with the support strut in the vertical position, as it will damage the support strut and hood.



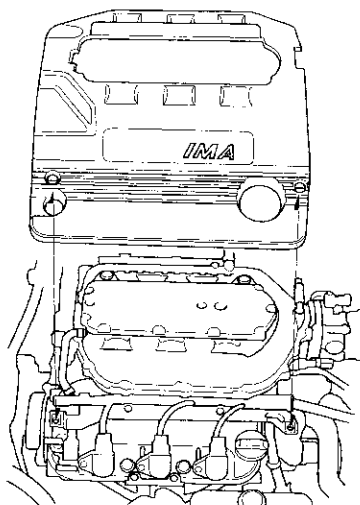
3. Turn the IMA battery module switch OFF (see page 12-4).
4. Relieve fuel pressure (see page 11-354).
5. Disconnect the negative cable from the battery first, then disconnect the positive cable.
6. Remove the battery.
7. Remove the front grille cover (see step 1 on page 20-111).
8. Remove the air cleaner housing assembly (see page 11-382).
9. Remove the harness clamps (A).



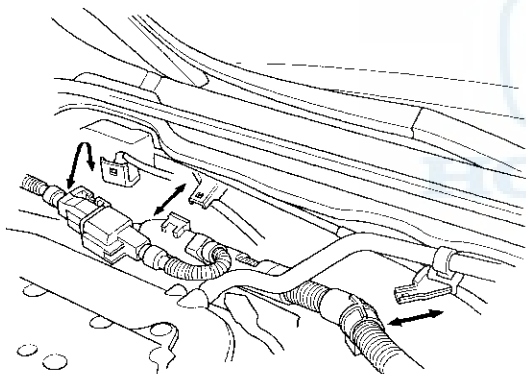
10. Remove the two bolts (B), and loosen the two bolts (C), then remove the battery base (D).



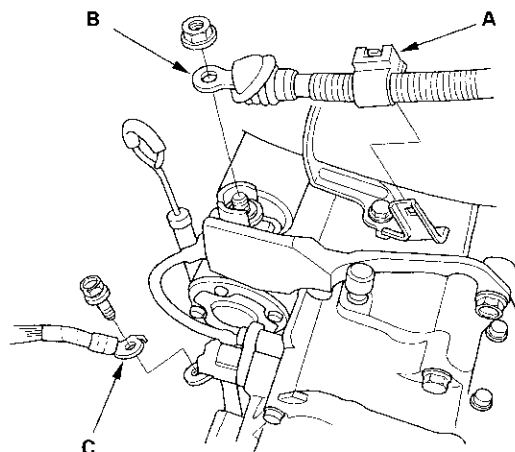
11. Remove the intake manifold cover.



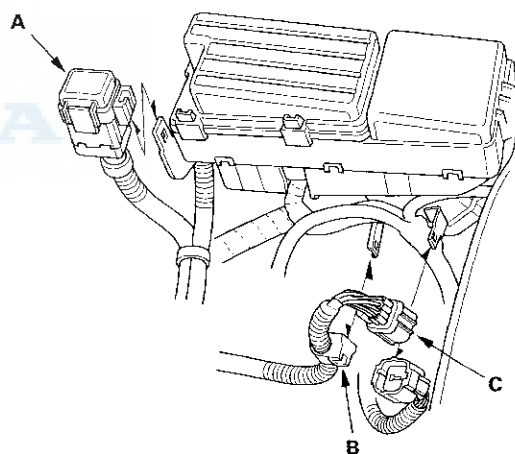
12. Remove the IMA power cable clamps.



13. Remove the harness clamp (A), starter cable (B), and ground cable (C).



14. Remove the auxiliary under-hood fuse/relay box B (A) and the harness holder (B) from the bracket, and disconnect the engine wire harness connector (C).



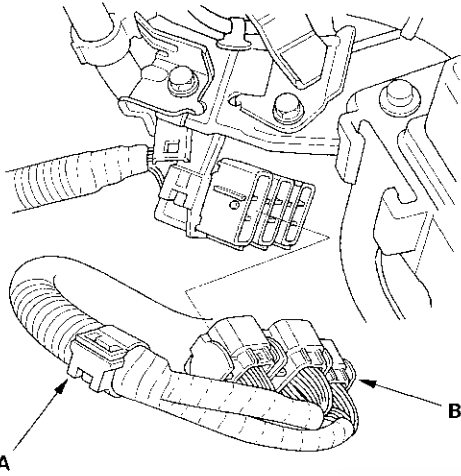
15. Disconnect the IMA power cable (see page 12-3).

(cont'd)

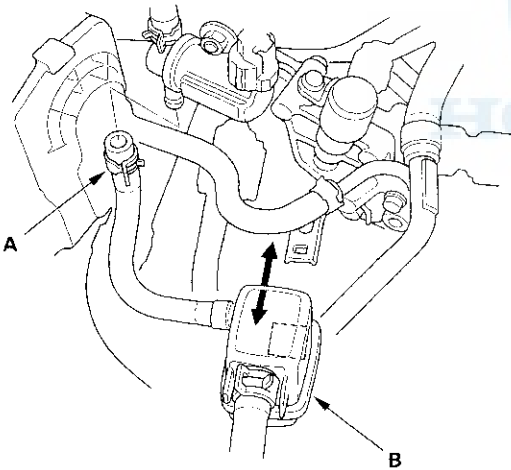
Engine Assembly

Engine Removal (cont'd)

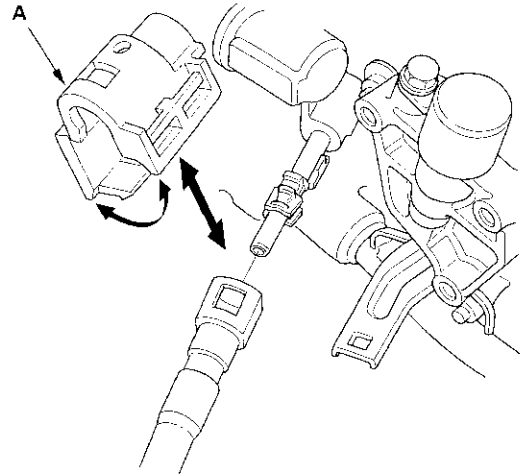
16. Remove the harness clamp (A), and disconnect the engine wire harness connectors (B) on the left side of the engine compartment.



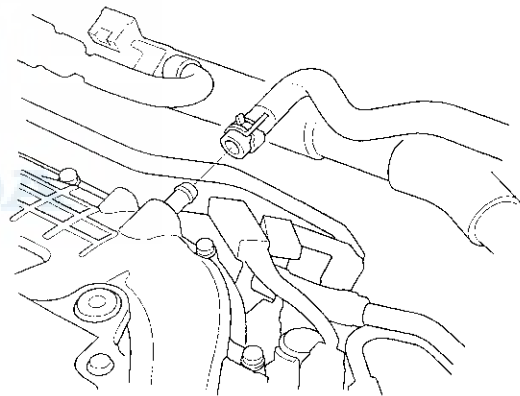
17. Remove the evaporative emission (EVAP) canister hose (A), then remove the purge joint (B) from the bracket.



18. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see page 11-361).

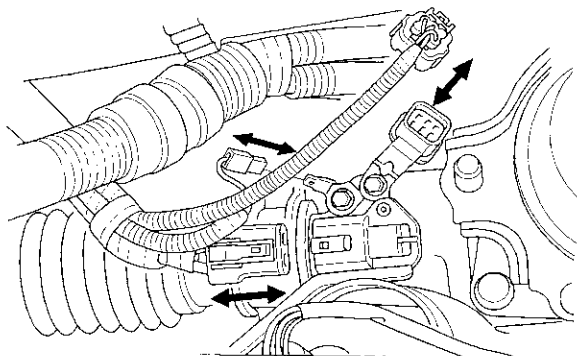


19. Remove the brake booster vacuum hose.

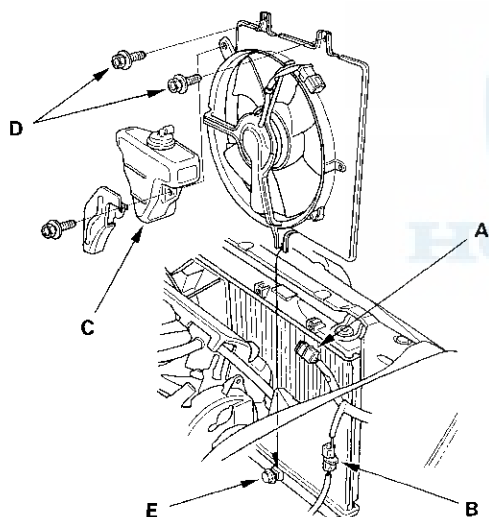




20. Disconnect the connectors from the steering gearbox.

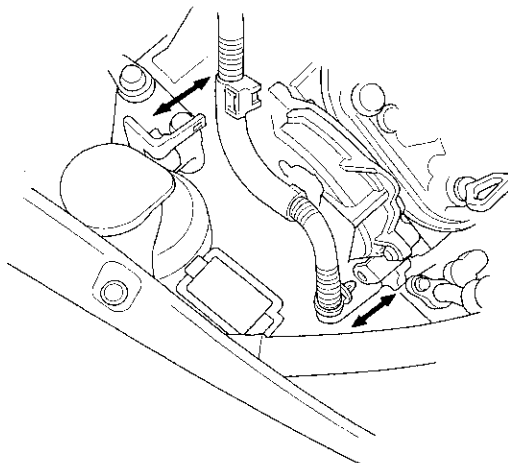


21. Disconnect the fan motor connector (A) and A/C compressor clutch connector (B), then remove the reserve tank (C).



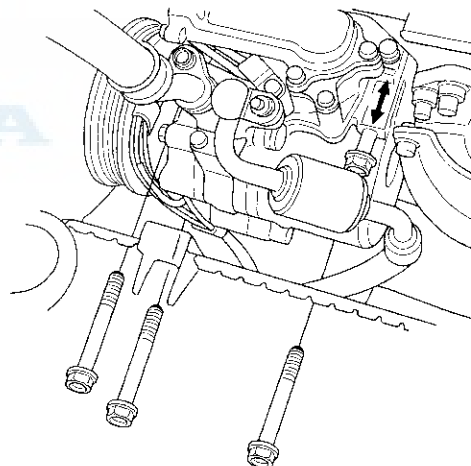
22. Remove the two bolts (D), and loosen the bolt (E), then remove the A/C condenser fan shroud.

23. Remove the A/C compressor motor power cable clamps.



24. Remove the A/C compressor belt (see page 21-100).

25. Remove the four bolts securing the A/C compressor.



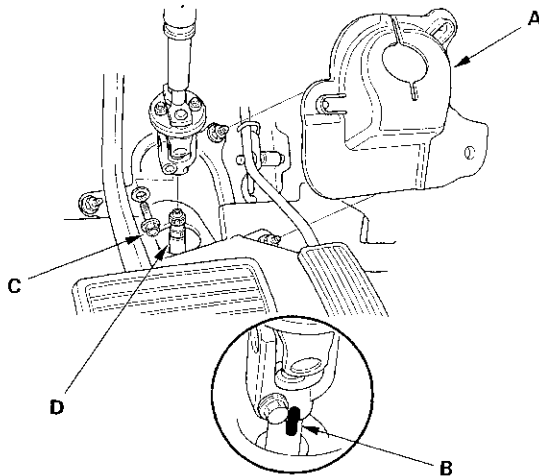
26. Remove the shift cable (see step 16 on page 14-233).

(cont'd)

Engine Assembly

Engine Removal (cont'd)

27. Remove the steering joint cover (A).



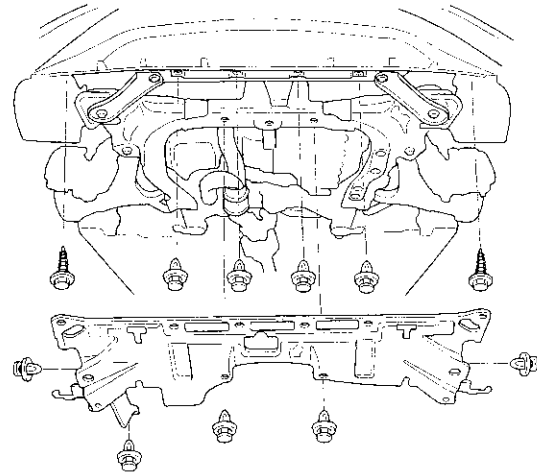
28. Lock the steering wheel. Make a reference mark (B) across the steering joint and steering gearbox pinion shaft. Remove the steering joint bolt (C), and disconnect the steering joint from the steering gearbox pinion shaft (D). To prevent damage to the cable reel, do not turn the steering wheel once the steering joint has been removed.

29. Remove the radiator cap.

30. Raise the vehicle on the hoist to full height.

31. Remove the front wheels.

32. Remove the splash shield.



33. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-6).

34. Drain the automatic transmission fluid (ATF) (see page 14-231).

35. Drain the engine oil (see page 8-7).

36. Disconnect the stabilizer links (see page 18-23).

37. Remove the damper fork (see step 3 on page 18-21).

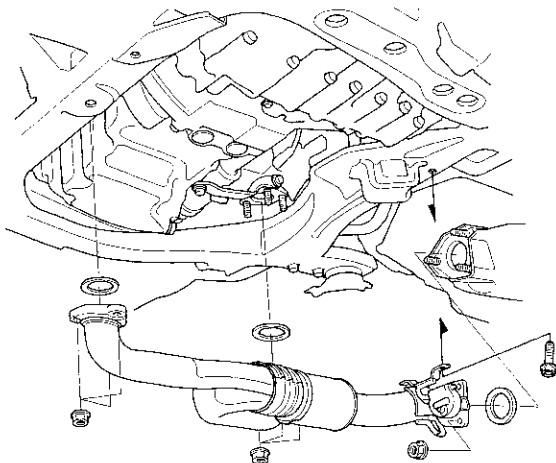
38. Separate the tie-rod end ball joints from the knuckles (see step 11 on page 17-48).

39. Separate the knuckles from the lower arms (see step 5 on page 18-22).

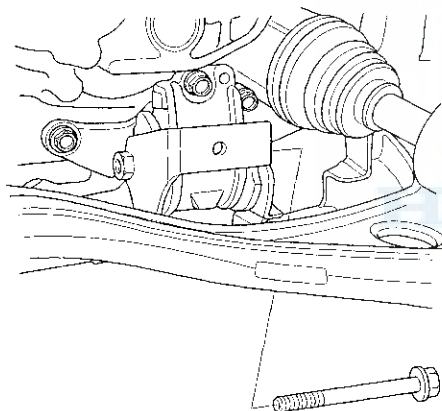
40. Remove the driveshafts (see step 10 on page 16-4). Coat all precision-finished surfaces with clean engine oil. Tie plastic bags over the driveshaft ends.



41. Remove exhaust pipe A.

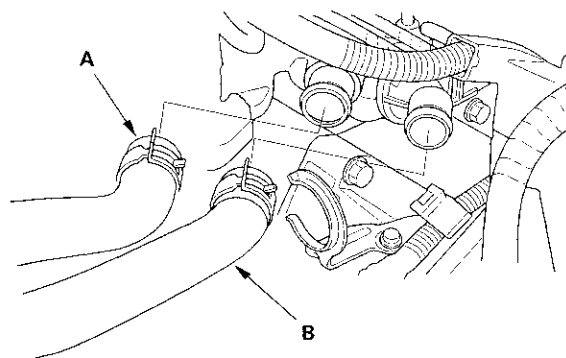


42. Remove the bolt securing the transmission lower mount.

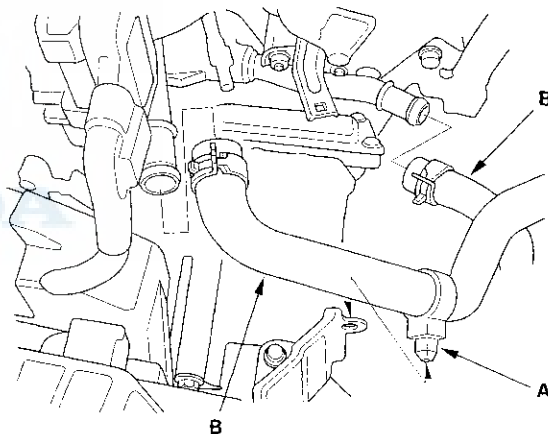


43. Lower the vehicle on the hoist.

44. Remove the upper radiator hose (A) and lower radiator hose (B).



45. Remove the heater hose clamp (A) and the heater hoses (B).



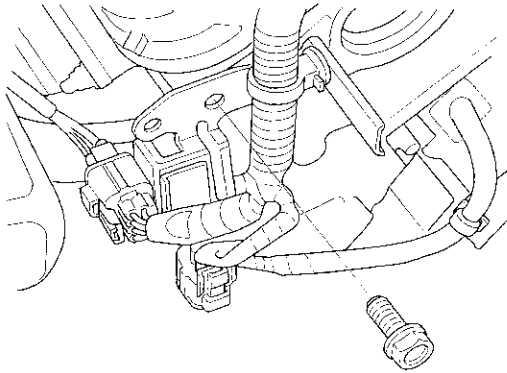
46. Remove the ATF cooler hoses from the transmission, then plug the line and hoses (see step 26 on page 14-235).

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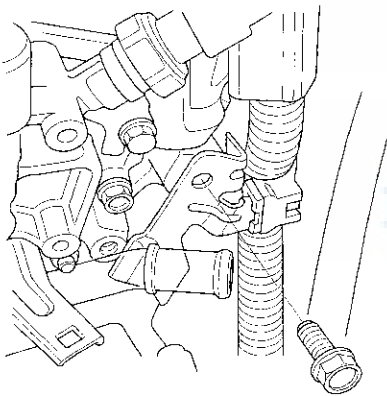
Engine Assembly

Engine Removal (cont'd)

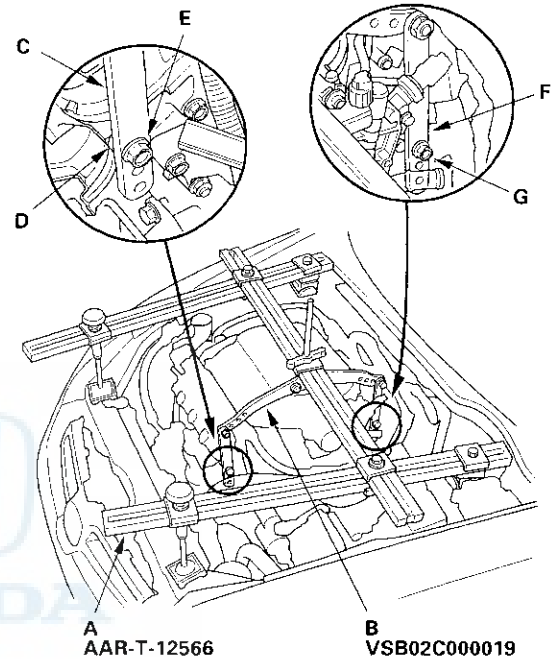
47. Remove the connector bracket from the front cylinder head; use the bracket bolt hole to attach the engine balancer bar front arm.



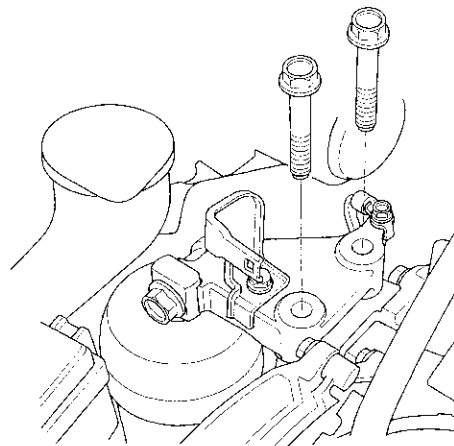
48. Remove the harness clamp bracket from the rear cylinder head; use the bracket bolt hole to attach the engine balancer bar rear arm.



49. Lift and support the engine with the engine hanger (A) and engine balancer bar (B). Attach the front arm (C) to the front cylinder head with a spacer (D) and the connector bracket bolt (10 x 1.25 mm) (E). Attach the rear arm (F) to the rear cylinder head with the harness clamp bracket bolt (8 x 1.25 mm) (G).

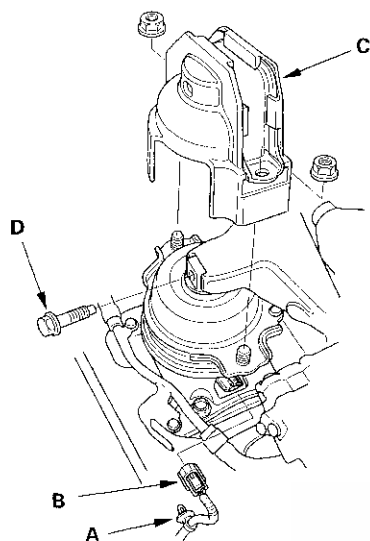


50. Remove the two bolts securing the upper bracket.

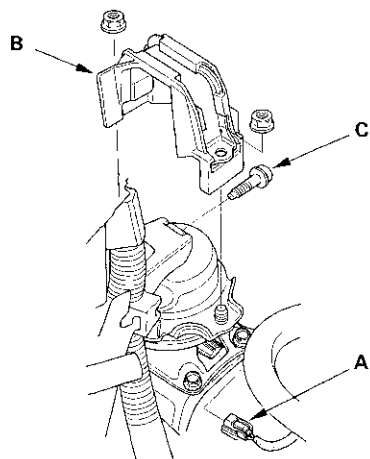




51. Remove the harness clamp (A), then disconnect the front active control engine mount actuator connector (B).

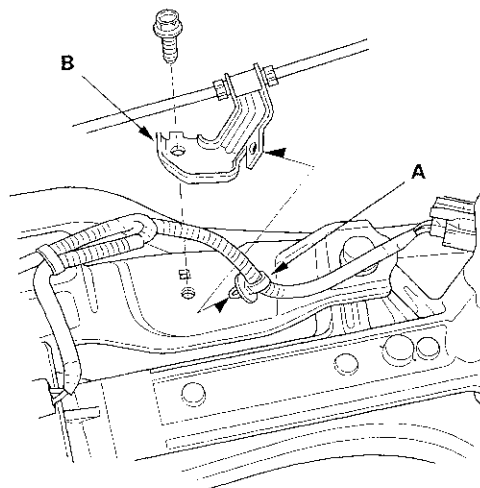


52. Remove the front mount stop (C), then remove the front mount bolt (D).
53. Disconnect the rear active control engine mount actuator connector (A).



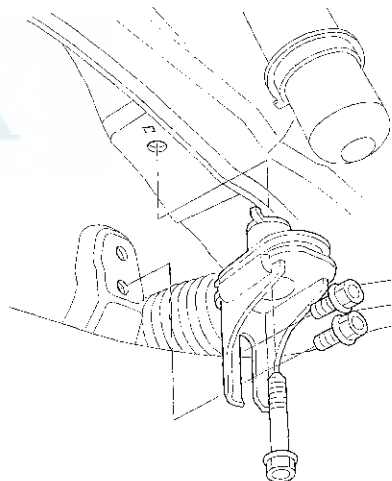
54. Remove the rear mount stop (B), then remove the rear mount bolt (C).

55. Remove the harness clamp (A), then remove the shift cable bracket (B).



56. Raise the vehicle on the hoist to full height.

57. Remove both mid-mounts.

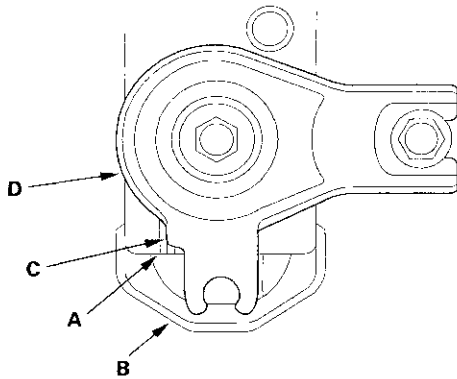


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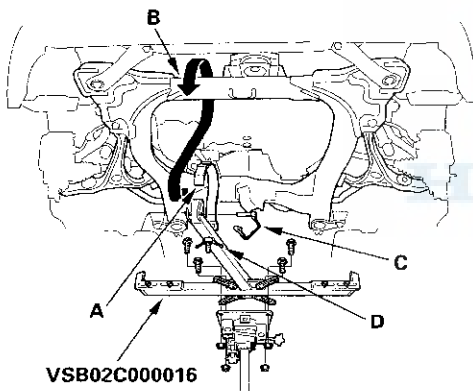
Engine Assembly

Engine Removal (cont'd)

58. Make the appropriate reference lines (A) at both ends of the subframe (B) that line up with the edge (C) of the stiffeners (D).

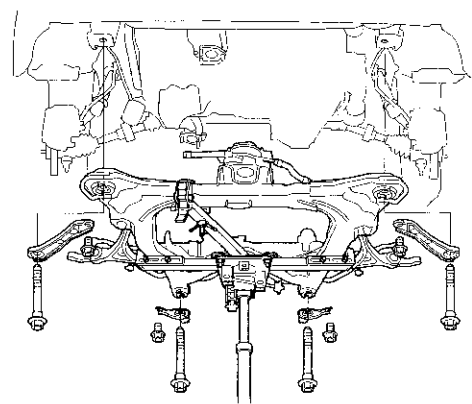


59. Attach the front subframe adapter to the subframe by hanging the belt (A) over the front of the subframe (B), then secure the belt with the lock pin (C), and tighten the wing nut (D).



60. Raise the jack and line up the slots in the front subframe adapter arms with the bolt holes on the jack base, then securely attach them with four bolts.

61. Remove the subframe.



62. Check that the engine/transmission is completely free of vacuum hoses, fuel and coolant hoses, and electrical wiring.
63. Lower the vehicle and securely support the engine and transmission assembly.
64. When the engine and transmission are securely supported, and there is no tension on the engine support hanger, remove the engine hanger from the engine.
65. Slowly raise the vehicle about 150 mm (6 in.). Check once again that all hoses and electrical wiring are disconnected from the engine/transmission assembly.
66. Raise the vehicle all the way.
67. Remove the engine/transmission assembly from under the vehicle.

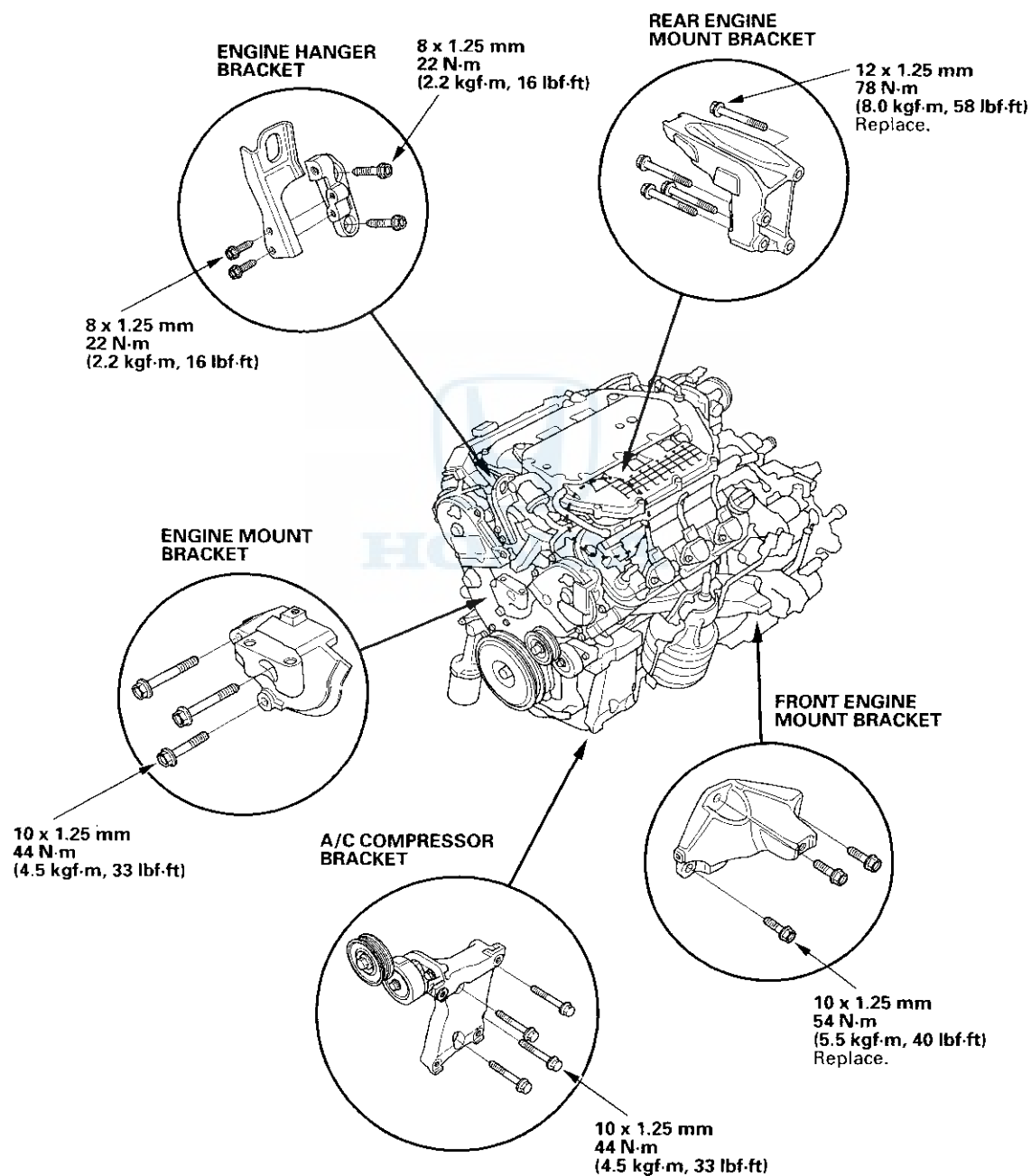


Engine Installation

Special Tools Required

- Front subframe adapter VSB02C000016
- Engine support hanger, A and Reds AAR-T-12566
(available through Honda Tool and Equipment program, 888-424-6857)
- Engine hanger balance bar VSB02C000019

1. Install the engine and accessory brackets and tighten their bolts to the specified torques.



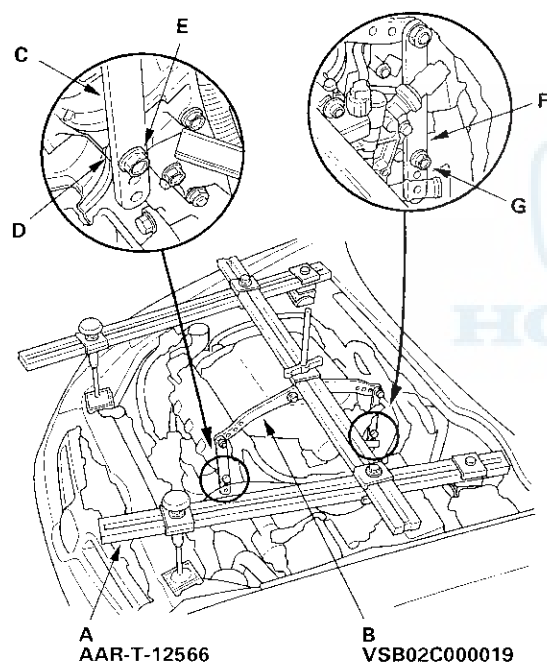
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Engine Assembly

Engine Installation (cont'd)

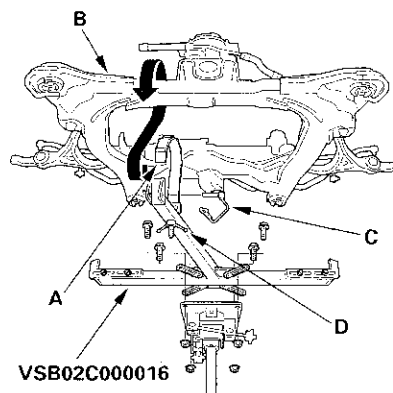
2. Position the engine/transmission assembly under the vehicle, and be sure that they are properly positioned. Carefully lower the vehicle until the engine and transmission are properly positioned in the engine compartment. Lift and support the engine with engine hanger (A) and engine balancer bar (B). Attach the front arm (C) to the front cylinder head with a spacer (D) and the connector bracket bolt (10 x 1.25 mm) (E). Attach the rear arm (F) to the rear cylinder head with the harness clamp bracket bolt (8 x 1.25 mm) (G). Lift the engine into position in the vehicle.

NOTE: Reinstall all mounting bolts/support nuts in the sequences given. Failure to follow this may cause excessive noise and vibration, and reduce bushing life.

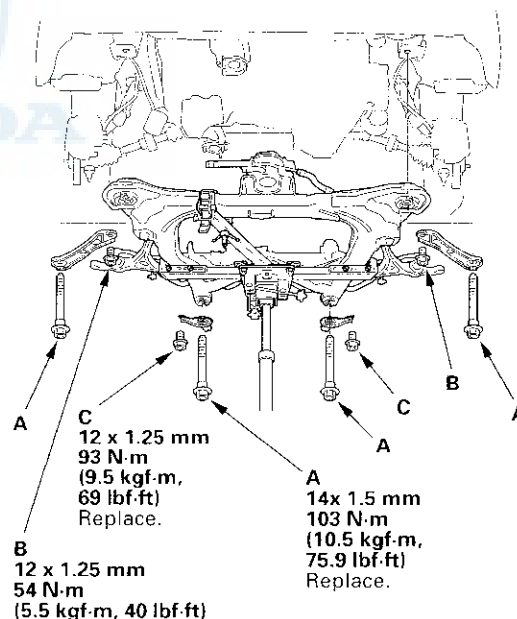


3. Raise the vehicle on the hoist to full height.

4. Attach the front subframe adapter to the subframe by hanging the belt (A) over the front of the subframe (B), then secure the belt with the lock pin (C) and tighten the wing nut (D). Raise the subframe up to the body with a jack.

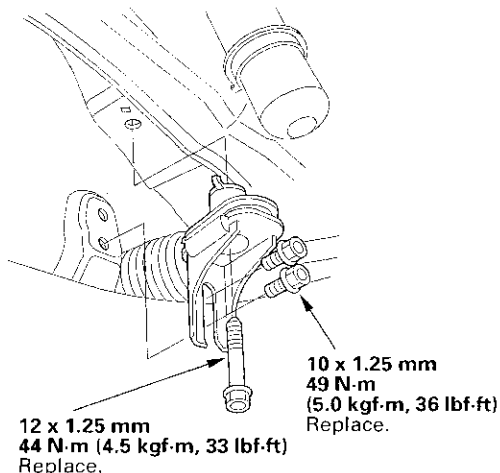


5. Loosely install the four subframe mounting bolts (A) and four 12 x 1.25 mm bolts (B), (C) with the stiffeners.

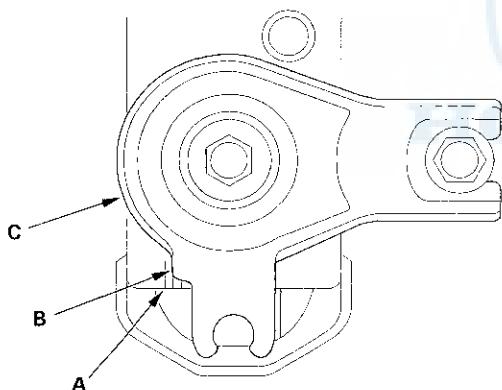




6. Loosely install both of the new mid-mount mounting bolts.



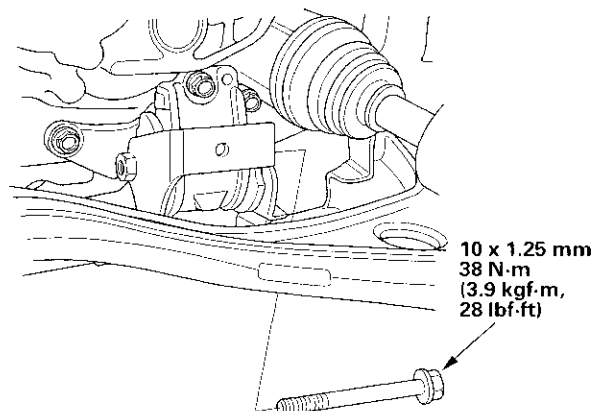
7. Align the reference marks (A) with edge (B) of both rear stiffeners (C), and tighten the rear subframe mounting bolts, then front bolts, and tighten the stiffener bolts to the specified torque.



8. Tighten the mid-mount mounting bolts.
9. Remove the jack and front subframe adapter.
10. Lower the vehicle on the hoist, then remove the engine hanger and engine balancer bar.

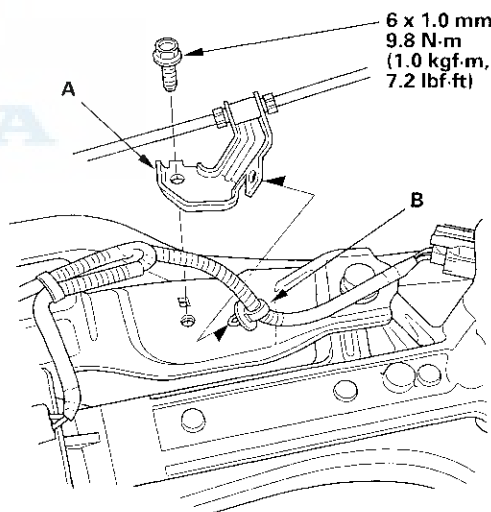
11. Raise the vehicle on the hoist to full height.

12. Tighten the bolt securing the transmission lower mount.



13. Lower the vehicle on the hoist.

14. Install the shift cable bracket (A), then install the harness clamp (B).

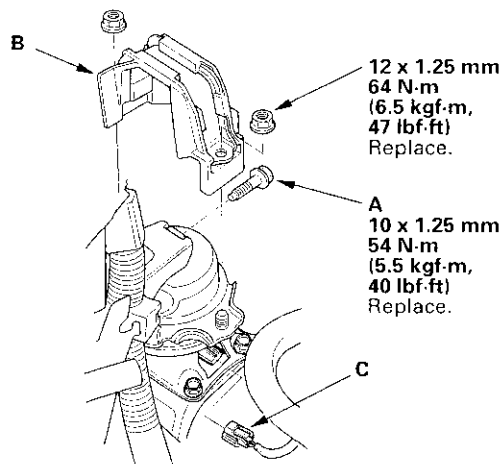


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Engine Assembly

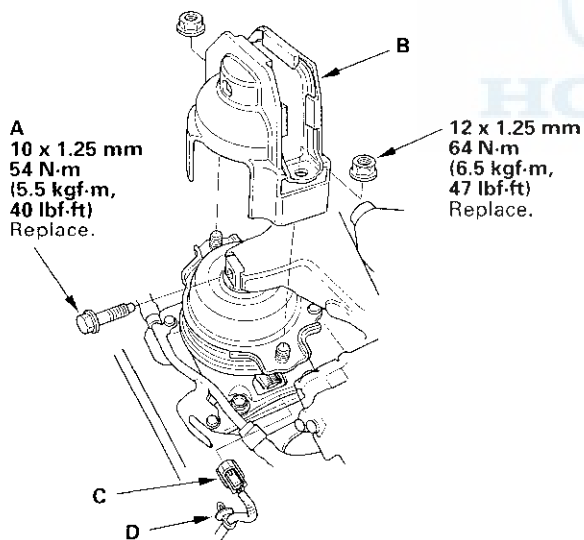
Engine Installation (cont'd)

15. Tighten the new rear mount bolt (A), then install the rear mount stop (B) with new nuts.



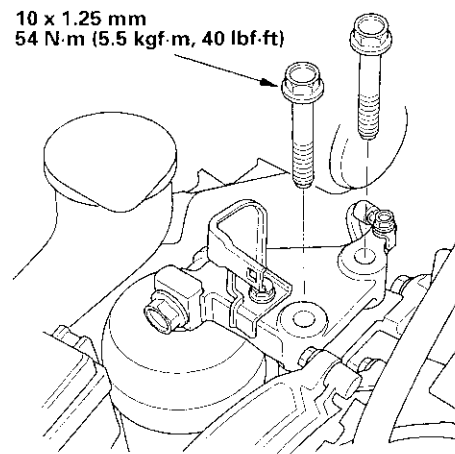
16. Connect the rear active control engine mount actuator connector (C).

17. Tighten the new front mount bolt (A), then install the front mount stop (B) with new nuts.



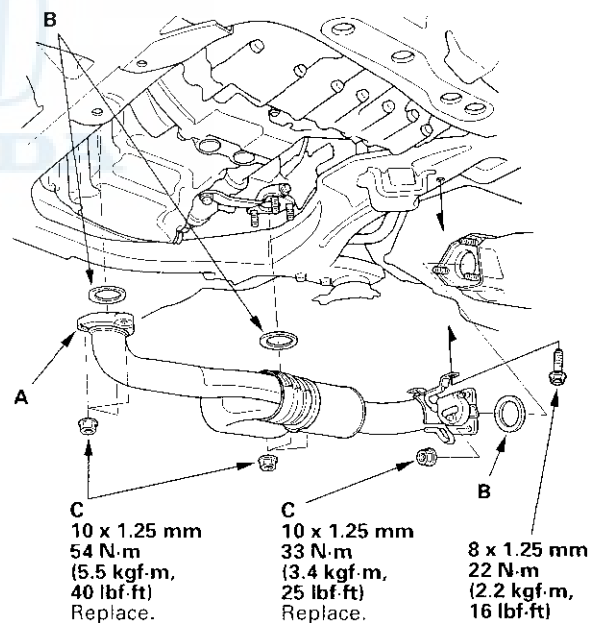
18. Connect the front active control engine mount actuator connector (C), then install the harness clamp (D).

19. Tighten the two bolts securing the upper bracket.



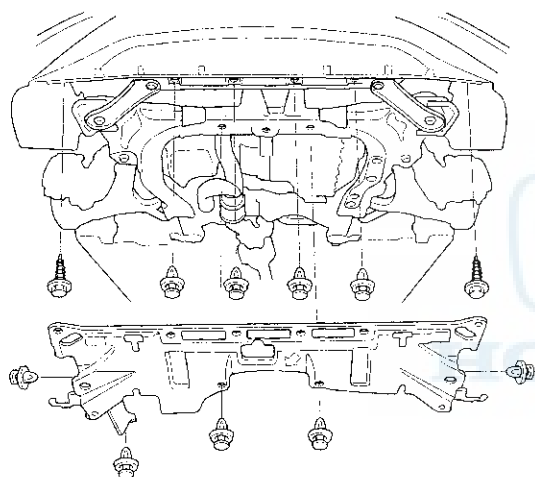
20. Raise the vehicle on the hoist to full height.

21. Install exhaust pipe A using new gaskets (B) and new self locking nuts (C).



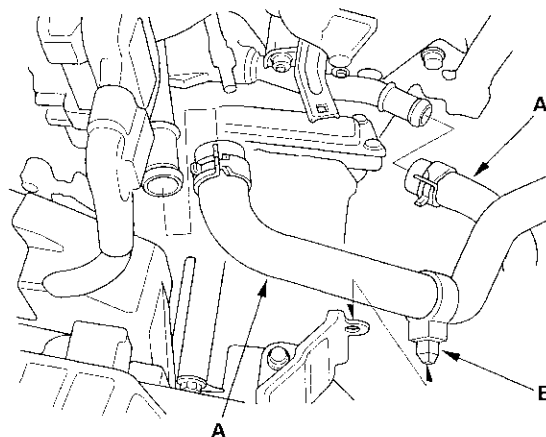


22. Install a new set ring on the end of each driveshaft, then install the driveshafts. Make sure each ring "clicks" into place in the differential and intermediate shaft.
23. Connect the suspension lower arms to the knuckles (see step 5 on page 18-22).
24. Connect the tie-rod end ball joints to the knuckles (see step 29 on page 17-58).
25. Install the damper fork (see step 3 on page 18-21).
26. Connect the stabilizer links (see page 18-23).
27. Install the splash shield.

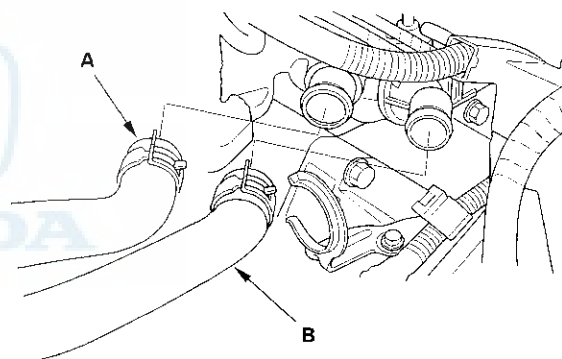


28. Install the front wheels.
29. Lower the vehicle on the hoist.
30. Install the ATF cooler hoses to the transmission (see step 38 on page 14-250).
31. Install the shift cable (see step 46 on page 14-251).

32. Install the heater hoses (A) and hose clamp (B).



33. Install the upper radiator hose (A) and lower radiator hose (B).

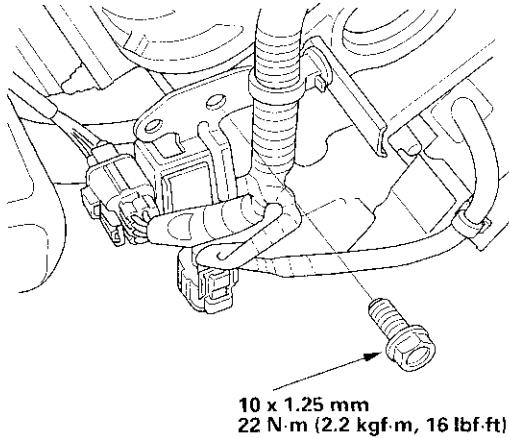


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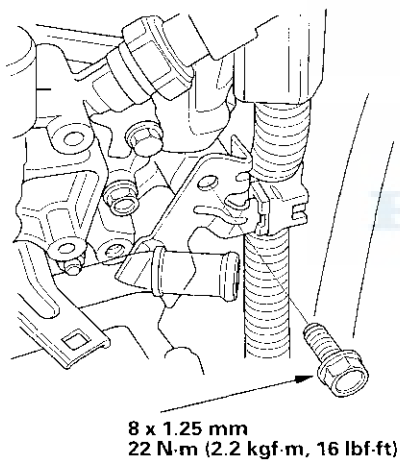
Engine Assembly

Engine Installation (cont'd)

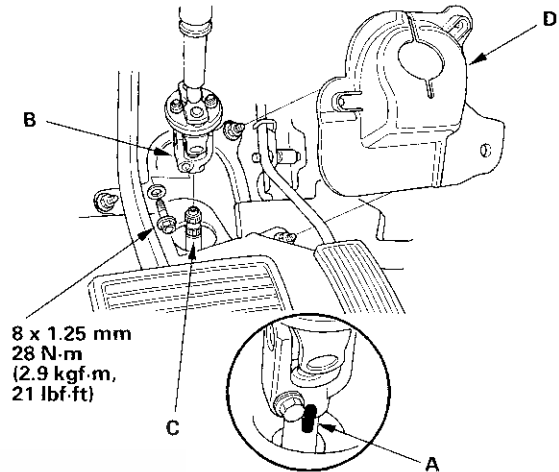
34. Install the connector bracket to the front cylinder head.



35. Install the harness clamp bracket to the rear cylinder head.

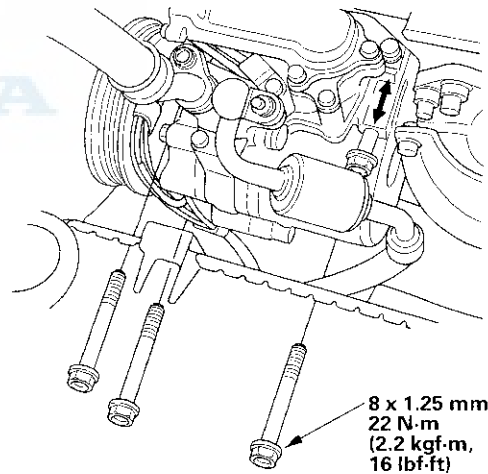


36. Align the reference mark (A) on the steering joint and steering gearbox pinion shaft. Connect the steering joint (B) to the steering gearbox pinion shaft (C). Tighten the steering joint bolt.



37. Install the steering joint cover (D).

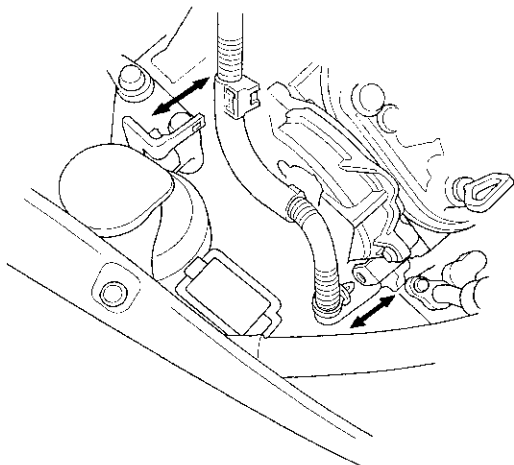
38. Install the A/C compressor.



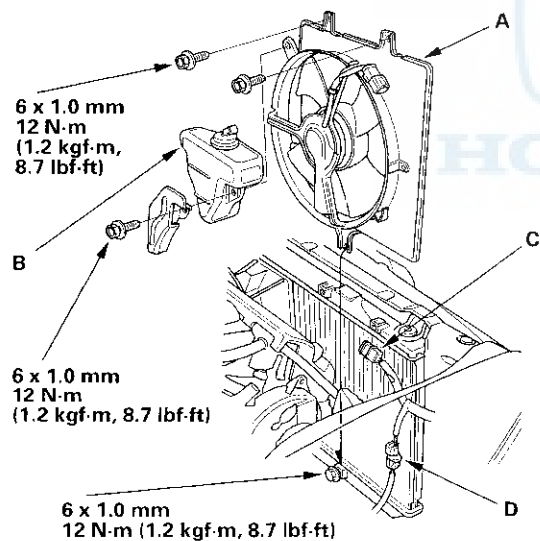
39. Install the A/C compressor belt (see page 21-100).



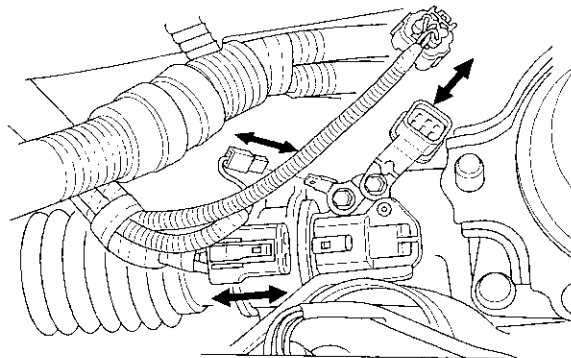
40. Install the A/C compressor motor power cable clamps.



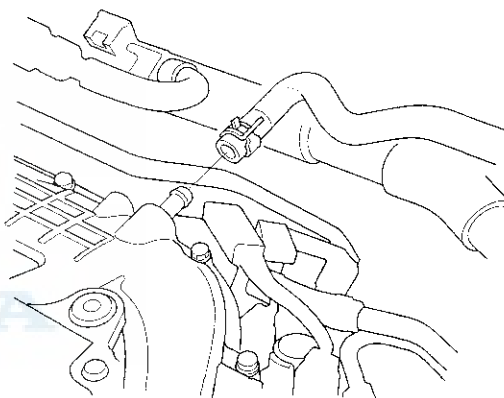
41. Install the condenser fan shroud (A), and reserve tank (B), then connect the fan motor connector (C) and compressor clutch connector (D).



42. Connect the connectors to the steering gearbox.



43. Install the brake booster vacuum hose.

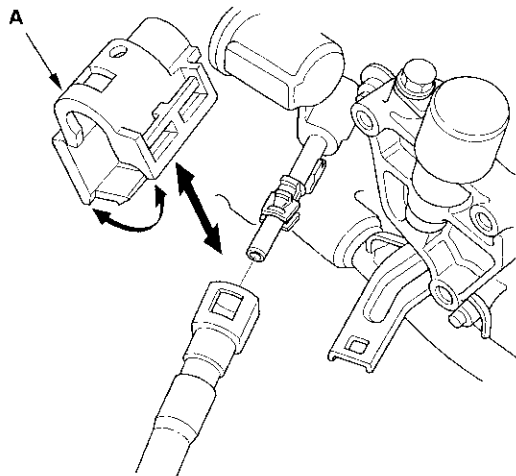


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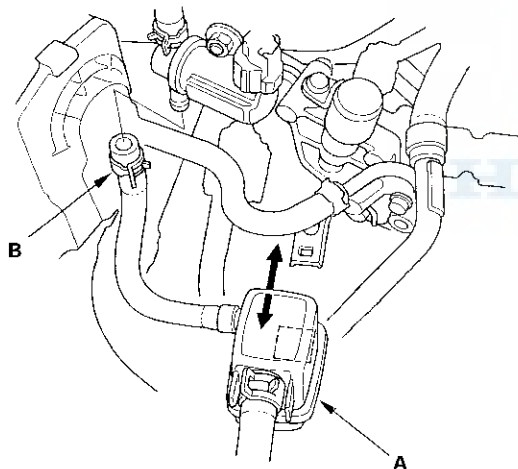
Engine Assembly

Engine Installation (cont'd)

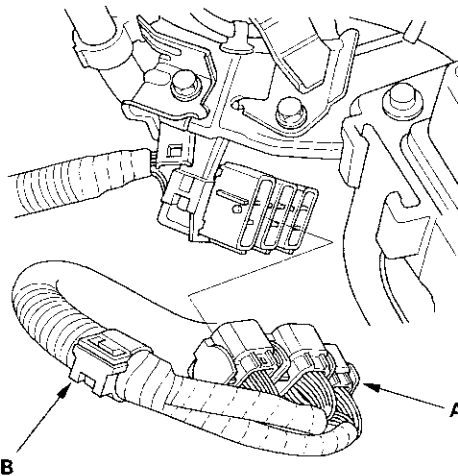
44. Connect the fuel feed hose (see page 11-362), then install the quick-connect fitting cover (A).



45. Install the purge joint (A) to the bracket, then install the evaporative emission (EVAP) canister hose (B).

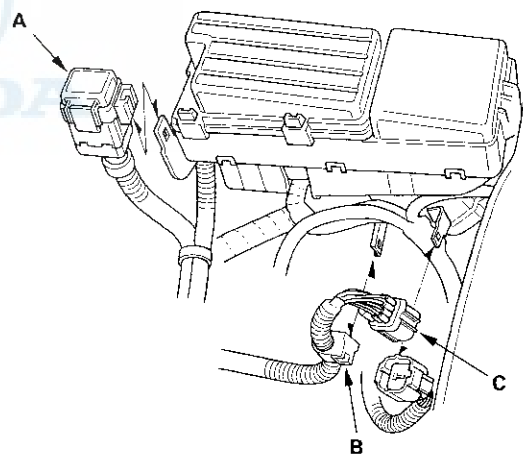


46. Connect the engine wire harness connectors (A), then install the harness clamp (B).



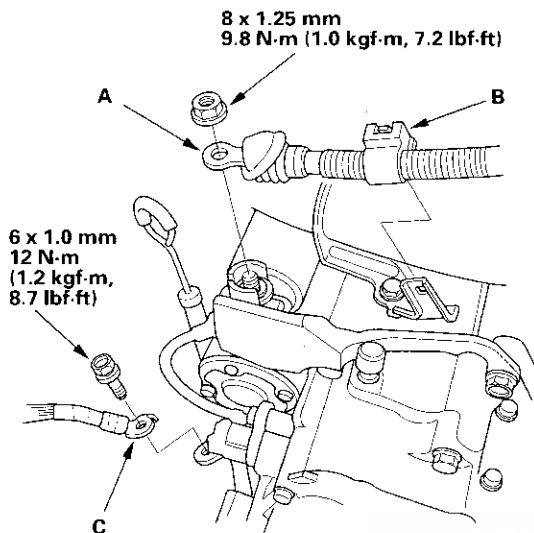
47. Connect the IMA power cable (see page 12-3).

48. Install the auxiliary under-hood fuse/relay box B (A) and the harness holder (B) to the bracket, and connect the engine wire harness connector (C).

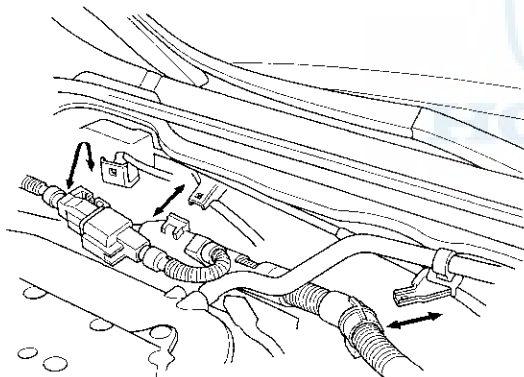




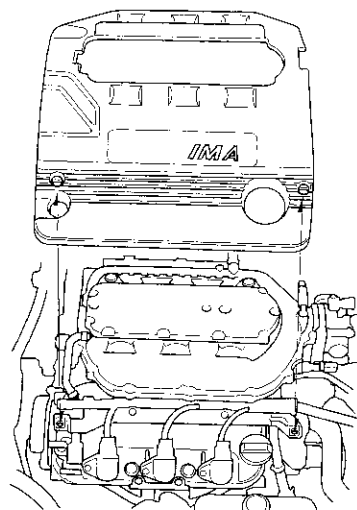
49. Install the starter cable (A), harness clamp (B), and ground cable (C).



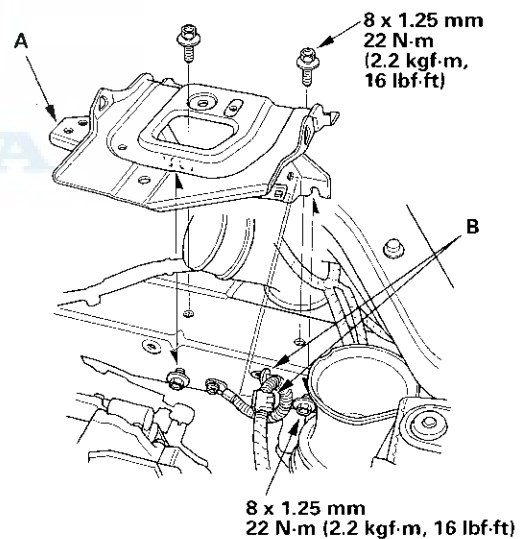
50. Install the IMA power cable clamps.



51. Install the intake manifold cover.



52. Install the battery base (A), then install the harness clamps (B).

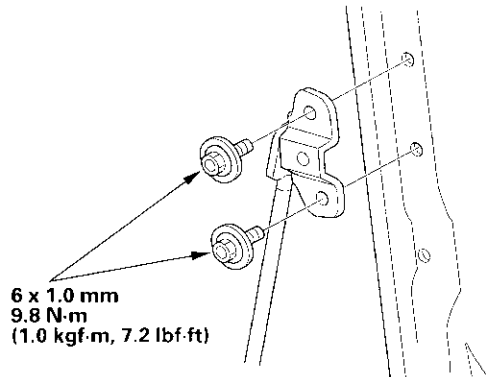


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Engine Assembly

Engine Installation (cont'd)

53. Reinstall the support strut bracket with the bolts in the proper location.

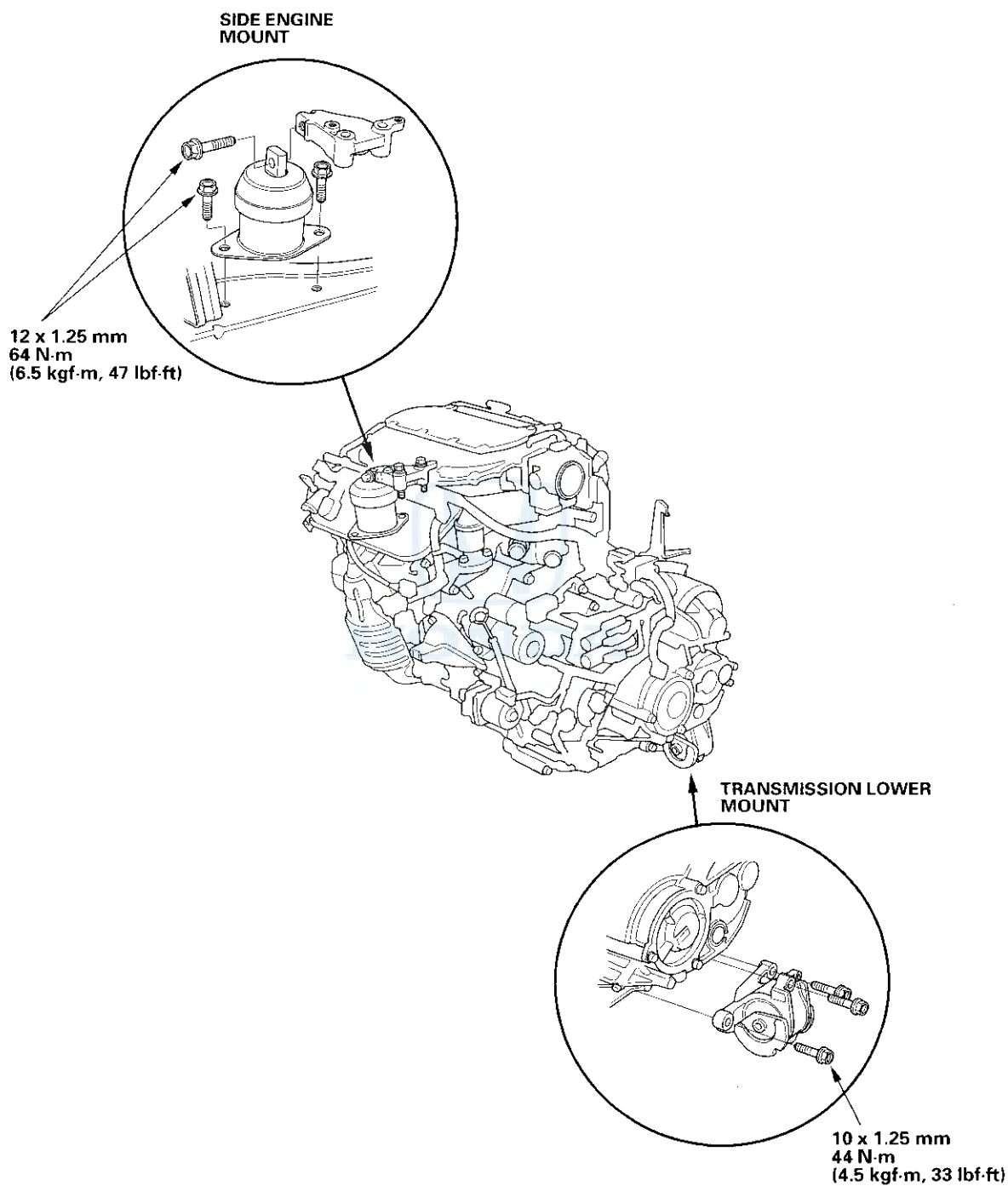


54. Install the air cleaner housing assembly (see page 11-382).
55. Install the front grille cover (see step 1 on page 20-111).
56. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them. Apply grease to prevent corrosion.
57. Move the shift lever to each gear, and verify that the A/T gear position indicator follows the transmission range switch.
58. Inspect for fuel leaks: Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
59. Refill the engine with engine oil (see step 4 on page 8-7).
60. Refill the transmission with ATF (see page 14-231).
61. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).

62. Do the powertrain control module (PCM) reset procedure (see page 11-4).
63. Do the crankshaft position (CKP) pattern clear/ CKP pattern learn procedure (see page 11-4).
64. Do the motor rotor position calibration (see page 12-6).
65. Inspect the idle speed (see page 11-339).
66. Inspect the ignition timing (see page 4-21).
67. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
68. Do the power window control unit reset procedure (see page 22-200).
69. Set the clock.
70. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.



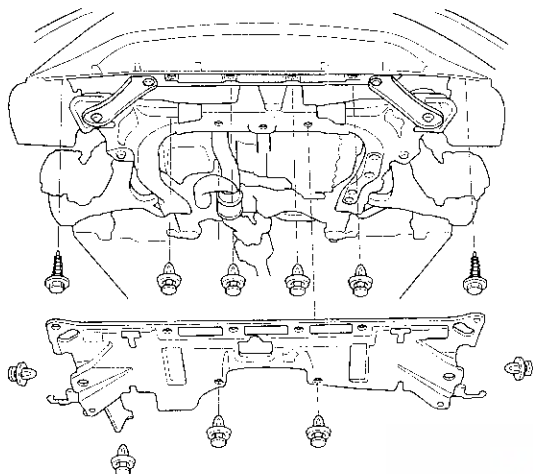
Side Engine/Transmission Mount Replacement



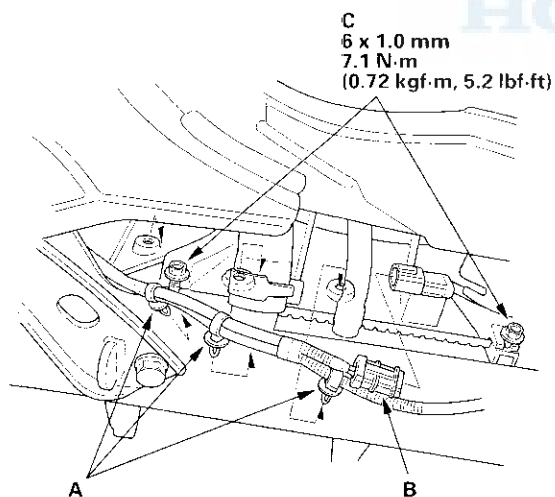
Engine Assembly

Front Engine Mount Replacement

1. Raise the vehicle on the hoist to full height.
2. Remove the front wheels.
3. Remove the splash shield.

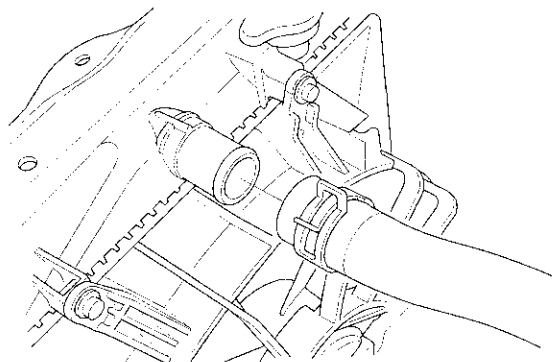


4. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-6).
5. Remove the harness clamps (A), then disconnect the fan motor connector (B).

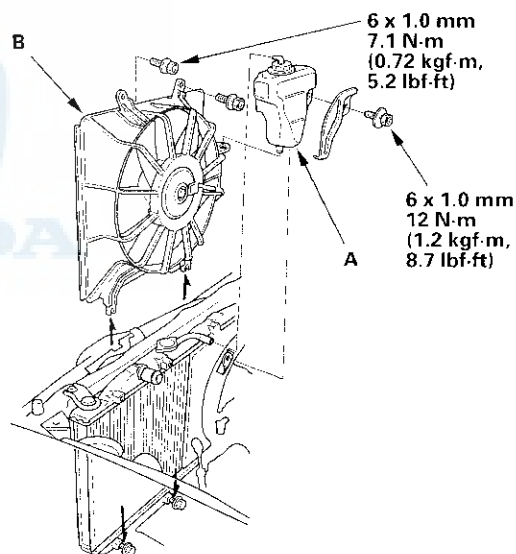


6. Loosen the two bolts (C) securing the fan shroud.

7. Lower the vehicle on the hoist.
8. Remove the upper radiator hose from the radiator.

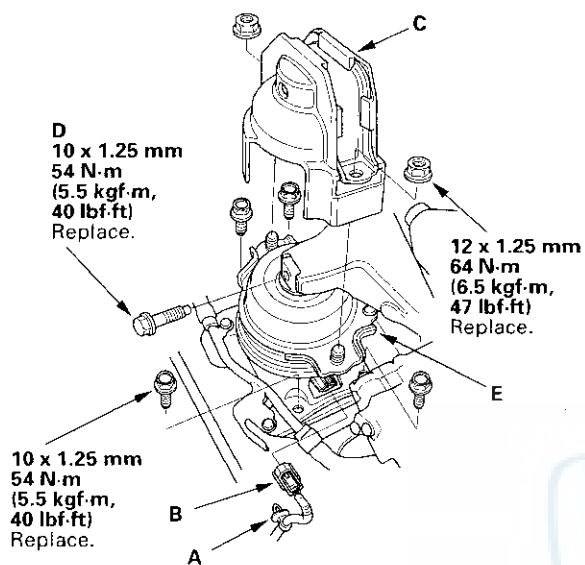


9. Remove the reserve tank (A), then remove the fan shroud (B).





10. Support the engine with a jack and wood block under the oil pan.
11. Remove the harness clamp (A), then disconnect the front active control engine mount actuator connector (B).

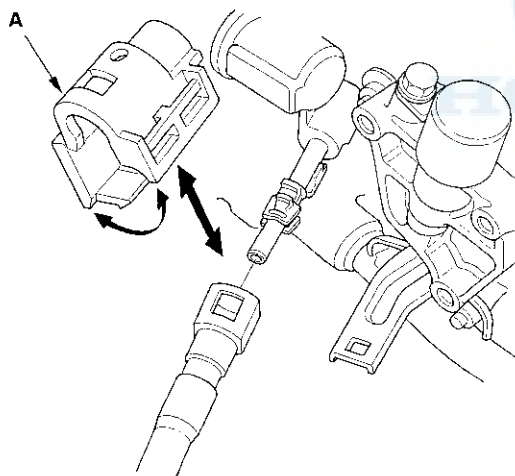


12. Remove the front mount stop (C), then remove the front mount bolt (D).
13. Remove the front mount (E).
14. Install in the reverse order of removal.
15. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).

Engine Assembly

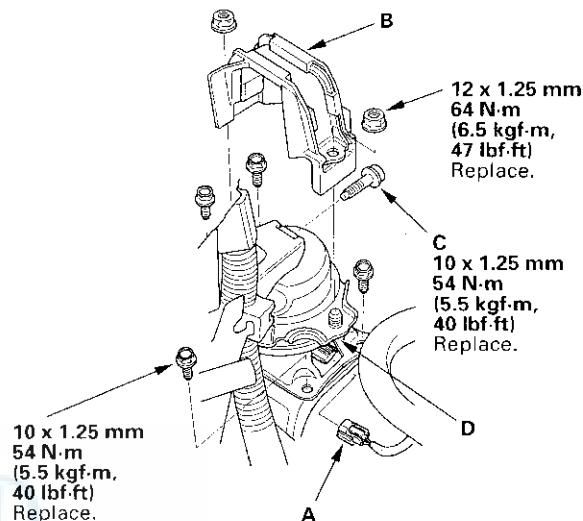
Rear Engine Mount Replacement

1. Turn the IMA battery module switch OFF (see page 12-4).
2. Relieve fuel pressure (see page 11-354).
3. Loosen the drain plug in the radiator, and drain the engine coolant (see page 10-6).
4. Remove the air cleaner housing assembly (see page 11-382).
5. Remove the IMA power cable clamps (see step 12 on page 5-3).
6. Remove the auxiliary under-hood fuse/relay box B and the harness holder from the bracket, and disconnect the engine wire harness connector (see step 14 on page 5-3).
7. Remove the evaporative emission (EVAP) canister hose, then remove the purge joint from the bracket (see step 17 on page 5-4).
8. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see page 11-361).



9. Disconnect the IMA power cable (see page 12-3).
10. Remove the heater hose clamp and the heater hoses (see step 45 on page 5-7).

11. Support the engine with a jack and wood block under the oil pan.
12. Disconnect the rear active control engine mount actuator connector (A).



13. Remove the front mount stop (B), then remove the rear mount bolt (C).
14. Remove the rear mount (D).
15. Install in the reverse order of removal.
16. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).
17. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.

Engine Mechanical

Cylinder Head

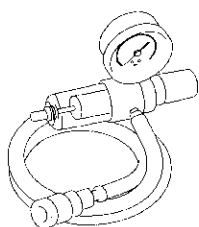
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Cylinder Head

Special Tools

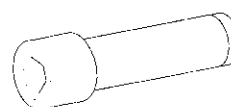
Ref. No.	Tool Number	Description	Qty
①	07AAJ-PNAA100	Air Pressure Regulator	1
②	07HAH-PJ7A100	Valve Guide Reamer, 5.5 mm	1
③	07JAA-001020A	Socket, 19 mm	1
④	07JAB-001020A	Holder Handle	1
⑤	07PAD-0010000	Stem Seal Driver	1
⑥	070AB-RJA0100	Crankshaft Pulley Holder	1
⑦	07742-0010100	Valve Guide Driver, 5.5 mm	1
⑧	07757-PJ1010A	Valve Spring Compressor Attachment	1



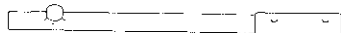
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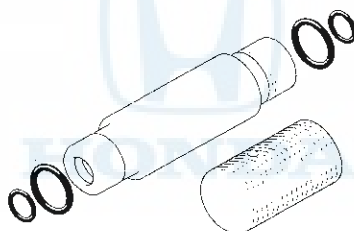
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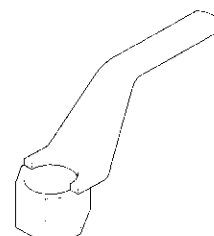
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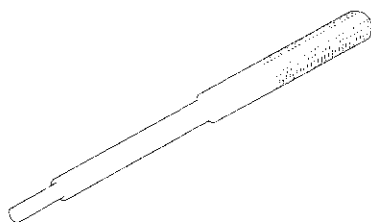
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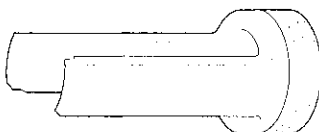
⑤



⑥



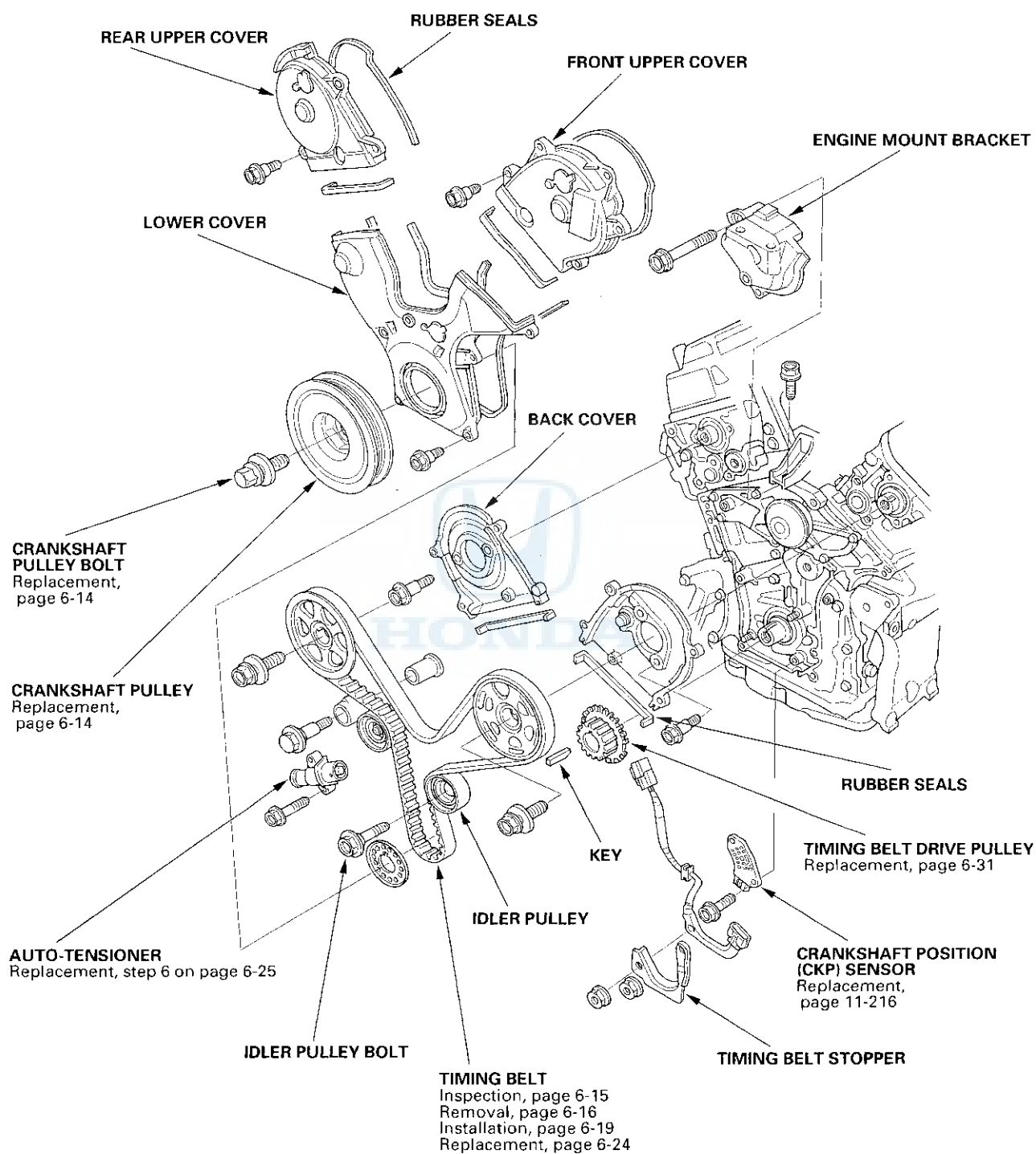
⑦



⑧



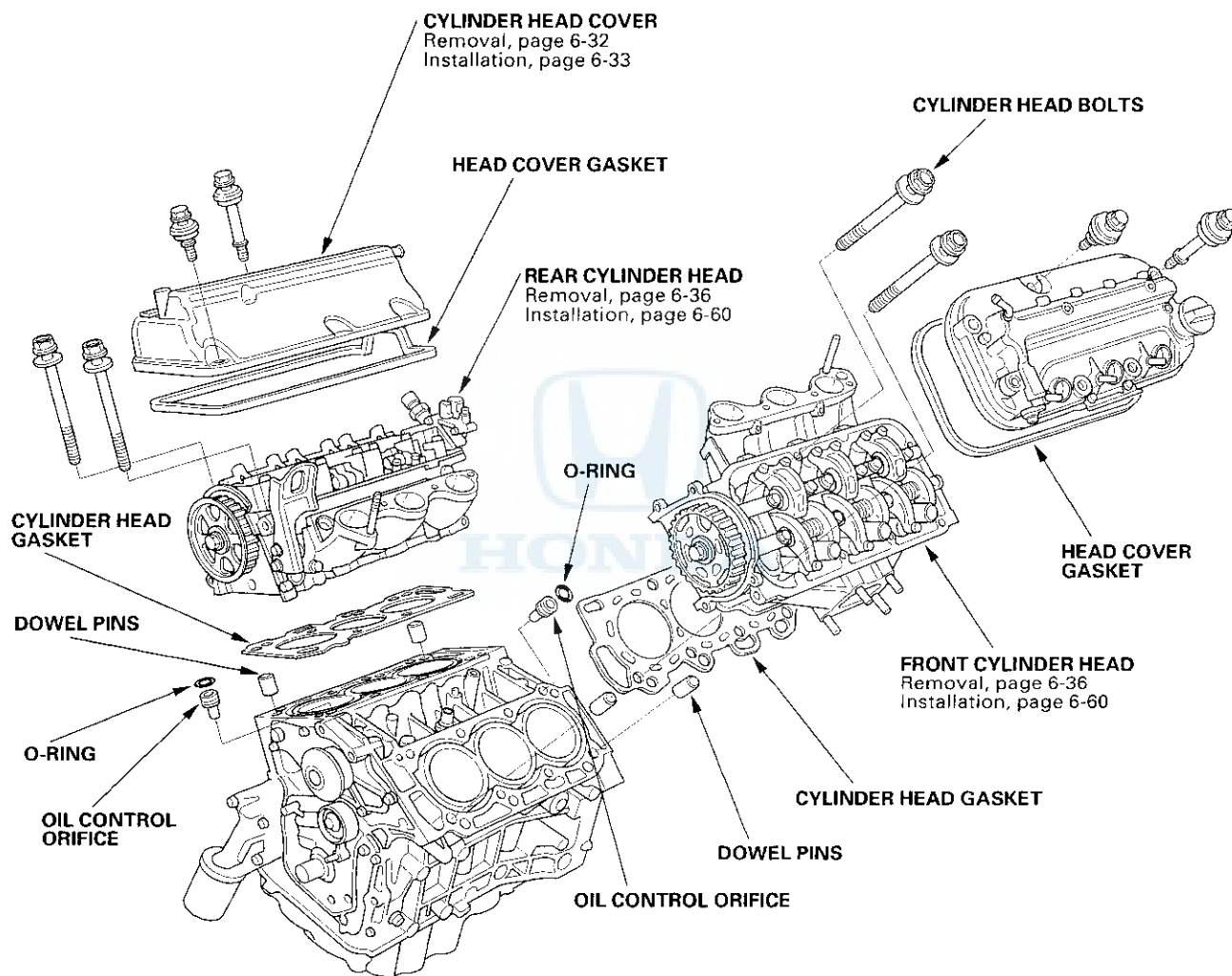
Component Location Index



(cont'd)

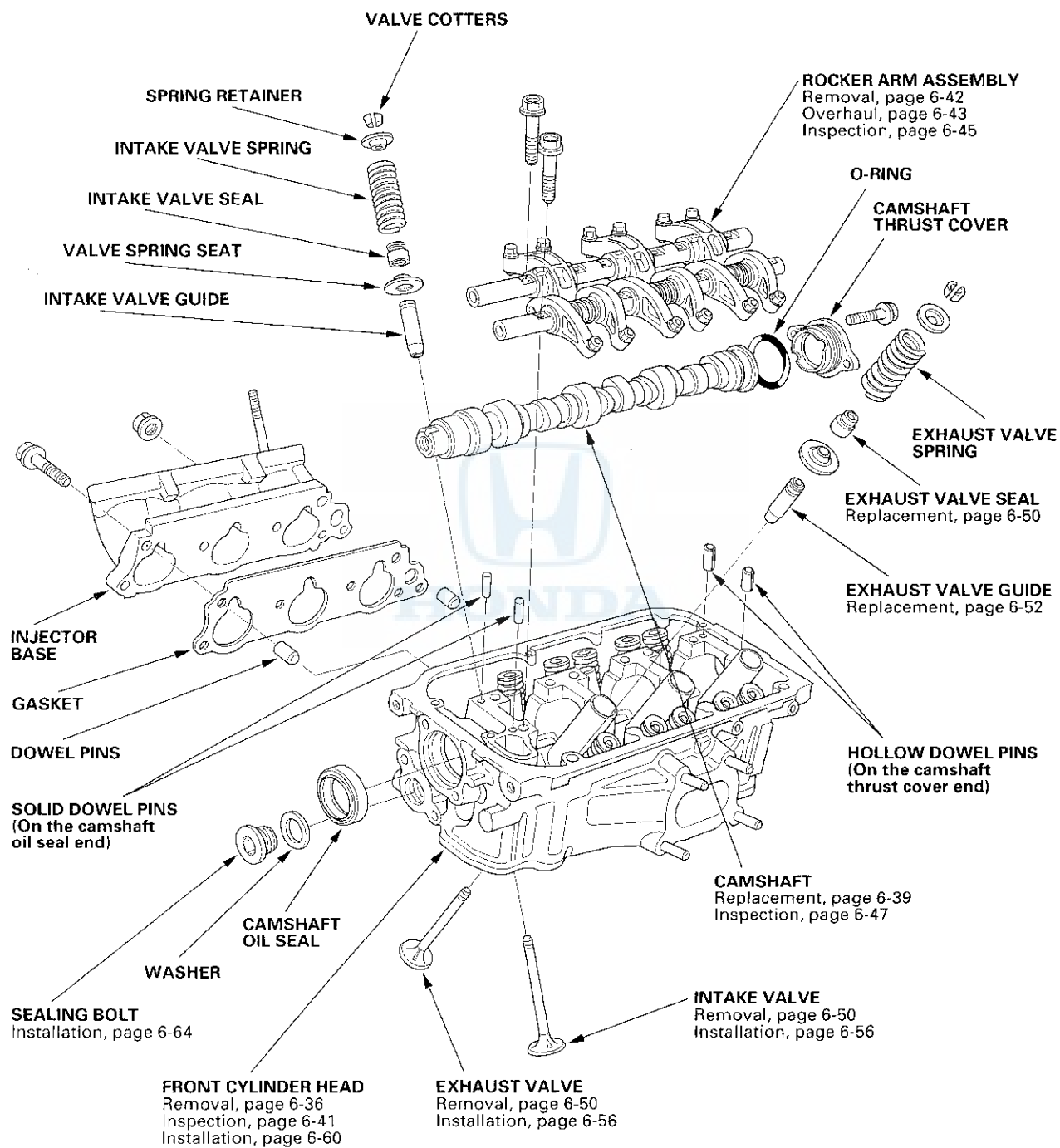
Cylinder Head

Component Location Index (cont'd)





FRONT:

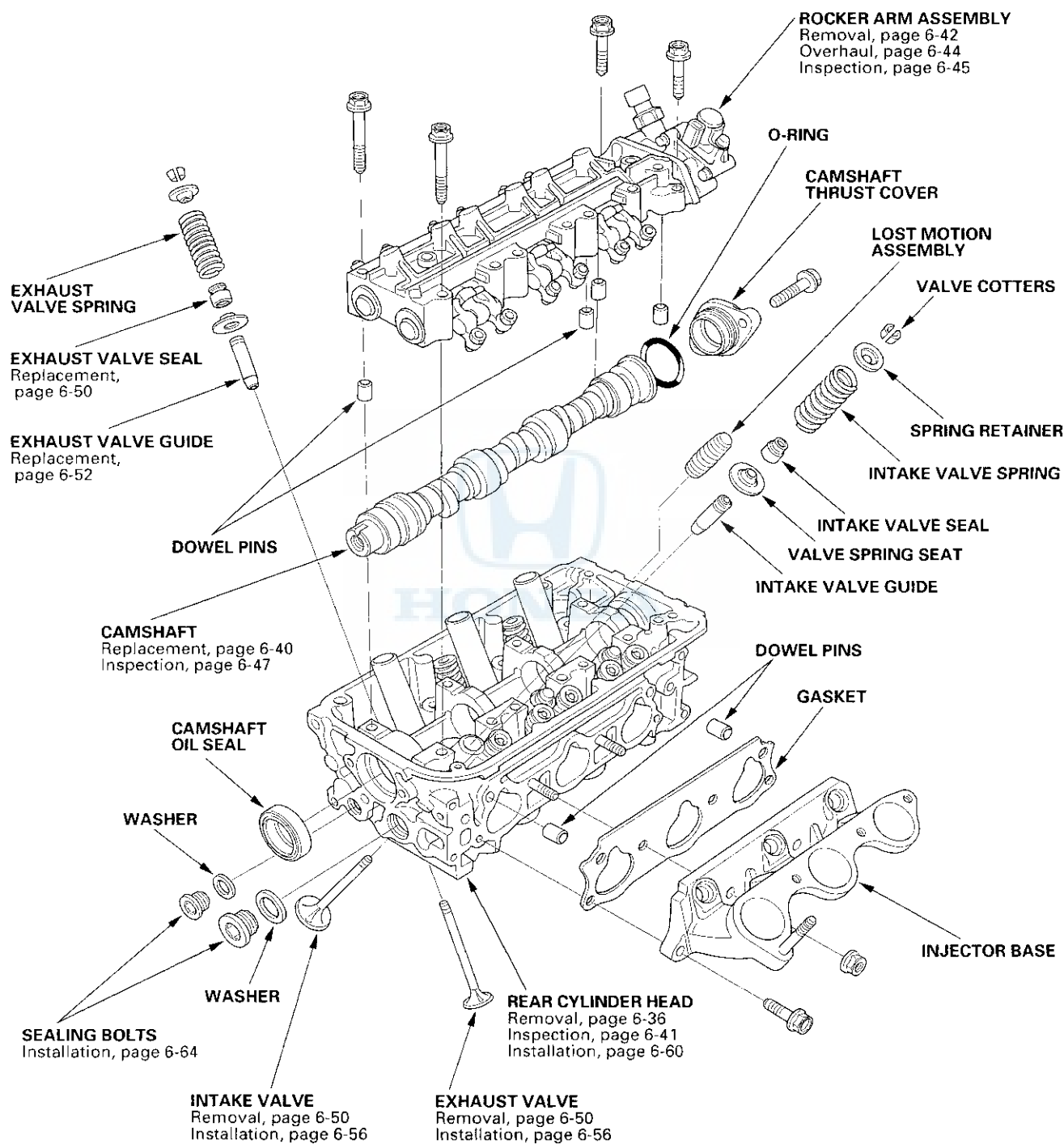


(cont'd)

Cylinder Head

Component Location Index (cont'd)

REAR:

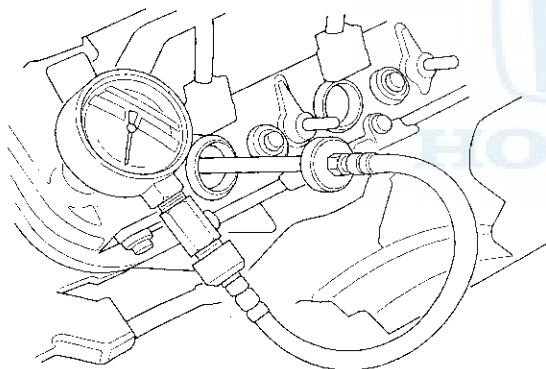




Engine Compression Inspection

NOTE: After this inspection, you must reset the powertrain control module (PCM), otherwise the PCM will continue to stop the injectors from functioning. Select PCM reset using the Honda Diagnostic System (HDS) (see page 11-4).

1. Warm up the engine to normal operating temperature (cooling fan comes on).
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (see page 11-3).
4. On the HDS, select PGM-FI, INSPECTION, and then ALL INJECTORS OFF.
5. Remove the six ignition coils (see page 4-22).
6. Remove the six spark plugs.
7. Attach the compression gauge to the spark plug hole.



8. Open the throttle fully, then crank the engine with the starter motor, and measure the compression.

Compression Pressure:

Above 930 kPa (9.5 kgf/cm², 135 psi)

9. Measure the compression on the remaining cylinders.

Maximum Variation:

Within 200 kPa (2.0 kgf/cm², 28 psi)

10. If the compression is not within specifications, check the following items, then remeasure the compression.
 - Damaged or worn valves and seats
 - Damaged cylinder head gaskets
 - Damaged or worn piston rings
 - Damaged or worn piston and cylinder bore
11. Select PCM reset (see page 11-4) to cancel the ALL INJECTORS OFF function on the HDS.

Cylinder Head

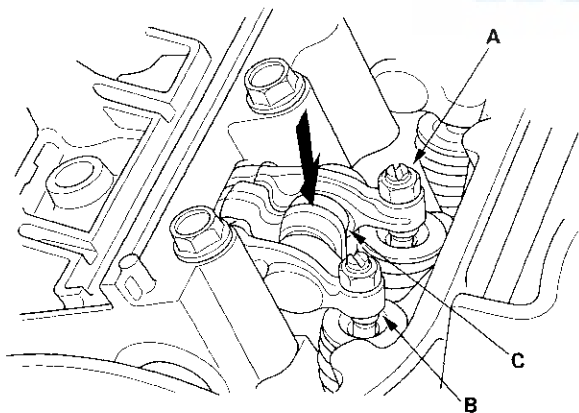
VTEC Rocker Arm Test

Special Tools Required

Air pressure regulator 07AAJ-PNAA100

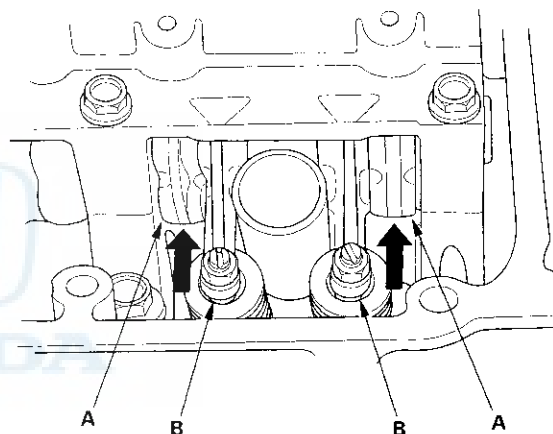
1. Start the engine and let it run for 5 minutes, then turn off the ignition switch.
2. Remove the rear cylinder head cover (see page 6-32).
3. Set the No. 1 piston at top dead center (TDC) (see step 2 on page 6-10).
4. Push on the intake secondary rocker arm (C) for the No. 1 cylinder. Make sure that the intake primary rocker arm A and intake primary rocker arm B are mechanically connected by the pistons and that the intake secondary rocker arm does not move when pushed manually.

- If the intake secondary rocker arm moves independently, remove the intake primary rocker arm A, intake primary rocker arm B, and intake secondary rocker arm as an assembly, and check that the pistons in the rocker arms move smoothly. If any intake rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly, and retest.
- If the intake secondary rocker arm does not move, go to step 5.



5. Push on the exhaust secondary rocker arms (A) for the No. 1 cylinder. Make sure that the exhaust primary rocker arm (B) is mechanically connected by the pistons and that the exhaust secondary rocker arm does not move when pushed manually.

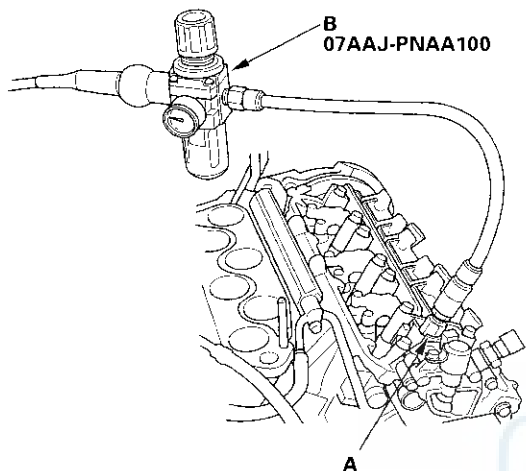
- If the exhaust secondary rocker arm moves independently, remove the exhaust primary rocker arm and exhaust secondary rocker arm as an assembly, and check that the pistons in the rocker arms move smoothly. If any exhaust rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly, and retest.
- If the exhaust secondary rocker arm does not move, go to step 6.



6. Repeat steps 4 and 5 for No. 2 and No. 3 cylinders with each piston at TDC. When the rocker arms pass the test, go to step 7.
7. Check that the air pressure on the shop air compressor gauge indicates over 200 kPa (2.0 kgf/cm², 29 psi).
8. Inspect the valve clearance (see page 6-10).



9. Set the No. 1 piston at top dead center (TDC) (see step 2 on page 6-10).
10. Install the adapter (10 x 1.0 mm) (A) to the inspection hole, then connect the air pressure regulator (B).

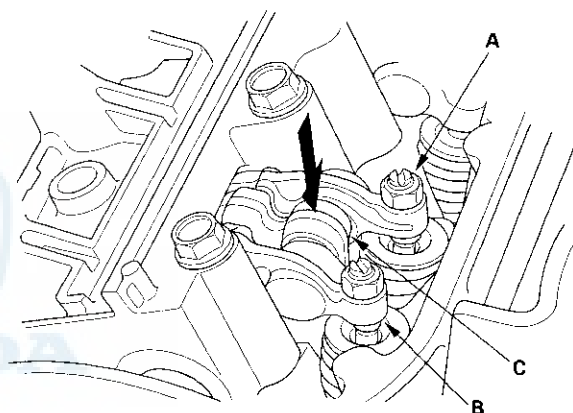


11. Loosen the valve on the regulator, and apply the specified air pressure.

Specified Air Pressure:
200 kPa (2.0 kgf/cm², 28 psi)

12. With the specified air pressure applied, push on the intake secondary rocker arm (C) for the No. 1 cylinder. The intake secondary rocker arm should move independently of the intake primary rocker arm A and intake primary rocker arm B.

- If the intake secondary rocker arm does not move independently, remove the intake primary rocker arm A, intake primary rocker arm B, and intake secondary rocker arm as an assembly, and check that the pistons in the rocker arms move smoothly. If any intake rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly, and retest.
- If the intake secondary rocker arm moves freely, go to step 13.

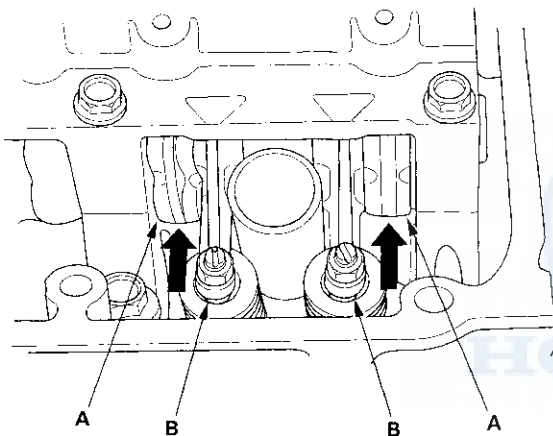


(cont'd)

Cylinder Head

VTEC Rocker Arm Test (cont'd)

13. With the specified air pressure applied, push on the exhaust secondary rocker arms (A) for the No. 1 cylinder. The exhaust secondary rocker arm should move independently of the exhaust primary rocker arm (B).
- If the exhaust secondary rocker arm does not move independently, remove the exhaust primary rocker arm and exhaust secondary rocker arm as an assembly, and check that the pistons in the rocker arms move smoothly. If any exhaust rocker arm needs replacing, replace the primary and secondary rocker arms as an assembly, and retest.
 - If the exhaust secondary rocker arm moves freely, go to step 14.

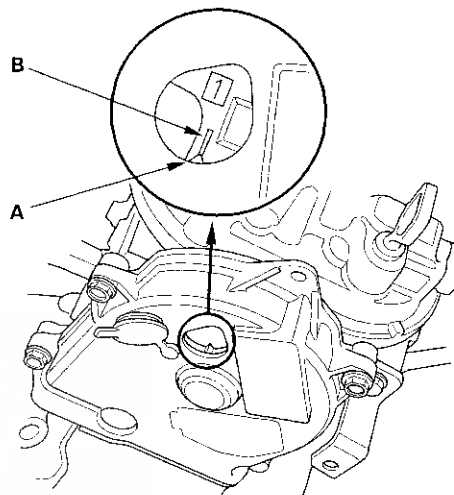


14. Repeat step 12 and 13 for No. 2 and No. 3 cylinders with each piston at TDC. When the rocker arms pass the test, go to step 15.
15. Remove the air pressure regulator and adapter.
16. Install the rear cylinder head cover (see page 6-34).

Valve Clearance Adjustment

NOTE: Adjust the valves only when the cylinder head temperature is less than 100 °F (38 °C).

1. Remove the cylinder head covers (see page 6-32).
2. Set the No. 1 piston at top dead center (TDC). Align the pointer (A) on the front upper cover with the No. 1 piston TDC mark (B) on the front camshaft pulley.





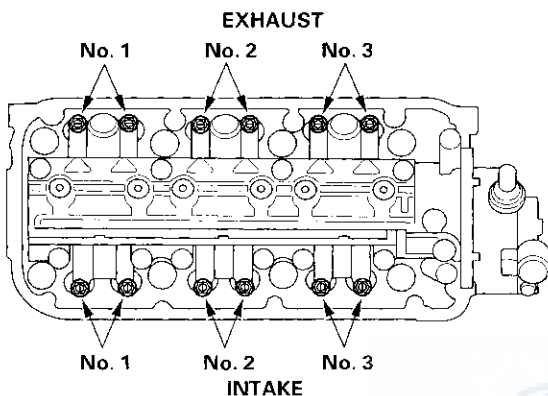
3. Select the correct thickness feeler gauge for the valves you're going to check.

Valve Clearance

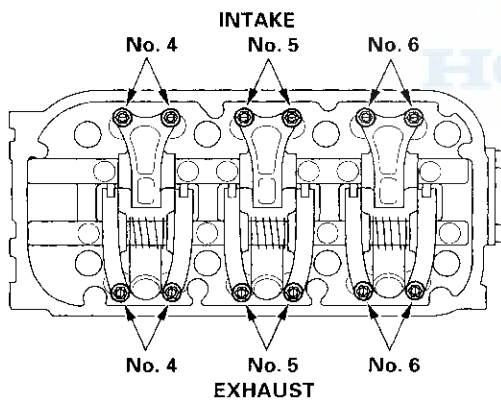
Intake: 0.20—0.24 mm (0.008—0.009 in.)

Exhaust: 0.28—0.32 mm (0.011—0.013 in.)

REAR:

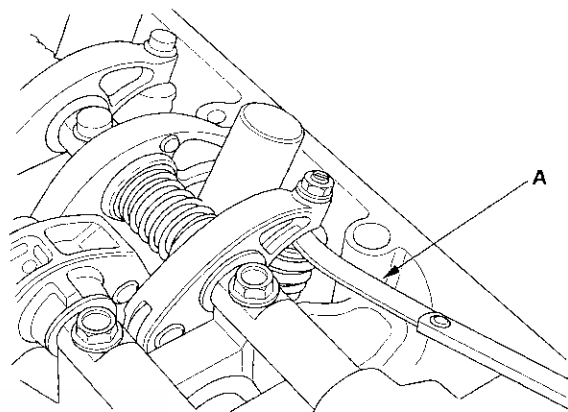


FRONT:

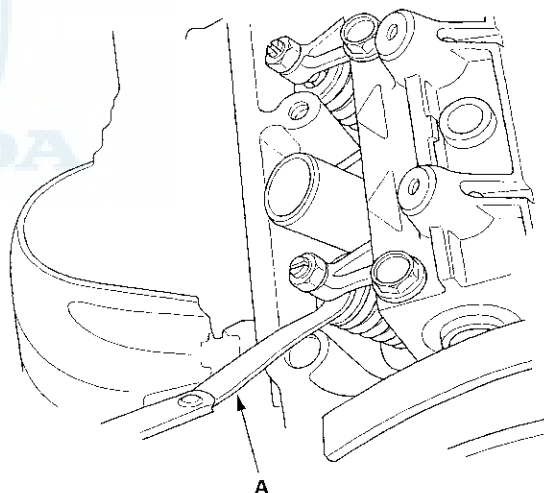


4. Insert the feeler gauge (A) between the adjusting screw and the end of the valve stem on the No. 1 cylinder, and slide it back and forth; you should feel a slight amount of drag.

FRONT:



REAR:



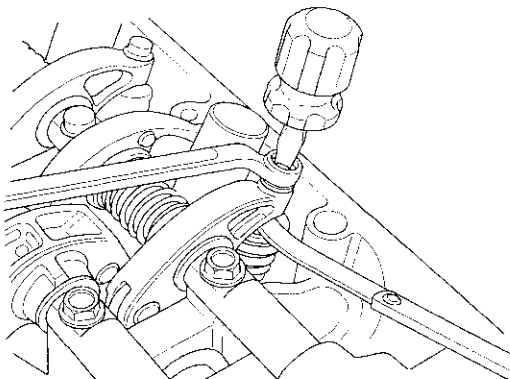
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Cylinder Head

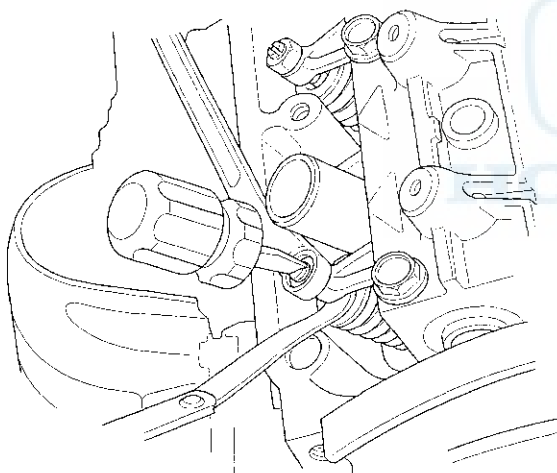
Valve Clearance Adjustment (cont'd)

5. If you feel too much or too little drag, loosen the locknut, and turn the adjusting screw until the drag on the feeler gauge is correct.

FRONT:



REAR:



6. While holding the adjusting screw with the screw driver, tighten the locknut and recheck the clearance. Repeat the adjustment, if necessary.

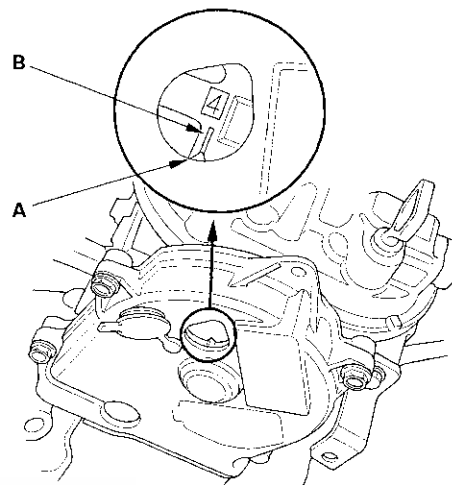
Specified Torque

Front: 14 N·m (1.4 kgf·m, 10 lbf·ft)

Apply new engine oil to the nut threads.

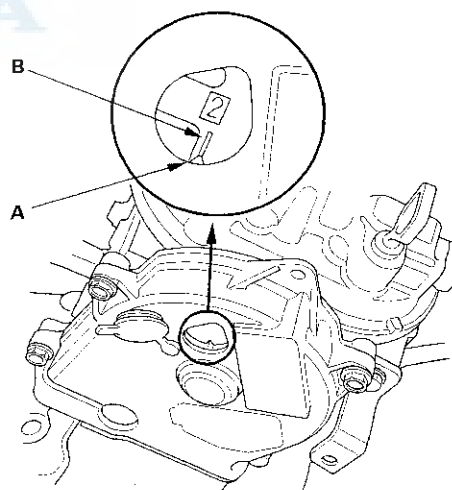
Rear: 20 N·m (2.0 kgf·m, 14 lbf·ft)

7. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 4 piston TDC mark (B) on the front camshaft pulley.



8. Check and, if necessary, adjust the valve clearance on the No. 4 cylinder.

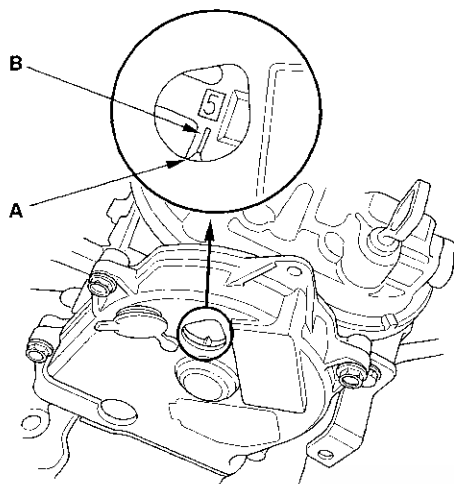
9. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 2 piston TDC mark (B) on the front camshaft pulley.



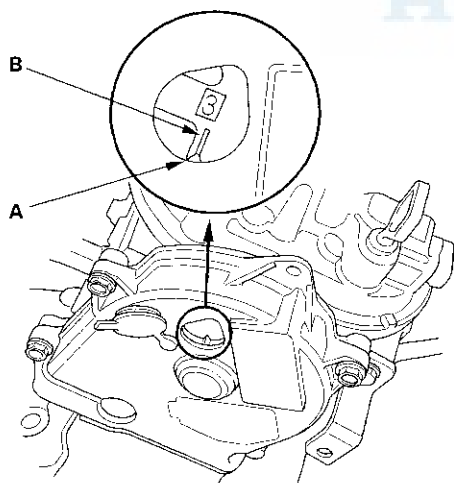
10. Check and, if necessary, adjust the valve clearance on the No. 2 cylinder.



11. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 5 piston TDC mark (B) on the front camshaft pulley.

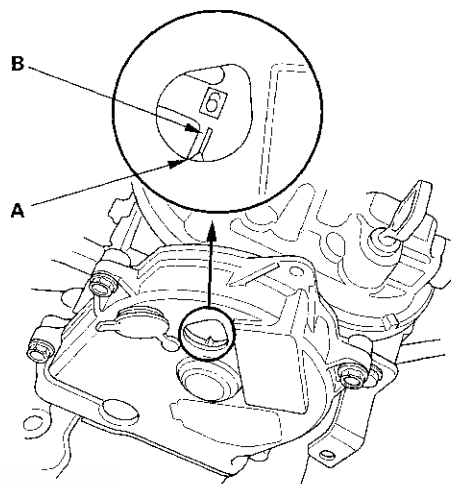


12. Check and, if necessary, adjust the valve clearance on the No. 5 cylinder.
13. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 3 piston TDC mark (B) on the front camshaft pulley.



14. Check and, if necessary, adjust the valve clearance on the No. 3 cylinder.

15. Rotate the crankshaft clockwise. Align the pointer (A) on the front upper cover with the No. 6 piston TDC mark (B) on the front camshaft pulley.



16. Check and, if necessary, adjust the valve clearance on the No. 6 cylinder.
17. Install the cylinder head covers (see page 6-33).

Cylinder Head

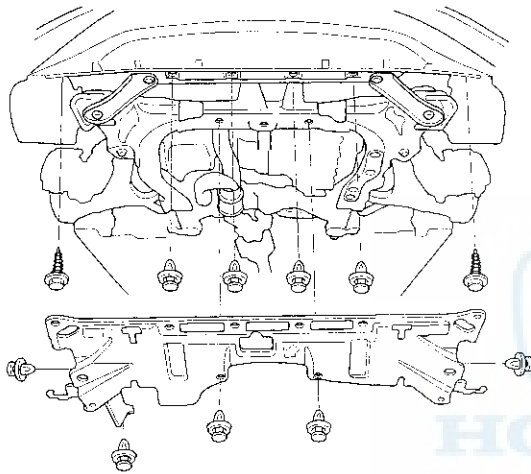
Crankshaft Pulley Removal and Installation

Special Tools Required

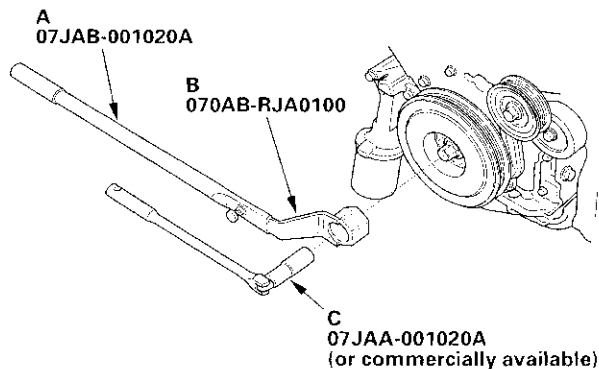
- Holder handle 07JAB-001020A
- Crankshaft pulley holder 070AB-RJA0100
- Socket, 19 mm 07JAA-001020A, or a commercially available 19 mm socket

Removal

1. Raise the vehicle on the hoist to full height.
2. Remove the right front wheel.
3. Remove the splash shield.



4. Remove the A/C compressor belt (see page 21-100).
5. Hold the pulley with the holder handle (A) and crankshaft pulley holder (B).

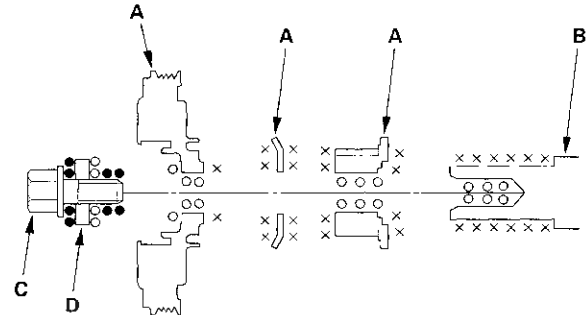


6. Remove the bolt with a heavy duty 19 mm socket (C) and breaker bar, then remove the crankshaft pulley.

Installation

1. Remove any oil or clean the pulleys (A), crankshaft (B), bolt (C), and washer (D). Lubricate new engine oil as shown.

- ×: Remove any oil
○: Clean
●: Lubricate with new engine oil

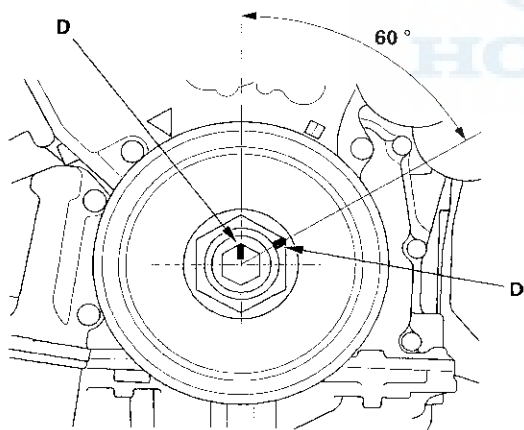
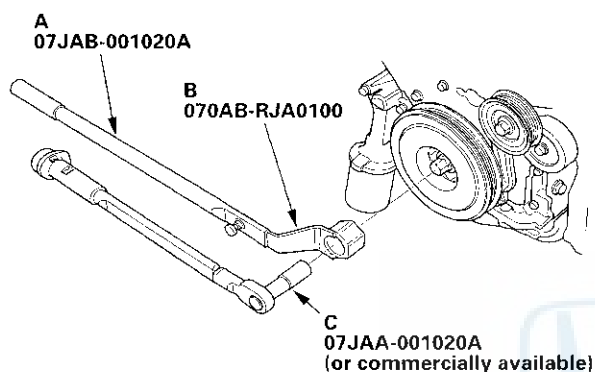




Timing Belt Inspection

2. Install the crankshaft pulley, and tighten the bolt. Do not use an impact wrench.

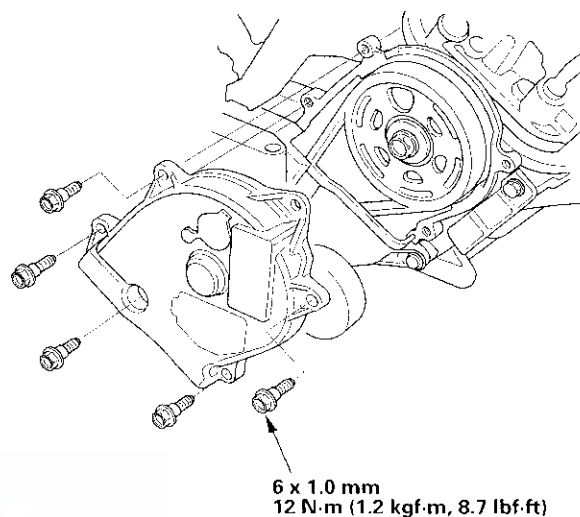
- 1 Hold the pulley with the holder handle (A) and crankshaft pulley holder (B), then tighten the bolt to 64 N·m (6.5 kgf·m, 47 lbf·ft) with a torque wrench and a 19 mm socket (C).
- 2 Mark (D) the bolt head and crankshaft pulley as shown, then tighten the bolt an additional 60° (The mark on the bolt head lines up with the mark on the crankshaft pulley).



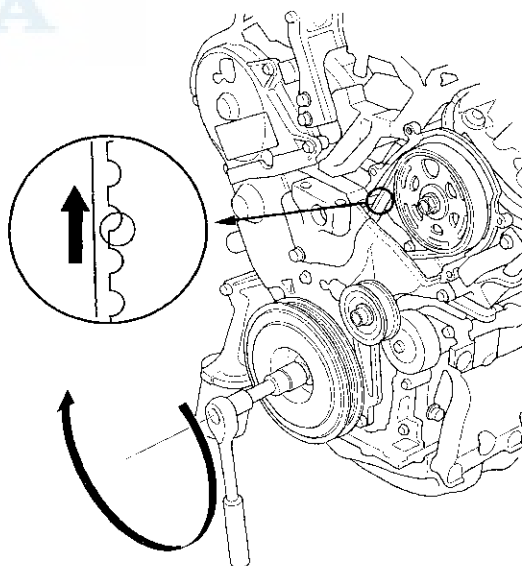
3. Install the A/C compressor belt (see page 21-100).
4. Install the splash shield.
5. Install the right front wheel.

1. Remove the intake manifold cover (see step 11 on page 5-3).

2. Remove the front upper cover.



3. Inspect the timing belt for cracks and oil or coolant soaking. Replace the belt if it is cracked, or is oil or coolant soaked. Remove any oil or solvent that gets on the belt.



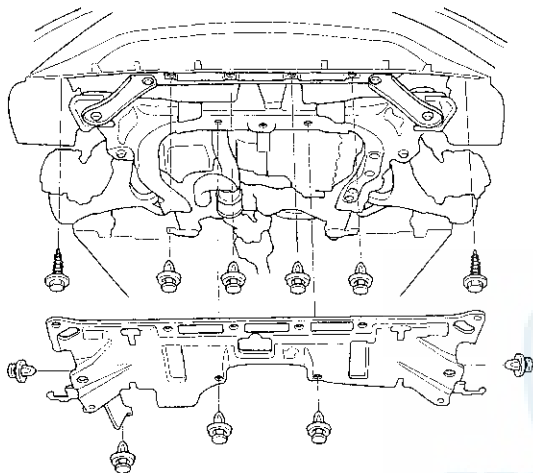
Cylinder Head

Timing Belt Removal

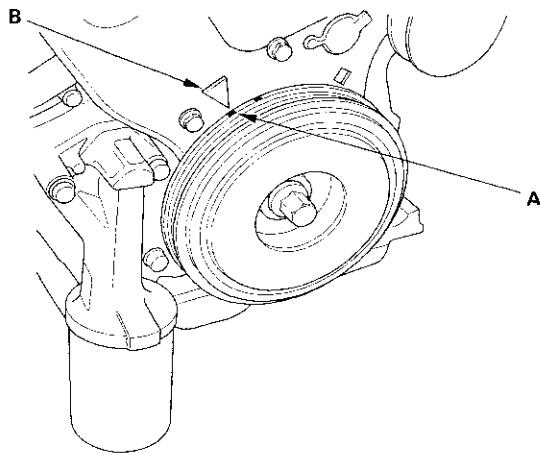
Special Tools Required

Engine support hanger, A and Reds AAR-T-12566 (available through Honda Tool and Equipment program, 888-424-6857)

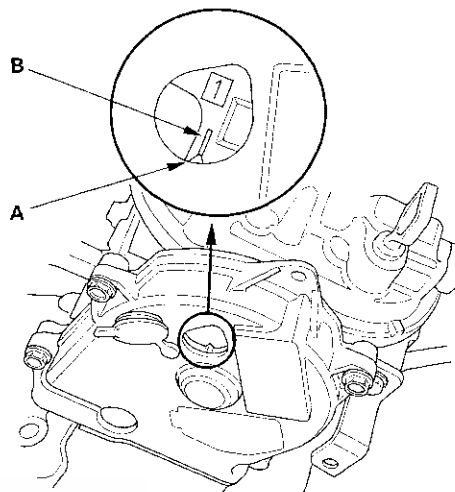
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the right front wheel.
3. Remove the splash shield.



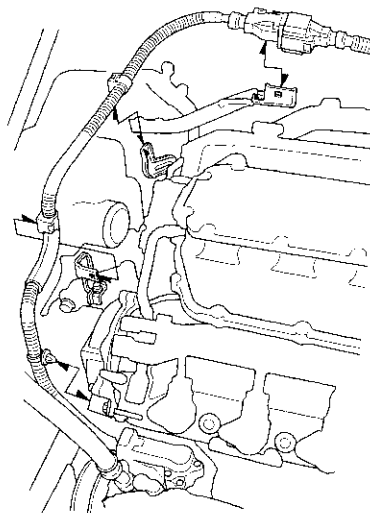
4. Turn the crankshaft so its white mark (A) lines up with the pointer (B).



5. Check that the No. 1 piston top dead center (TDC) mark (A) on the front camshaft pulley and the pointer (B) on the front upper cover are aligned.

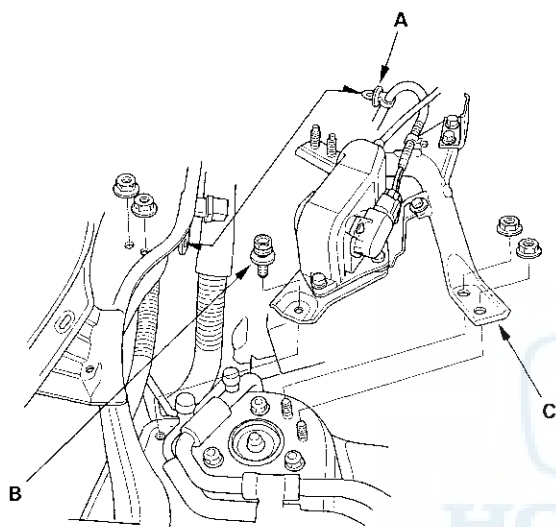


6. Remove the A/C compressor belt (see page 21-100).
7. Remove the A/C compressor belt auto-tensioner (see page 21-102).
8. Remove the crankshaft pulley (see page 6-14).
9. Remove the front grille cover (see step 1 on page 20-111).
10. Remove the A/C compressor motor power cable clamps.

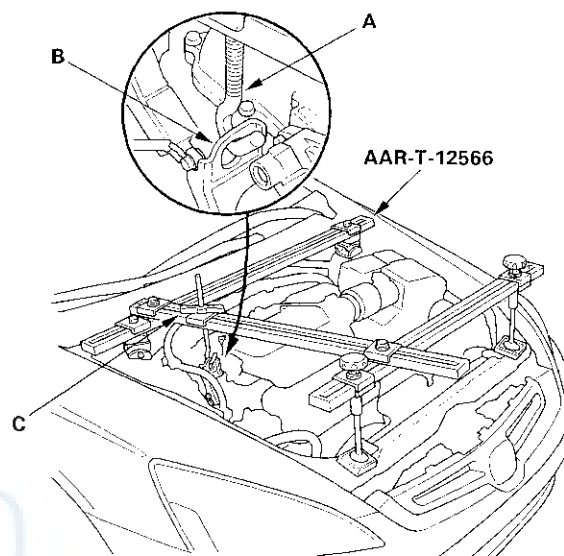




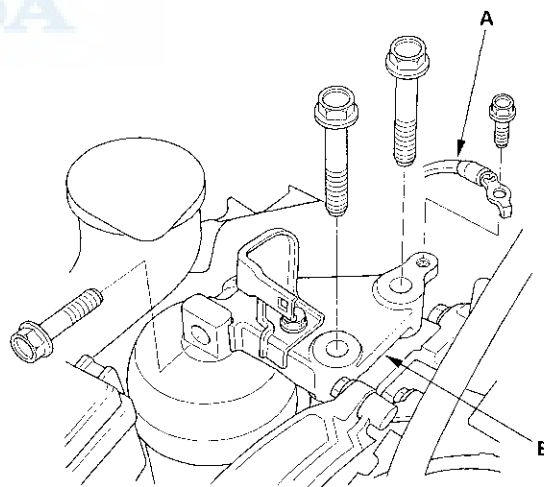
11. Remove the right side windshield wiper arm (see page 22-221).
12. Remove the passenger's cowl cover (see page 20-113).
13. Remove the throttle cable clamp (A) and accelerator pedal position (APP) sensor mounting bolt (B), then remove the right front strut bar (C) from the body.



14. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook (A) to the engine hanger (B). Tighten the wing nut (C) by hand, and support the engine.



15. Remove the ground cable (A), then remove the side engine mount bracket (B).



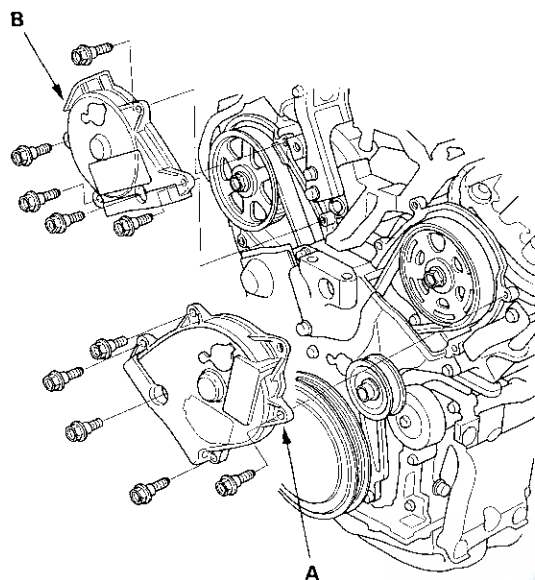
16. Lift up the engine 20 mm (0.7 in.) by turning the wing nut.

(cont'd)

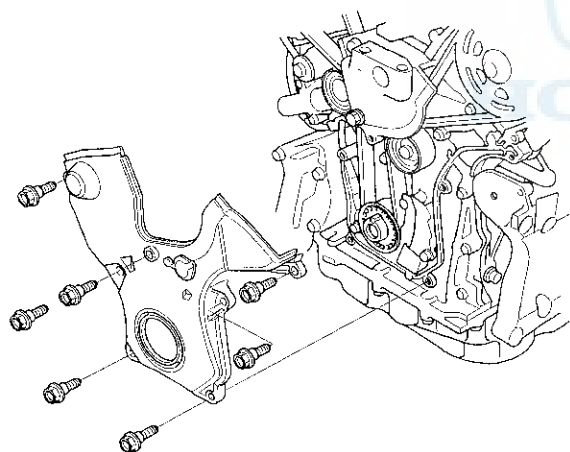
Cylinder Head

Timing Belt Removal (cont'd)

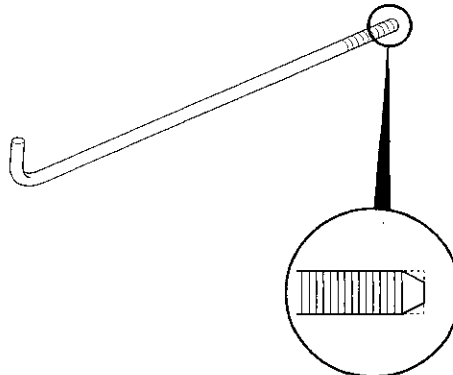
17. Remove the front upper cover (A) and rear upper cover (B).



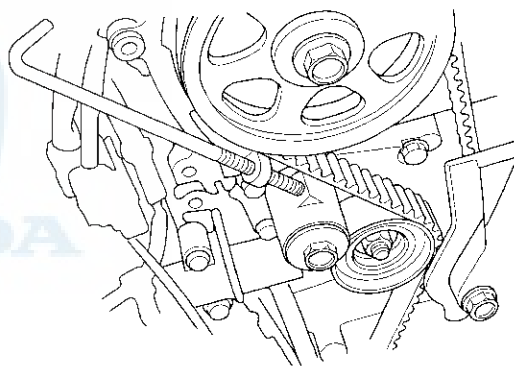
18. Remove the lower cover.



19. Remove one of the battery clamp bolts from the battery tray, and grind the end of it as shown.



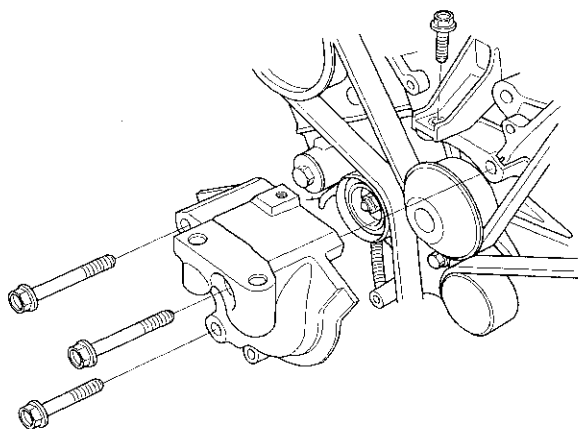
20. Screw the battery clamp bolt in as shown to hold the timing belt adjuster in its current position. Tighten it by hand, do not use a wrench.



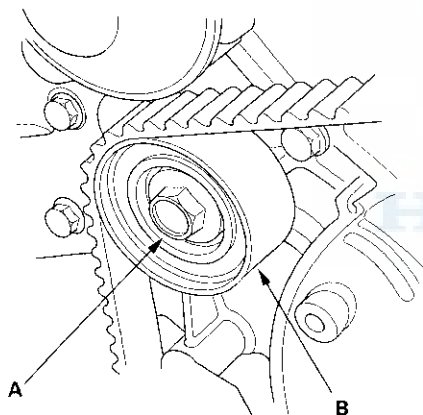


Timing Belt Installation

21. Remove the engine mount bracket.

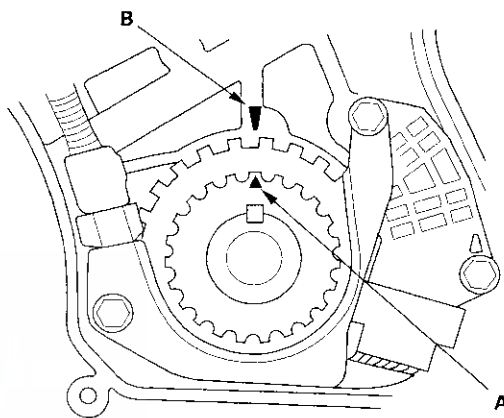


22. Remove the idler pulley bolt (A) and idler pulley (B), then remove the timing belt.



NOTE: The following procedure is for installing a used belt. If you are installing a new belt, refer to the timing belt replacement procedure (see page 6-24).

1. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
2. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.



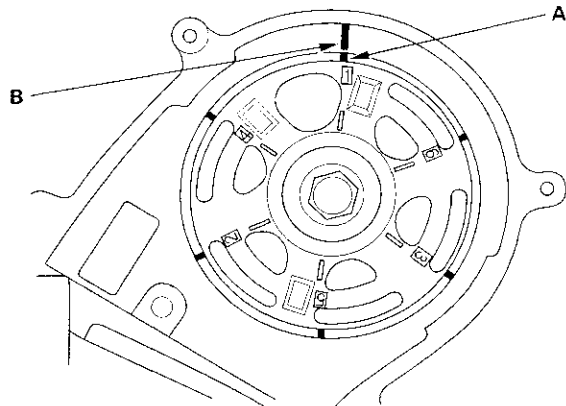
(cont'd)

Cylinder Head

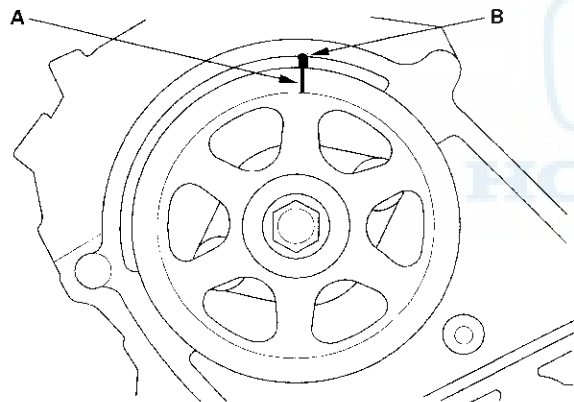
Timing Belt Installation (cont'd)

3. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:

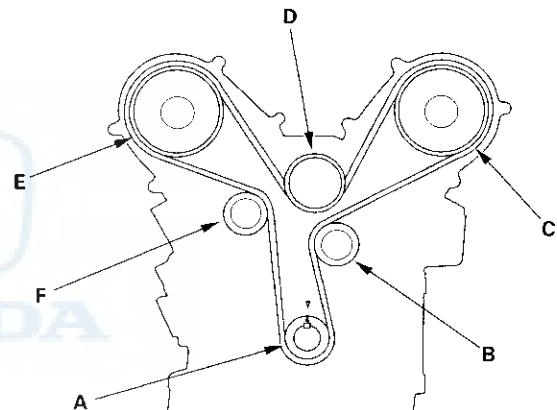


REAR:

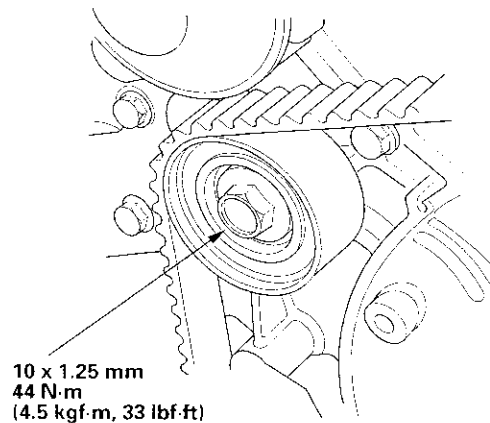


4. Apply liquid thread lock to the idler pulley bolt, then loosely install the idler pulley.
5. If the auto-tensioner has extended and the timing belt cannot be installed, perform the timing belt replacement procedure (see page 6-24).
6. Install the timing belt in a counterclockwise sequence starting with the drive pulley. Take care not to damage the timing belt when installing it.

- 1 Drive pulley (A)
- 2 Idler pulley (B)
- 3 Front camshaft pulley (C)
- 4 Water pump pulley (D)
- 5 Rear camshaft pulley (E)
- 6 Adjusting pulley (F)

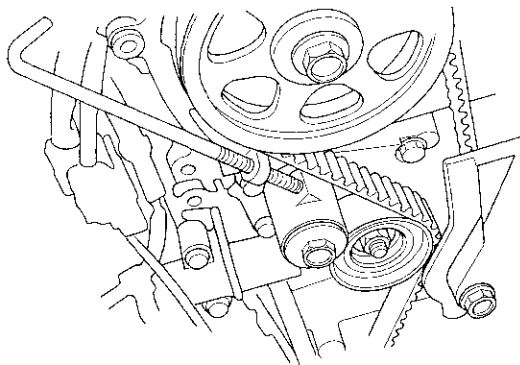


7. Tighten the idler pulley bolt.



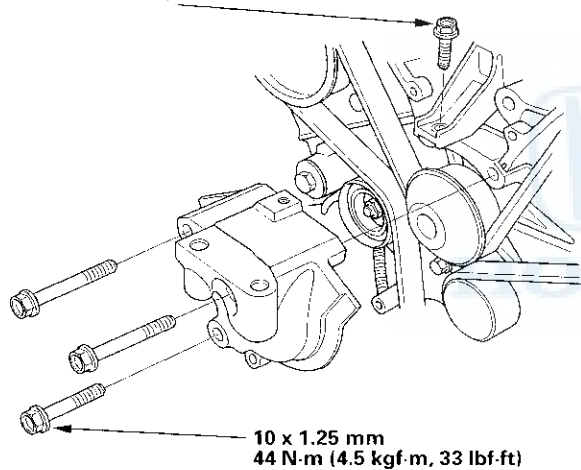


8. Remove the battery clamp bolt from the back cover.

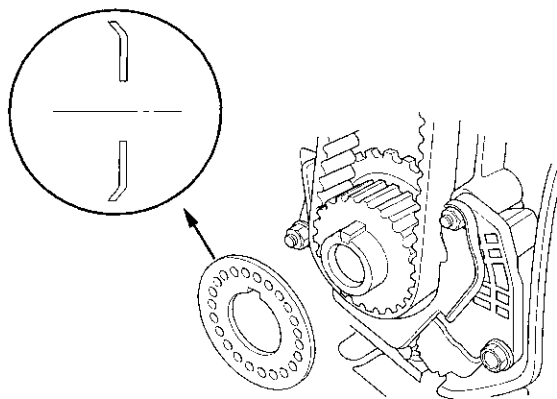


9. Install the engine mount bracket.

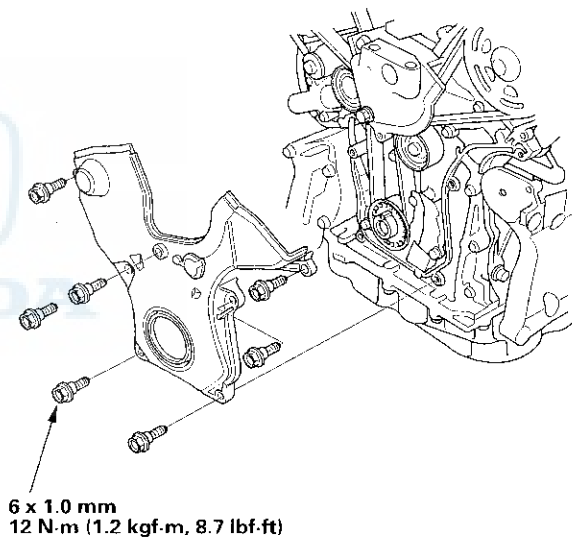
6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)



10. Install the timing belt guide plate as shown.



11. Install the lower cover.

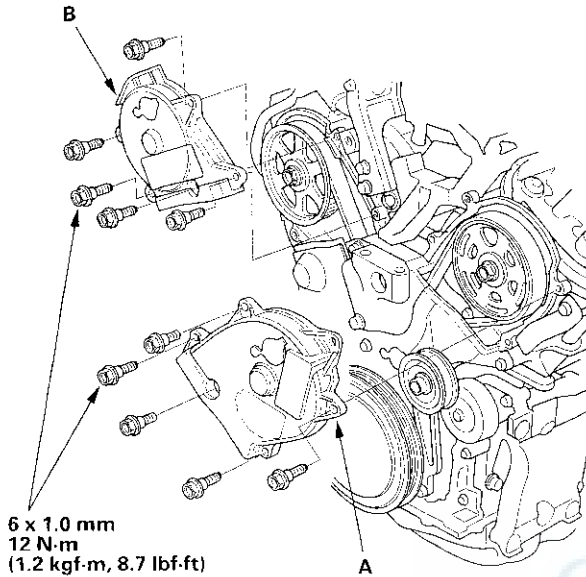


(cont'd)

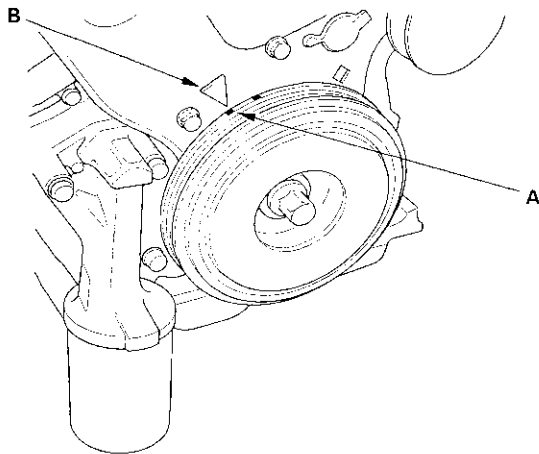
Cylinder Head

Timing Belt Installation (cont'd)

12. Install the front upper cover (A) and rear upper cover (B).



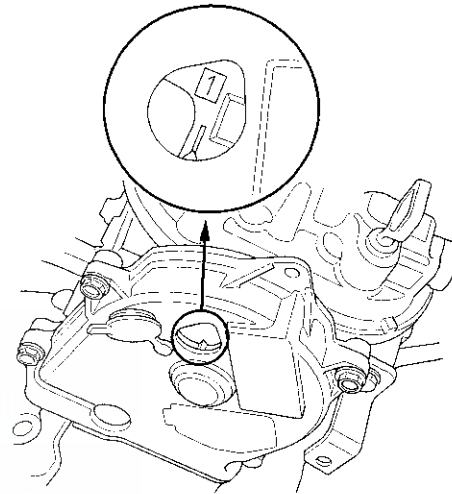
13. Install the crankshaft pulley (see page 6-14).
14. Rotate the crankshaft pulley about five or six turns clockwise so the timing belt positions itself on the pulleys.
15. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).



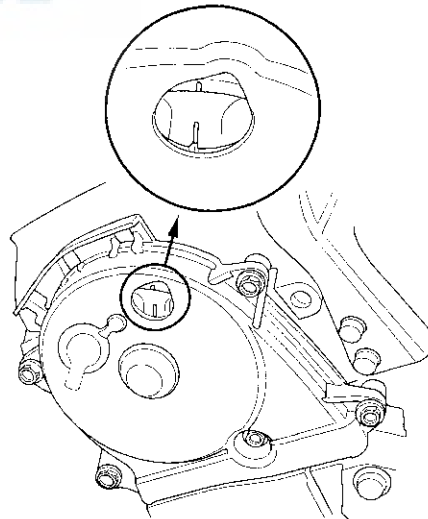
16. Check the camshaft pulley marks.

- If the camshaft pulley marks are at TDC, go to step 17.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 16.

FRONT CAMSHAFT PULLEY:



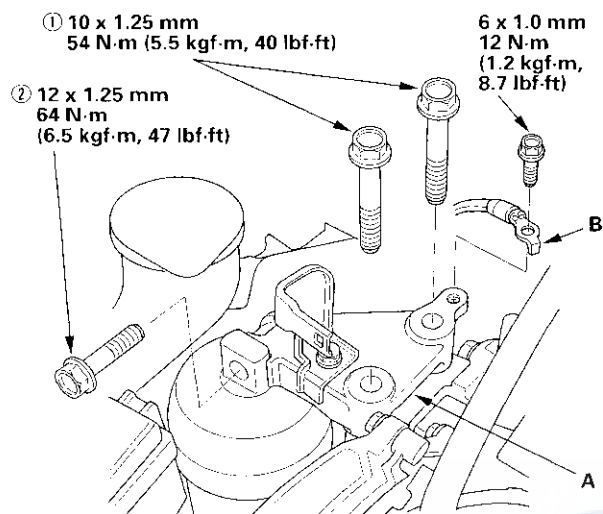
REAR CAMSHAFT PULLEY:





17. Lower the engine to proper position.

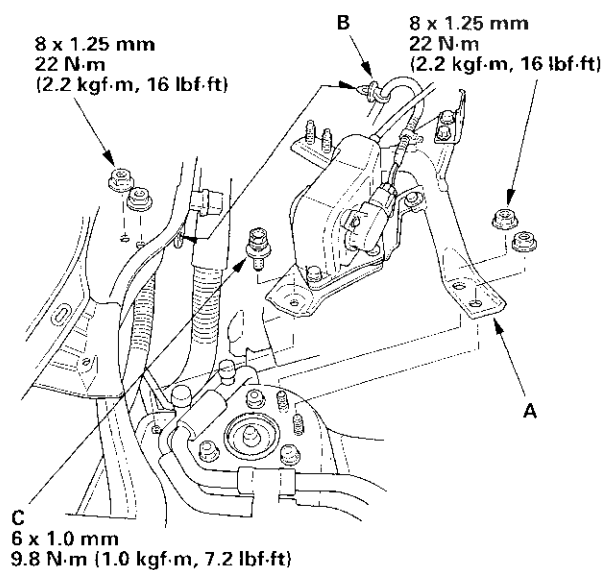
18. Install the side engine mount bracket (A), then tighten the bolts in the numbered sequence shown.



19. Install the ground cable (B).

20. Remove the engine support hanger.

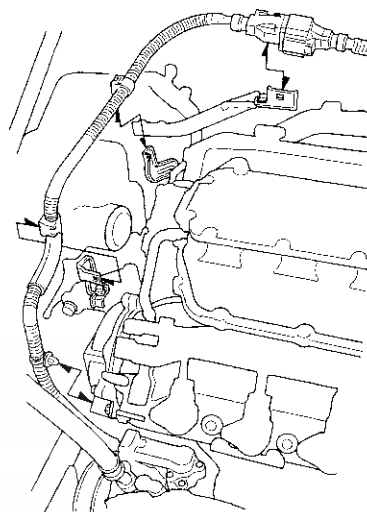
21. Install the right front strut bar (A), then install the throttle cable clamp (B) and accelerator pedal position (APP) sensor mounting bolt (C).



22. Install the passenger's cowl cover (see page 20-113).

23. Install the right side windshield wiper arm (see page 22-221).

24. Install the A/C compressor motor power cable clamps.



25. Install the front grille cover (see step 1 on page 20-111).

26. Install the A/C compressor belt auto-tensioner (see page 21-102).

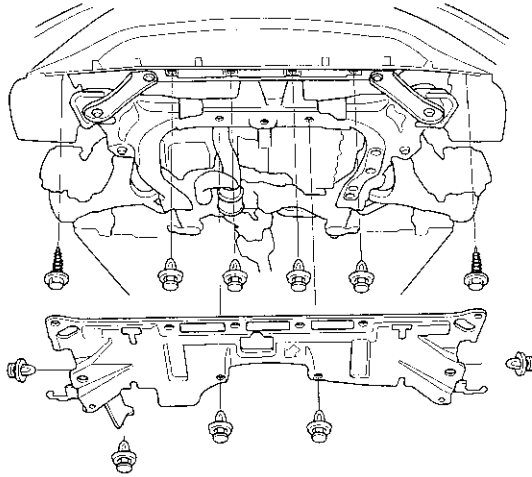
27. Install the A/C compressor belt (see page 21-100).

(cont'd)

Cylinder Head

Timing Belt Installation (cont'd)

28. Install the splash shield.

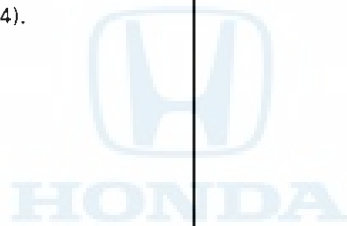
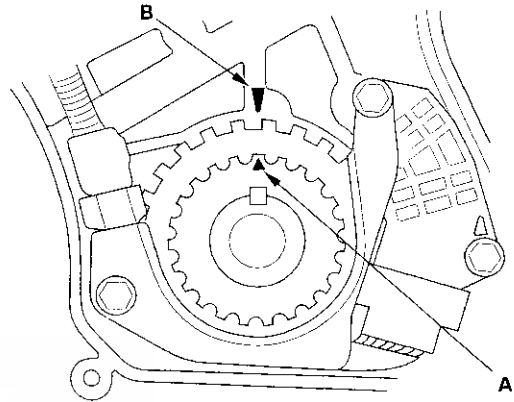


29. Install the right front wheel.

30. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).

Timing Belt Replacement

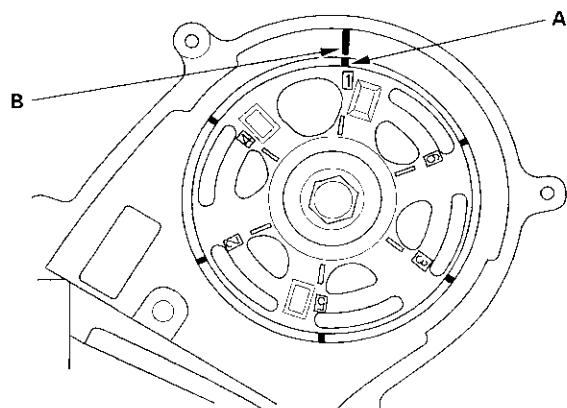
1. Remove the timing belt (see page 6-16).
2. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
3. Set the timing belt drive pulley to TDC by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.



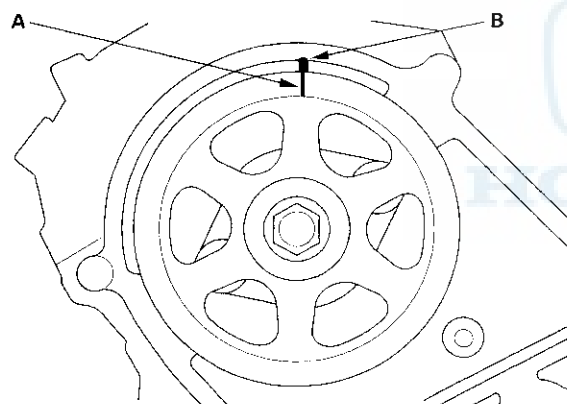


4. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:

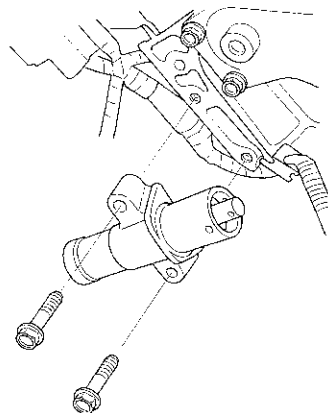


REAR:

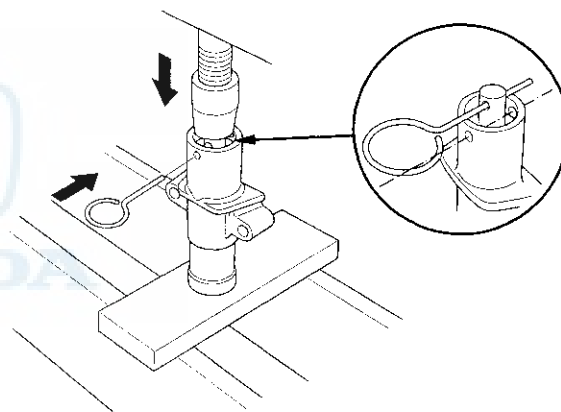


5. Remove the battery clamp bolt from the back cover.

6. Remove the auto-tensioner.



7. Align the holes on the rod and housing of the auto-tensioner.



8. Use a hydraulic press to slowly compress the auto-tensioner. Insert a 2.0 mm (0.08 in.) pin through the housing and the rod.

NOTE: The compression pressure should not exceed 9,800 N (1,000 kgf, 2,200 lbf).

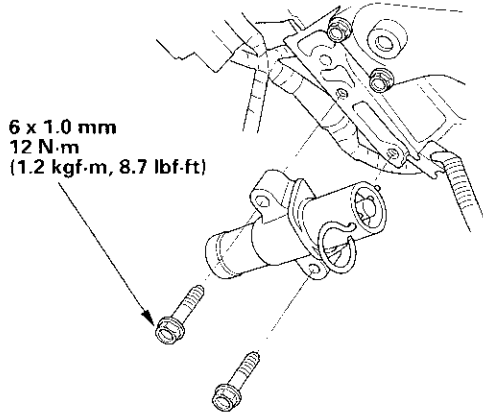
(cont'd)

Cylinder Head

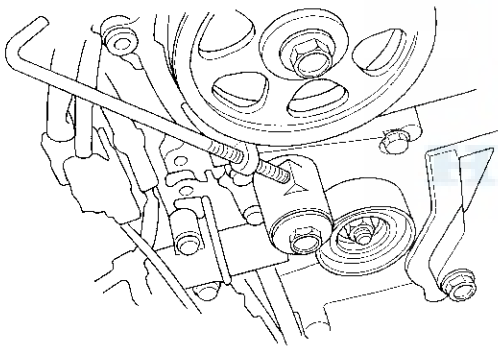
Timing Belt Replacement (cont'd)

9. Install the auto-tensioner.

NOTE: Make sure the pin stays in place.



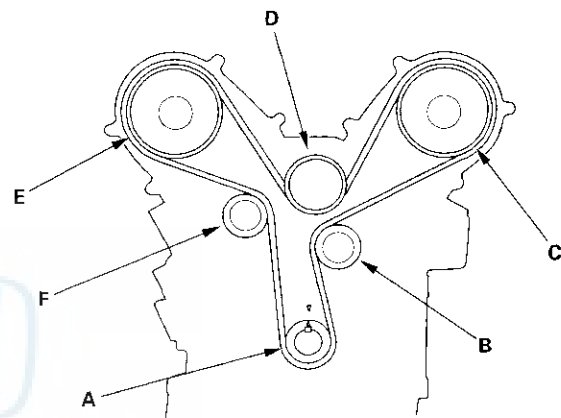
10. Screw the battery clamp bolt in as shown to hold the timing belt adjuster. Tighten it by hand; do not use a wrench.



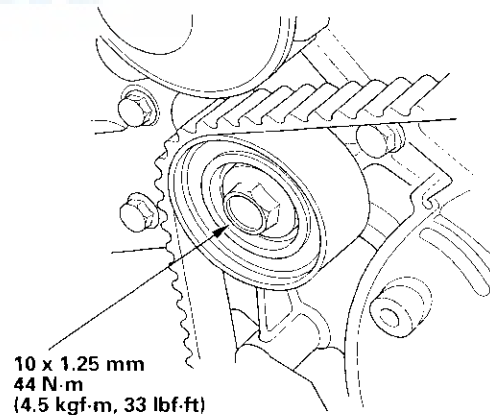
11. Apply liquid thread lock to the idler pulley bolt, then loosely install the idler pulley.

12. Install the timing belt in a counterclockwise sequence starting with the drive pulley.

- 1 Drive pulley (A)
- 2 Idler pulley (B)
- 3 Front camshaft pulley (C)
- 4 Water pump pulley (D)
- 5 Rear camshaft pulley (E)
- 6 Adjusting pulley (F)

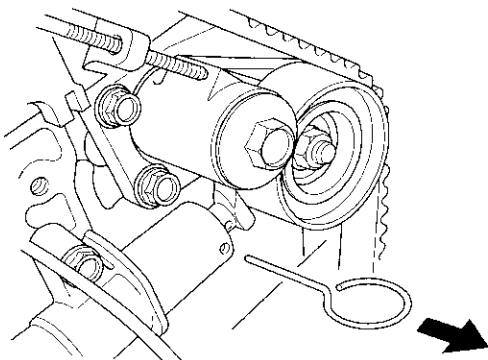


13. Tighten the idler pulley bolt.





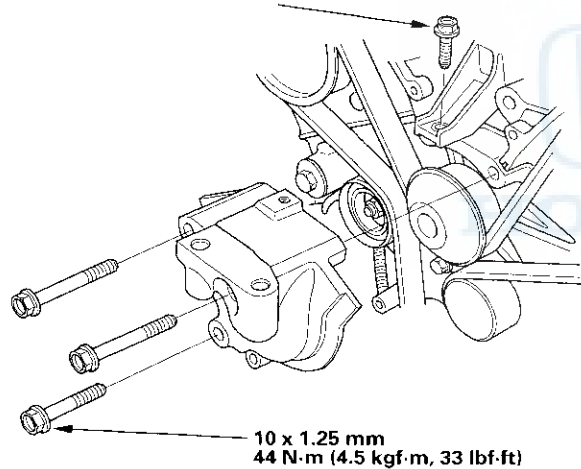
14. Remove the pin from the auto-tensioner.



15. Remove the battery clamp bolt from the back cover.

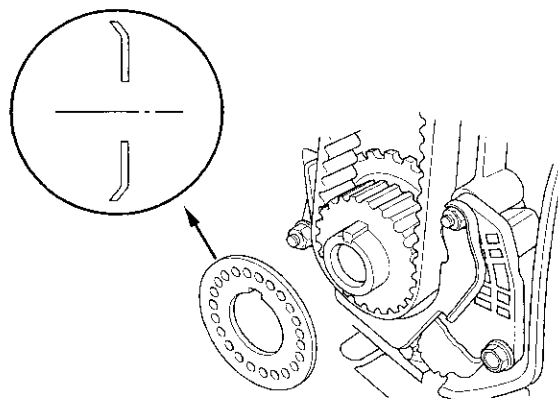
16. Install the engine mount bracket.

6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)



10 x 1.25 mm
44 N·m (4.5 kgf·m, 33 lbf·ft)

17. Install the timing belt guide plate as shown.

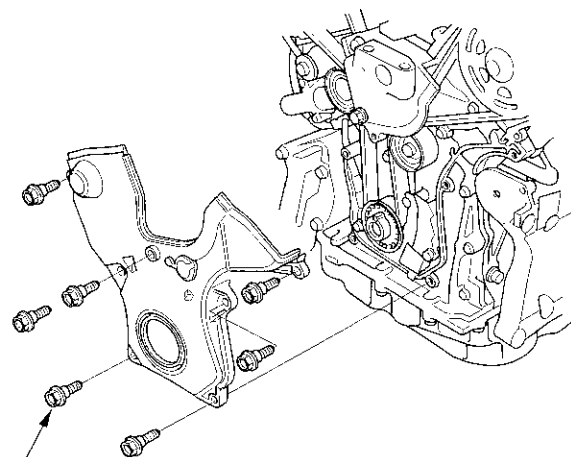


(cont'd)

Cylinder Head

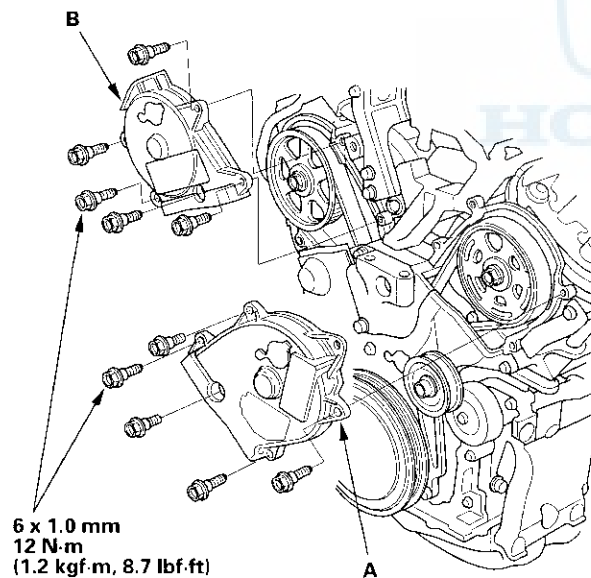
Timing Belt Replacement (cont'd)

18. Install the lower cover.



6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

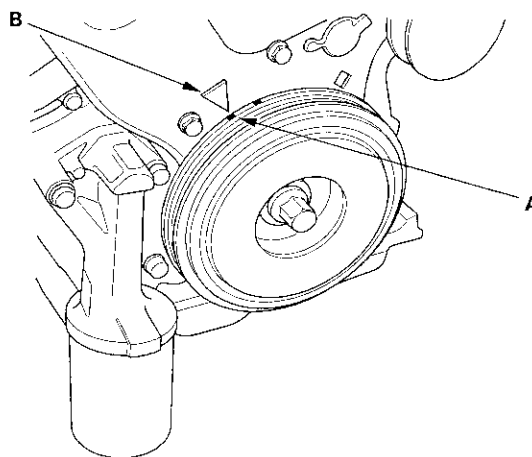
19. Install the front upper cover (A) and rear upper cover (B).



6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)

20. Install the crankshaft pulley (see page 6-14).
21. Rotate the crankshaft pulley about five or six turns clockwise so the timing belt positions itself on the pulleys.

22. Turn the crankshaft pulley so its white mark (A) lines up with the pointer (B).

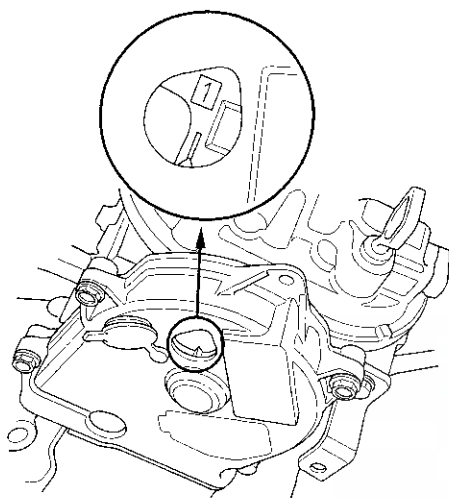




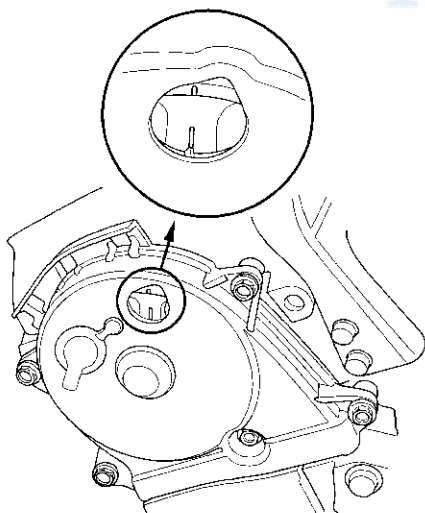
23. Check the camshaft pulley marks.

- If the camshaft pulley marks are at TDC, go to step 24.
- If the camshaft pulley marks are not at TDC, remove the timing belt and repeat steps 2 through 23.

FRONT CAMSHAFT PULLEY:

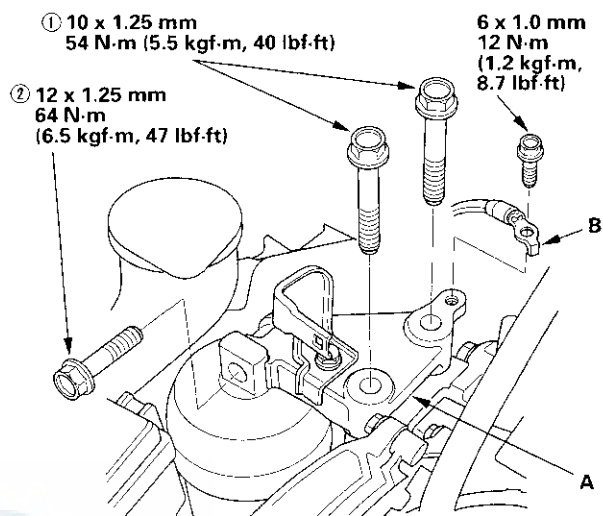


REAR CAMSHAFT PULLEY:



24. Lower the engine to proper position.

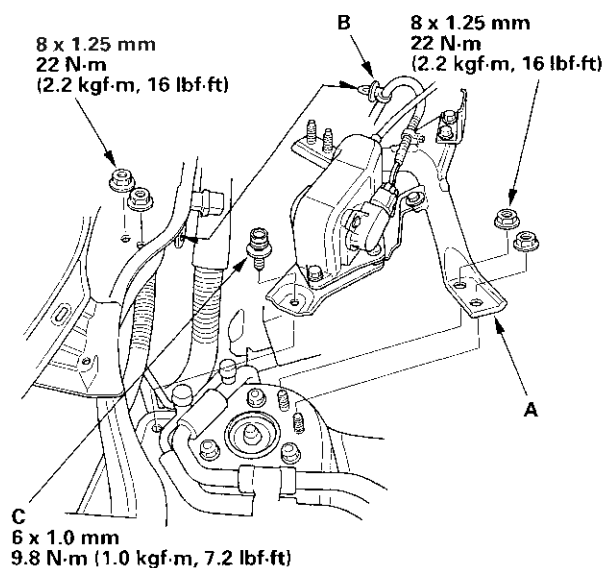
25. Install the side engine mount bracket (A), then tighten the bolts in the numbered sequence shown.



26. Install the ground cable (B).

27. Remove the engine support hanger.

28. Install the right front strut bar (A), then install the throttle cable clamp (B) and accelerator pedal position (APP) sensor mounting bolt (C).

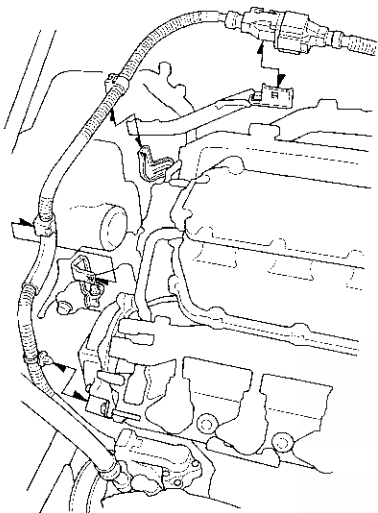


(cont'd)

Cylinder Head

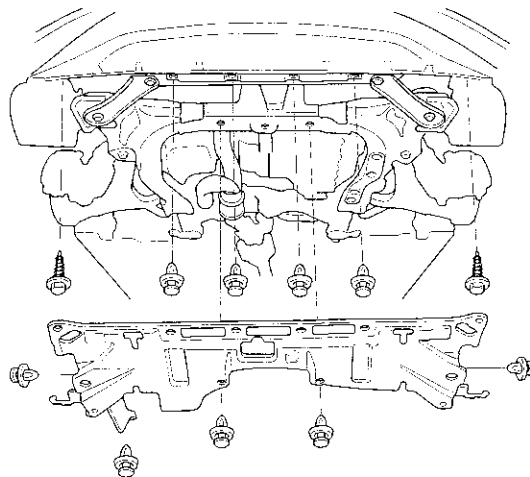
Timing Belt Replacement (cont'd)

- 29. Install the passenger's cowl cover (see page 20-113).
- 30. Install the right side windshield wiper arm (see page 22-221).
- 31. Install the A/C compressor motor power cable clamps.



- 32. Install the front grille cover (see step 1 on page 20-111).
- 33. Install the A/C compressor belt auto-tensioner (see page 21-102).
- 34. Install the A/C compressor belt (see page 21-100).

- 35. Install the splash shield.

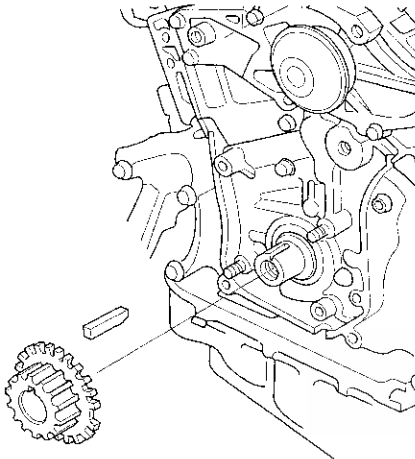


- 36. Install the right front wheel.
- 37. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).



Timing Belt Drive Pulley Replacement

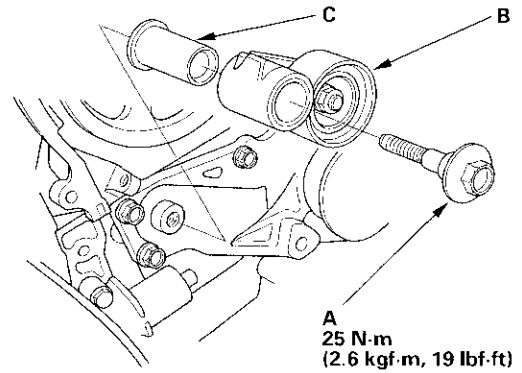
1. Remove the timing belt (see page 6-16).
2. Remove the crankshaft position (CKP) sensor (see page 11-216).
3. Remove the timing belt drive pulley.



4. Install the new timing belt drive pulley.
5. Install the CKP sensor (see page 11-216).
6. Install the timing belt (see page 6-19).

Timing Belt Adjuster Replacement

1. Remove the timing belt (see page 6-16).
2. Remove the bolt (A), then remove the timing belt adjuster (B) and collar (C).



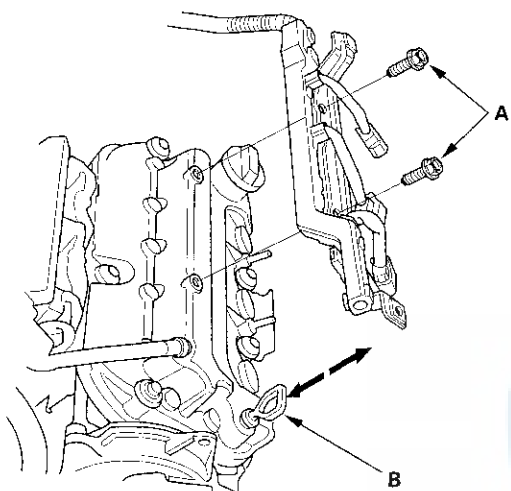
3. Install the timing belt adjuster.
4. Install the timing belt (see page 6-19).

Cylinder Head

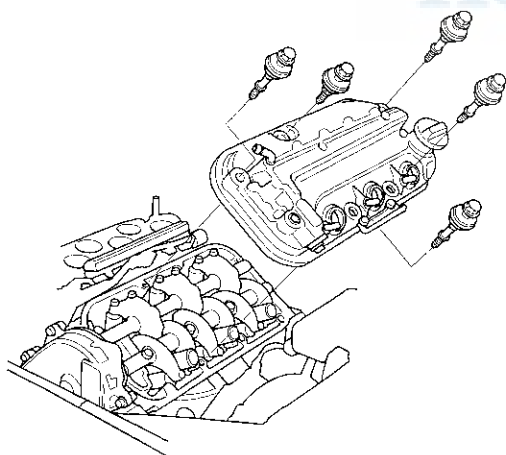
Cylinder Head Cover Removal

FRONT

1. Remove the intake manifold (see page 9-3).
2. Remove the three ignition coils from the front cylinder head (see page 4-22).
3. Remove the two bolts (A) securing the harness holder, and remove the dipstick (B).

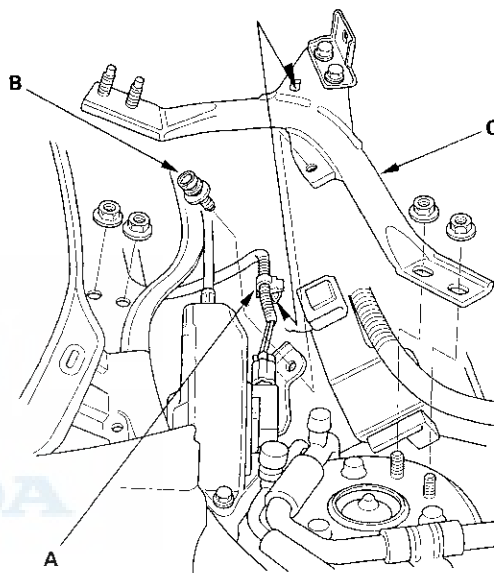


4. Remove the front cylinder head cover.



REAR

1. Remove the right side windshield wiper arm (see page 22-221).
2. Remove the passenger's cowl cover (see page 20-113).
3. Remove the harness clamp (A) and accelerator pedal position (APP) sensor mounting bolt (B), then remove the right front strut bar (C) from the body.

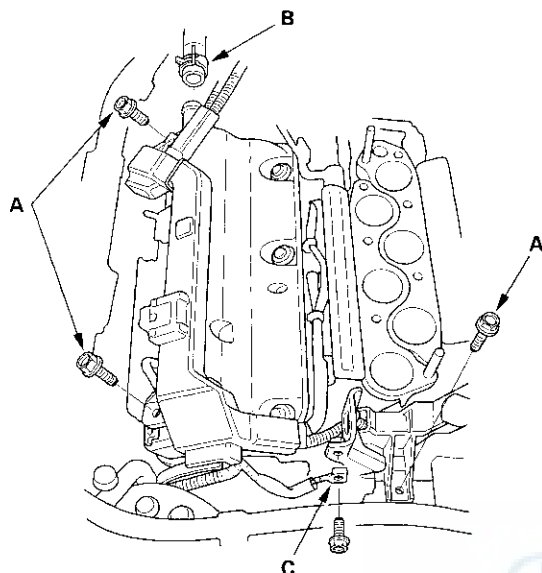


4. Remove the intake manifold (see page 9-3).
5. Remove the three ignition coils from the rear cylinder head (see page 4-22).
6. Disconnect the three injector connectors, VTEC solenoid valve connector, and VTEC oil pressure switch connector from the rear cylinder head.



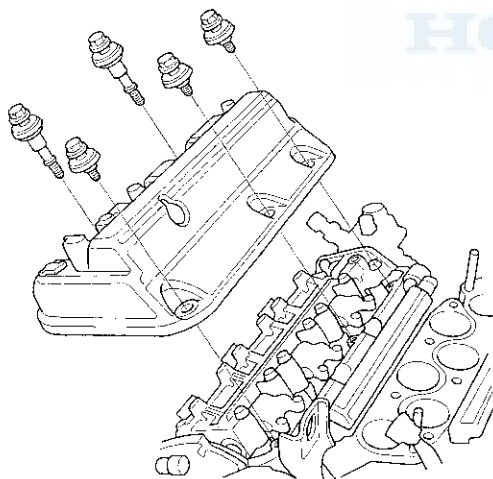
Cylinder Head Cover Installation

7. Remove the three bolts (A) securing the harness holder.



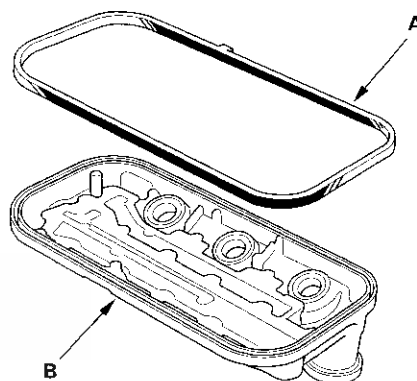
8. Remove the breather hose (B) and ground cable (C).

9. Remove the rear cylinder head cover.

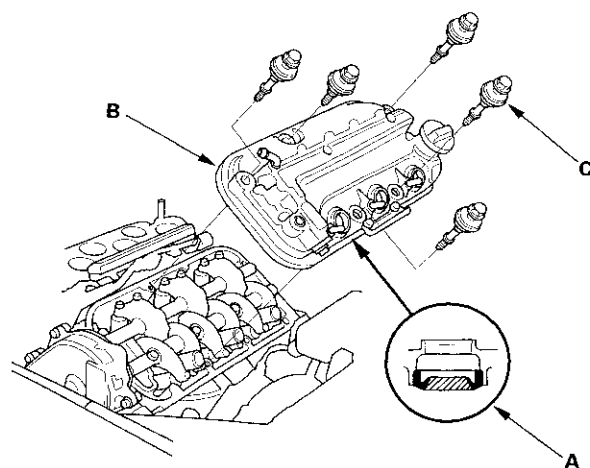


FRONT

1. Check the spark plug seals for damage. If any seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove.
3. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely.



4. Clean the head cover contacting surfaces with a shop towel.
5. Set the spark plug seals (A) on the spark plug tubes, and install the cylinder head cover (B).



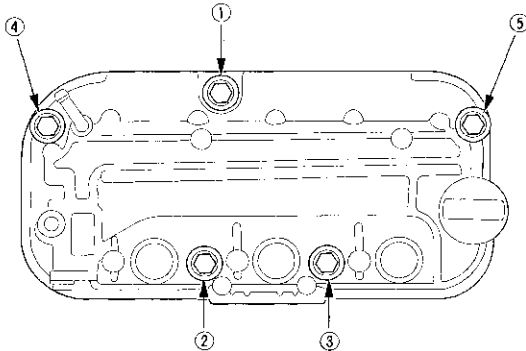
6. Visually check the spark plug seals for damage.
7. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

(cont'd)

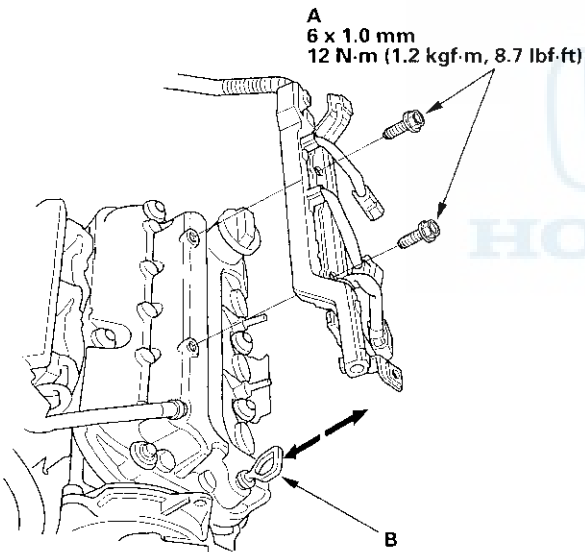
Cylinder Head

Cylinder Head Cover Installation (cont'd)

8. Tighten the bolts in two or three steps. In the final step tighten all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.7 lbf·ft).



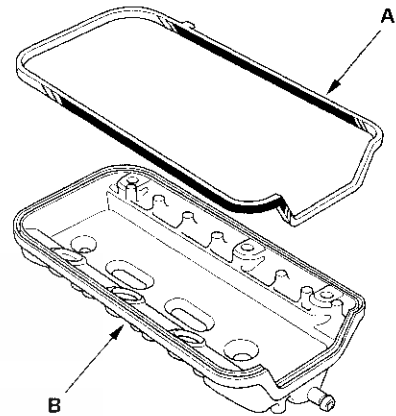
9. Tighten the two bolts (A) securing the harness holder, and install the dipstick (B).



10. Install the three ignition coils to the front cylinder head (see page 4-22).
11. Install the intake manifold (see page 9-5).

REAR

1. Check the spark plug seals for damage. If any seal is damaged, replace it.
2. Thoroughly clean the head cover gasket and the groove.
3. Install the head cover gasket (A) in the groove of the cylinder head cover (B). Make sure the head cover gasket is seated securely.

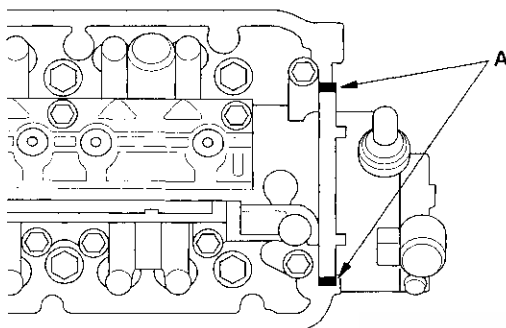


4. Remove all of the old liquid gasket from the rocker shaft holder and cylinder head.
5. Clean the head cover contacting surfaces with a shop towel.

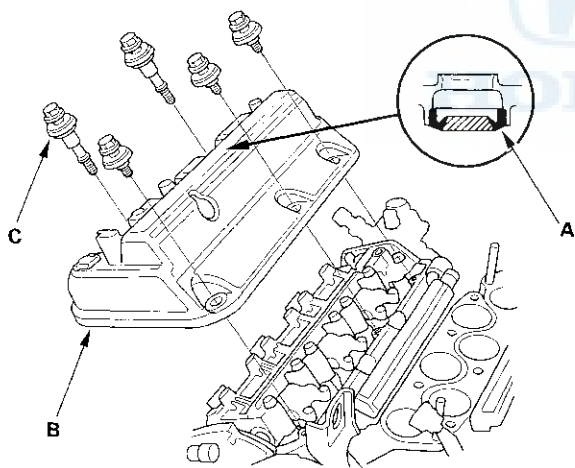


6. Apply liquid gasket, P/N 08717-004, 08718-0001, 08718-0003, or 08718-0009, on the rocker shaft holder mating areas (A).

NOTE: Do not install the parts if 4 minutes or more have elapsed since applying the liquid gasket. Instead, reapply liquid gasket after removing the old residue.

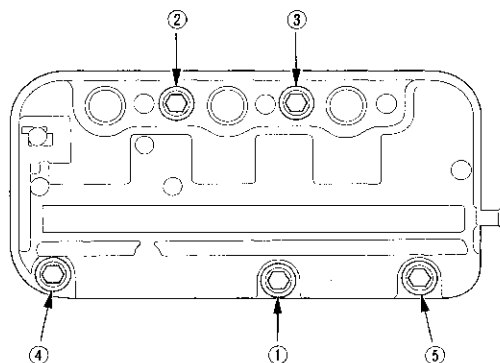


7. Set the spark plug seals (A) on the spark plug tubes, and install the rear cylinder head cover (B).

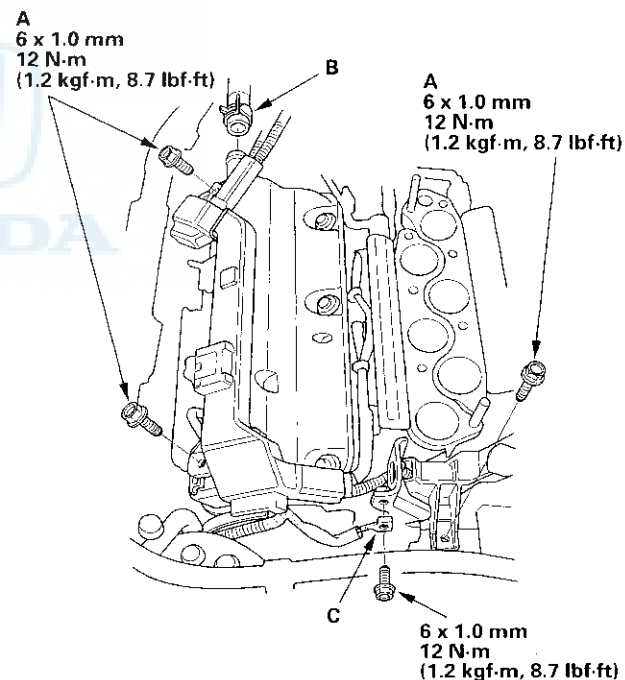


8. Visually check the spark plug seals for damage.
9. Inspect the cover washers (C). Replace any washer that is damaged or deteriorated.

10. Tighten the bolts in two or three steps. In the final step tighten all bolts, in sequence, 12 N·m (1.2 kgf·m, 8.7 lbf·ft).



11. Tighten the three bolts (A) securing the harness holder.



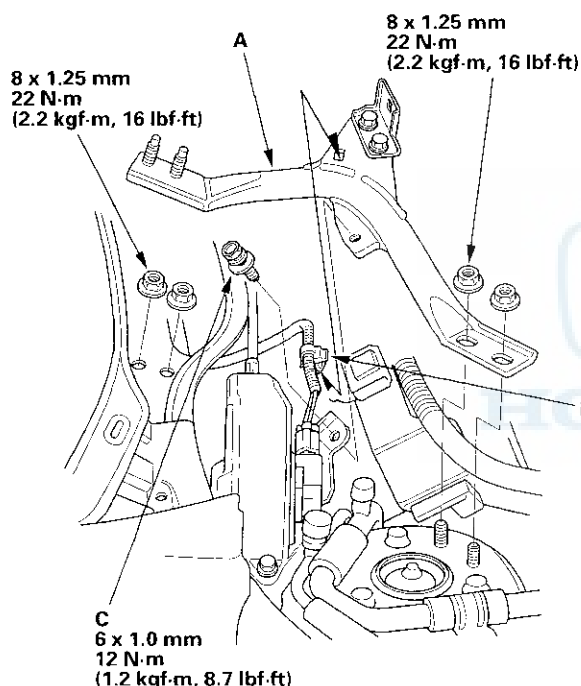
12. Install the breather hose (B) and ground cable (C).

(cont'd)

Cylinder Head

Cylinder Head Cover Installation (cont'd)

13. Connect the three injector connectors, VTEC solenoid valve connector, and VTEC oil pressure switch connector to the rear cylinder head.
14. Install the three ignition coils from the rear cylinder head (see page 4-22).
15. Install the intake manifold (see page 9-5).
16. Install the right front strut bar (A), then install the harness clamp (B) and accelerator pedal position (APP) sensor mounting bolt (C).



17. Install the passenger's cowl cover (see page 20-113).
18. Install the right side windshield wiper arm (see page 22-221).
19. After assembly, wait at least 30 minutes before filling the engine with oil.

Cylinder Head Removal

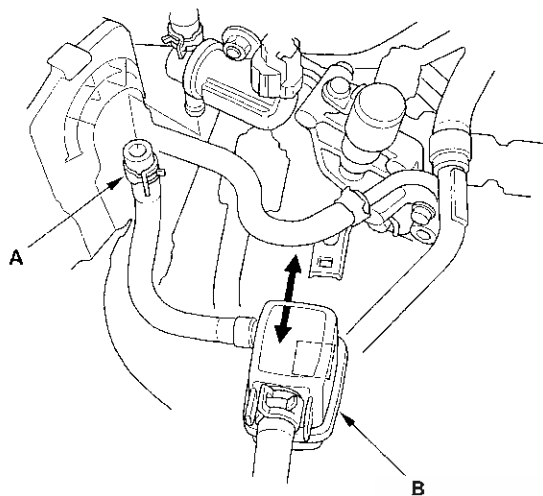
NOTE:

- Use fender covers to avoid damaging painted surfaces.
- To avoid damaging the wires and terminals, unplug the wiring connectors carefully while holding the connector portion.
- To avoid damaging the cylinder head, wait until the engine coolant temperature drops below 100 °F (38 °C) before loosening the cylinder head bolts.
- Mark all wiring and hoses to avoid misconnection. Also, be sure that they do not contact other wiring or hoses, or interfere with other parts.

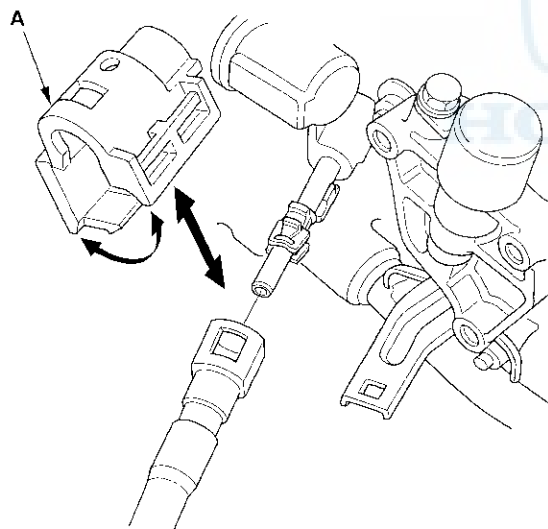
1. Relieve the fuel pressure (see page 11-354).
2. Drain the engine coolant (see page 10-6).
3. Remove the A/C compressor belt (see page 21-100).
4. Remove the timing belt (see page 6-16).
5. Remove the engine support hanger.
6. Remove the intake manifold (see page 9-3).
7. Remove the six ignition coils (see page 4-22).
8. Remove the engine wire harness connectors and wire harness clamps from the cylinder head.
 - Six injector connectors
 - Engine coolant temperature (ECT) sensor 1 connector
 - Engine coolant temperature (ECT) sensor 2 connector
 - Crankshaft position (CKP) sensor connector
 - Exhaust gas recirculation (EGR) valve connector
 - VTEC solenoid valve connector
 - VTEC oil pressure switch connector
 - Oil pressure switch connector
 - Two air fuel ratio (A/F) sensor connectors
 - Two secondary heated oxygen sensor (secondary HO2S) connectors
9. Remove the front warm up three way catalytic converter (front WU-TWC) (see page 11-390) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-391).



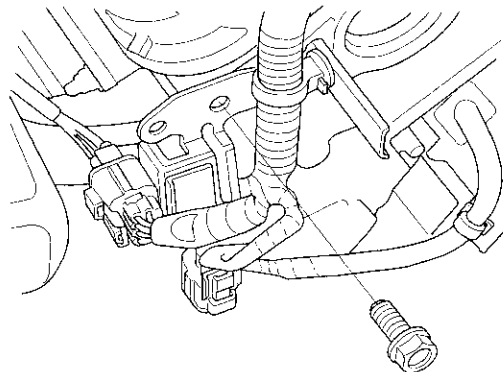
10. Remove the evaporative emission (EVAP) canister hose (A), then remove the purge joint (B) from the bracket.



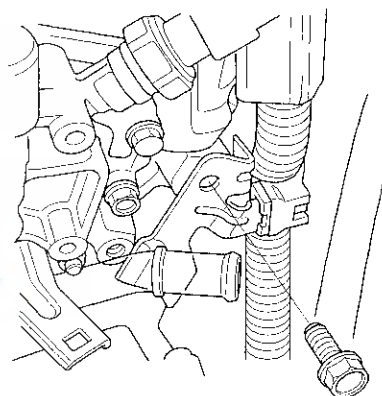
11. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see page 11-361).



12. Remove the connector bracket from the front cylinder head.



13. Remove the harness clamp bracket from the rear cylinder head.

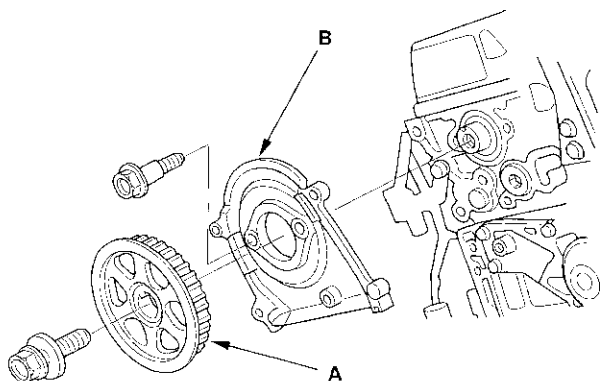


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Cylinder Head

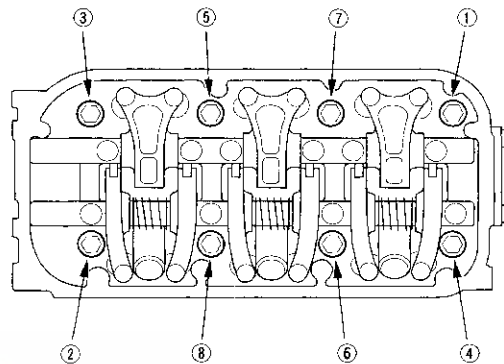
Cylinder Head Removal (cont'd)

14. Remove the fuel rails (see step 3 on page 11-211).
15. Remove the water passage (see page 10-9).
16. Remove the front and rear camshaft pulleys (A) and front and rear back covers (B).

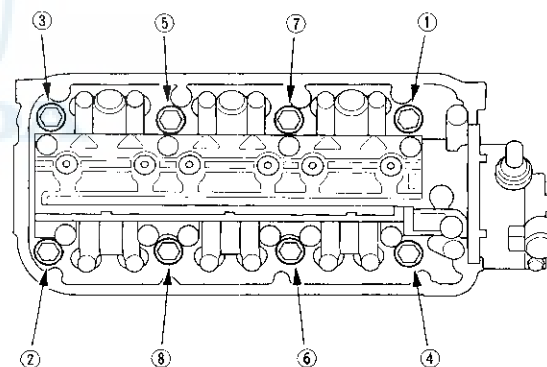


17. Remove the cylinder head covers (see page 6-32).
18. Remove the cylinder head bolts. To prevent warpage, unscrew the bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.

FRONT:



REAR:



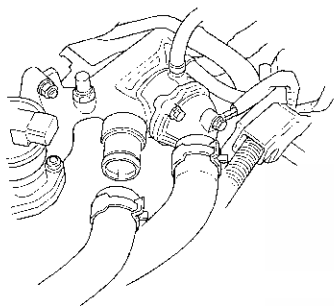
19. Remove the cylinder heads.



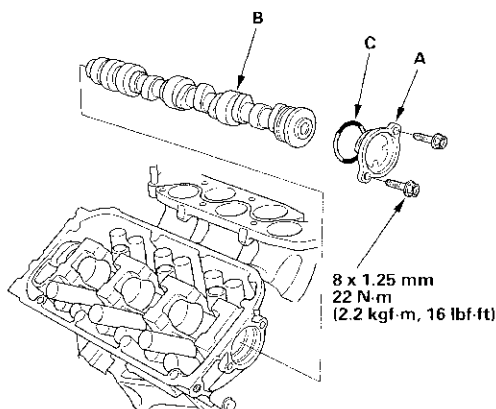
Camshaft Replacement

FRONT

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's audio presets.
2. Disconnect the negative cable from the battery first, then disconnect the positive cable.
3. Remove the battery.
4. Drain the engine coolant (see page 10-6).
5. Remove the upper radiator hose.



6. Remove the exhaust gas recirculation (EGR) valve (see page 11-404).
7. Remove the timing belt (see page 6-16).
8. Remove the front rocker arm assembly (see page 6-42).
9. Remove the front camshaft pulley.
10. Remove the thrust cover (A), then remove the front camshaft (B).



11. Install the front camshaft in the reverse order of removal with a new O-ring (C). Apply new engine oil to the camshaft journals and lobes.
12. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the front camshaft pulley (see step 11 on page 6-58).
13. Install the rocker arm assembly, then tighten the mounting bolts (see step 8 on page 6-57).
14. Install the timing belt (see page 6-19).
15. Adjust the valve clearance (see page 6-10).
16. Fill the radiator with engine coolant and bleed the air out (see step 8 on page 10-7).
17. Install the battery. Clean the battery posts and cable terminals with sandpaper, then assemble them and apply grease to prevent corrosion.
18. Do the power window control unit reset procedure (see page 22-200).
19. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).
20. Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets. Set the clock.
21. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

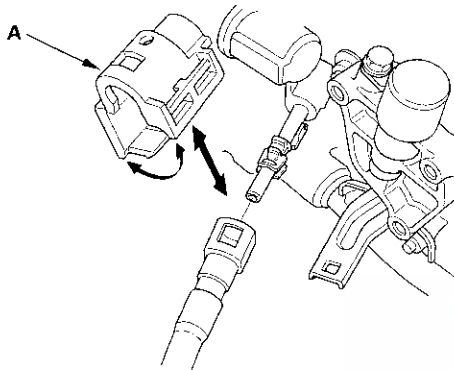
(cont'd)

Cylinder Head

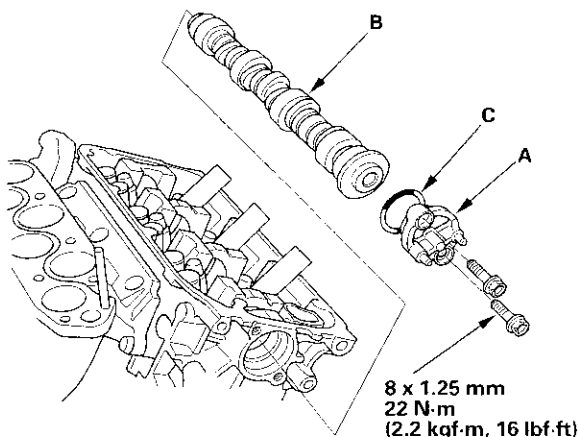
Camshaft Replacement (cont'd)

REAR

1. Relieve the fuel pressure (see page 11-354).
2. Drain the engine coolant (see page 10-6).
3. Remove the water passage (see page 10-9).
4. Remove the quick-connect fitting cover (A), then disconnect the fuel feed hose (see page 11-361).



5. Remove the timing belt (see page 6-16).
6. Remove the rear rocker arm assembly (see page 6-42).
7. Remove the rear camshaft pulley.
8. Remove the thrust cover (A), then remove the rear camshaft (B).



9. Install the rear camshaft in the reverse order of removal with a new O-ring (C). Apply new engine oil to the camshaft journals and lobes.

10. Remove all of the old liquid gasket from the rocker shaft holder and cylinder head.
11. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the camshaft holder mating surface of the cylinder head (see step 8 on page 6-59).

NOTE: Do not install the parts if 4 minutes or more have elapsed since applying the liquid gasket. Instead, reapply liquid gasket after removing the old residue.

12. Apply new engine oil to the threads of the camshaft pulley mounting bolt, then install the rear camshaft pulley (see step 12 on page 6-60).
13. Install the rocker arm assembly, then tighten the mounting bolts (see step 9 on page 6-59).
14. Install the timing belt (see page 6-19).
15. Adjust the valve clearance (see page 6-10).
16. Connect the fuel feed hose (see page 11-361), then install the quick-connect fitting cover.
17. Fill the radiator with engine coolant and bleed the air out (see step 8 on page 10-7).
18. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
19. Do the crankshaft position (CKP) pattern clear/CKP pattern learn procedure (see page 11-4).



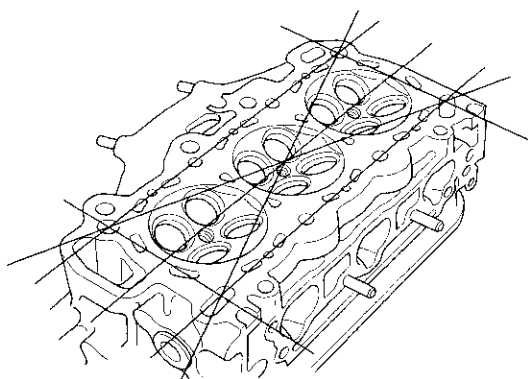
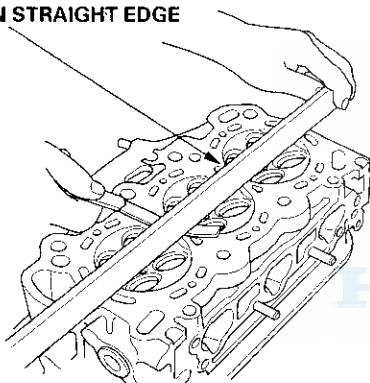
Cylinder Head Inspection for Warpage

1. Remove the cylinder head (see page 6-36).
2. Inspect the camshaft (see page 6-47).
3. Check the cylinder head for warpage. Measure along the edges, and three ways across the center.
 - If warpage is less than 0.05 mm (0.002 in.), cylinder head resurfacing is not required.
 - If warpage is between 0.05 mm (0.002 in.) and 0.2 mm (0.008 in.), resurface the cylinder head.
 - Maximum resurface limit is 0.2 mm (0.008 in.) based on a height of 121 mm (4.76 in.).

Cylinder Head Height

Standard (New): 120.95—121.05 mm
(4.762—4.766 in.)

PRECISION STRAIGHT EDGE

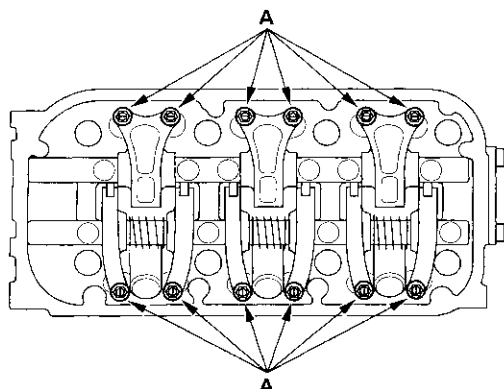


Cylinder Head

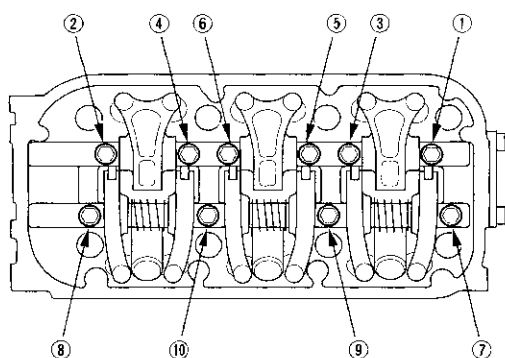
Rocker Arm Assembly Removal

FRONT

1. Remove the cylinder head cover (see page 6-32).
2. Loosen the locknuts and adjusting screws (A).

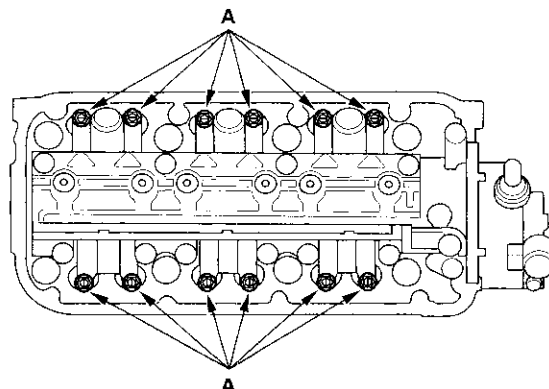


3. Remove the rocker shaft mounting bolts and the rocker arm assembly.
 - 1 Unscrew the rocker shaft mounting bolts two turns at a time, to prevent damaging the valves or rocker arm assembly.
 - 2 When removing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and the rocker arms on the shafts.

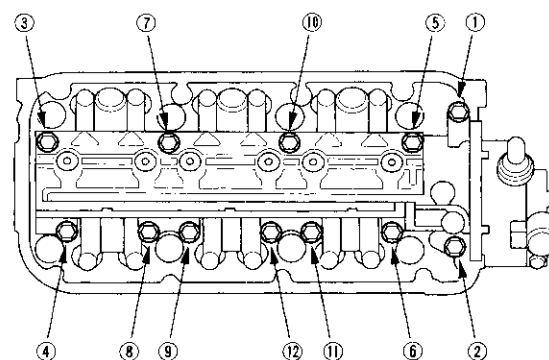


REAR

4. Remove the cylinder head cover (see page 6-32).
5. Loosen the locknuts and adjusting screws (A).



6. Remove the rocker shaft mounting bolts and the rocker arm assembly.
 - 1 Unscrew the rocker shaft bridge mounting bolts and rocker shaft holder mounting bolts two turns at a time, to prevent damaging the valves or rocker arm assembly.
 - 2 When removing the rocker arm assembly, do not remove the rocker shaft bridge mounting bolts and rocker shaft holder mounting bolts. The bolts will keep the rocker arms on the shafts.



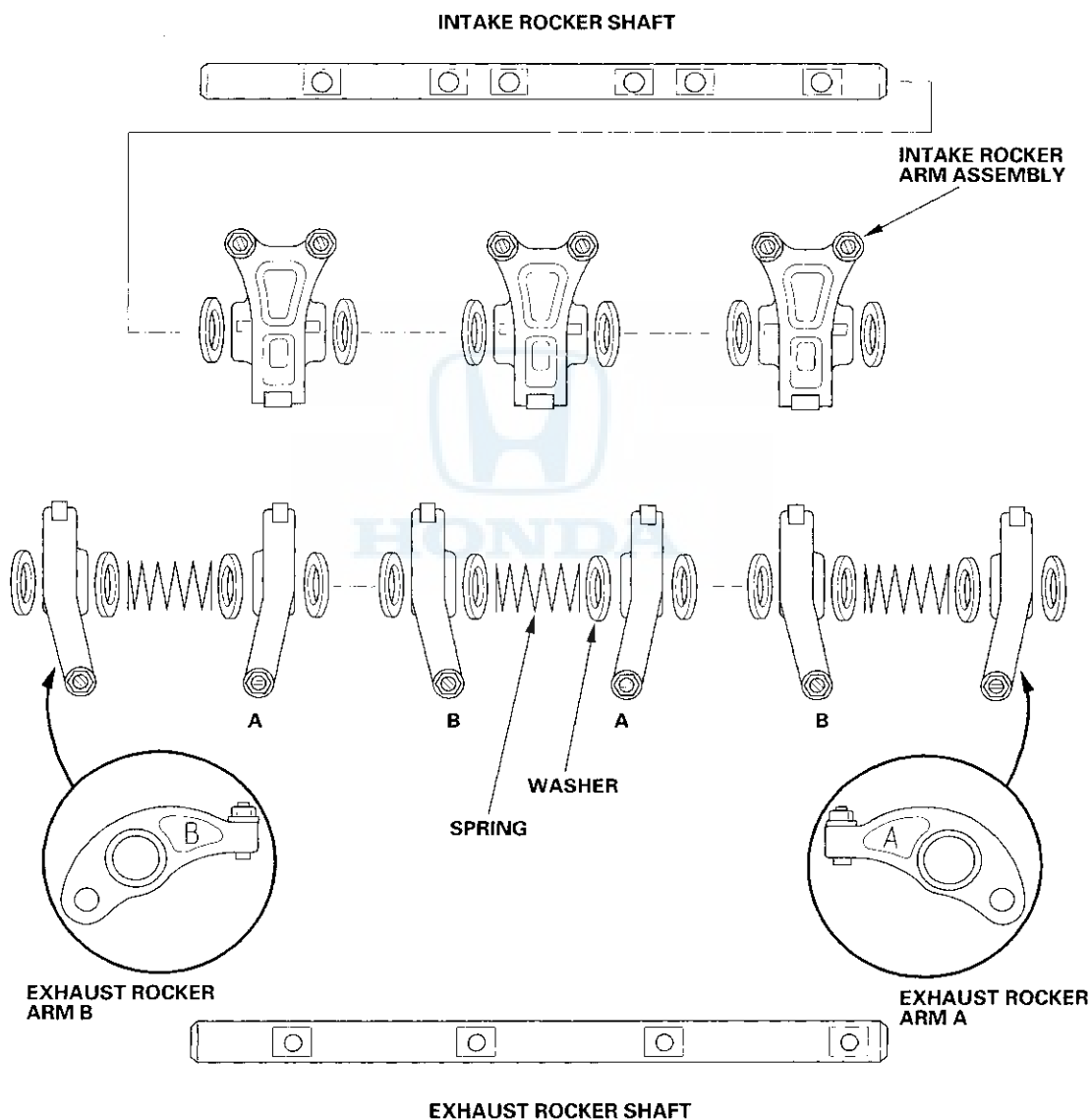


Rocker Arm and Shaft Disassembly/Reassembly

FRONT

NOTE:

- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-45).
- Rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the rocker shaft mounting bolts. The bolts will keep the springs and rocker arms on the shaft.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.



(cont'd)

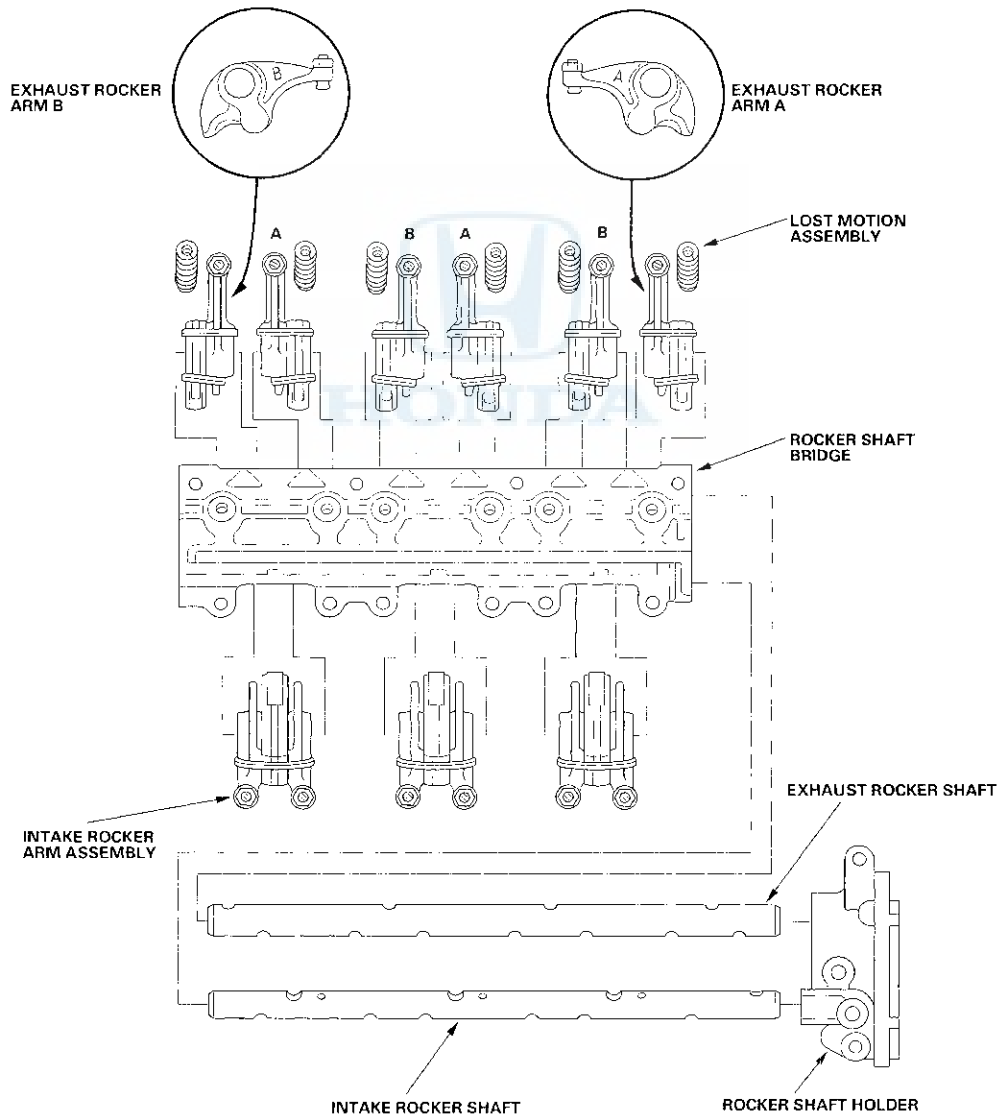
Cylinder Head

Rocker Arm and Shaft Disassembly/Reassembly (cont'd)

REAR

NOTE:

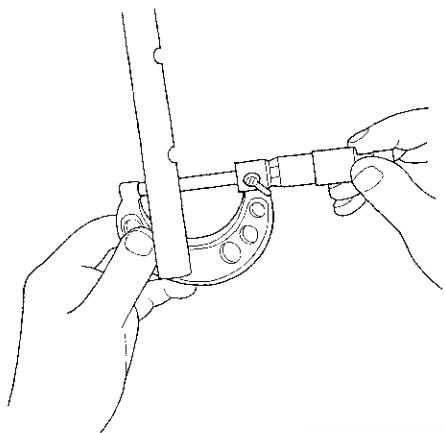
- Identify parts as they are removed so they can be reinstalled in their original locations.
- Inspect the rocker shafts and rocker arms (see page 6-45).
- Rocker arms must be installed in the same positions if reused.
- When removing or installing the rocker arm assembly, do not remove the mounting bolts. The bolts will keep the rocker arms, rocker shaft bridge, and rocker shaft on the shaft.
- If the rocker shaft does not remove or does not install by hand, remove or install the rocker shaft by heating the rocker shaft bridge.
- Bundle the rocker arms with rubber bands to keep them together as a set, and remove the bands after the rocker arms have been installed.
- Prior to reassembling, clean all the parts in solvent, dry them, and apply new engine oil to any contact points.
- When replacing the rocker arm assembly, remove the fastening hardware from the new rocker arm assembly.



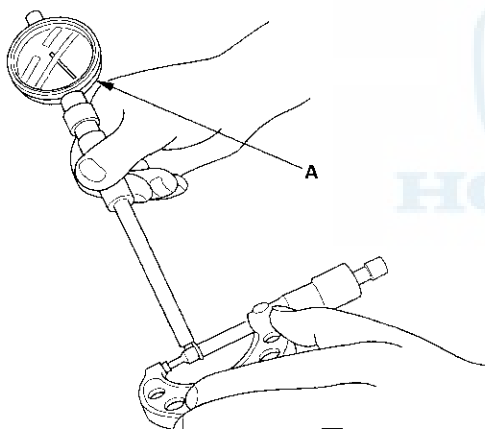


Rocker Arm and Shaft Inspection

1. Remove the rocker arm assembly (see page 6-42), then disassemble it (see page 6-43).
2. Measure the diameter of the shaft at the first rocker location.



3. Zero the gauge (A) to the shaft diameter.



4. Measure the inside diameter of the rocker arm, and check it for an out-of-round condition.

FRONT

Intake Rocker Arm-to-Shaft Clearance:

Standard (New): 0.019—0.067 mm
(0.0007—0.0026 in.)

Service Limit: 0.067 mm (0.0026 in.)

Exhaust Rocker Arm-to-Shaft Clearance:

Standard (New): 0.019—0.058 mm
(0.0007—0.0023 in.)

Service Limit: 0.058 mm (0.0023 in.)

REAR

Intake Rocker Arm-to-Shaft Clearance:

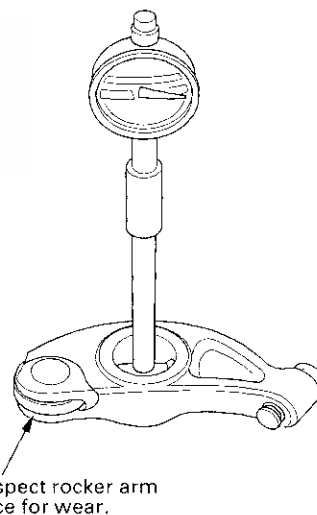
Standard (New): 0.015—0.046 mm
(0.0006—0.0018 in.)

Service Limit: 0.046 mm (0.0018 in.)

Exhaust Rocker Arm-to-Shaft Clearance:

Standard (New): 0.015—0.046 mm
(0.0006—0.0018 in.)

Service Limit: 0.046 mm (0.0018 in.)



5. Repeat for all rockers and both shafts. If the clearance is over the limit, replace the rocker shaft and all over-tolerance rocker arms. If any VTEC rocker arm needs replacement, replace all rocker arms in that set (primary and secondary).

(cont'd)

Cylinder Head

Rocker Arm and Shaft Inspection (cont'd)

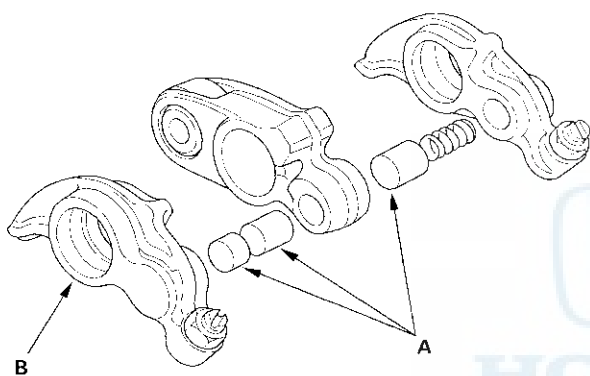
VTEC Rocker Arms

6. Inspect the rocker arm synchronizing pistons (A). Slide them into the rocker arms. If they do not move smoothly, replace the rocker arm set.

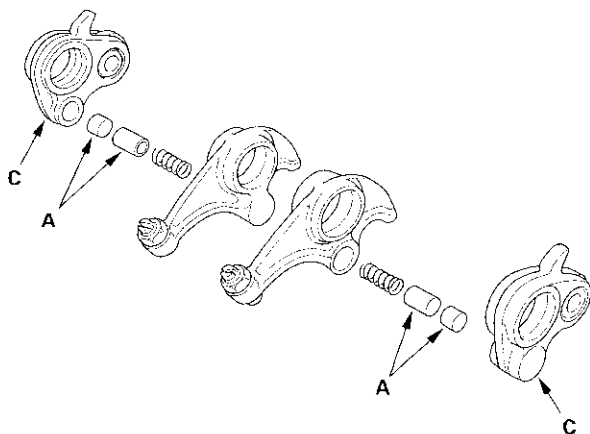
NOTE:

- Apply new engine oil to the pistons when reassembling.
- When removing the pistons from the intake primary rocker arm B and exhaust secondary rocker arms (C), carefully apply air pressure to the oil passage of the rocker arm.

INTAKE:



EXHAUST:



7. Install the rocker arm assembly (see page 6-57).

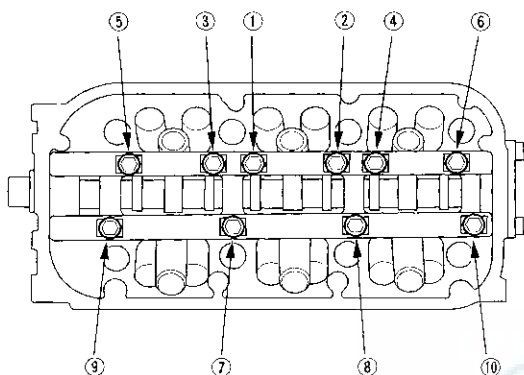


Camshaft Inspection

1. Remove the cylinder head (see page 6-36).
2. Remove the rocker arms (see page 6-42).
3. Front: Put the rocker shafts on the front cylinder head, then tighten the bolts to the specified torque.

Specified Torque

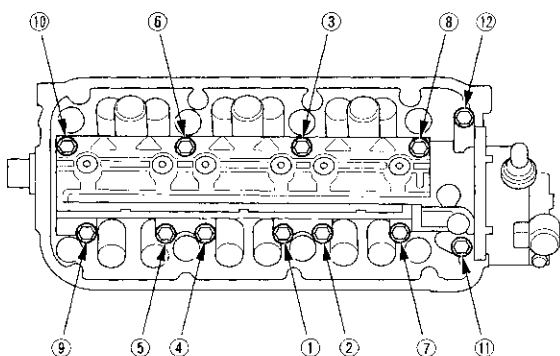
8 x 1.25 mm: 24 N·m (2.4 kgf·m, 17 lbf·ft)



4. Rear: Put the rocker shaft bridge and rocker shaft holder on the rear cylinder head, then tighten the bolts to the specified torque.

Specified Torque

8 x 1.25 mm: 22 N·m (2.2 kgf·m, 15 lbf·ft)

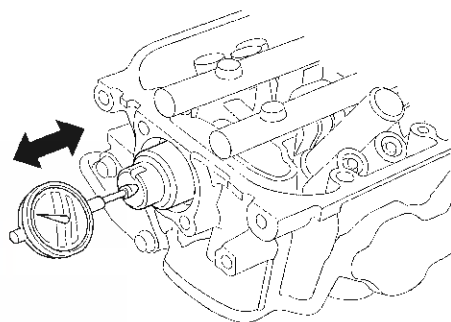


5. Seat the camshaft by pushing it toward the rear of the cylinder head.
6. Zero the dial indicator against the end of the camshaft. Push the camshaft back and forth and read the end play. If the end play is beyond the service limit, replace the thrust cover and recheck. If it is still beyond the service limit, replace the camshaft.

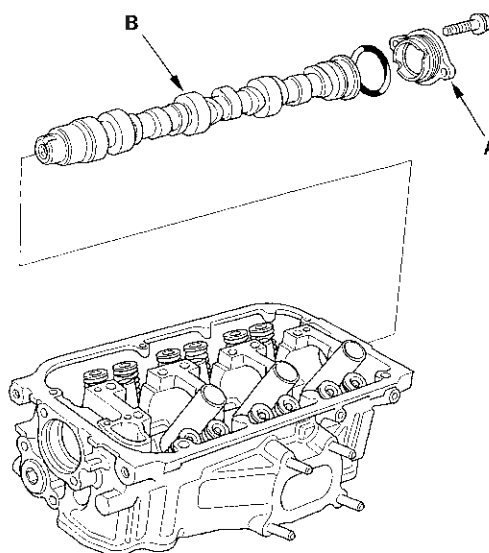
Camshaft End Play

Standard (New): 0.05—0.20 mm
(0.002—0.008 in.)

Service Limit: 0.20 mm (0.008 in.)



7. Remove the camshaft thrust cover (A), then pull out the camshaft (B).

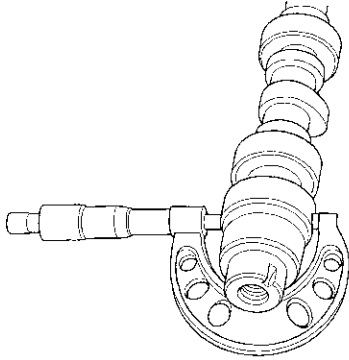


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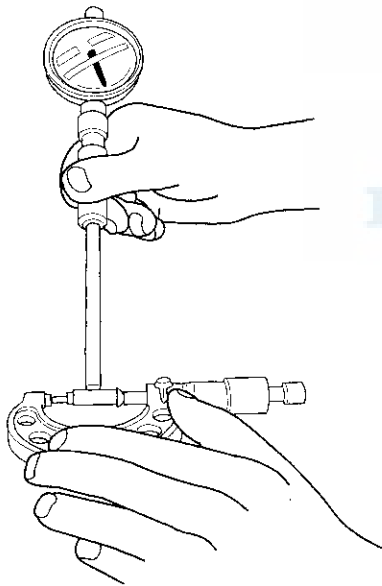
Cylinder Head

Camshaft Inspection (cont'd)

8. Wipe the camshaft clean, then inspect the lift ramps. Replace the camshaft if any lobes are pitted, scored, or excessively worn.
9. Measure the diameter of each camshaft journal.



10. Zero the gauge to the journal diameter.



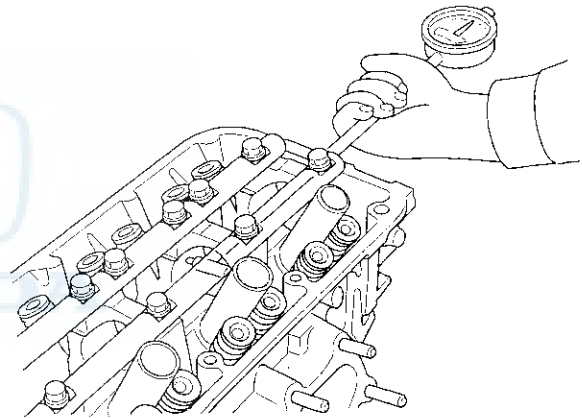
11. Clean the camshaft bearing surfaces in the cylinder head. Measure the inside diameter of each camshaft bearing surface, and check for an out-of-round condition.

- If the camshaft-to-holder clearance is within limits, go to step 13.
- If the camshaft-to-holder clearance is beyond the service limit and the camshaft has been replaced, replace the cylinder head.
- If the camshaft-to-holder clearance is beyond the service limit and the camshaft has not been replaced, go to step 12.

Camshaft-to-Holder Oil Clearance

Standard (New): 0.050—0.089 mm
(0.0020—0.0035 in.)

Service Limit: 0.15 mm (0.006 in.)





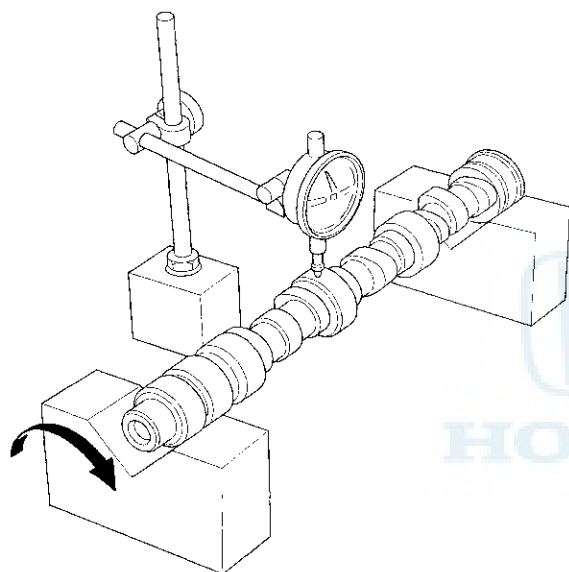
12. Check total runout with the camshaft supported on V-blocks.

- If the total runout of the camshaft is within the service limit, replace the cylinder head.
- If the total runout is beyond the service limit, replace the camshaft and recheck the oil clearance. If the oil clearance is still out of tolerance, replace the cylinder head.

Camshaft Total Runout

Standard (New): 0.03 mm (0.001 in.) max.

Service Limit: 0.04 mm (0.002 in.)



13. Measure cam lobe height.

NOTE: When measuring the cam lobe height of the rear camshaft, measure the secondary cam lobes.

Cam Lobe Height Standard (New)

Front:

Intake: 36.149 mm (1.4232 in.)

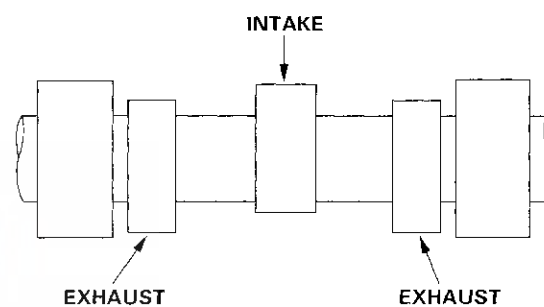
Exhaust: 35.864 mm (1.4120 in.)

Rear:

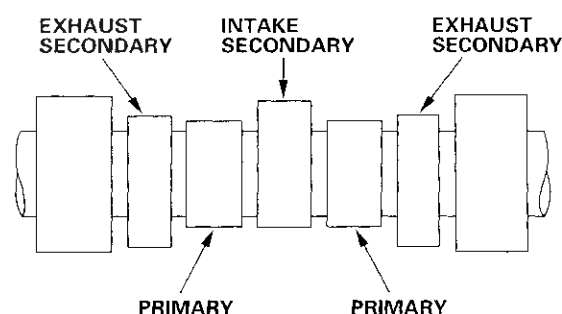
Intake: 35.406 mm (1.3939 in.)

Exhaust: 37.035 mm (1.4581 in.)

FRONT:



REAR:



Cylinder Head

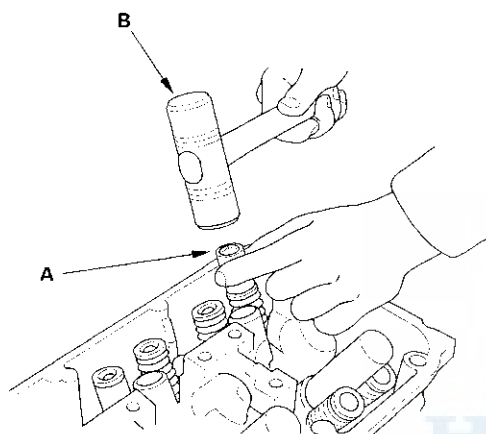
Valve, Spring, and Valve Seal Removal

Special Tools Required

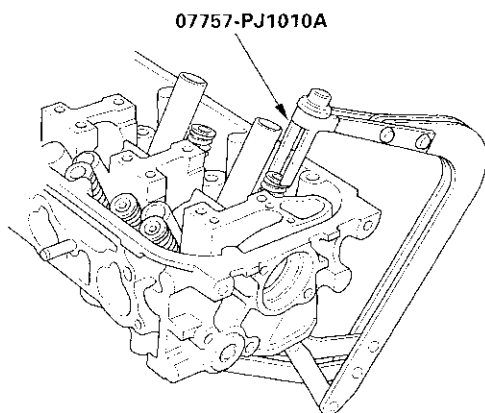
Valve spring compressor attachment
07757-PJ1010A

Identify the valves and valve springs as they are removed so that each item can be reinstalled in its original position.

1. Remove the cylinder head (see page 6-36).
2. Using an appropriate-sized socket (A) and plastic mallet (B), lightly tap the valve retainer to loosen the valve cotters.

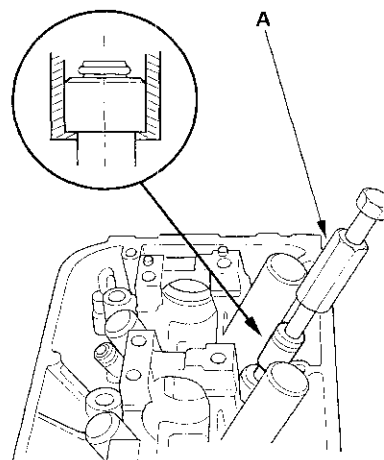


3. Install the valve spring compressor attachment and spring compressor. Compress the spring and remove the valve cotters.

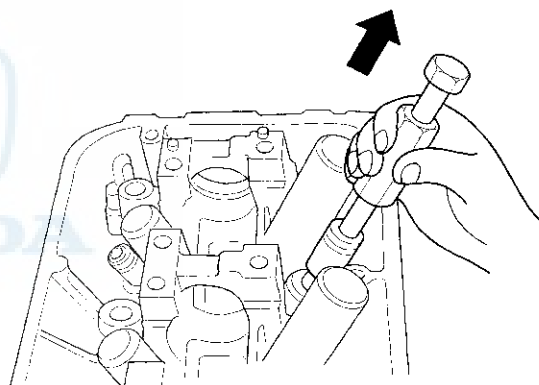


4. Remove the spring compressor and attachment, then remove the valve retainer and valve spring.

5. Install the valve guide seal remover (A).



6. Remove the valve seal.





Valve Inspection

1. Remove the valves (see page 6-50).
2. Measure the valve in these areas:

Intake Valve Dimensions

A Standard (New): 34.85—35.15 mm
(1.372—1.384 in.)

B Standard (New): 115.70—116.30 mm
(4.555—4.579 in.)

C Standard (New): 5.485—5.495 mm
(0.2159—0.2163 in.)

C Service Limit: 5.455 mm (0.2148 in.)

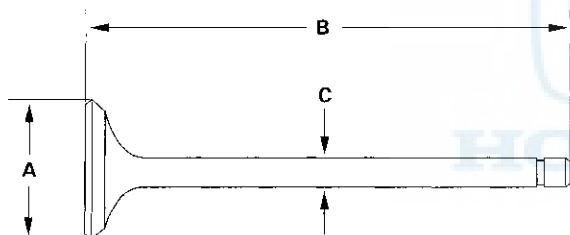
Exhaust Valve Dimensions

A Standard (New): 29.85—30.15 mm
(1.175—1.187 in.)

B Standard (New): 113.90—114.50 mm
(4.484—4.508 in.)

C Standard (New): 5.450—5.460 mm
(0.2146—0.2150 in.)

C Service Limit: 5.420 mm (0.2134 in.)



Valve Stem-to-Guide Clearance Inspection

1. Remove the valves (see page 6-50).
2. Slide the valve out of its guide about 10 mm (0.39 in.), then measure the guide-to-stem clearance with a dial indicator while rocking the stem in the direction of normal thrust (wobble method).

- If the measurement exceeds the service limit, recheck it using a new valve.
- If the measurement is now within the service limit, reassemble using a new valve.
- If the measurement with a new valve still exceeds the service limit, go to step 3.

Intake Valve Stem-to-Guide Clearance

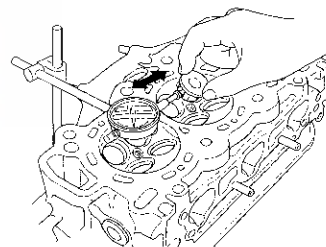
Standard (New): 0.04—0.09 mm
(0.002—0.004 in.)

Service Limit: 0.16 mm (0.006 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.11—0.16 mm
(0.004—0.006 in.)

Service Limit: 0.22 mm (0.009 in.)



3. Subtract the O.D. of the valve stem, measured with a micrometer, from the I.D. of the valve guide, measured with an inside micrometer or ball gauge. Take the measurements in three places along the valve stem and three places inside the valve guide. The difference between the largest guide measurement and the smallest stem measurement should not exceed the service limit.

Intake Valve Stem-to-Guide Clearance

Standard (New): 0.020—0.045 mm
(0.0008—0.0018 in.)

Service Limit: 0.08 mm (0.003 in.)

Exhaust Valve Stem-to-Guide Clearance

Standard (New): 0.055—0.080 mm
(0.0022—0.0031 in.)

Service Limit: 0.11 mm (0.004 in.)

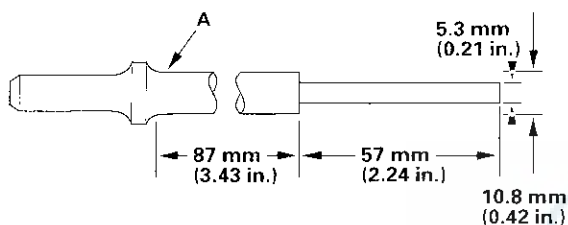
Cylinder Head

Valve Guide Replacement

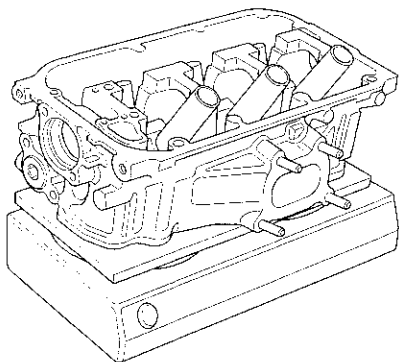
Special Tools Required

- Valve guide driver, 5.5 mm 07742-0010100
- Valve guide reamer, 5.5 mm 07HAH-PJ7A100

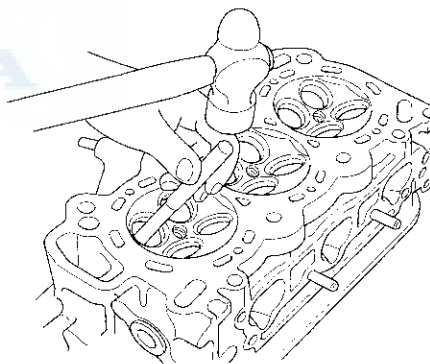
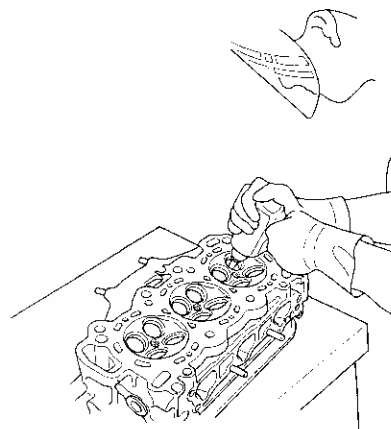
1. Inspect valve stem-to-guide clearance (see page 6-51).
2. As illustrated, use a commercially available air-impact valve guide driver (A) modified to fit the diameter of the valve guides. In most cases, the same procedure can be done using the special tool and a conventional hammer.



3. Select the proper replacement guides, and chill them in the freezer section of a refrigerator for about an hour.
4. Use a hot plate or oven to evenly heat the cylinder head to 300 °F (150 °C). Monitor the temperature with a cooking thermometer. Do not get the head hotter than 300 °F (150 °C); excessive heat may loosen the valve seats.



5. Working from the camshaft side, use the driver and an air hammer to drive the guide about 2 mm (0.1 in.) towards the combustion chamber. This will knock off some of the carbon and make removal easier. Hold the air hammer directly in line with the valve guide to prevent damaging the driver. Wear safety goggles or a face shield.
6. Turn the head over, and drive the guide out toward the camshaft side of the head.



7. If a valve guide still won't move, drill it out with a 8 mm (5/16 inch) bit, then try again.

NOTE: Drill guides only in extreme cases; you could damage the cylinder head if the guide breaks.

8. Remove the new guide(s) from the freezer, one at a time, as you need them.

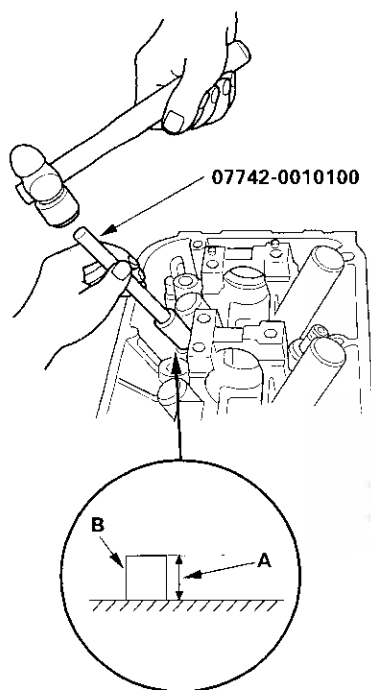


9. Apply a thin coat of clean engine oil to the outside of the new valve guide. Install the guide from the camshaft side of the head; use the valve guide driver to drive the guide to the specified installed height (A) of the guide (B). If you have all 12 guides to do, you may have to reheat the head.

Valve Guide Installed Height

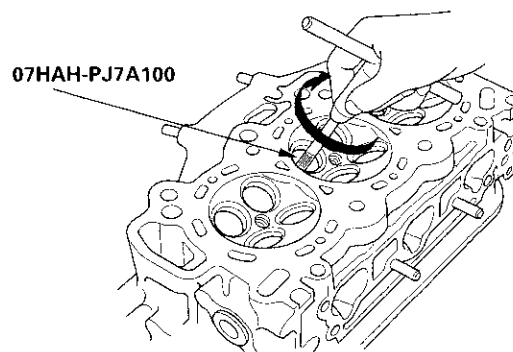
Intake: 21.20—22.20 mm (0.835—0.874 in.)

Exhaust: 20.63—21.63 mm (0.812—0.852 in.)



10. Coat both the reamer and the valve guide with cutting oil.

11. Rotate the reamer clockwise the full length of the valve guide bore.



12. Continue to rotate the reamer clockwise while removing it from the bore.

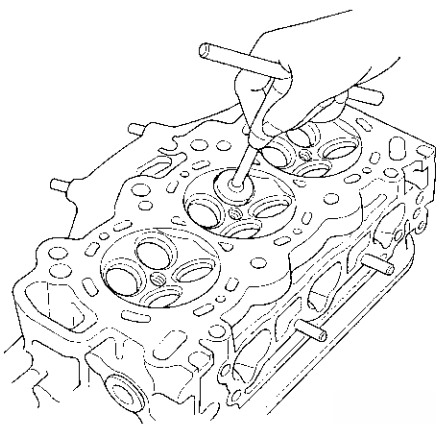
13. Thoroughly wash the guide in detergent and water to remove any cutting residue.

14. Check the clearance with a valve (see page 6-51). Verify that a valve slides in the intake and exhaust valve guides without exerting pressure.

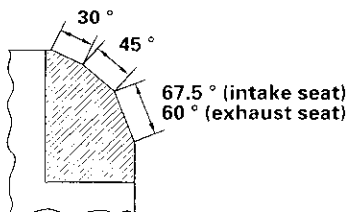
Cylinder Head

Valve Seat Reconditioning

1. Inspect valve stem-to-guide clearance (see page 6-51). If the valve guides are worn, replace them (see page 6-52) before cutting the valve seats.
2. Renew the valve seats in the cylinder head using a valve seat cutter.



3. Carefully cut a 45 ° seat, removing only enough material to ensure a smooth and concentric seat.
4. Bevel the upper edge of the seat with the 30 ° cutter and the lower edge of the seat with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat). Check the width of the seat and adjust accordingly.



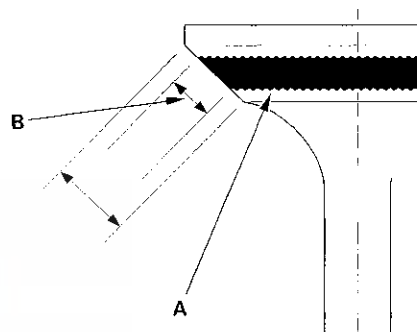
5. Make one more very light pass with the 45 ° cutter to remove any possible burrs caused by the other cutters.

Valve Seat Width

Standard (New): 1.25—1.55 mm (0.049—0.061 in.)

Service Limit: 2.00 mm (0.079 in.)

6. After resurfacing the seat, inspect it for even valve seating: Apply Prussian Blue compound (A) to the valve face. Insert the valve in its original location in the head, then lift it and snap it closed against the seat several times.



7. The actual valve seating surface (B), as shown by the blue compound, should be centered on the seat.

- If it is too high (closer to the valve stem), you must make a second cut with the 67.5 ° cutter (intake seat) or the 60 ° cutter (exhaust seat) to move it down, then one more cut with the 45 ° cutter to restore seat width.
- If it is too low (closer to the valve edge), you must make a second cut with the 30 ° cutter to move it up, then one more cut with the 45 ° cutter to restore seat width.

NOTE: The final cut should always be made with the 45 ° cutter.



8. Insert the intake and exhaust valves in the head, and measure the valve stem installed height (A).

Intake Valve Stem Installed Height

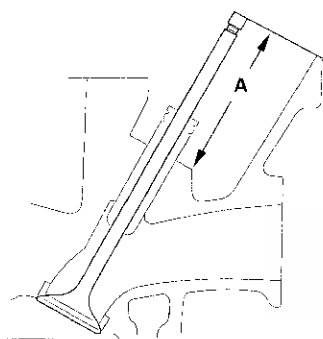
Standard (New): 46.75—47.55 mm
(1.841—1.872 in.)

Service Limit: 47.80 mm (1.882 in.)

Exhaust Valve Stem Installed Height

Standard (New): 46.68—47.48 mm
(1.838—1.869 in.)

Service Limit: 47.73 mm (1.879 in.)



9. If the valve stem installed height is over the service limit, replace the valve and recheck. If it is still over the service limit, replace the cylinder head; the valve seat in the head is too deep.

Cylinder Head

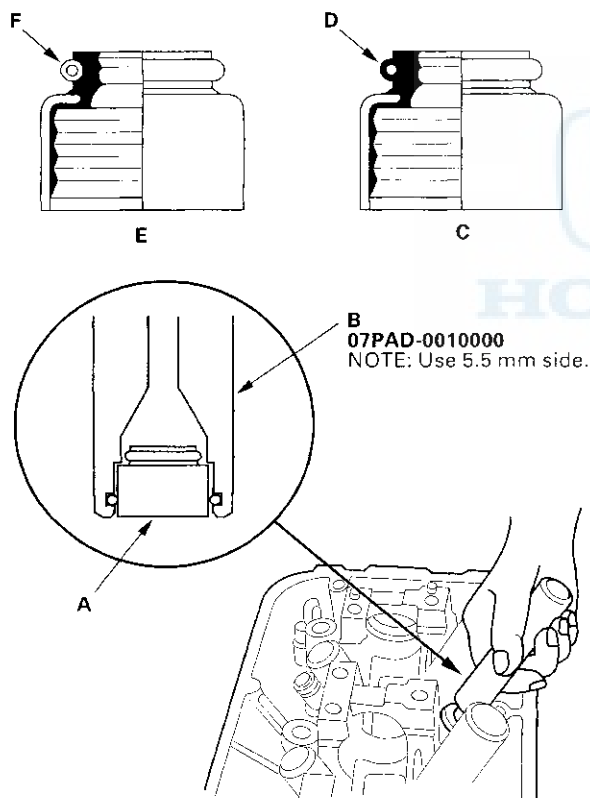
Valve, Spring, and Valve Seal Installation

Special Tools Required

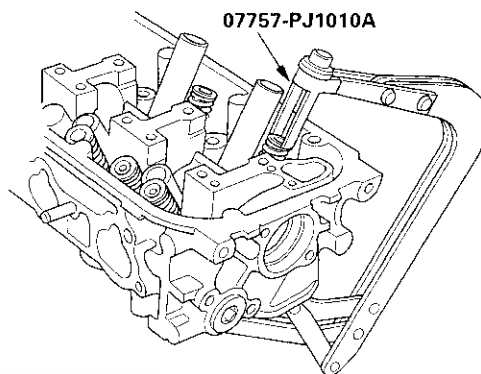
- Stem seal driver 07PAD-0010000
- Valve spring compressor attachment 07757-PJ1010A

1. Coat the valve stems with new engine oil. Install the valves in the valve guides.
2. Check that the valves move up and down smoothly.
3. Install the spring seats on the cylinder head.
4. Install the new valve seals (A) using the valve guide seal installer (B).

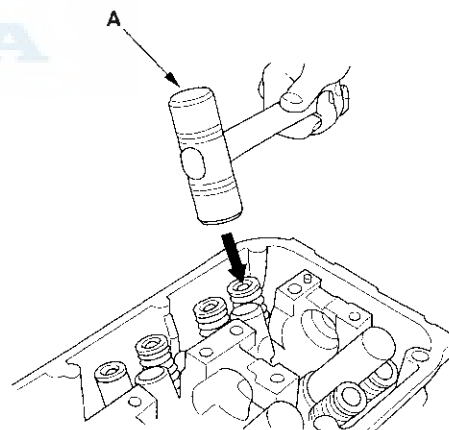
NOTE: Exhaust valve seals (C) have a black spring (D) and intake valve seals (E) have a white spring (F). They are not interchangeable.



5. Install the valve spring and valve retainer. Place the end of the valve spring with closely wound coils toward the cylinder head.
6. Install the valve spring compressor attachment and spring compressor. Compress the spring and install the valve cotters.



7. Lightly tap the end of each valve stem two or three times with a plastic mallet (A) to ensure proper seating of the valve and valve cotters. Tap the valve stem only along its axis so you do not bend the stem.



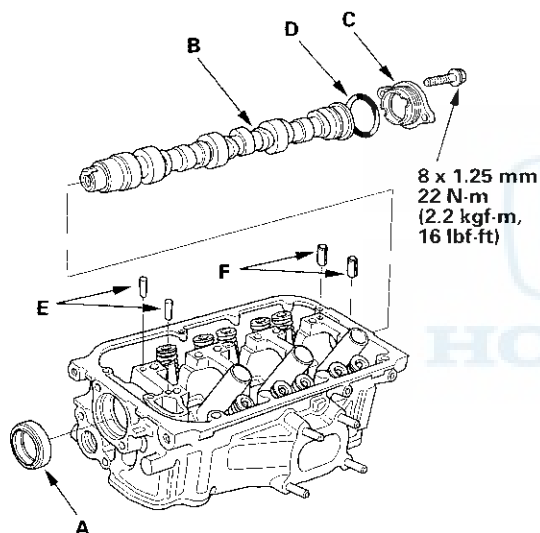


Camshaft, Rocker Arm, Camshaft Seal, and Pulley Installation

FRONT

1. Reassemble the rocker arm assembly (see page 6-43).
2. Apply a light coat of oil around the camshaft oil seal.
3. Gently tap the new camshaft oil seal (A) into the cylinder head.

- 1 Tap the camshaft oil seal in squarely.
- 2 Install the oil seal about 0.5—1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.

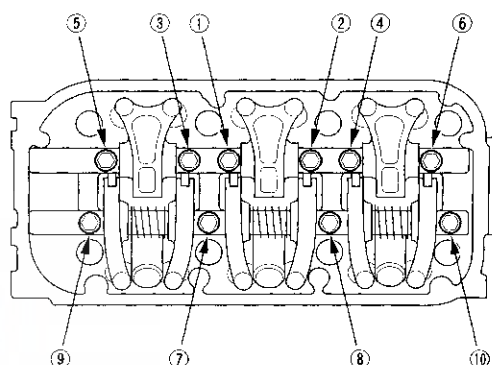


4. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D).
5. Check that the oil seal lips are not distorted.
6. Install the solid dowel pins (E) and the hollow dowel pins (F).

7. Loosen the valve adjusting screws.
8. Set the rocker arm assembly in place, and loosely install the bolts. Make sure that the rocker arms are properly positioned on the valve stems.
9. Tighten each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

Specified Torque

8 x 1.25 mm: 24 N·m (2.4 kgf·m, 17 lbf·ft)



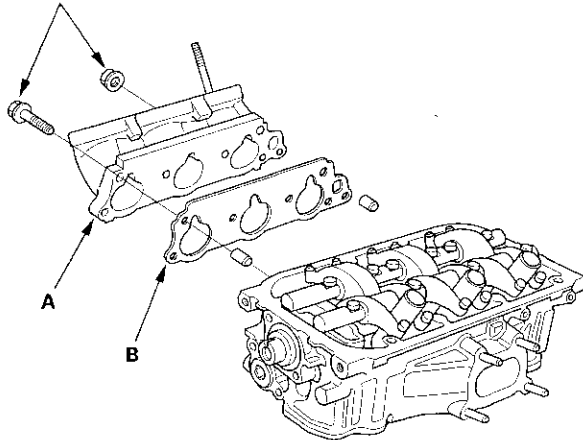
(cont'd)

Cylinder Head

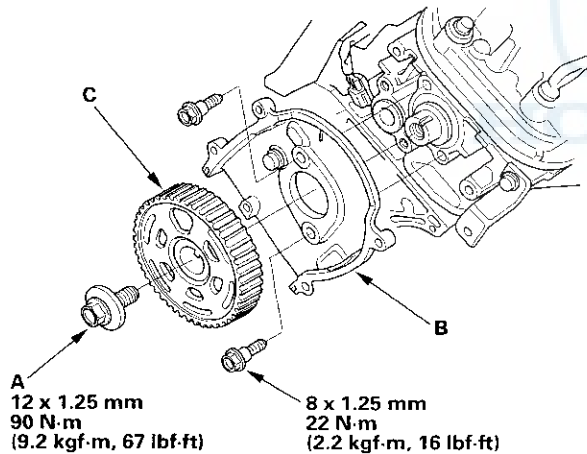
Camshaft, Rocker Arm, Camshaft Seal, and Pulley Installation (cont'd)

10. Install the injector base (A). Always use a new gasket (B).

8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)



11. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).

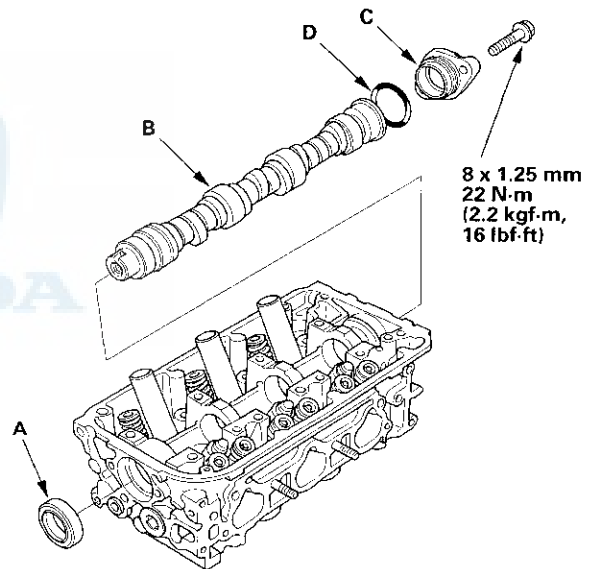


A
12 x 1.25 mm
90 N·m
(9.2 kgf·m, 67 lbf·ft)

8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)

REAR

1. Reassemble the rocker arm assembly (see page 6-44).
2. Loosen the valve adjusting screws.
3. Apply a light coat of new engine oil around the camshaft oil seal.
4. Gently tap the new camshaft oil seal (A) into the cylinder head.
 - 1 Tap the camshaft oil seal in squarely.
 - 2 Install the oil seal about 0.5—1.5 mm (0.02—0.06 in.) below the surface of the cylinder head.



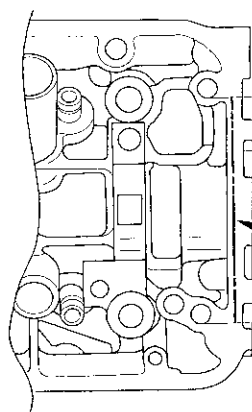
8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)

5. Insert the camshaft (B) into the cylinder head, then install the camshaft thrust cover (C). Always use a new O-ring (D). Apply new engine oil to the camshaft journals and lobes.
6. Check that the oil seal lips are not distorted.



7. Remove all of the old liquid gasket from the rocker shaft holder and cylinder head.
8. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the camshaft holder mating surface of the cylinder head.

NOTE: Do not install the parts if 4 minutes or more have elapsed since applying the liquid gasket. Instead, reapply liquid gasket after removing the old residue.



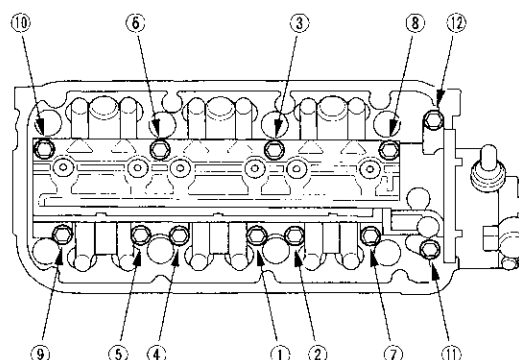
Apply liquid gasket along the broken line.

9. Set the rocker arm assembly in place, and loosely install the bolts. Make sure that the rocker arms are properly positioned on the valve stems.

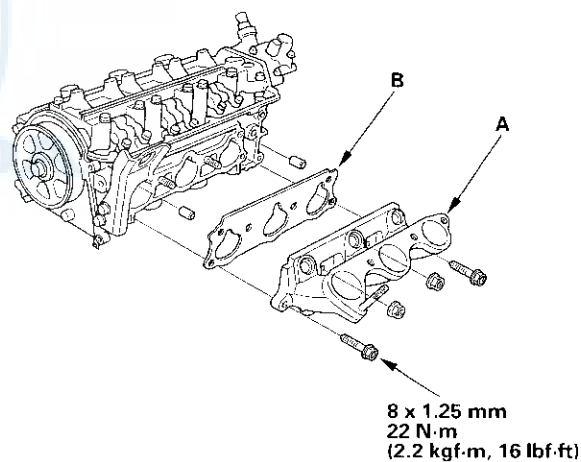
10. Tighten each bolt two turns at a time in the sequence shown to ensure that the rockers do not bind on the valves.

Specified Torque

8 x 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)



11. Install the injector base (A). Always use a new gasket (B).



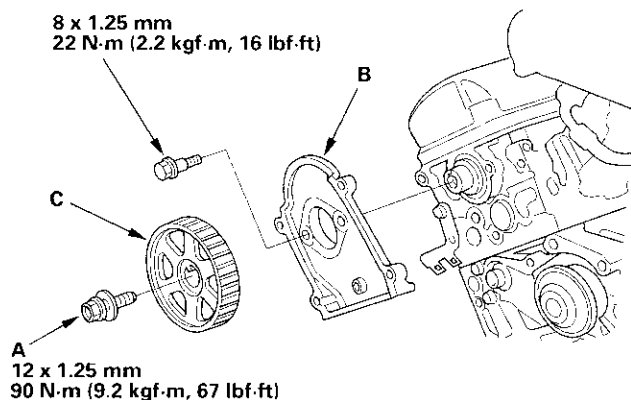
(cont'd)

Cylinder Head

Camshaft, Rocker Arm, Camshaft Seal, and Pulley Installation (cont'd)

12. Apply new engine oil to the threads of the camshaft pulley mounting bolt (A). Install the back cover (B), then install the camshaft pulley (C).

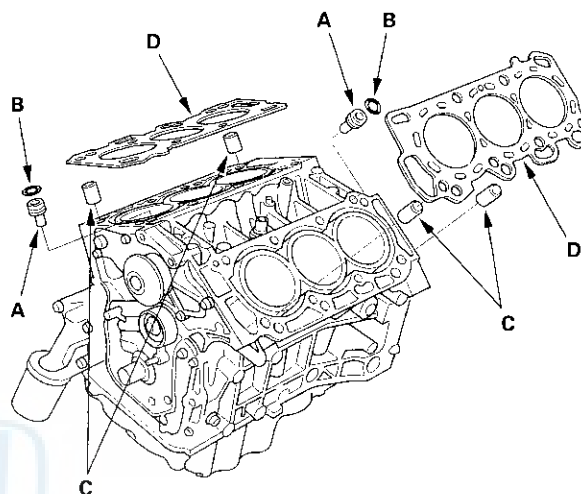
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)



Cylinder Head Installation

Install the cylinder head in the reverse order of removal:

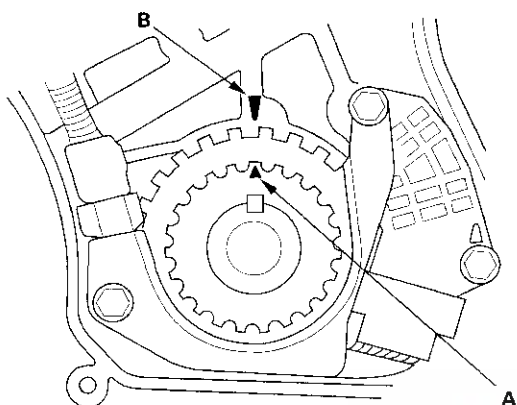
1. Clean the cylinder head and block surface.
2. Clean and install the oil control orifices (A) with new O-rings (B).



3. Install the dowel pins (C) and new cylinder head gaskets (D).

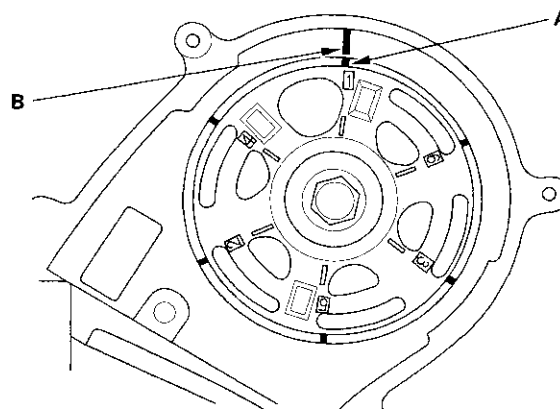


4. Clean the timing belt pulleys, timing belt guide plate, and the upper and lower covers.
5. Set the timing belt drive pulley to top dead center (TDC) by aligning the TDC mark (A) on the tooth of the timing belt drive pulley with the pointer (B) on the oil pump.

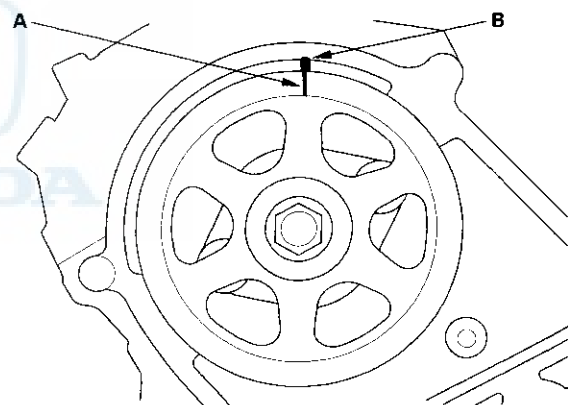


6. Set the camshaft pulleys to TDC by aligning the TDC marks (A) on the camshaft pulleys with the pointers (B) on the back covers.

FRONT:



REAR:



(cont'd)

Cylinder Head

Cylinder Head Installation (cont'd)

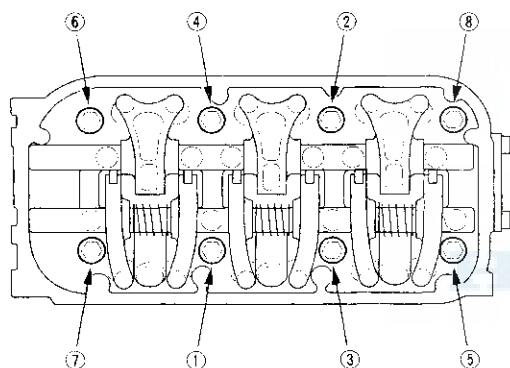
7. Apply new engine oil to the threads and flanges of the cylinder head bolts.
8. Tighten the cylinder head bolts sequentially in three steps.

NOTE: Perform each step twice.

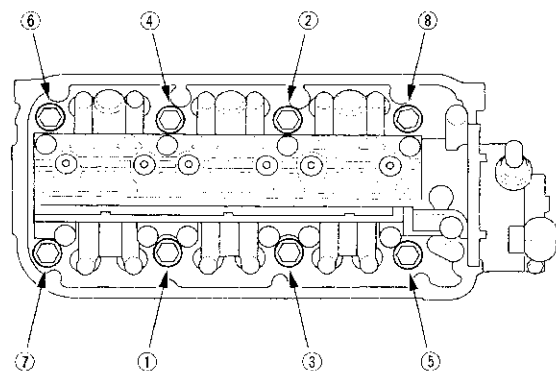
1st Step Torque: 39 N·m (4.0 kgf·m, 29 lbf·ft)
2nd Step Torque: 69 N·m (7.0 kgf·m, 51 lbf·ft)
3rd Step Torque: 98.1 N·m (10.0 kgf·m, 72.3 lbf·ft)

Use a beam-type torque wrench. When using a preset-type torque wrench, be sure to tighten slowly and not to overtighten. If a bolt makes any noise while you are torquing it, loosen the bolt, and retighten it from the 1st step.

FRONT:



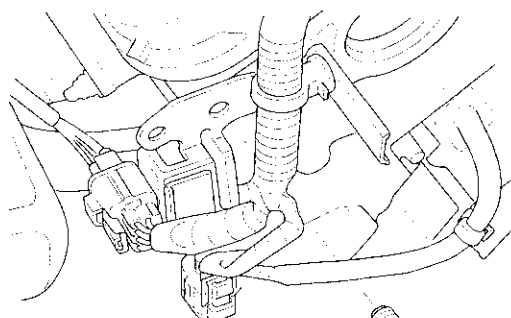
REAR:



9. Install the water passage (see page 10-9).

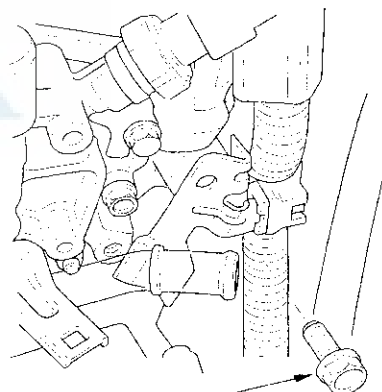
10. Install the fuel rails (see step 8 on page 11-212).

11. Install the connector bracket to the front cylinder head.



10 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

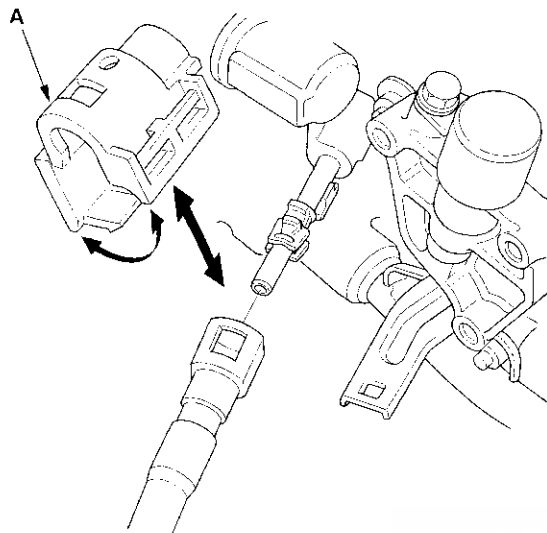
12. Install the harness clamp bracket to the rear cylinder head.



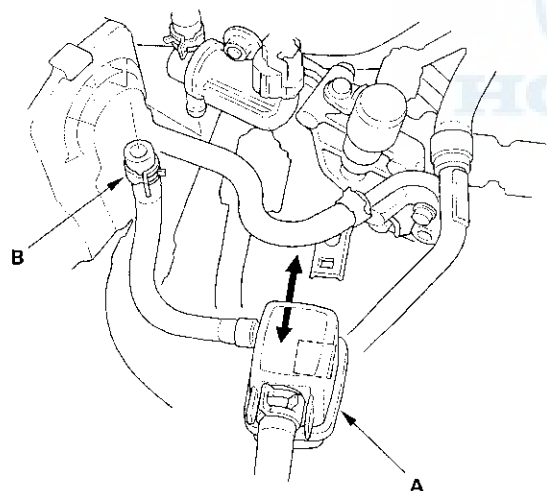
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)



13. Connect the fuel feed hose (see page 11-362), then install the quick-connect fitting cover (A).



14. Install the purge joint (A) to the bracket, then install the evaporative emission (EVAP) canister hose (B).



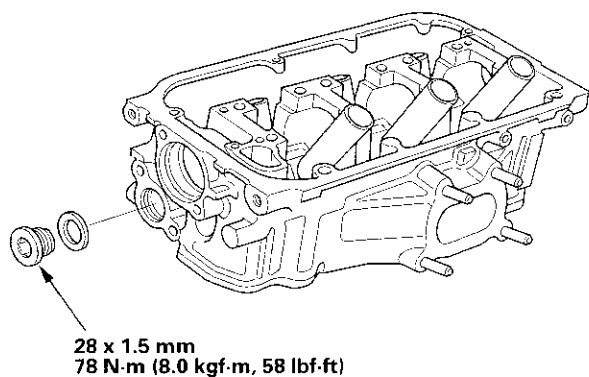
15. Install the front warm up three way catalytic converter (front WU-TWC) (see page 11-390) and rear warm up three way catalytic converter (rear WU-TWC) (see page 11-391).
16. Install the timing belt (see page 6-19).
17. Adjust the valve clearance (see page 6-10).
18. Install the cylinder head covers (see page 6-33).
19. Install the intake manifold (see page 9-5).
20. Install the A/C compressor belt (see page 21-100).
21. After installation, check that all tubes, hoses, and connectors are installed correctly.
22. Inspect for fuel leaks. Turn the ignition switch ON (II) (do not operate the starter) so the fuel pump runs for about 2 seconds and pressurizes the fuel line. Repeat this operation two or three times, then check for fuel leakage at any point in the fuel line.
23. Refill the radiator with engine coolant, and bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).
24. Inspect the idle speed (see page 11-339).
25. Inspect the ignition timing (see page 4-21).

Cylinder Head

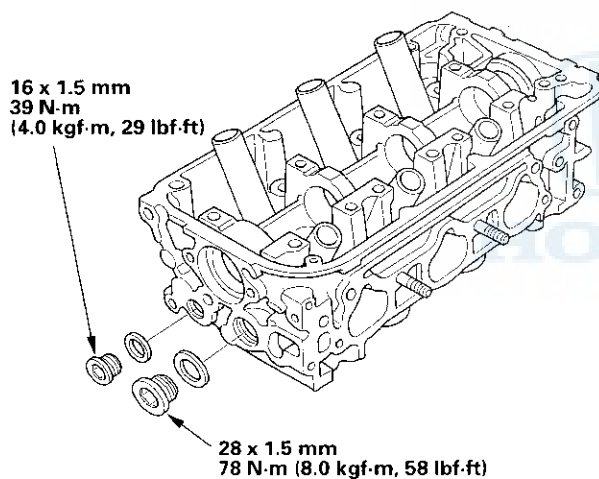
Sealing Bolt Installation

NOTE: When installing the sealing bolt, always use new washer.

FRONT:



REAR:



Engine Mechanical

Engine Block

Special Tools	7-2
Component Location Index	7-3
Connecting Rod and Crankshaft End Play	
Inspection	7-6
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Connecting Rod Bearing Replacement	7-9
Oil Pan Removal	7-11
Crankshaft and Piston Removal	7-13
Crankshaft Inspection	7-15
Block and Piston Inspection	7-16
Cylinder Bore Honing	7-18
Piston, Pin, and Connecting Rod Replacement	7-19
Piston Ring Replacement	7-22
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Oil Pan Installation	7-29
Pulley End Crankshaft Oil Seal Installation - In Car ...	7-32
Transmission End Crankshaft Oil Seal	
Installation - In Car	7-32
Coolant Drain Bolt Installation	7-33



Engine Block

Special Tools

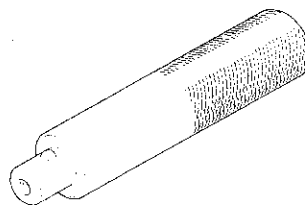
Ref. No.	Tool Number	Description	Qty
①	070AD-RCA0100	Oil Seal Driver, 64 mm	1
②	070AD-RCA0200	Driver Attachment, 106 mm	1
③	07749-0010000	Driver	1



①



②

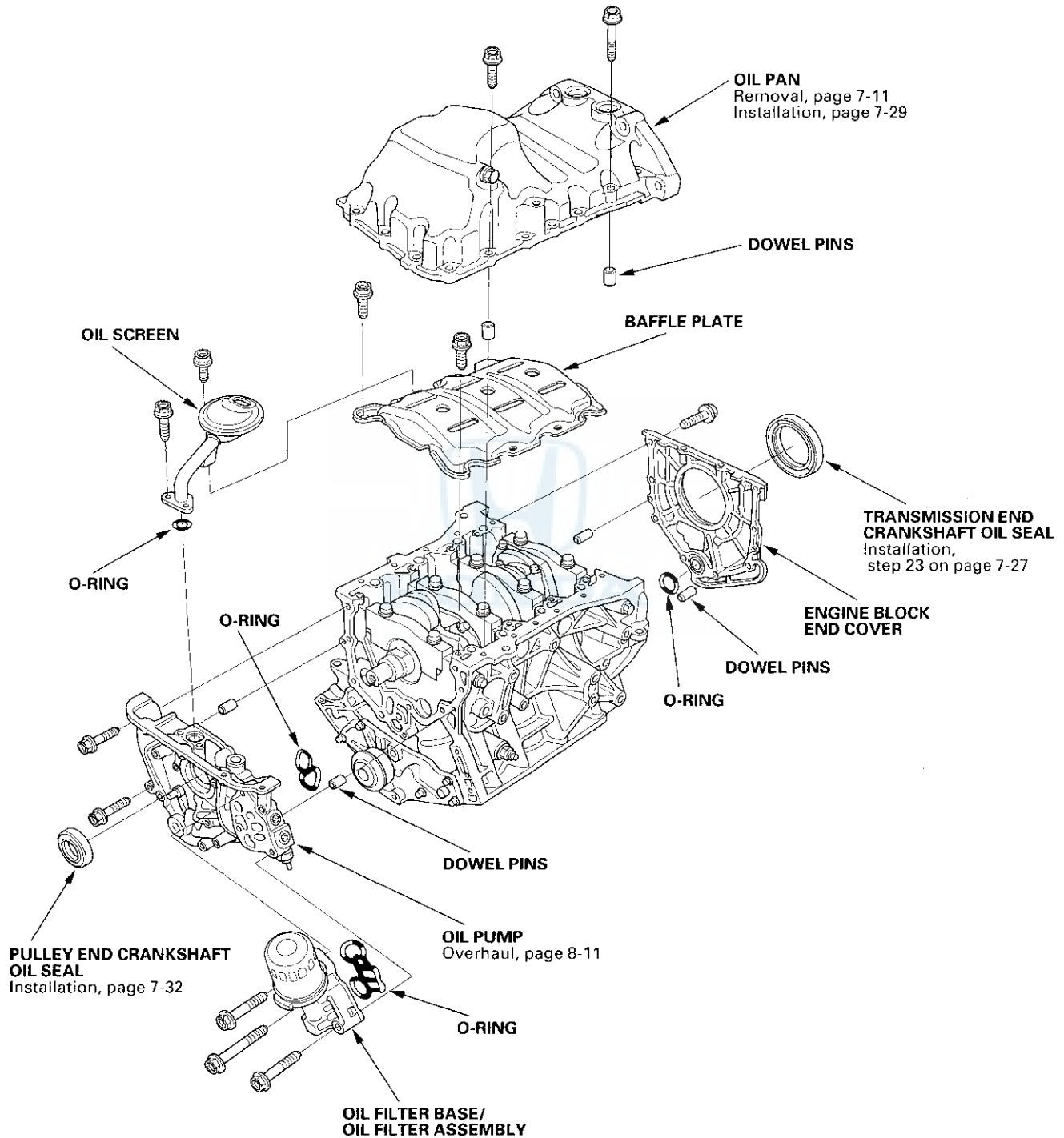


③





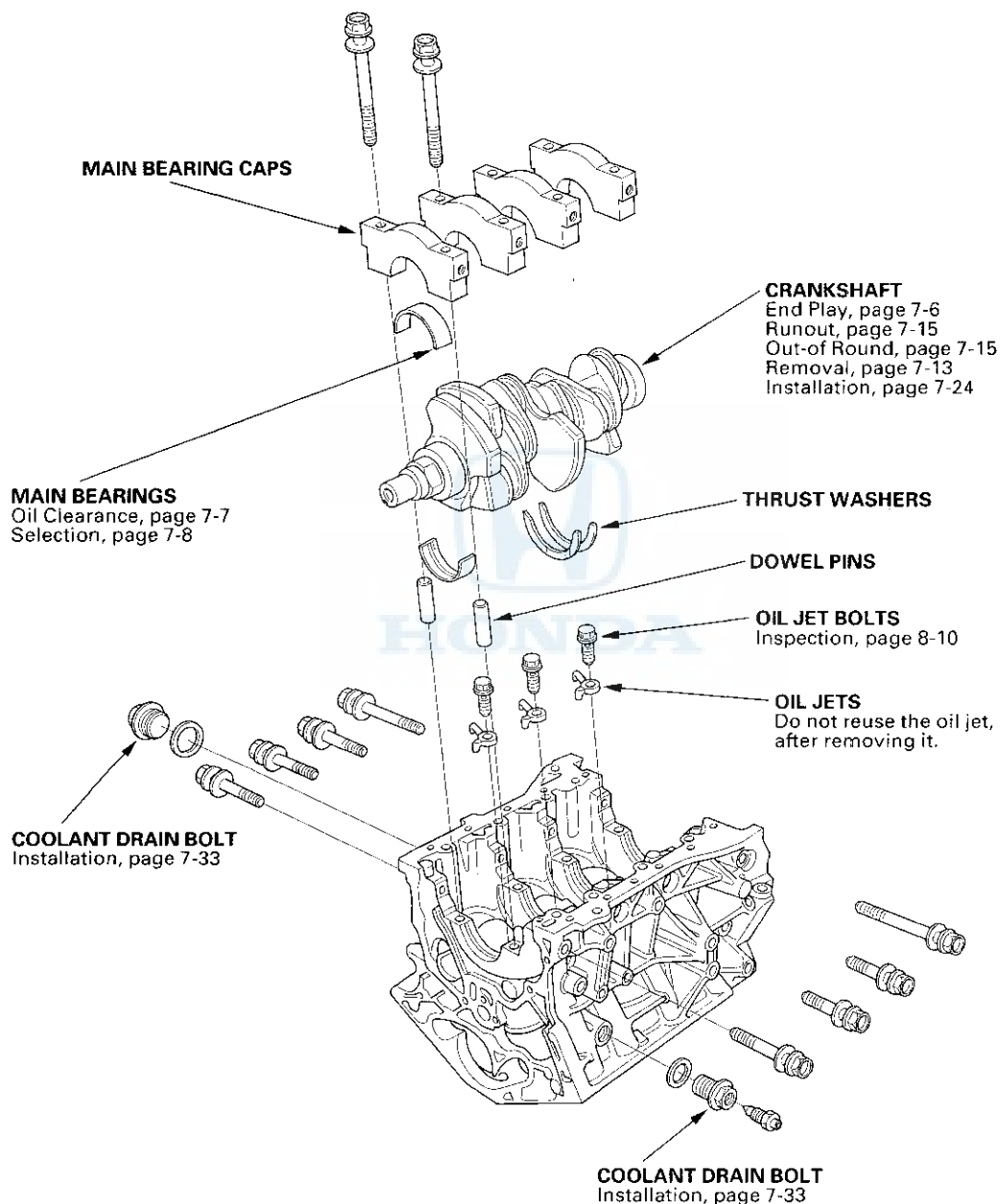
Component Location Index

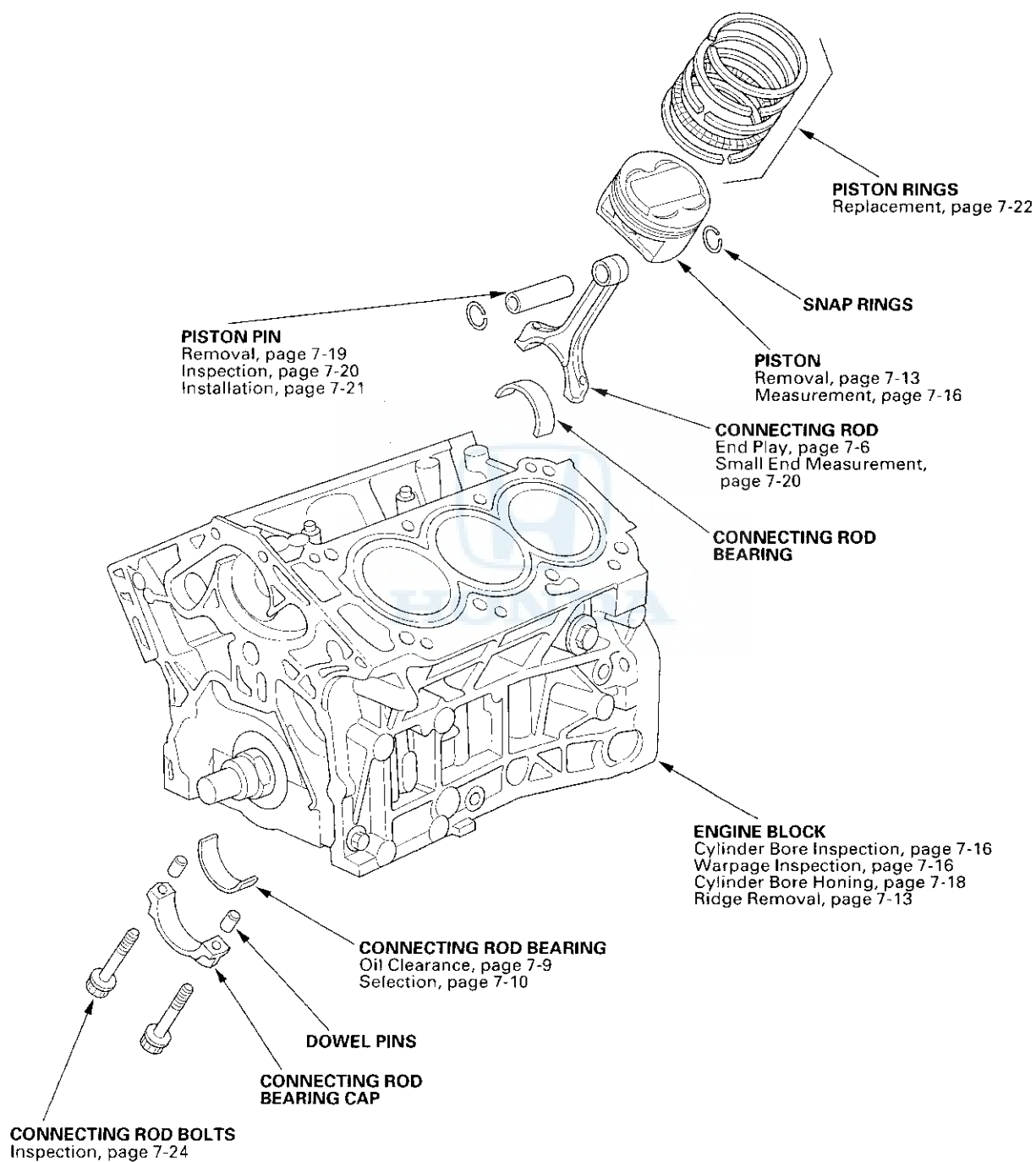


(cont'd)

Engine Block

Component Location Index (cont'd)





Engine Block

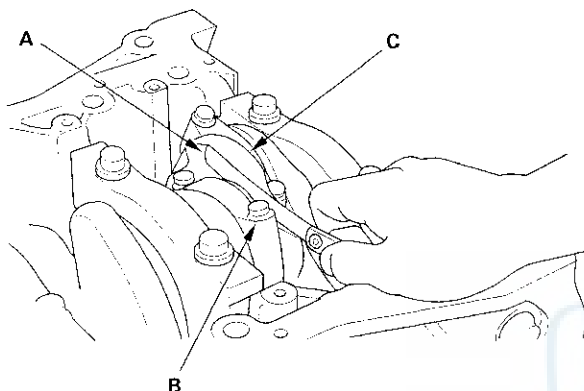
Connecting Rod and Crankshaft End Play Inspection

1. Remove the oil pump (see page 8-12).
2. Remove the baffle plate (see step 9 on page 7-13).
3. Measure the connecting rod end play with a feeler gauge (A) between the connecting rod (B) and crankshaft (C).

Connecting Rod End Play

Standard (New): 0.15—0.35 mm (0.006—0.014 in.)

Service Limit: 0.45 mm (0.018 in.)



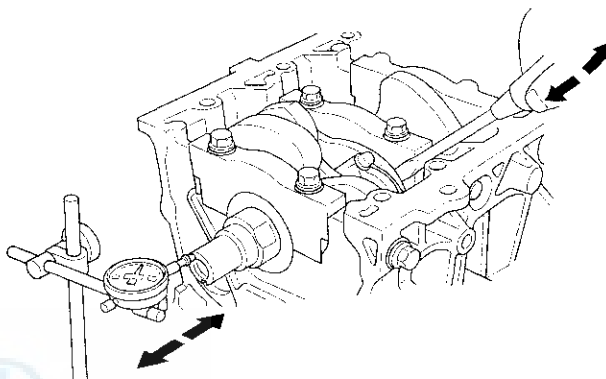
4. If the connecting rod end play is out-of-tolerance, install a new connecting rod and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-13).

5. Push the crankshaft firmly away from the dial indicator, and zero the dial against the end of the crankshaft. Then pull the crankshaft firmly back toward the indicator; the dial reading should not exceed the service limit.

Crankshaft End Play

Standard (New): 0.10—0.35 mm (0.004—0.014 in.)

Service Limit: 0.45 mm (0.018 in.)



6. If the end play is excessive, replace the thrust washers and recheck. If it is still out-of-tolerance, replace the crankshaft (see page 7-13).



Crankshaft Main Bearing Replacement

Main Bearing Clearance Inspection

1. Remove the main caps and bearing halves (see page 7-13).
2. Clean each main journal and bearing half with a clean shop towel.
3. Place one strip of plastigage across each main journal.

NOTE: If the engine is still in the vehicle when you bolt the main cap down to check the clearance, the weight of the crankshaft and drive plate will flatten the plastigage further than just the torque on the cap bolt, and give you an incorrect reading. For an accurate reading, support the crank with a jack under the counterweights, and check only one bearing at a time.

4. Reinstall the bearings and caps, then torque the bearing cap bolts to 74 N·m (7.5 kgf·m, 54 lbf·ft), and the bearing cap side bolts to 49 N·m (5.0 kgf·m, 36 lbf·ft) in the proper sequence (see step 21 on page 7-26).

NOTE: Do not rotate the crankshaft during inspection.

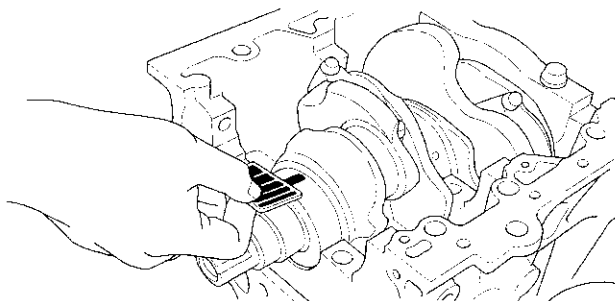
5. Remove the cap and bearing half, and measure the widest part of the plastigage.

Main Bearing-to-Journal Oil Clearance

Standard (New): 0.020–0.044 mm

(0.0008–0.0017 in.)

Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the crankshaft, and remove the upper half of the bearing. Install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

(cont'd)

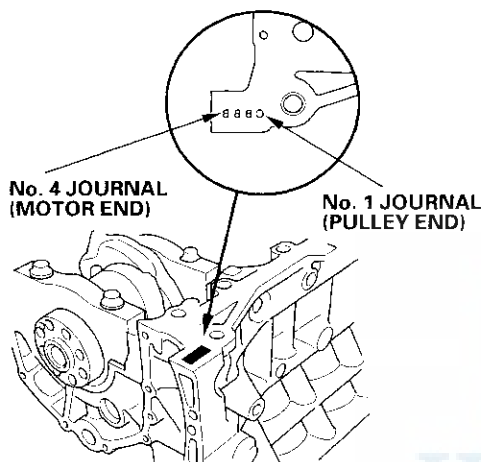
Engine Block

Crankshaft Main Bearing Replacement (cont'd)

Main Bearing Selection

Crankshaft Bore Code Location

Letters or bars have been stamped on the end of the block as a code for the size of each of the four main journal bores. Use them, and the numbers stamped on the crankshaft (codes for main journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Bearing Identification

Color code is on the edge of the bearing

1 or I	Smaller main journal
2 or II	
3 or III	
4 or IIII	
5 or IIIII	
6 or IIIII	
	Smaller bearing (Thicker)

→ Larger crank bore

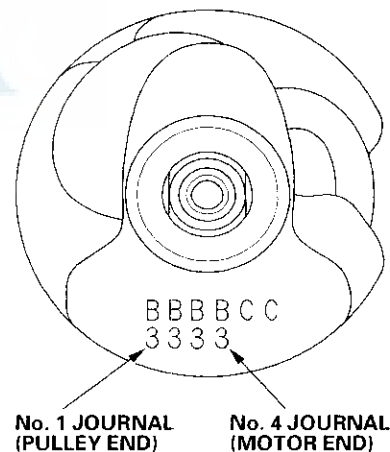
A or I	B or II	C or III	D or IIII
--------	---------	----------	-----------

→ Smaller bearing (Thicker)

Red/Pink	Pink	Pink/Yellow	Yellow
Pink	Pink/Yellow	Yellow	Yellow/Green
Pink/Yellow	Yellow	Yellow/Green	Green
Yellow	Yellow/Green	Green	Green/Brown
Yellow/Green	Green	Green/Brown	Brown
Green	Green/Brown	Brown	Brown/Black

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Main Journal Code Locations (Numbers or Bars)





Connecting Rod Bearing Replacement

Rod Bearing Clearance Inspection

1. Remove the connecting rod cap and bearing half (see page 7-13).
2. Clean the crankshaft rod journal and bearing half with a clean shop towel.
3. Place a strip of plastigage across the rod journal.
4. Reinstall the bearing half and cap, and torque the bolts.

Tightening Torque:

20 N·m (2.0 kgf·m, 14 lbf·ft) + 90°

Apply new engine oil to the bolt threads.

NOTE: Do not rotate the crankshaft during inspection.

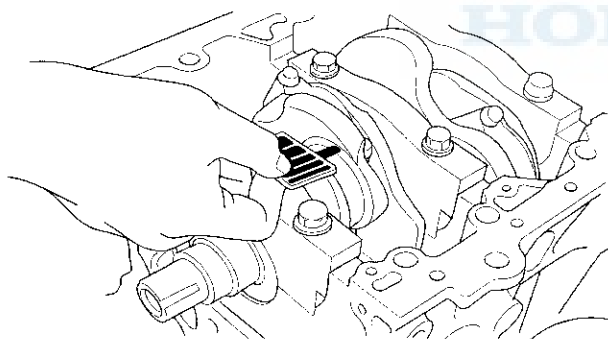
5. Remove the rod cap and bearing half and measure the widest part of the plastigage.

Connecting Rod Bearing-to-Journal Oil Clearance

Standard (New): 0.020–0.044 mm

(0.0008–0.0017 in.)

Service Limit: 0.050 mm (0.0020 in.)



6. If the plastigage measures too wide or too narrow, remove the upper half of the bearing, then install a new, complete bearing with the same color code, and recheck the clearance. Do not file, shim, or scrape the bearings or the caps to adjust clearance.
7. If the plastigage shows the clearance is still incorrect, try the next larger or smaller bearing (the color listed above or below that one), and check clearance again. If the proper clearance cannot be obtained by using the appropriate larger or smaller bearings, replace the crankshaft and start over.

(cont'd)

Engine Block

Connecting Rod Bearing Replacement (cont'd)

Rod Bearing Selection

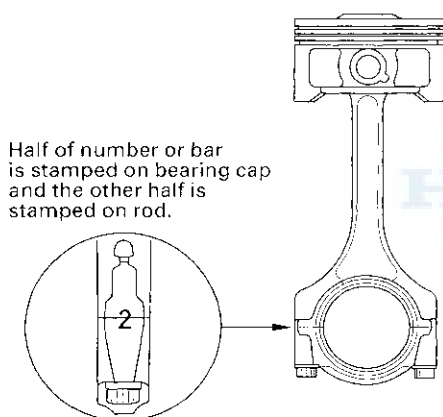
Each rod falls into one of four tolerance ranges (from 0 to 0.024 mm (0.0009 in.), in 0.006 mm (0.0002 in.) increments) depending on the size of its big end bore. It's then stamped with a number or bar (1, 2, 3, or 4/I, II, III, or IIII) indicating the range. You may find any combination of 1, 2, 3, or 4/I, II, III, or IIII in any engine.

Normal Bore Size: 56.0 mm (2.20 in.)

Inspect the connecting rod for cracks and heat damage.

Connecting Rod Journal Code Locations

Numbers or bars have been stamped on the side of each connecting rod as a code for the size of the big end. Use them, and the letters or bars stamped on the crank (codes for rod journal size), to choose the correct bearings. If the codes are indecipherable because of an accumulation of dirt and dust, do not scrub them with a wire brush or scraper. Clean them only with solvent or detergent.



Bearing Identification

Color code is on the edge of the bearing

A or I
B or II
C or III
D or IIII
E or IIII
F or IIIII

Smaller
rod
journal

Smaller
bearing
(Thicker)

➔ Larger big end bore

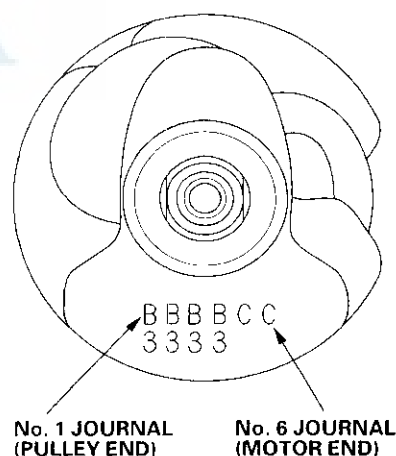
1 or I	2 or II	3 or III	4 or IIII
--------	---------	----------	-----------

➔ Smaller bearing (Thicker)

Pink	Pink/ Yellow	Yellow	Yellow/ Green
Pink/ Yellow	Yellow	Yellow/ Green	Green
Yellow	Yellow/ Green	Green	Green/ Brown
Yellow/ Green	Green	Green/ Brown	Brown
Green	Green/ Brown	Brown	Brown/ Black
Green/ Brown	Brown	Brown/ Black	Black

NOTE: When using bearing halves of different colors, it does not matter which color is used in the top or bottom.

Connecting Rod Journal Code Locations (Letters or Bars)





Oil Pan Removal

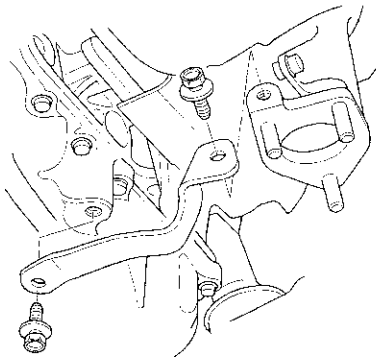
1. If the engine is out of the vehicle, go to step 29.
2. Drain the engine oil (see page 8-7).
3. Remove the front grille cover (see step 1 on page 20-111).
4. Remove the intake manifold cover (see step 11 on page 5-3).
5. Disconnect the connectors from the steering gearbox (see step 20 on page 5-5).
6. Remove the steering joint cover. Lock the steering wheel. Make a reference mark across the steering joint and steering gearbox pinion shaft. Remove the steering joint bolt, and disconnect the steering joint from the steering gearbox pinion shaft. To prevent damage to the cable reel, do not turn the steering wheel once the steering joint has been removed (see step 27 on page 5-6).
7. Raise the vehicle on the hoist to full height.
8. Remove the front wheels.
9. Remove the splash shield (see step 32 on page 5-6).
10. Disconnect the stabilizer links (see page 18-23).
11. Remove the damper fork (see step 3 on page 18-21).
12. Separate the tie-rod end ball joints from the knuckles (see step 11 on page 17-48).
13. Separate the knuckles from the lower arms (see step 5 on page 18-22).
14. Remove exhaust pipe A (see step 41 on page 5-7).
15. Remove the bolt securing the transmission lower mount (see step 42 on page 5-7).
16. Lower the vehicle on the hoist.
17. Remove the connector bracket from the front cylinder head; use the bracket bolt hole to attach engine balancer bar front arm (see step 47 on page 5-8).
18. Remove the harness clamp bracket from the rear cylinder head; use the bracket bolt hole to attach engine balancer bar rear arm (see step 48 on page 5-8).
19. Lift and support the engine with engine hanger and engine balancer bar. Attach the front arm to the front cylinder head with a spacer and the connector bracket bolt (10 x 1.25 mm). Attach the rear arm to the rear cylinder head with the harness clamp bracket bolt (8 x 1.25 mm) (see step 49 on page 5-8).
20. Remove the harness clamp, then disconnect the front active control engine mount actuator connector. Remove the front mount stop, then remove the front mount bolt (see step 51 on page 5-9).
21. Disconnect the rear active control engine mount actuator connector. Remove the rear mount stop, then remove the rear mount bolt (see step 53 on page 5-9).
22. Remove the harness clamp, then remove the shift cable bracket (see step 55 on page 5-9).
23. Raise the vehicle on the hoist to full height.
24. Remove both mid-mounts (see step 57 on page 5-9).
25. Make the appropriate reference lines at both ends of the subframe that line up with the edge of the stiffeners (see step 58 on page 5-10).
26. Attach the special tool to the subframe by hanging the belt over the front of the subframe, then secure the belt with its stop (see step 59 on page 5-10).
27. Raise the jack and line up the slots in the special tool arms with the bolt holes on the jack base, then securely attach them with four bolts.
28. Remove the subframe (see step 61 on page 5-10).

(cont'd)

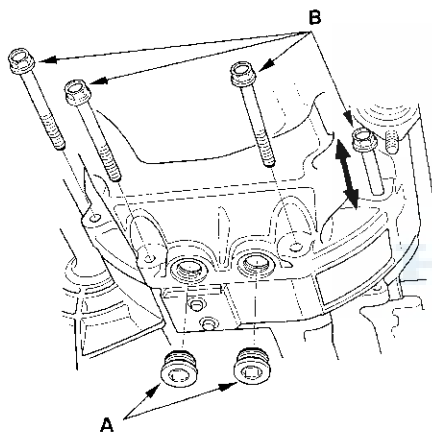
Engine Block

Oil Pan Removal (cont'd)

29. Remove the rear warm up three way catalytic converter (rear WU-TWC) bracket.

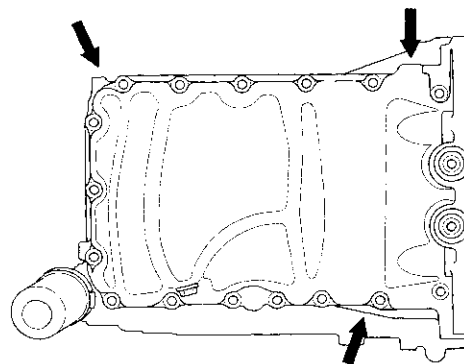


30. Remove the sealing bolts (A) and the four bolts (B) securing the transmission.



31. Remove the bolts securing the oil pan.

32. Using a flat blade screwdriver, separate the oil pan from the block in the places shown.

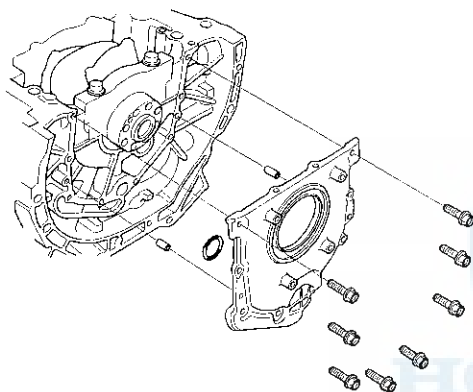


33. Remove the oil pan.

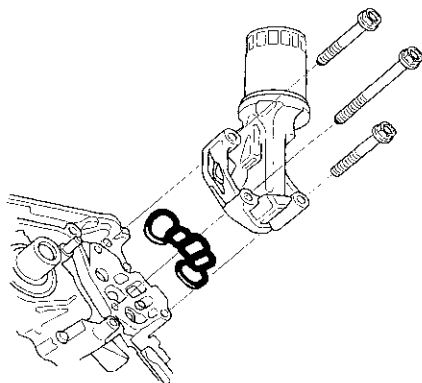


Crankshaft and Piston Removal

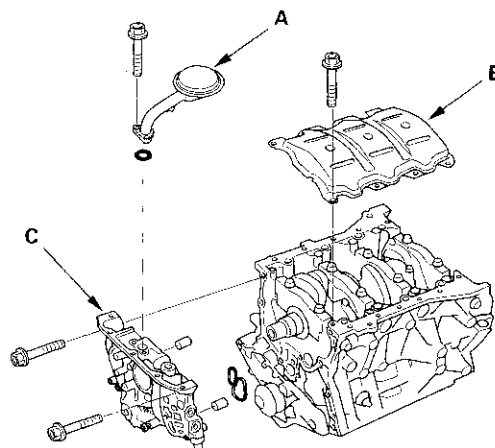
1. Remove the engine assembly (see page 5-2).
2. Remove the IMA motor housing (see page 12-153).
3. Remove the cylinder heads (see page 6-36).
4. Remove the crankshaft position (CKP) sensor (see page 11-216).
5. Remove the timing belt drive pulley from the crankshaft.
6. Remove the oil pan (see page 7-11).
7. Remove the engine block end cover.



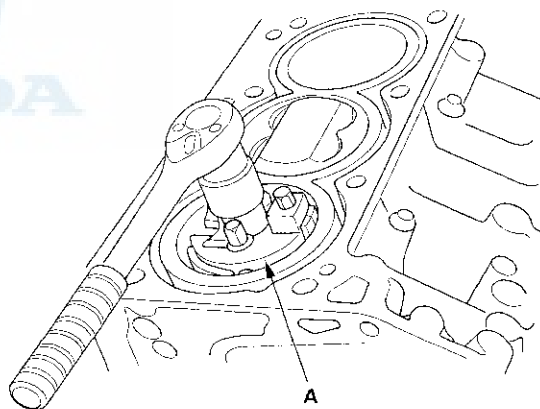
8. Remove the oil filter base/oil filter assembly.



9. Remove the oil screen (A), baffle plate (B), and oil pump (C).



10. If you can feel a ridge of metal or hard carbon around the top of any cylinder, remove it with a ridge reamer (A). Follow the reamer manufacturer's instructions. If the ridge is not removed, it may damage the piston as it's pushed out.



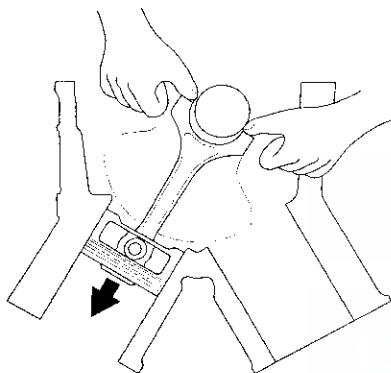
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Engine Block

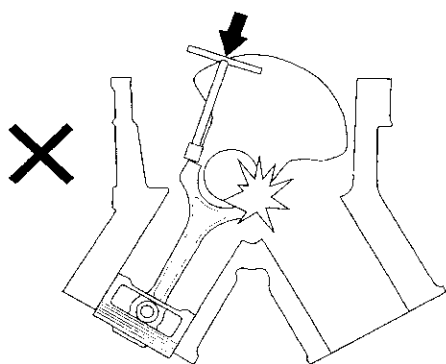
Crankshaft and Piston Removal (cont'd)

11. Remove the bearing from the cap. Keep all caps/bearings in order.
12. Remove the upper bearing halves from the connecting rods, and set them aside with their respective caps.
13. Remove the connecting rod caps after setting the crank pin at bottom dead center (BDC) for each cylinder. Remove the piston assembly by pushing on the connecting rod. Take care not to damage the oil jets, crank pin, or cylinder with the connecting rod.

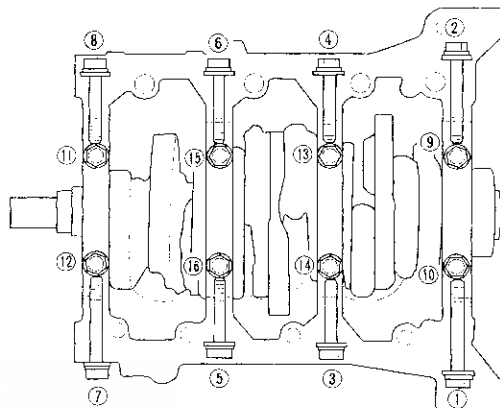
CORRECT



INCORRECT



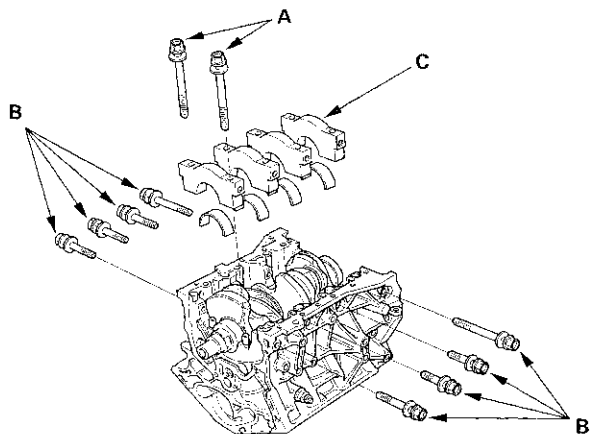
14. To avoid confusion during reassembly, mark each piston/connecting rod assembly with its cylinder number.
15. Unscrew the bearing cap bolts and bearing cap side bolts in sequence 1/3 turn at a time; repeat the sequence until all bolts are loosened.



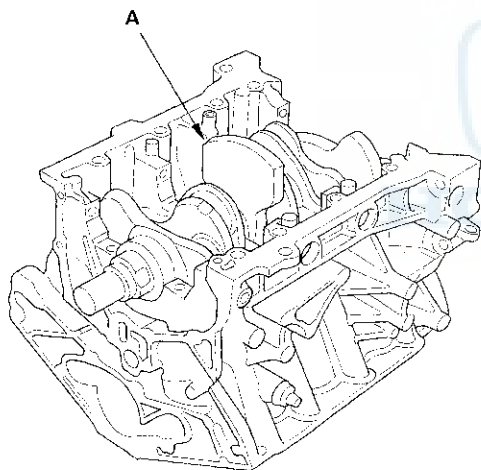


Crankshaft Inspection

16. Remove the bearing cap bolts (A) and bearing cap side bolts (B), then remove the bearing cap (C).



17. Lift the crankshaft (A) out of the engine block, being careful not to damage the journals.



18. Reinstall the main caps and bearings on the engine block in the proper order.

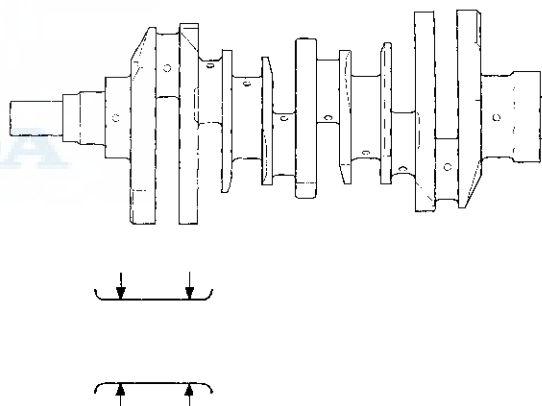
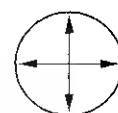
Out-of-Round and Taper

1. Remove the crankshaft from the engine block (see page 7-13).
2. Clean the crankshaft oil passages with pipe cleaners or a suitable brush.
3. Check the keyway and threads.
4. Measure out-of-round at the middle of each rod and main journal in two places. The difference between measurements on each journal must not be more than the service limit.

Journal Out-of-Round

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)



5. Measure taper at the edges of each rod and main journal. The difference between measurements on each journal must not be more than the service limit.

Journal Taper

Standard (New): 0.005 mm (0.0002 in.) max.

Service Limit: 0.010 mm (0.0004 in.)

(cont'd)

Engine Block

Crankshaft Inspection (cont'd)

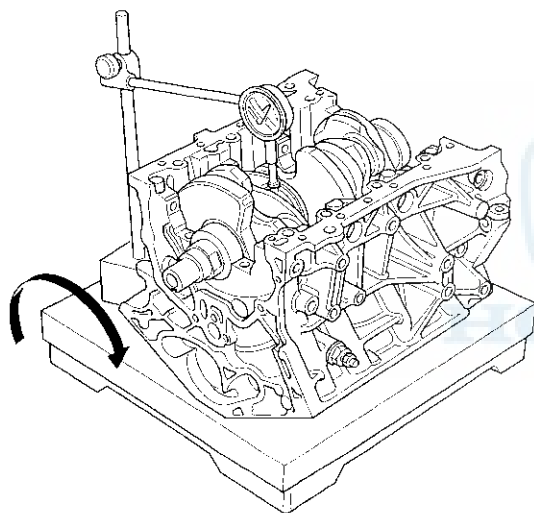
Straightness

6. Place the engine block on the surface plate.
7. Clean and install the bearings on the No. 1 and No. 4 journal of the engine block.
8. Lower the crankshaft into the block.
9. Measure the runout on all of the main journals. Rotate the crankshaft two complete revolutions. The difference between measurements on each journal must not be more than the service limit.

Crankshaft Total Runout

Standard (New): 0.025 mm (0.0010 in.) max.

Service Limit: 0.030 mm (0.0012 in.)



Block and Piston Inspection

1. Remove the piston from the engine block (see page 7-13).
2. Check the piston for distortion or cracks.
3. Measure the piston diameter at a point 16.0 mm (0.63 in.) from the bottom of the skirt.

Piston Diameter

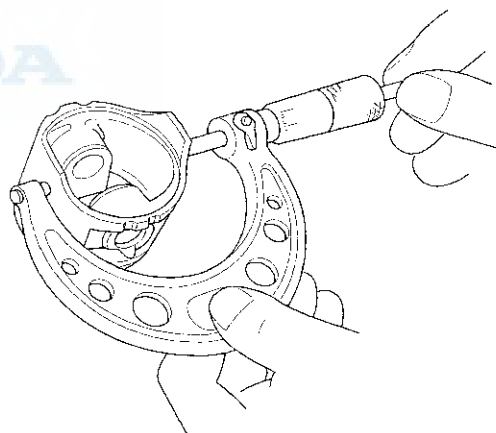
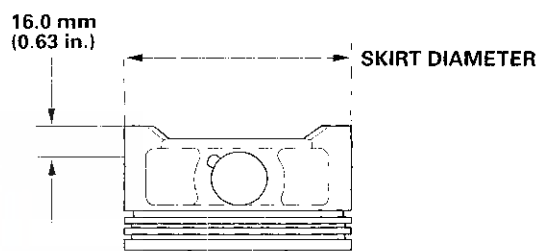
Standard (New): 85.975—85.985 mm
(3.3848—3.3852 in.)

Service Limit: 85.965 mm (3.3844 in.)

Oversize Piston Diameter

0.25: 86.225—86.235 mm (3.3947—3.3951 in.)

0.50: 86.475—86.485 mm (3.4045—3.4049 in.)





4. Measure wear and taper in direction X and Y at three levels in each cylinder as shown. If measurements in any cylinder are beyond the oversize bore service limit, replace the block. If the block has to be rebored, refer to step 7 after reboring.

Cylinder Bore Size

Standard (New): 86.000–86.015 mm
(3.3858–3.3864 in.)

Service Limit: 86.065 mm (3.3884 in.)

Oversize

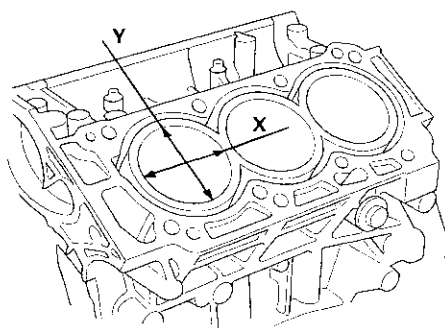
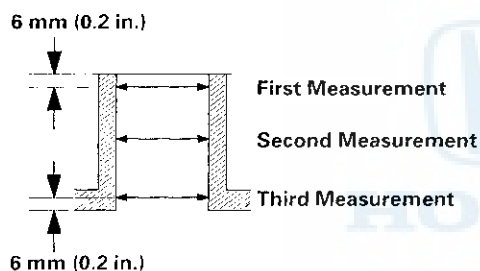
0.25: 86.250–86.265 mm (3.3957–3.3963 in.)

0.50: 86.500–86.515 mm (3.4055–3.4061 in.)

Reboring Limit: 0.5 mm (0.02 in.)

Bore Taper

Limit: (Difference between first and third measurement) 0.05 mm (0.002 in.)

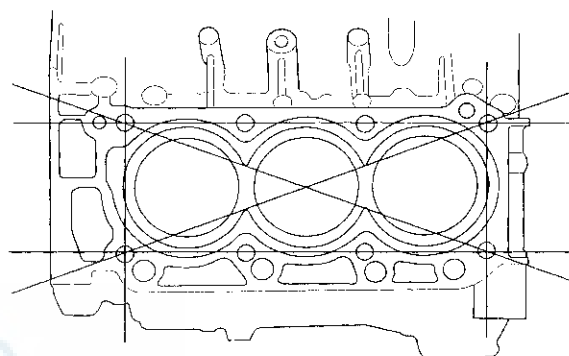


5. Scored or scratched cylinder bores must be honed (see page 7-18).
6. Check the top of the engine block for warpage. Measure along the edges and across the center as shown.

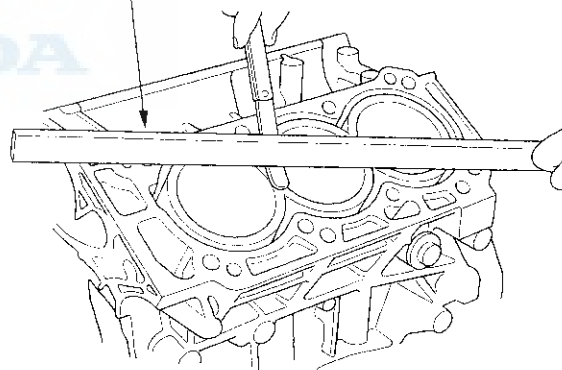
Engine Block Warpage

Standard (New): 0.07 mm (0.003 in.) max.

Service Limit: 0.10 mm (0.004 in.)



PRECISION STRAIGHT EDGE



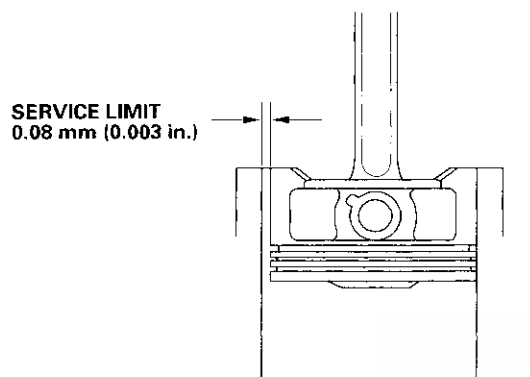
(cont'd)

Engine Block

Block and Piston Inspection (cont'd)

7. Calculate the difference between cylinder bore diameter and piston diameter. If the clearance is near or exceeds the service limit, inspect the piston and cylinder bore for excessive wear.

Piston-to-Cylinder Bore Clearance
Standard (New): 0.015—0.040 mm
(0.0006—0.0016 in.)
Service Limit: 0.08 mm (0.003 in.)

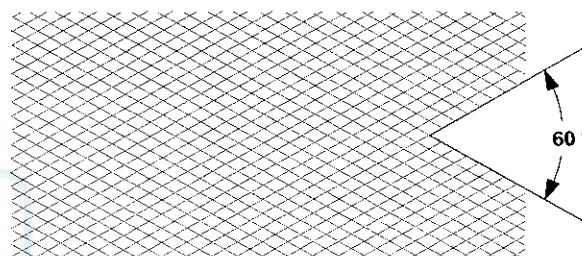


Cylinder Bore Honing

1. Measure the cylinder bores (see step 4 on page 7-17). If the engine block is to be reused, hone the cylinders and remeasure the bores. Only scored or scratched cylinder bores must be honed.
2. Remove and discard the oil jets (see page 8-9).
3. Hone the cylinder bores with honing oil and a fine (400 grit) stone in a 60 degree crosshatch pattern.

NOTE:

- Use only a rigid hone with 400 grit or finer stone, such as Sunnen, Ammco, or equivalent.
- Do not use stones that are worn or broken.



4. When honing is complete, thoroughly clean the engine block of all metal particles. Wash the cylinder bores with hot soapy water, then dry and oil them immediately to prevent rusting. Never use solvent, it will only redistribute the grit on the cylinder walls.
5. If scoring or scratches are still present in the cylinder bores after honing to the service limit, rebore the engine block. Some light vertical scoring and scratching is acceptable if it is not deep enough to catch your fingernail and does not run the full length of the bore.
6. Install the oil jets (see page 8-9).

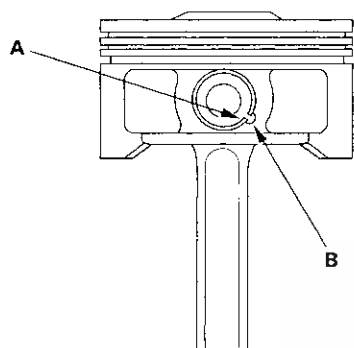


Piston, Pin, and Connecting Rod Replacement

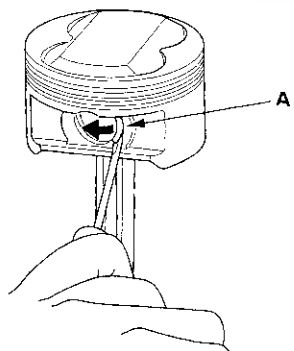
Disassembly

1. Remove the piston from the engine block (see page 7-13).
2. Apply new engine oil to the piston pin snap rings (A) and turn them in the ring grooves until the end gaps are lined up with the cutouts in the piston pin bores (B).

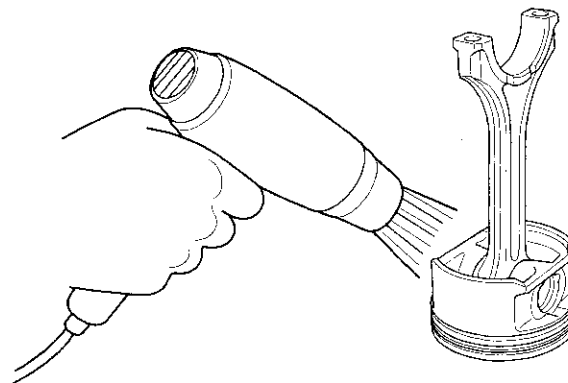
NOTE: Take care not to damage the ring grooves.



3. Remove snap rings (A) from both sides of the piston. Start at the cutout in the piston pin bore. Remove the snap rings carefully so they do not go flying or get lost. Wear eye protection.



4. Heat the piston and connecting rod assembly to about 158 °F (70 °C), then remove the piston pin.



(cont'd)

Engine Block

Piston, Pin, and Connecting Rod Replacement (cont'd)

Inspection

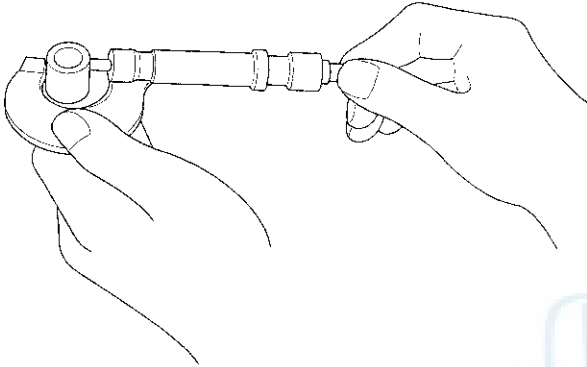
NOTE: Inspect the piston, piston pin, and connecting rod when they are at room temperature.

1. Measure the diameter of the piston pin.

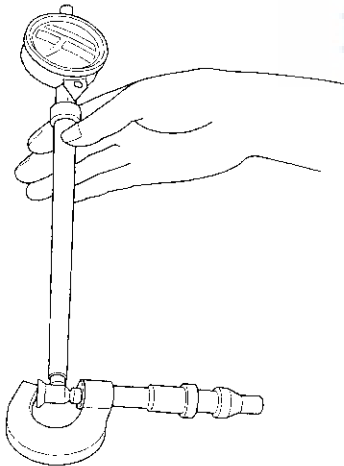
Piston Pin Diameter

Standard (New): 21.962–21.965 mm
(0.8646–0.8648 in.)

Service Limit: 21.954 mm (0.8643 in.)



2. Zero the dial indicator to the piston pin diameter.

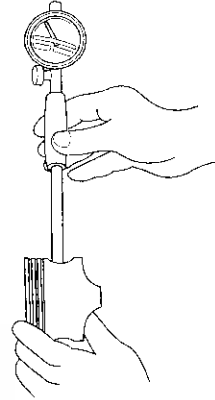


3. Check the difference between the piston pin diameter and piston pin hole diameter on the piston.

Piston Pin-to-Piston Clearance

Standard (New): -0.0050 to $+0.0010$ mm
(-0.00020 to $+0.00004$ in.)

Service Limit: 0.004 mm (0.0002 in.)

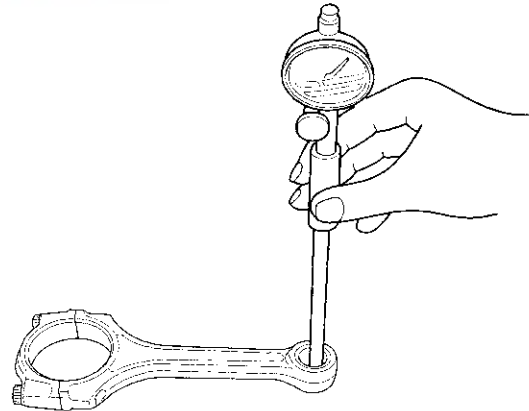


4. Measure the piston pin-to-connecting rod clearance.

Piston Pin-to-Connecting Rod Clearance

Standard (New): 0.005–0.014 mm
(0.0002–0.0006 in.)

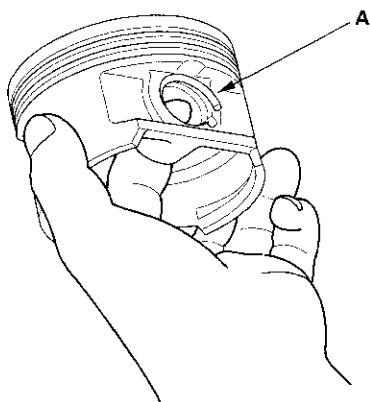
Service Limit: 0.019 mm (0.0007 in.)





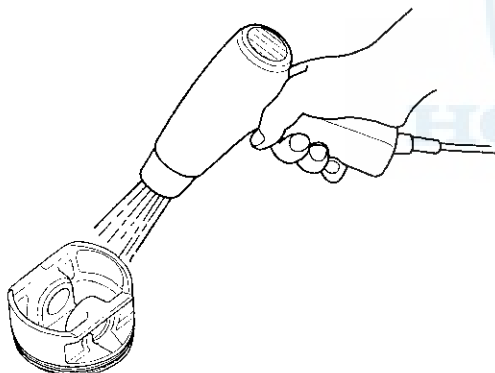
Reassembly

1. Install a piston pin snap ring (A).

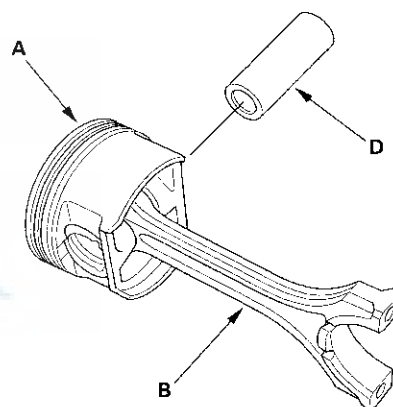
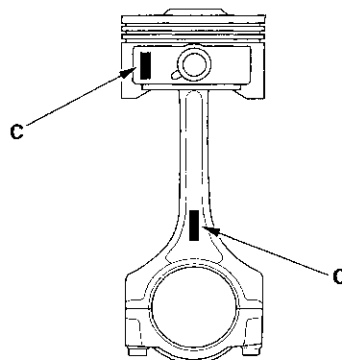


2. Coat the piston pin bore in the piston, the bore in the connecting rod, and the piston pin with new engine oil.

3. Heat the piston to about 158 °F (70 °C).



4. Assemble the piston (A) and connecting rod (B) with the embossed marks (C) on the same side. Install the piston pin (D).

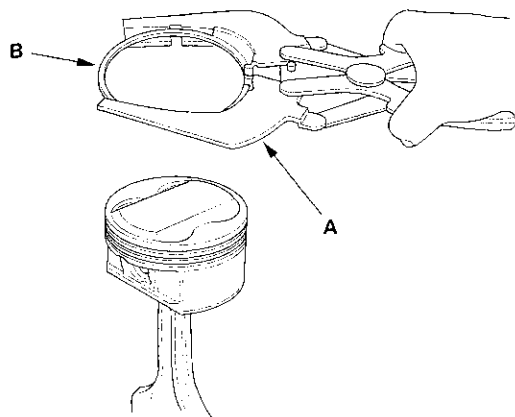


5. Install the remaining snap ring.

Engine Block

Piston Ring Replacement

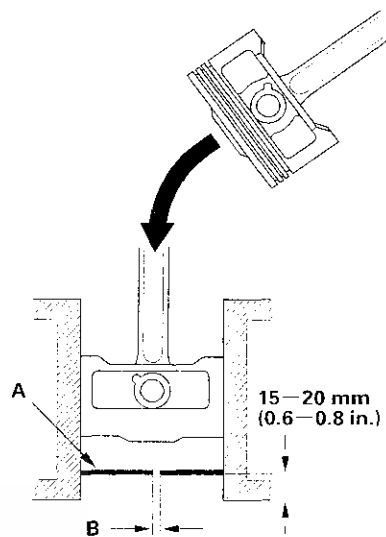
1. Remove the piston from the engine block (see page 7-13).
2. Using a ring expander (A), remove the old piston rings (B).



3. Clean all the ring grooves thoroughly with a squared-off broken ring, or a ring groove cleaner with a blade to fit the piston grooves. File down the blade, if necessary. The top ring and second ring grooves are 1.2 mm (0.05 in.) wide, and the oil ring groove is 2.8 mm (0.11 in.) wide. Do not use a wire brush to clean the ring grooves, or cut the ring grooves deeper with the cleaning tool.

NOTE: If the piston is to be separated from the connecting rod, do not install new rings yet.

4. Using a piston, push a new ring (A) into the cylinder bore 15–20 mm (0.6–0.8 in.) from the bottom.



5. Measure the piston ring end-gap (B) with a feeler gauge:
 - If the gap is too small, check to see if you have the proper rings for your engine.
 - If the gap is too large, recheck the cylinder bore diameter against the wear limits (see step 4 on page 7-17). If the bore is over the service limit, the engine block must be rebored.

Piston Ring End-Gap

Top Ring:

Standard (New): 0.20–0.35 mm
(0.008–0.014 in.)

Service Limit: 0.60 mm (0.024 in.)

Second Ring:

Standard (New): 0.40–0.55 mm
(0.016–0.022 in.)

Service Limit: 0.70 mm (0.028 in.)

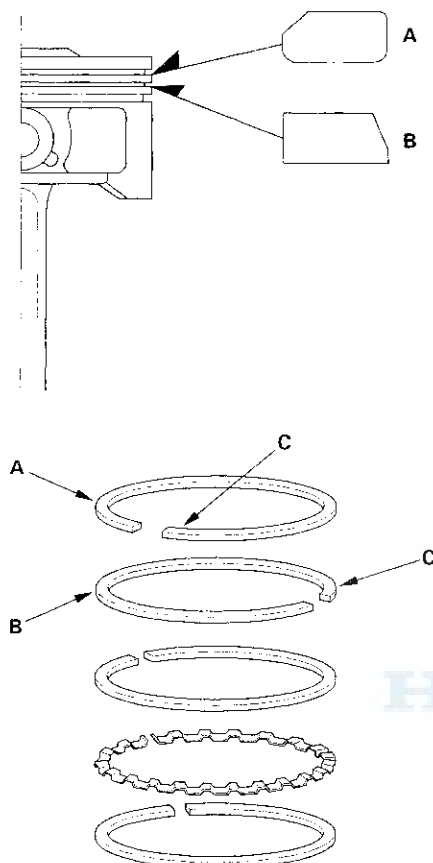
Oil Ring:

Standard (New): 0.20–0.70 mm
(0.008–0.028 in.)

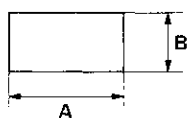
Service Limit: 0.80 mm (0.031 in.)



6. Install the rings as shown. The top ring (A) has a AR or 1A mark and the second ring (B) has a 2R or 2B mark. The manufacturing marks (C) must be facing upward.



Piston Ring Dimensions:



Top Ring (Standard)
A: 3.1 mm (0.12 in.)
B: 1.2 mm (0.05 in.)
Second Ring (Standard)
A: 3.4 mm (0.13 in.)
B: 1.2 mm (0.05 in.)

7. After installing a new set of rings, measure the ring-to-groove clearance:

Top Ring Clearance

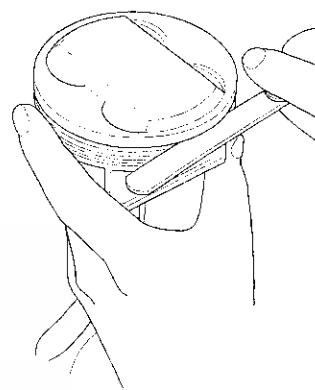
Standard (New): 0.055—0.080 mm
(0.0022—0.0031 in.)

Service Limit: 0.15 mm (0.006 in.)

Second Ring Clearance

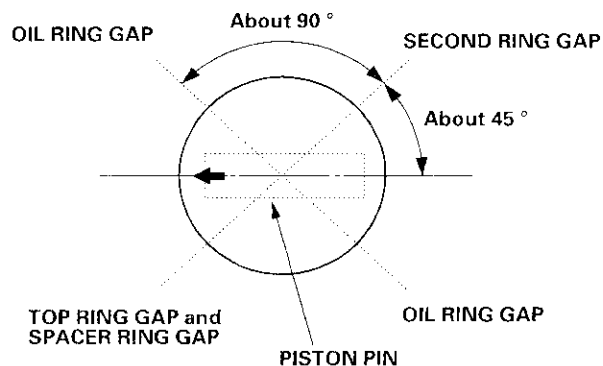
Standard (New): 0.030—0.055 mm
(0.0012—0.0022 in.)

Service Limit: 0.13 mm (0.005 in.)



8. Rotate the rings in their grooves to make sure they do not bind.

9. Position the ring end gaps as shown:



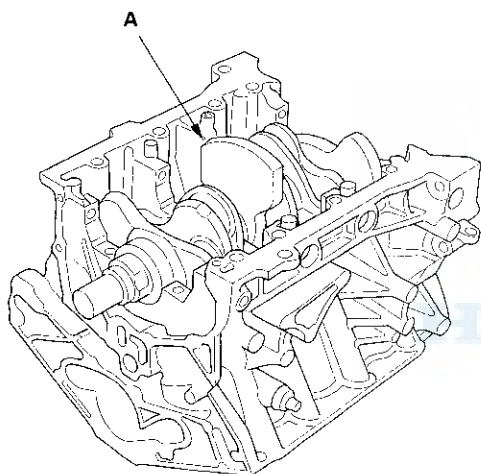
Engine Block

Crankshaft and Piston Installation

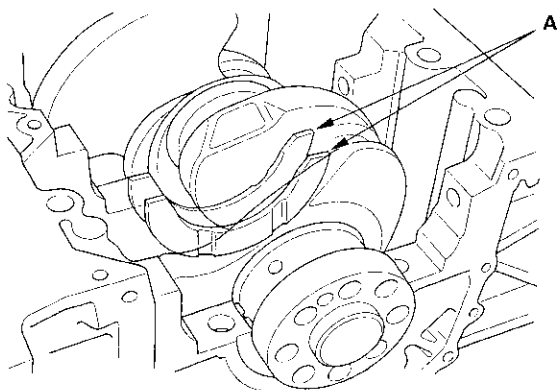
Special Tools Required

- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCA0200

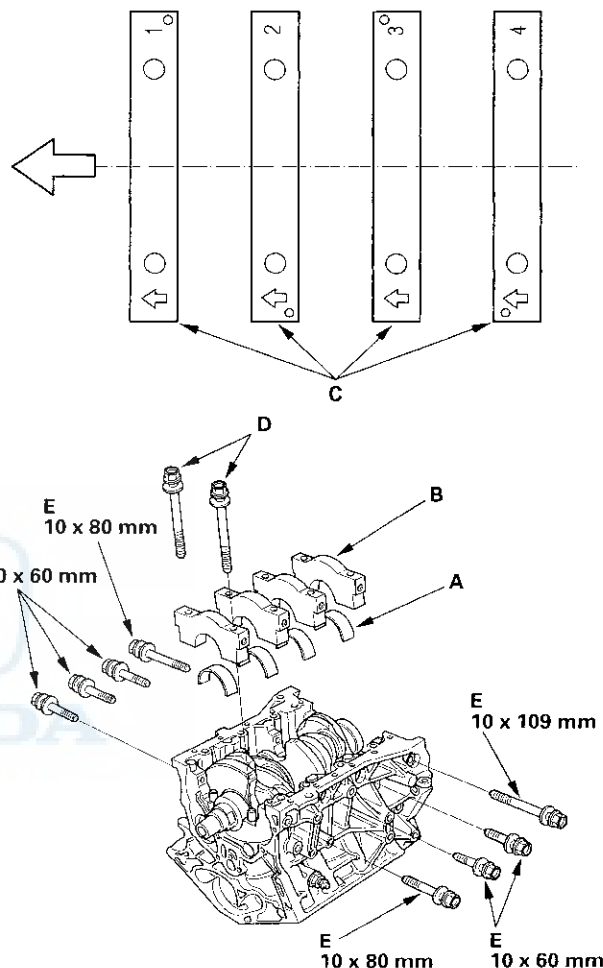
1. Check the connecting rod bearing clearance with plastigage (see page 7-9).
2. Check the main bearing clearance with plastigage (see page 7-7).
3. Install the bearing halves in the engine block and connecting rods.
4. Apply new engine oil to all the main bearing and rod bearing journals.
5. Lower the crankshaft (A) into the block.



6. Apply new engine oil to the thrust washer surfaces. Install the thrust washers (A) in the No. 3 journal.



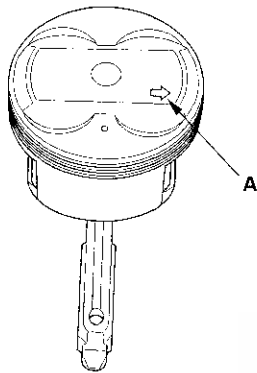
7. Install the bearings (A) and bearing caps (B) with the arrow (C) facing the timing belt end of the engine.



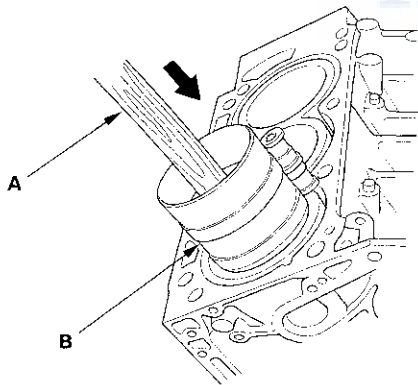
8. Apply new engine oil to the bolt threads and flanges, then loosely install the bearing cap bolts (D) and bearing cap side bolts (E).



9. Set the crankshaft to bottom dead center (BDC) for the cylinder you are installing the piston in.
10. Remove the connecting rod cap. Install the ring compressor, and check that the bearing is securely in place.
11. Position the piston with the arrow (A) facing the timing belt side of the engine.

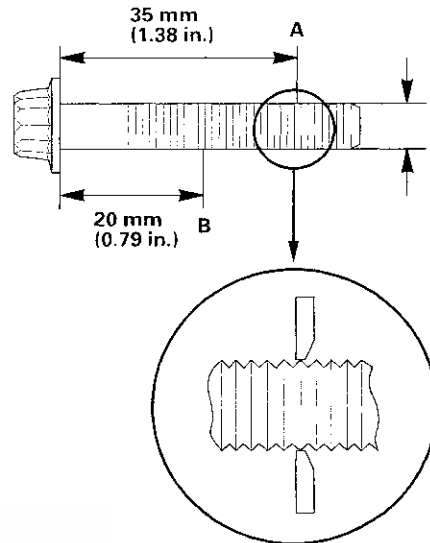


12. Position the piston in the cylinder, and tap it in using the wooden handle of a hammer (A). Maintain downward force on the ring compressor (B) to prevent the rings from expanding before entering the cylinder bore.



13. Stop after the ring compressor pops free, and check the connecting rod-to-crank journal alignment before pushing the piston into place.

14. Measure the diameter of each connecting rod bolt at point A and point B.



15. Calculate the difference in diameter between point A and point B.

Point A—Point B = Difference in Diameter

Difference in Diameter

Specification: 0—0.1 mm (0—0.004 in.)

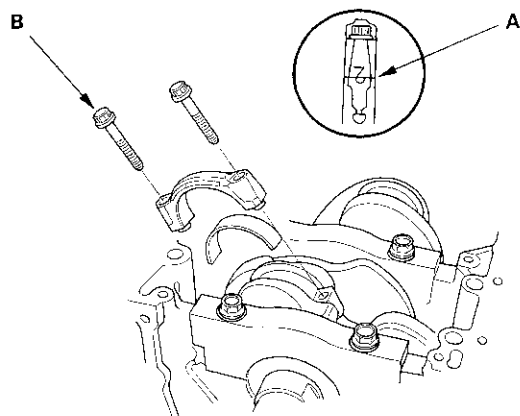
16. If the difference in diameter is out of tolerance, replace the connecting rod bolt.

(cont'd)

Engine Block

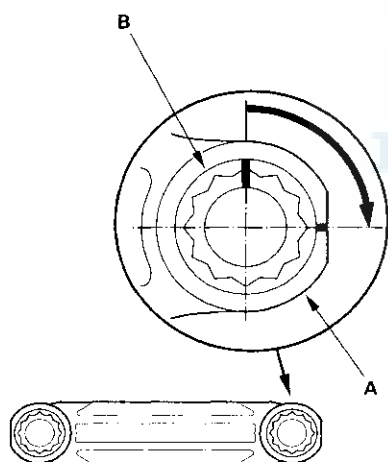
Crankshaft and Piston Installation (cont'd)

17. Line up the mark (A) on the connecting rod and cap, then install the cap.



18. Apply new engine oil to the bolt threads. Torque the bolts (B) to 20 N·m (2.0 kgf·m, 14 lbf·ft).

19. Mark the connecting rod (A) and bolt head (B) as shown.



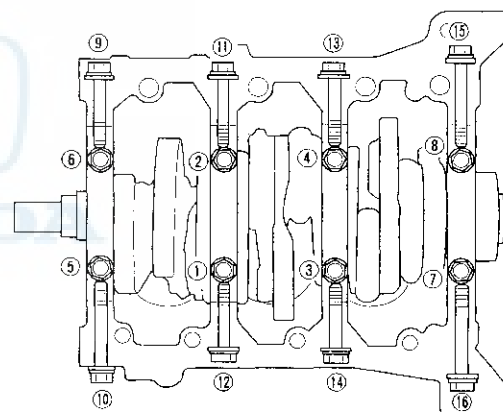
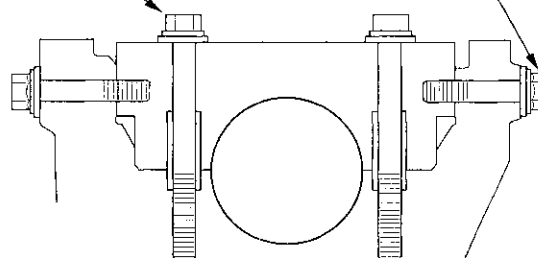
20. Tighten the bolt until the mark on the bolt head lines up with the mark on the connecting rod (turn the bolt 90°).

NOTE: Remove the connecting rod bolt if you tightened it beyond the specified angle, and go back to step 14 of the procedure. Do not loosen it back to the specified angle.

21. Tighten the bearing cap bolts (A), and then the bearing cap side bolts (B) to the specified torque in the sequence shown. Repeat the torque sequence again to ensure the bolts are properly torqued.

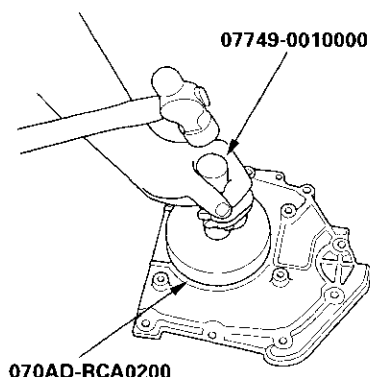
A
11 x 1.5 mm
74 N·m
(7.5 kgf·m, 54 lbf·ft)

B
10 x 1.25 mm
49 N·m
(5.0 kgf·m, 36 lbf·ft)





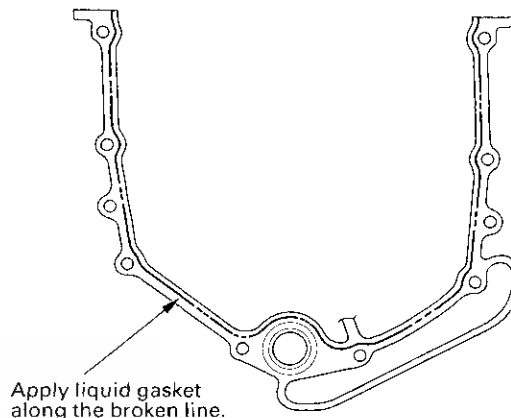
22. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
23. Drive the new crankshaft oil seal until the special tool bottoms on the engine block end cover.



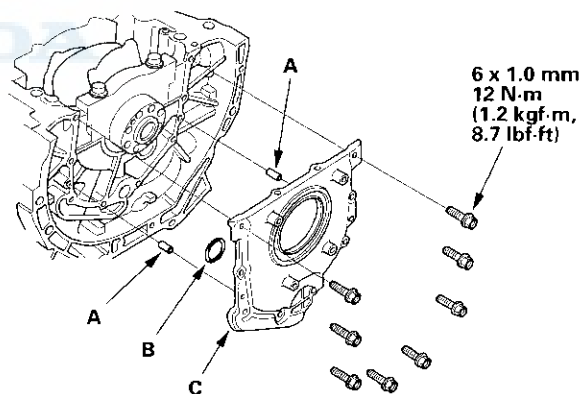
24. Remove all of the old liquid gasket from the engine block end cover mating surfaces, bolts, and bolt holes.
25. Clean and dry the engine block end cover mating surfaces.

26. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the engine block end cover.

NOTE: Do not install the parts if 4 minutes or more have elapsed since applying the liquid gasket. Instead, reapply liquid gasket after removing the old residue.



27. Install the dowel pins (A), new O-ring (B), and the engine block end cover (C) on the engine block.



28. Clean the excess grease off the crankshaft, and check the seal for distortion.

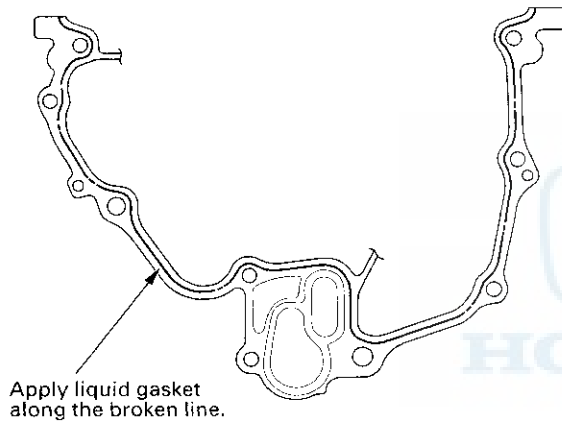
(cont'd)

Engine Block

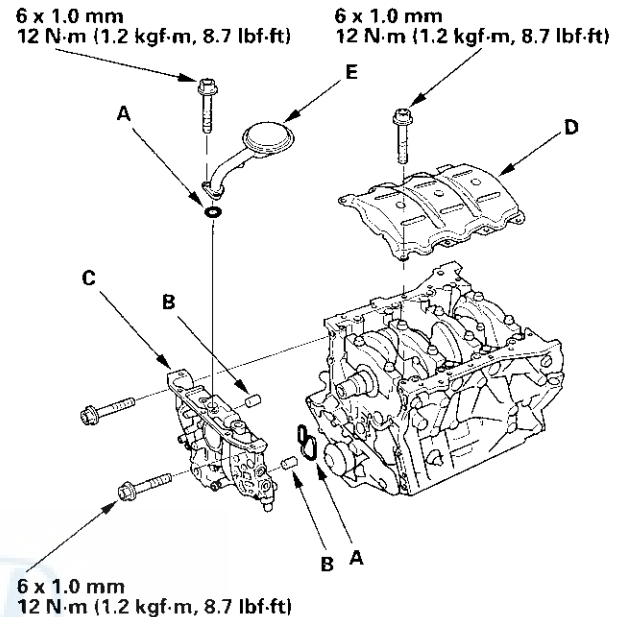
Crankshaft and Piston Installation (cont'd)

29. Install a new crankshaft oil seal in the oil pump (see step 2 on page 8-13).
30. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
31. Clean and dry the oil pump mating surfaces.
32. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump.

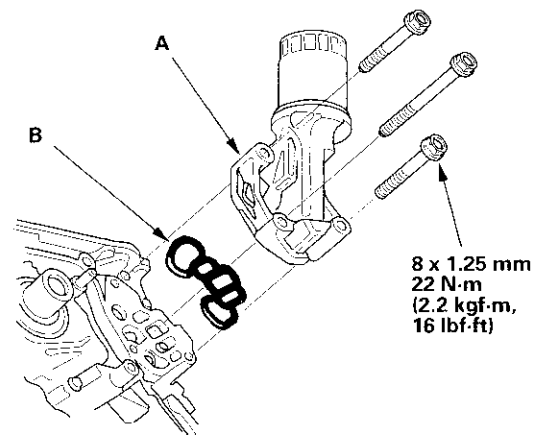
NOTE: Do not install the parts if 4 minutes or more have elapsed since applying the liquid gasket. Instead, reapply liquid gasket after removing the old residue.



33. Grease the lip of the oil seal, and apply oil to the new O-rings (A).



34. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).
35. Clean the excess grease off the crankshaft, and check the seal for distortion.
36. Install the baffle plate (D), then install the oil screen (E).
37. Install the oil filter base/oil filter assembly (A), with a new O-ring (B).





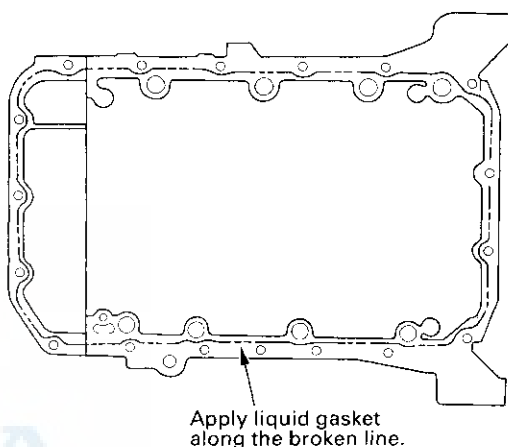
Oil Pan Installation

38. Install the oil pan (see page 7-29).
39. Install the crankshaft position (CKP) sensor (see page 11-216).
40. Install the cylinder heads (see page 6-60).
41. Install the IMA motor housing (see page 12-153).
42. Install the engine assembly (see page 5-11).

NOTE: When any crankshaft or connecting rod bearing is replaced, after assembly it is necessary to run the engine at idling speed until it reaches normal operating temperature, then continue to run it for about 15 minutes.

1. Remove all of the old liquid gasket from the oil pan mating surfaces, bolts, and bolt holes.
2. Clean and dry the oil pan mating surfaces.
3. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the oil pan mating surface of the engine block.

NOTE: Do not install the parts if 4 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing the old residue.



4. Install the oil pan on the engine block.

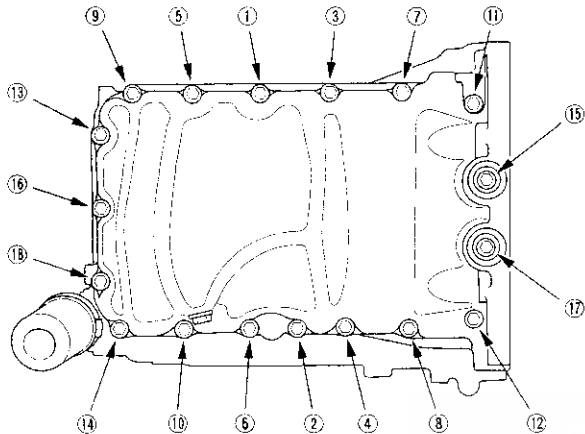
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Engine Block

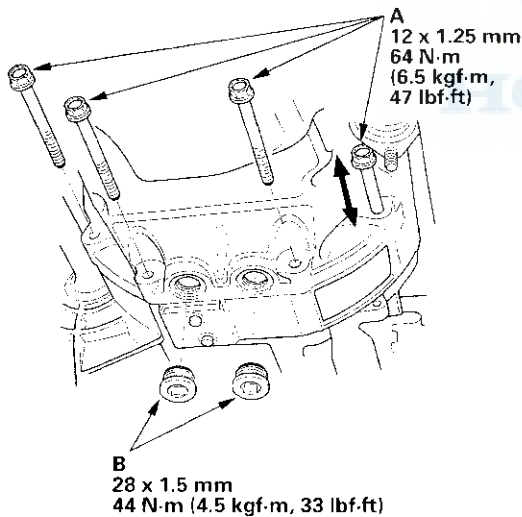
Oil Pan Installation (cont'd)

5. Tighten the bolts in two or three steps. In the final step, tighten all bolts, in sequence, to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).

NOTE: After assembly, wait at least 30 minutes before filling the engine with oil.

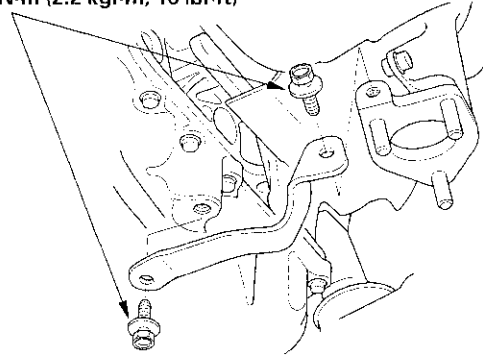


6. Tighten the four bolts (A) securing the transmission, then install the sealing bolts (B).



7. Install the rear warm up three way catalytic converter (rear WU-TWC) bracket.

8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)



8. If the engine is still in the vehicle, do the following steps.
9. Loosely install the four subframe mounting bolts and four 12 x 1.25 mm bolts with the stiffeners (see step 5 on page 5-12).
10. Loosely install both of the new mid-mounting bolts (see step 6 on page 5-13).
11. Align the reference marks with edge of both rear stiffener, and tighten the rear subframe mounting bolts, then front bolts, and tighten the stiffener bolts to the specified torque (see step 7 on page 5-13).
12. Tighten the mid-mount mounting bolts.
13. Remove the jack and special tool.
14. Lower the vehicle on the hoist, then remove the engine hanger and engine balancer bar.
15. Raise the vehicle on the hoist to full height.
16. Tighten the bolt securing the transmission lower mount (see step 12 on page 5-13).
17. Lower the vehicle on the hoist.



18. Install the shift cable bracket, then install the harness clamp (see step 14 on page 5-13).
19. Tighten the rear mount bolt, then install the rear mount stop. Connect the rear active control engine mount actuator connector (see step 15 on page 5-14).
20. Tighten the front mount bolt, then install the front mount stop. Connect the front active control engine mount actuator connector, then install the harness clamp (see step 17 on page 5-14).
21. Install exhaust pipe A, using new gaskets and new self locking nuts (see step 21 on page 5-14).
22. Raise the vehicle on the hoist to full height.
23. Connect the suspension lower arms to the knuckles (see step 5 on page 18-22).
24. Connect the tie-rod end ball joints to the knuckles (see step 29 on page 17-58).
25. Install the damper fork (see step 3 on page 18-21).
26. Connect the stabilizer links (see page 18-23).
27. Install splash shield (see step 27 on page 5-15).
28. Install the front wheels.
29. Lower the vehicle on the hoist.
30. Install the connector bracket to the front cylinder head (see step 34 on page 5-16).
31. Install the harness clamp bracket to the rear cylinder head (see step 35 on page 5-16).
32. Align the reference mark on the steering joint and steering gearbox pinion shaft. Connect the steering joint to the steering gearbox pinion shaft. Tighten the steering joint bolt. Install the steering joint cover (see step 36 on page 5-16).
33. Connect the connectors to the steering gearbox (see step 42 on page 5-17).
34. Install the intake manifold cover (see step 51 on page 5-19).
35. Install the front grille cover (see step 1 on page 20-111).
36. Refill the engine with oil (see step 4 on page 8-7).

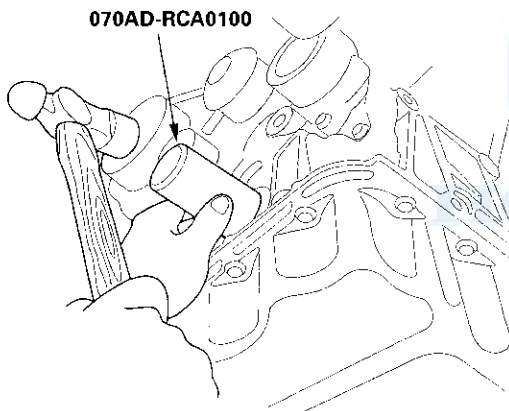
Engine Block

Pulley End Crankshaft Oil Seal Installation - In Car

Special Tools Required

Oil seal driver, 64 mm 070AD-RCA0100

1. Remove the crankshaft position (CKP) sensor, timing belt, and timing belt drive pulley (see page 6-31).
2. Remove the pulley end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the seal driver, drive in the crankshaft oil seal until the driver bottoms against the oil pump. When the seal is in place, clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.



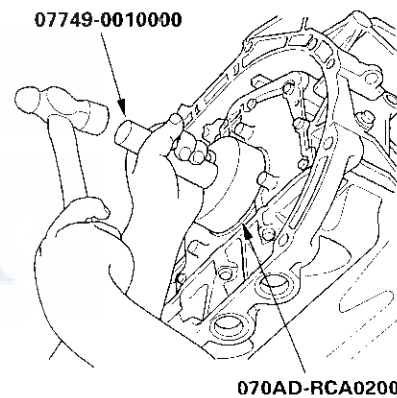
6. Install the timing belt drive pulley, CKP sensor, and timing belt (see page 6-31).

Transmission End Crankshaft Oil Seal Installation - In Car

Special Tools Required

- Driver 07749-0010000
- Driver attachment, 106 mm 070AD-RCA0200

1. Remove the IMA motor housing (see page 12-153).
2. Remove the motor end crankshaft oil seal.
3. Clean and dry the crankshaft oil seal housing.
4. Apply a light coat of multipurpose grease to the crankshaft and to the lip of the seal.
5. Using the special tools, drive in the crankshaft oil seal until the driver attachment bottoms against the engine block end cover. Align the hole in the driver attachment with the pin on the crankshaft.

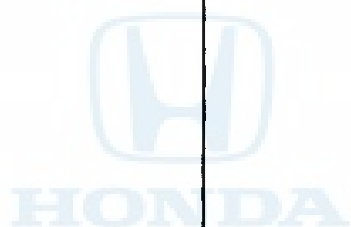
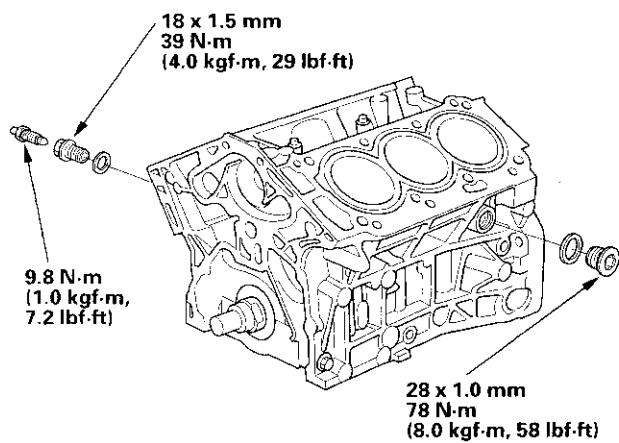


6. Clean any excess grease off the crankshaft, and check that the oil seal lip is not distorted.
7. Install the IMA motor housing (see page 12-153).



Coolant Drain Bolt Installation

NOTE: When installing the drain bolt, always use new washer.



Engine Mechanical



Engine Lubrication

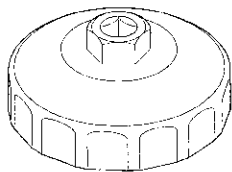
Special Tools	8-2
Component Location Index	8-3
Symptom Troubleshooting Index	8-5
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Oil Pressure Test	8-6
Engine Oil Replacement	8-7
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Oil Filter Feed Pipe Replacement	8-9
Oil Jet Replacement	8-9
Oil Jet Bolt Inspection	8-10
Oil Pump Overhaul	8-11
Oil Pressure Switch Replacement	8-15

HONDA

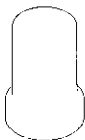
Engine Lubrication

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07HAA-PJ70101	Oil Filter Wrench	1
②	070AD-RCA0100	Oil Seal Driver, 64 mm	1



①

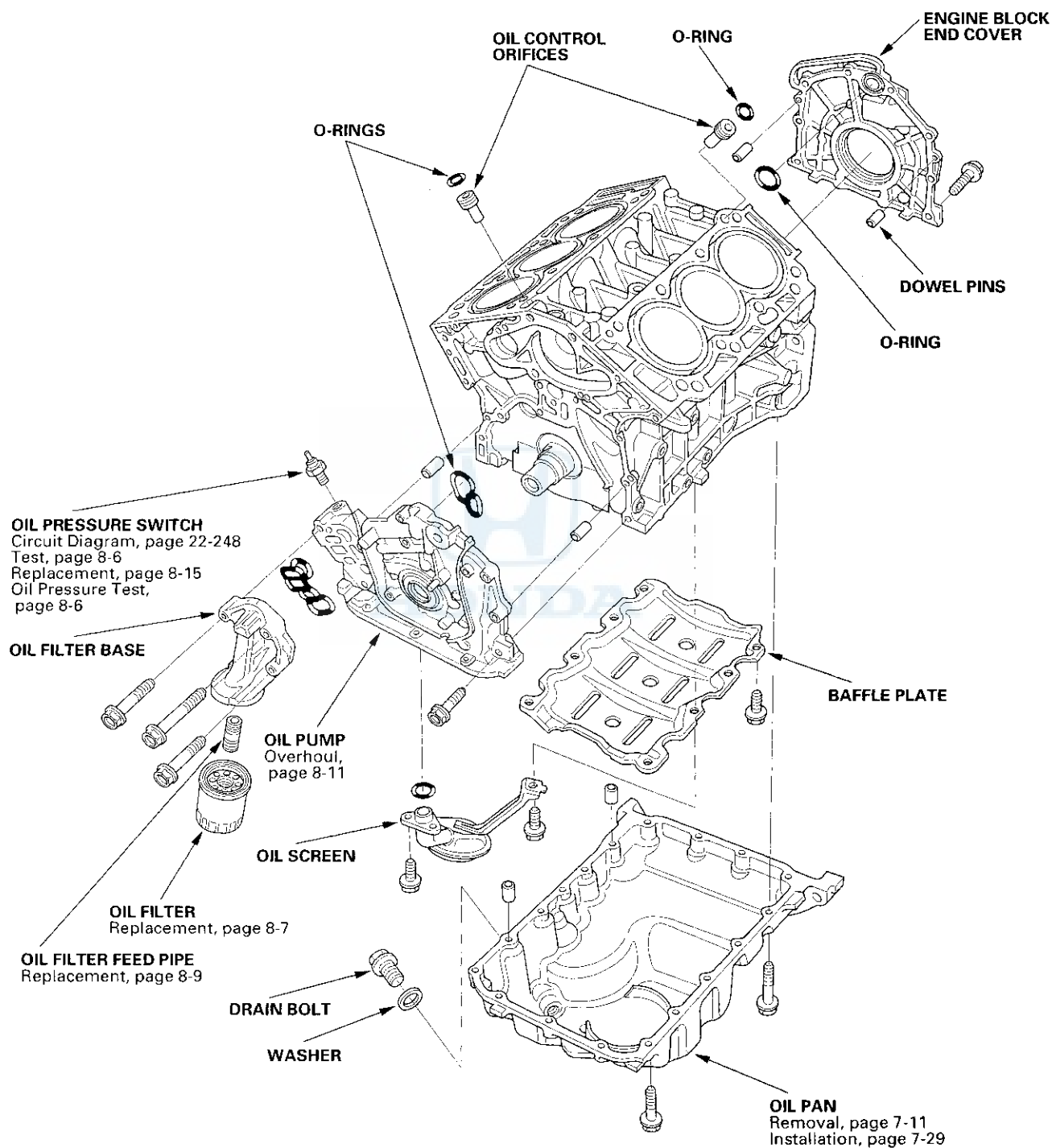


②





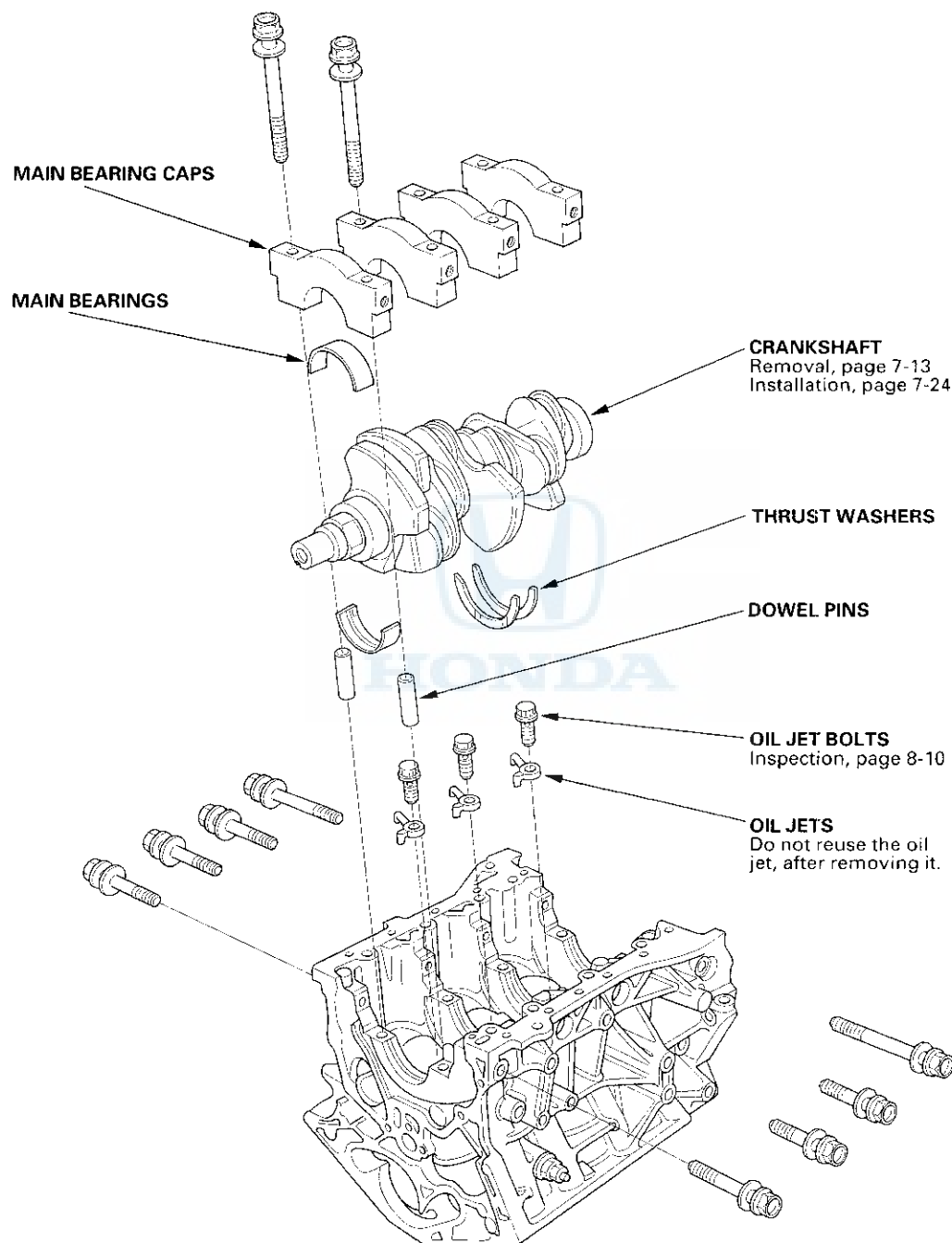
Component Location Index



(cont'd)

Engine Lubrication

Component Location Index (cont'd)





Symptom Troubleshooting Index

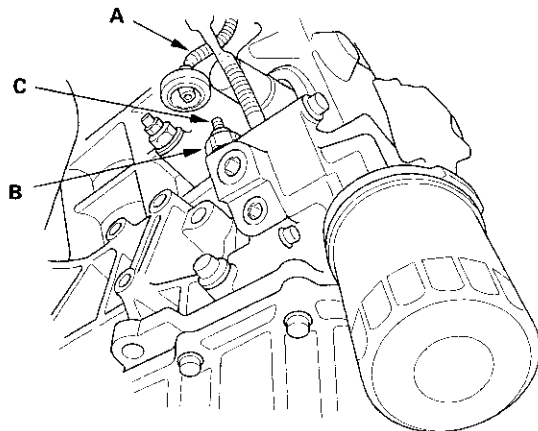
Symptom	Diagnostic procedure	Also check for
Excessive engine oil consumption	<ol style="list-style-type: none">1. Check for worn valve guide(s) (see page 6-51) or worn valve stem seal(s).2. Check for damaged or worn piston ring(s).3. Check for damaged or worn engine internal parts (cylinder wall, pistons, etc.) (see page 7-16).4. Check for oil leaks.5. Check the operation of the positive crankcase ventilation (PCV) system (see page 11-407).6. Check the engine oil for dirt or improper viscosity.	
Low engine oil pressure	<ol style="list-style-type: none">1. Check the oil screen for clogging.2. Test the oil pump (see page 8-11).3. Check the relief valve.4. Test the oil pressure switch.5. Check for excessive clearance in the engine (bearing-to-journal, etc.).6. Check the engine oil for dirt or improper viscosity.	
High engine oil pressure	Check the relief valve.	



Engine Lubrication

Oil Pressure Switch Test

1. Remove the YEL/RED wire (A) from the engine oil pressure switch (B).

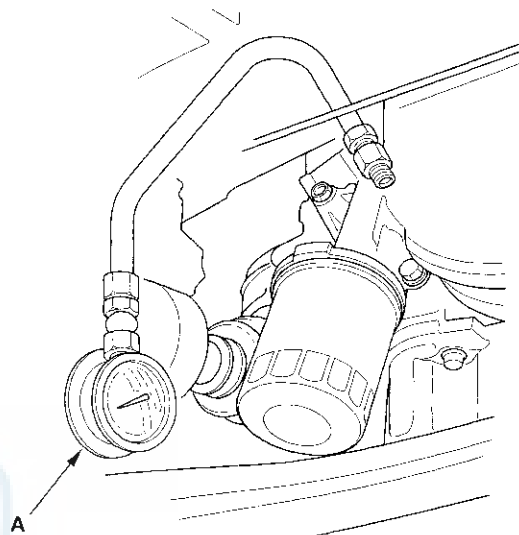


2. Check for continuity between the positive terminal (C) and the engine (ground). There should be continuity with the engine stopped. There should be no continuity with the engine running.

Oil Pressure Test

If the low oil pressure indicator stays on with the engine running, check the engine oil level. If the oil level is correct:

1. Remove the engine oil pressure switch, then install an oil pressure gauge (A).



2. Start the engine. Shut it off immediately if the gauge registers no oil pressure. Repair the problem before continuing.
3. Allow the engine to reach operating temperature (fan comes on at least twice). The pressure should be:

Engine Oil Temperature: 176 °F (80 °C)

Engine Oil Pressure:

At Idle: 70 kPa (0.7 kgf/cm², 10 psi) min.

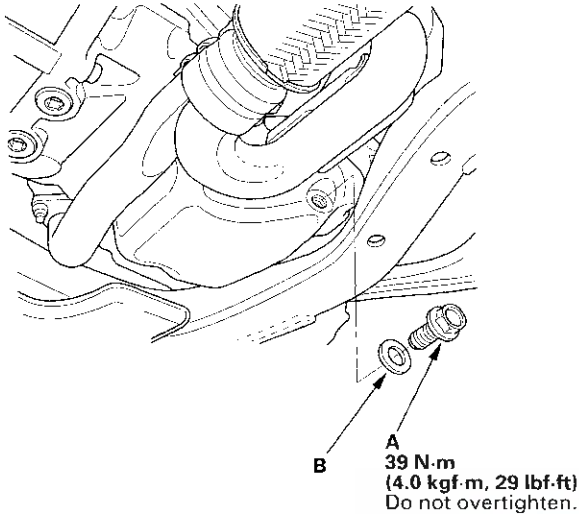
At 3,000 rpm: 490 kPa (5.0 kgf/cm², 71 psi) min.

4. If oil pressure is not within specifications, inspect these items:
 - Check oil level
 - Inspect oil pressure relief valve (see page 8-11).
 - Check the oil screen for clogging.
 - Inspect the oil pump (see page 8-12).



Engine Oil Replacement

1. Warm up the engine.
2. Remove the drain bolt (A), and drain the engine oil.



3. Reinstall the drain bolt with a new washer (B).
4. Refill with the recommended oil (see page 3-2).

Capacity

At Oil Change:

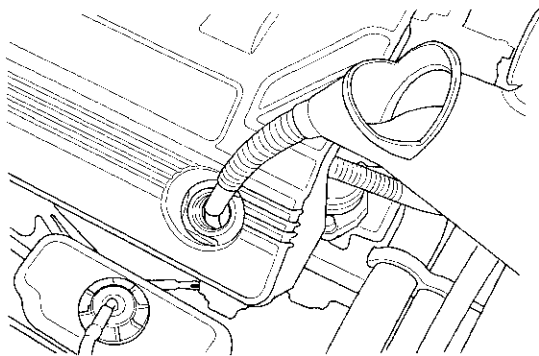
4.0 L (4.2 US qt)

At Oil Change including Filter:

4.3 L (4.5 US qt)

After Engine Overhaul:

5.0 L (5.3 US qt)



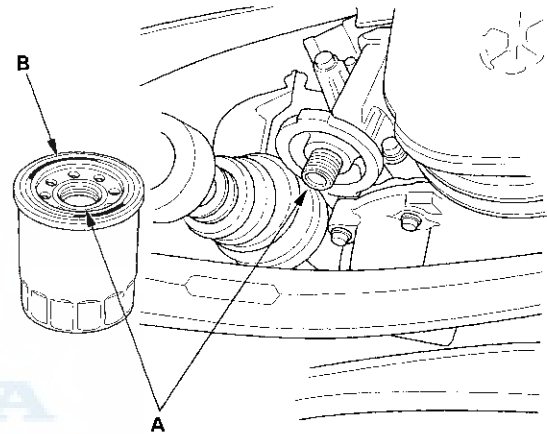
5. Run the engine for more than 3 minutes, then check for oil leakage.

Engine Oil Filter Replacement

Special Tools Required

Oil filter wrench 07HAA-PJ70101

1. Remove the oil filter with the oil filter wrench.
2. Inspect the filter to make sure the oil filter gasket is not stuck to the oil filter seating surface of the engine.
3. Inspect the threads (A) and oil filter gasket (B) on the new oil filter. Clean the seat on the engine block, then apply a light coat of new engine oil to the oil filter gasket. Use only filters with a built-in bypass system.



(cont'd)

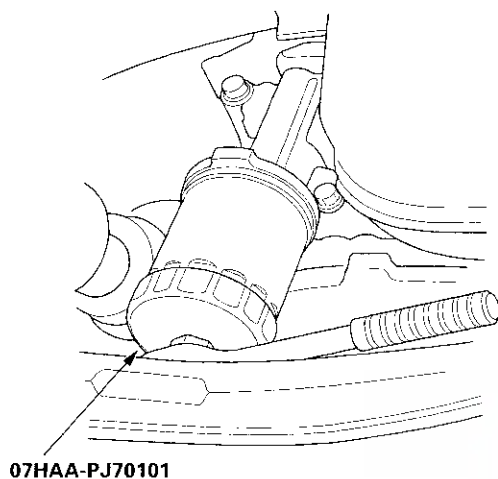
Engine Lubrication

Engine Oil Filter Replacement (cont'd)

4. Install the oil filter by hand.
5. After the rubber seal seats, tighten the oil filter clockwise with the oil filter wrench.

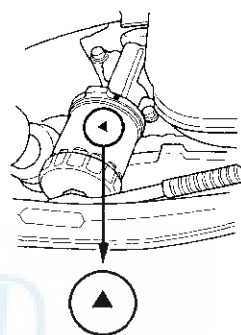
Tighten: 3/4 Turn Clockwise

Tightening Torque: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)

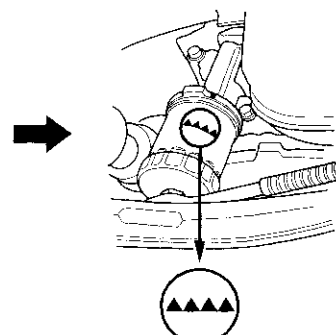


6. If four numbers or marks (1 to 4 or ▼ to ▼▼▼▼) are printed around the outside of the filter, you can use the following procedure to tighten the filter.

- Spin the filter on until its seal lightly seats against the block, and note which number or mark is at the bottom.
- Tighten the filter by turning it clockwise three numbers or marks from the one you noted. For example, if mark ▼ is at the bottom when the seal is lightly seated, tighten the filter until the mark ▼▼▼▼ comes around to the bottom.



Mark when rubber seal is seated.



Mark after tightening.

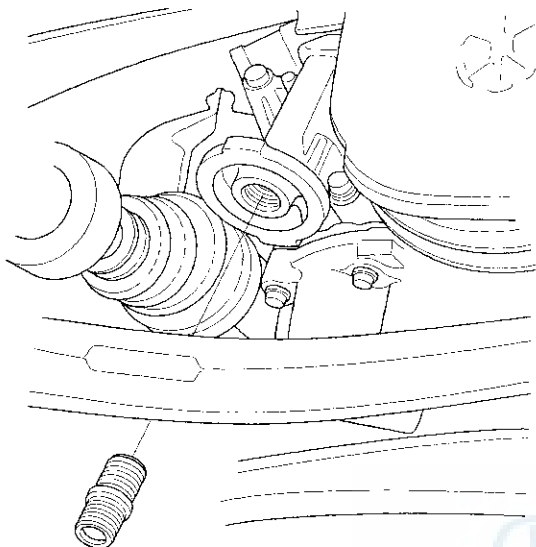
Number or Mark when rubber seal is seated	1 or ▼	2 or ▼▼	3 or ▼▼▼	4 or ▼▼▼▼
Number or Mark after tightening	4 or ▼▼▼▼	1 or ▼	2 or ▼▼	3 or ▼▼▼

7. After installation, fill the engine with oil up to the specified level, run the engine for more than 3 minutes, then check for oil leakage.
8. Check the dipstick for correct engine oil level, and add oil as needed.

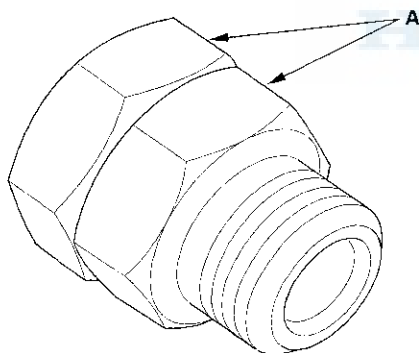


Oil Filter Feed Pipe Replacement

1. Remove the filter (see page 8-7).
2. Remove the oil filter feed pipe.



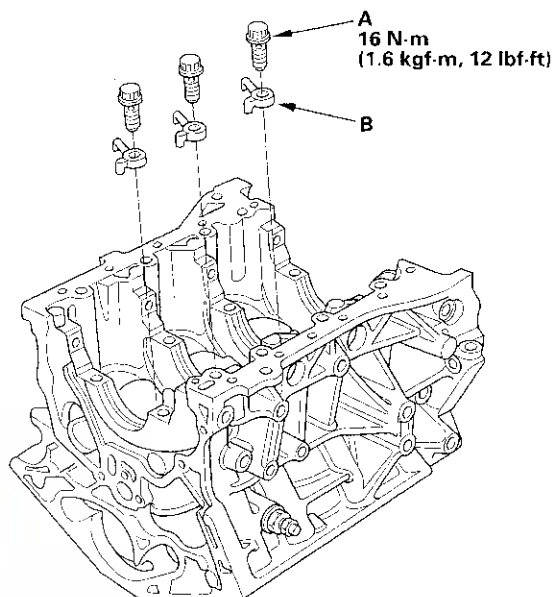
3. Install two 20 x 1.5 mm nuts (A) onto the new oil filter feed pipe, and hold one nut with a wrench, then tighten the other nut.



4. Tighten the oil filter feed pipe to 49 N·m (5.0 kgf·m, 36 lbf·ft), then remove the nuts from the oil filter feed pipe.
5. Install the filter (see page 8-7).

Oil Jet Replacement

1. Remove the crankshaft from the engine block (see page 7-13).
2. Remove the oil jet bolt (A), then remove and discard oil jet (B).

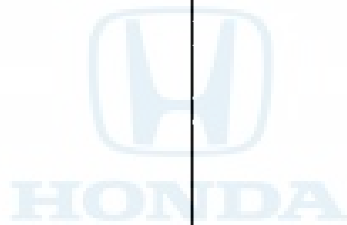
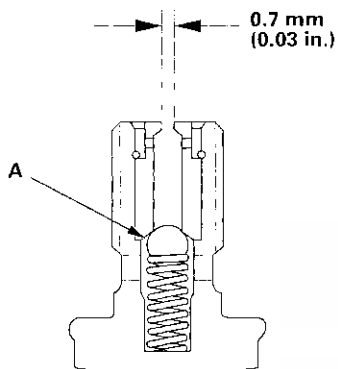


3. Carefully install the new oil jet and tighten the oil jet bolt.
4. Install the crankshaft (see page 7-24).

Engine Lubrication

Oil Jet Bolt Inspection

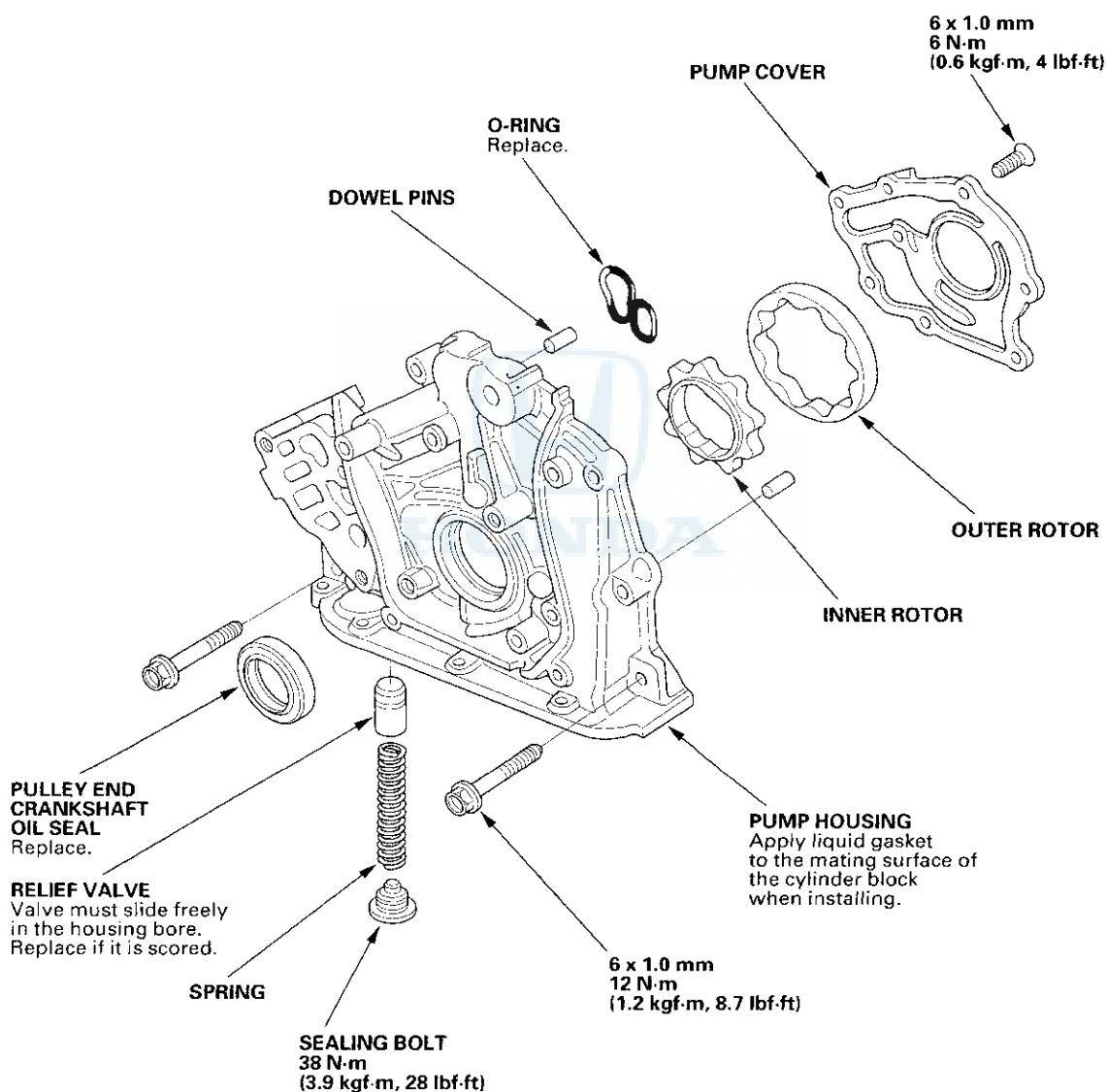
1. Remove the oil jet bolt (see page 8-9).
2. Inspect the oil jet bolt as follows.
 - Make sure that a 0.6 mm (0.02 in.) diameter drill will go through the oil intake (0.7 mm (0.03 in.) diameter). Make sure the check ball (A) moves smoothly and has a stroke of about 4.0 mm (0.16 in.)
 - Check the oil jet bolt operation with an air nozzle. It should take at least 120 kPa (1.2 kgf/cm, 17 psi) to unseat the check ball.





Oil Pump Overhaul

Exploded View



(cont'd)

Engine Lubrication

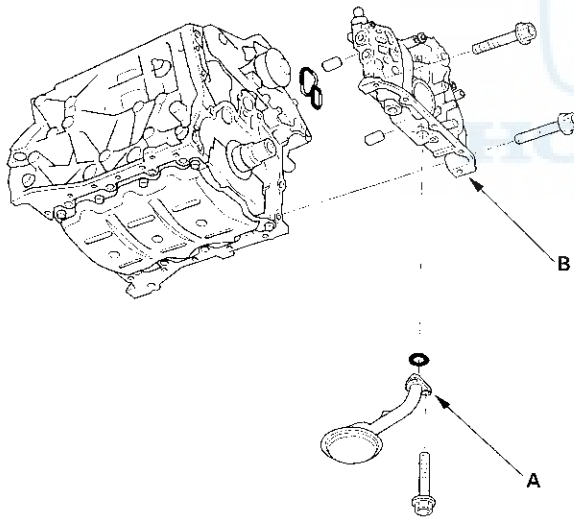
Oil Pump Overhaul (cont'd)

Special Tools Required

Oil seal driver, 64 mm 070AD-RCA0100

Removal

1. Drain the engine oil (see page 8-7).
2. Turn the crankshaft so that the No. 1 piston is at top dead center (TDC) (see page 6-16).
3. Remove the timing belt (see page 6-16).
4. Remove the idler pulley.
5. Remove the crankshaft position (CKP) sensor (see page 11-216).
6. Remove the oil filter base/oil filter assembly (see step 8 on page 7-13).
7. Remove the oil pan (see page 7-11).
8. Remove the oil screen (A).



9. Remove the mounting bolts and the oil pump assembly (B).

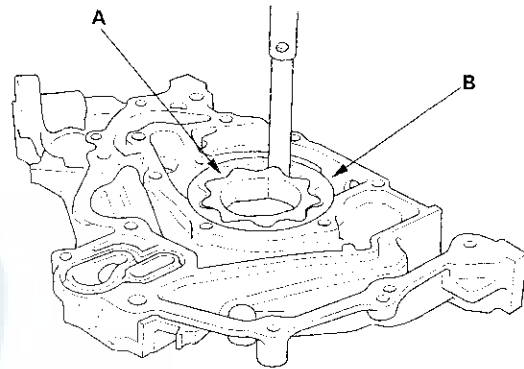
Inspection

1. Remove the screws from the pump housing, then separate the housing and cover.
2. Check the inner-to-outer rotor radial clearance between the inner rotor (A) and outer rotor (B). If the inner-to-outer rotor clearance exceeds the service limit, replace the oil pump assembly.

Inner Rotor-to-Outer Rotor Radial Clearance

Standard (New): 0.04—0.16 mm (0.002—0.006 in.)

Service Limit: 0.20 mm (0.008 in.)

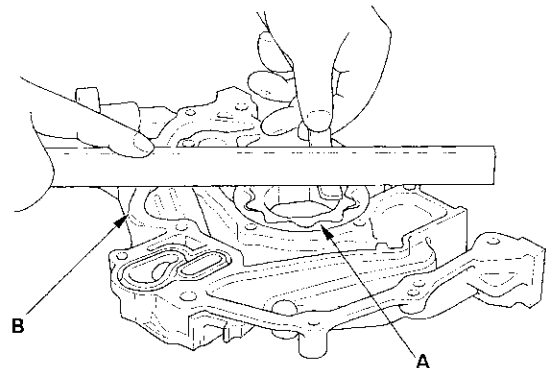


3. Check the housing-to-rotor axial clearance between the rotors (A) and pump housing (B). If the housing-to-rotor axial clearance exceeds the service limit, replace the oil pump assembly.

Housing-to-Rotor Axial Clearance

Standard (New): 0.02—0.07 mm (0.001—0.003 in.)

Service Limit: 0.12 mm (0.005 in.)



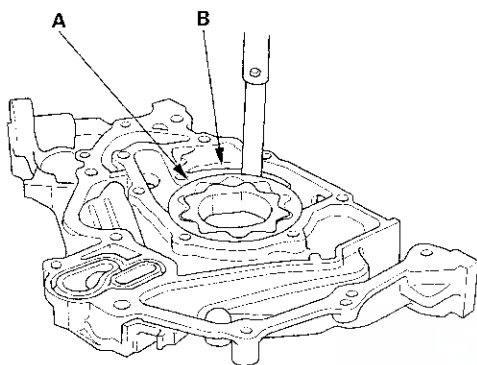


4. Check the housing-to-outer rotor radial clearance between the outer rotor (A) and pump housing (B). If the housing-to-outer rotor radial clearance exceeds the service limit, replace the oil pump assembly.

Housing-to-Outer Rotor Radial Clearance

Standard (New): 0.10—0.19 mm (0.004—0.007 in.)

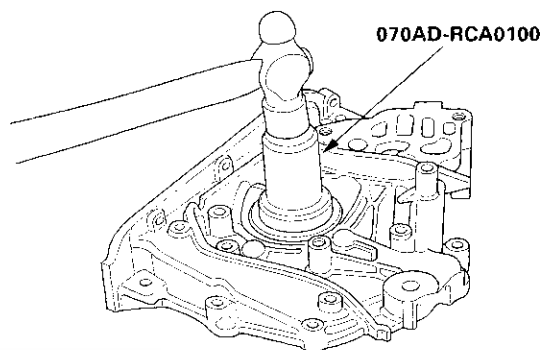
Service Limit: 0.20 mm (0.008 in.)



5. Inspect both rotors and pump housing for scoring or other damage. Replace parts, if necessary.
6. Apply liquid thread lock to the pump housing screws, then install the oil pump cover.
7. Check that the oil pump turns freely.

Installation

1. Remove the old crankshaft oil seal from the oil pump.
2. Gently tap in the new crankshaft oil seal until the oil seal driver bottoms on the pump.



3. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
4. Clean and dry the oil pump mating surfaces.

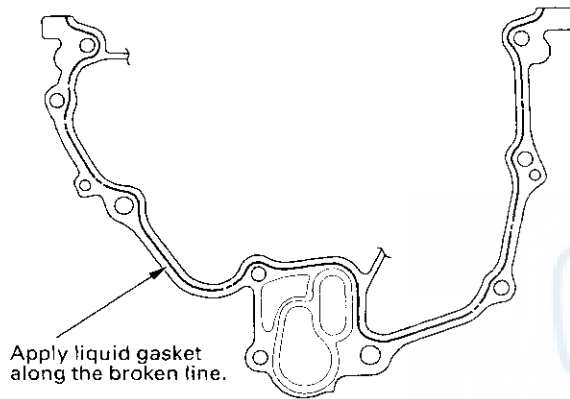
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Engine Lubrication

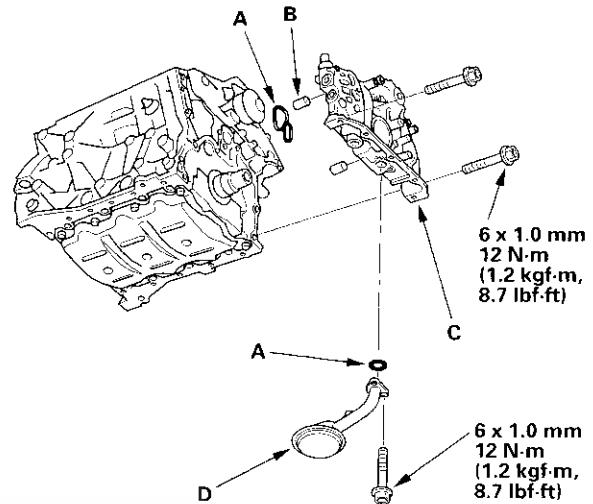
Oil Pump Overhaul (cont'd)

5. Remove all of the old liquid gasket from the oil pump mating surfaces, bolts, and bolt holes.
6. Clean and dry the oil pump mating surfaces.
7. Apply liquid gasket, P/N 08717-0004, 08718-0001, 08718-0003, or 08718-0009, evenly to the engine block mating surface of the oil pump.

NOTE: Do not install the parts if 4 minutes or more have elapsed since applying liquid gasket. Instead, reapply liquid gasket after removing the old residue.



8. Grease the lip of the oil seal, and apply oil to the new O-rings (A).

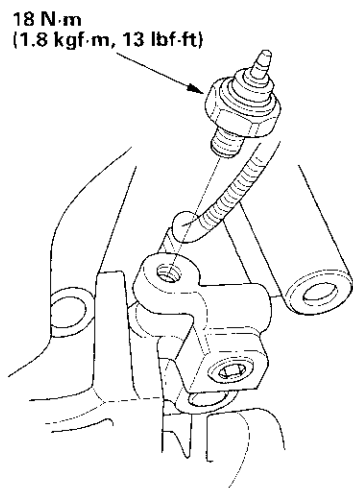


9. Install the dowel pins (B), then align the inner rotor with the crankshaft, and install the oil pump (C).
10. Clean the excess grease off the crankshaft, and check the seal for distortion.
11. Install the oil screen (D).
12. Install the oil pan (see page 7-29).
13. Install the oil filter base/oil filter assembly, with a new O-ring (see step 37 on page 7-28).
14. Install the CKP sensor (see page 11-216).
15. Install the idler pulley.
16. Install the timing belt (see page 6-19).



Oil Pressure Switch Replacement

1. Disconnect the oil pressure switch connector, then remove the oil pressure switch.



2. Remove all of the old liquid gasket from the switch and switch mounting hole.
3. Apply a very small amount of liquid gasket to the oil pressure switch threads, then install the oil pressure switch.

NOTE: Using too much liquid gasket may cause liquid gasket to enter the oil passage or the end of the new oil pressure switch.

Engine Mechanical



Intake Manifold and Exhaust System

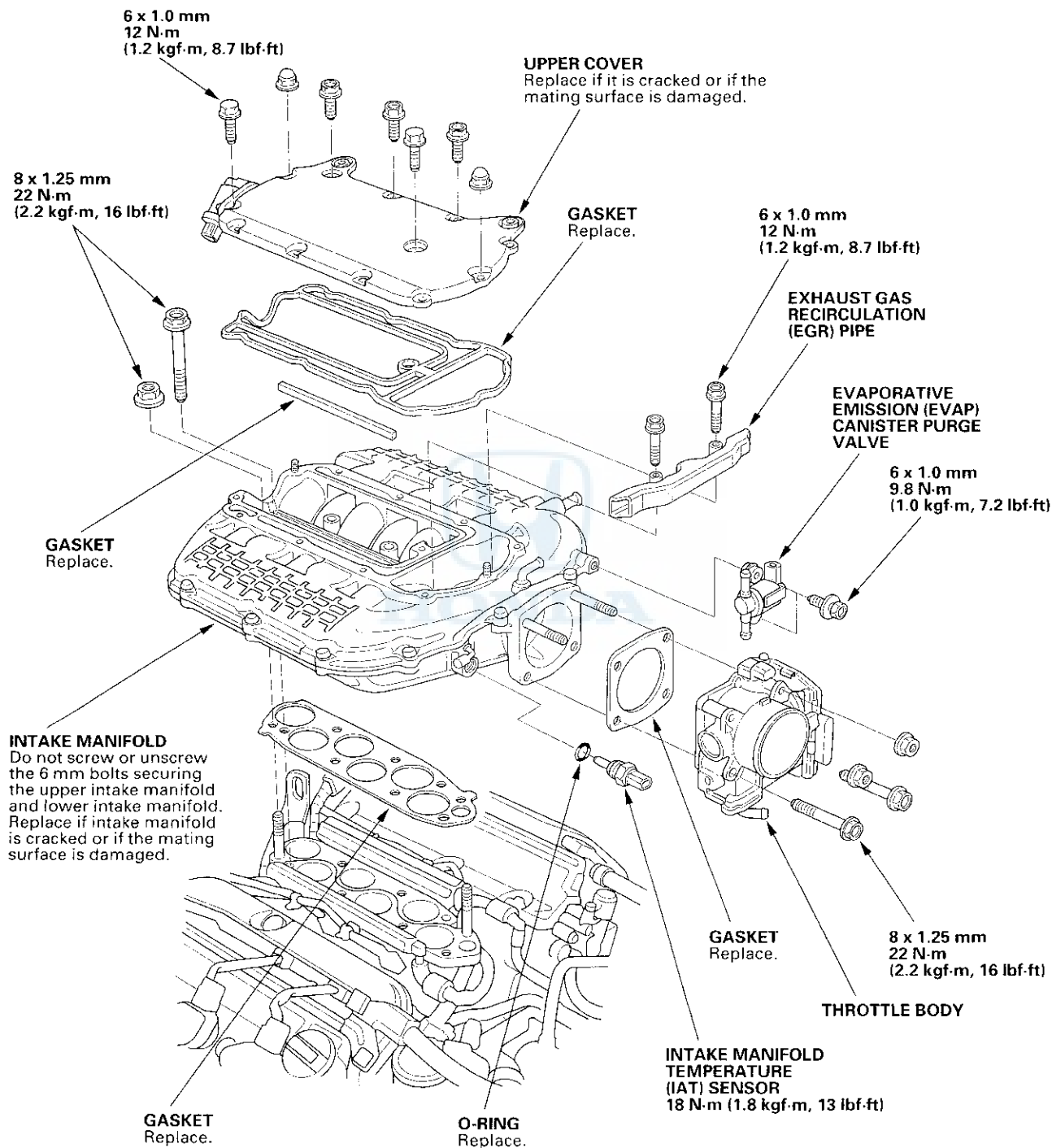
Intake Manifold Removal and Installation	9-2
Exhaust Pipe and Muffler Replacement	9-7



Intake Manifold and Exhaust System

Intake Manifold Removal and Installation

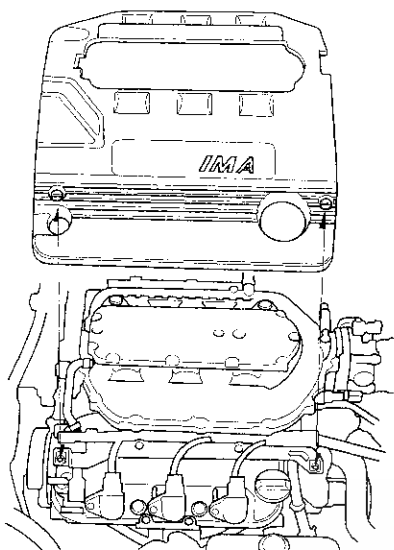
Exploded View



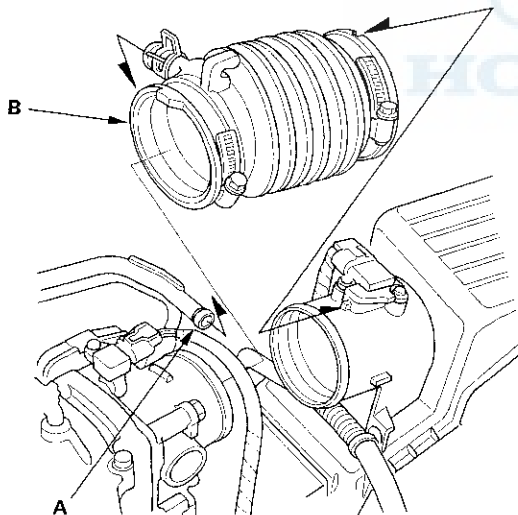


Removal

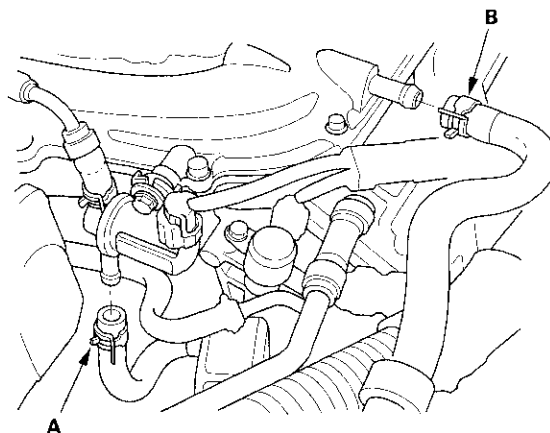
1. Remove the intake manifold cover.



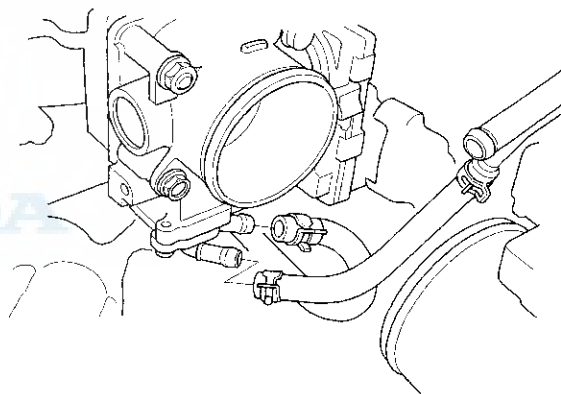
2. Remove breather pipe, then remove the air intake duct (B).



3. Remove the evaporative emission (EVAP) canister purge hose (A) and brake booster vacuum hose (B).



4. Remove the water bypass hoses, then plug the water bypass hoses.

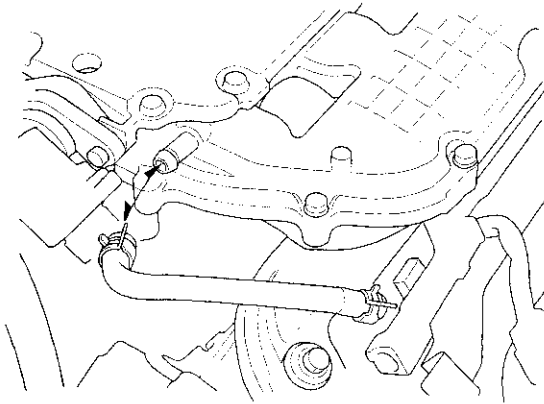


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Intake Manifold and Exhaust System

Intake Manifold Removal and Installation (cont'd)

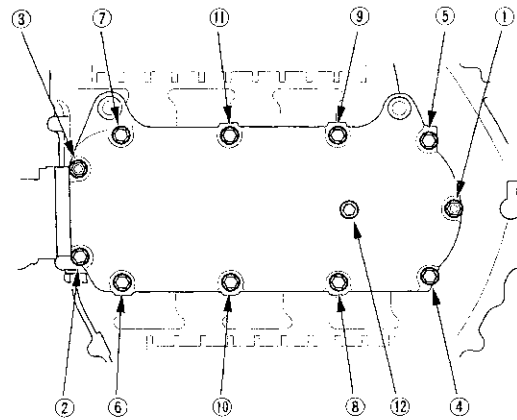
5. Remove the positive crankcase ventilation (PCV) hose.



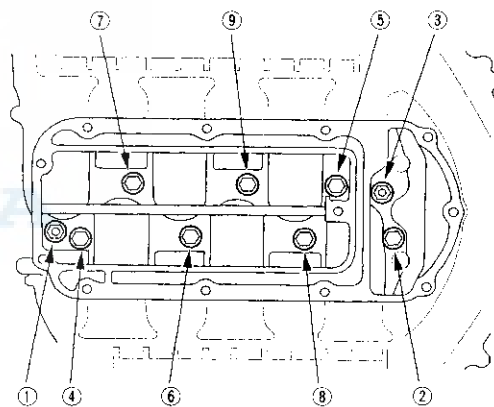
6. Remove the engine wire harness connectors and wire harness clamps from the intake manifold.

- Intake air temperature (IAT) sensor connector
- Throttle actuator connector
- Manifold absolute pressure (MAP) sensor connector
- Evaporative emission (EVAP) canister purge valve connector
- Intake manifold tuning (IMT) actuator connector

7. Remove the upper cover mounting bolts and nuts sequentially in two or three steps, then remove the upper cover.



8. Remove the intake manifold mounting bolts and nuts sequentially in two or three steps.



9. Remove the intake manifold.

NOTE: Do not screw or unscrew the 6 mm bolts securing the upper intake manifold and lower intake manifold.

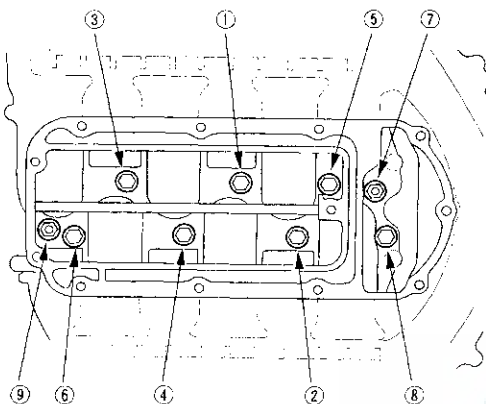


Installation

1. Install the intake manifold. Tighten the bolts and nuts sequentially in two or three steps. Always use a new intake manifold gasket.

Specified Torque

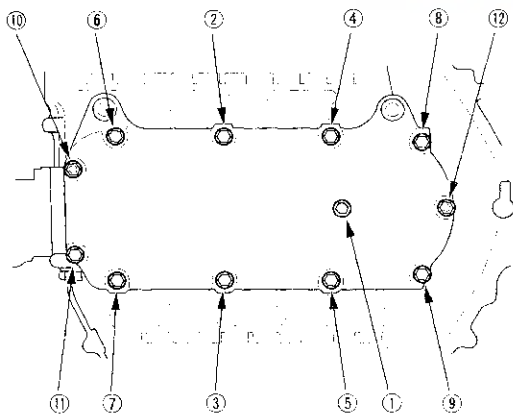
8 x 1.25 mm: 22 N·m (2.2 kgf·m, 16 lbf·ft)



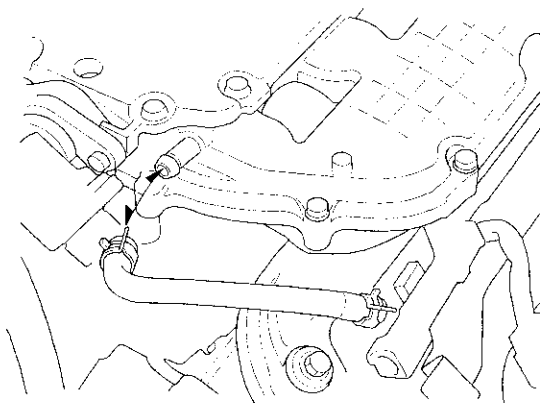
2. Install the upper cover. Tighten the bolts and nuts sequentially in two or three steps. Always use new gaskets.

Specified Torque

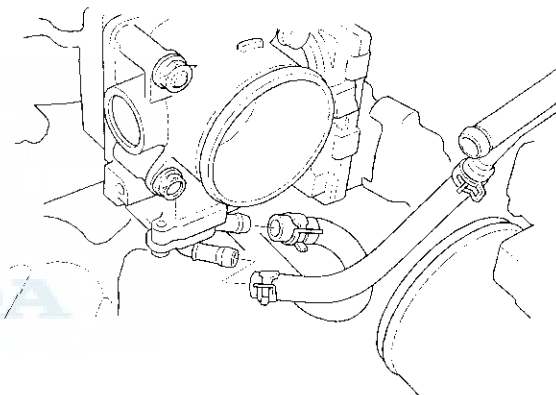
6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)



3. Install the positive crankcase ventilation (PCV) hose.



4. Install the water bypass hoses.

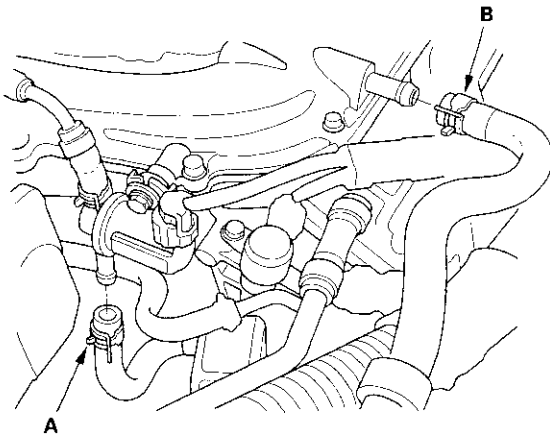


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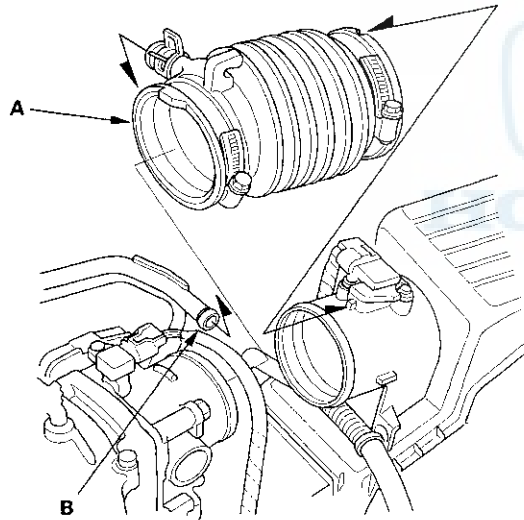
Intake Manifold and Exhaust System

Intake Manifold Removal and Installation (cont'd)

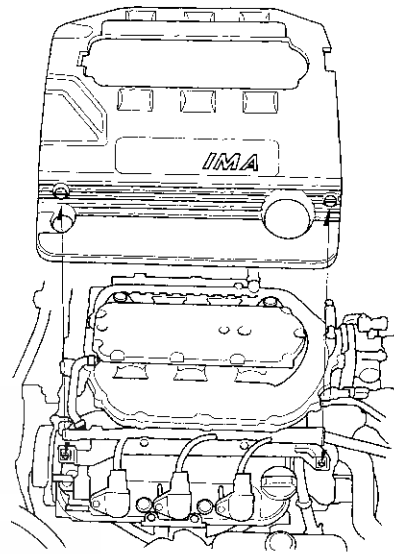
5. Install the EVAP canister purge hose (A) and brake booster vacuum hose (B).



6. Install the air intake duct (A), then install the breather pipe (B).



7. Clean up any spilled engine coolant.
8. After installation, check that all tubes, hoses and connectors are installed correctly.
9. Install the intake manifold cover.

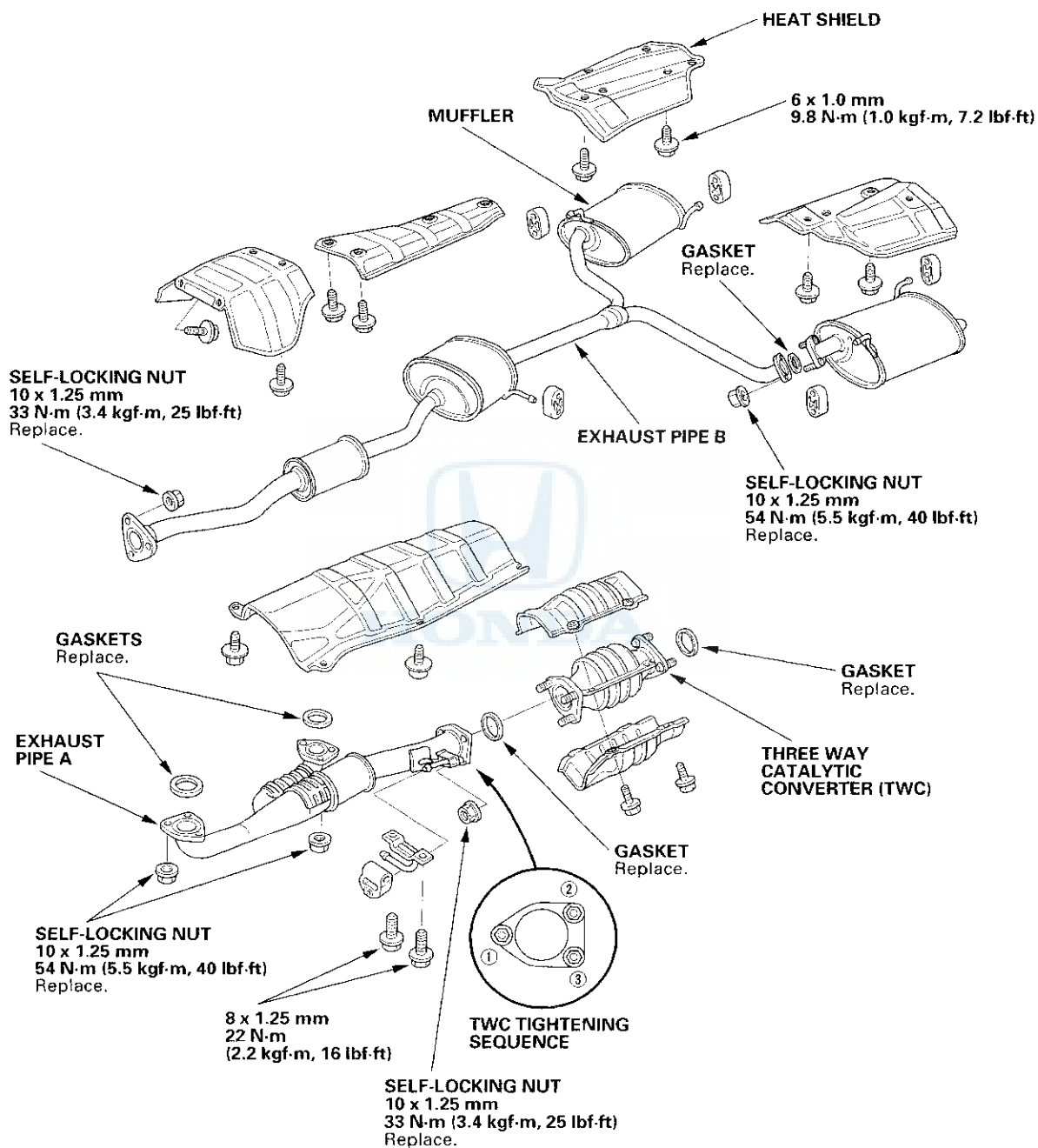


10. Refill the radiator with engine coolant, then bleed air from the cooling system with the heater valve open (see step 8 on page 10-7).



Exhaust Pipe and Muffler Replacement

NOTE: Use new gaskets and self-locking nuts when reassembling.



Navigation Tools: Click on the “Table of Contents”
below, or use the Bookmarks to the left.

Engine Cooling

Cooling System

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Coolant Check	10-6
Coolant Replacement	10-6
Thermostat Replacement	10-8
Water Passage Replacement	10-9
Radiator and Fan Replacement	10-12

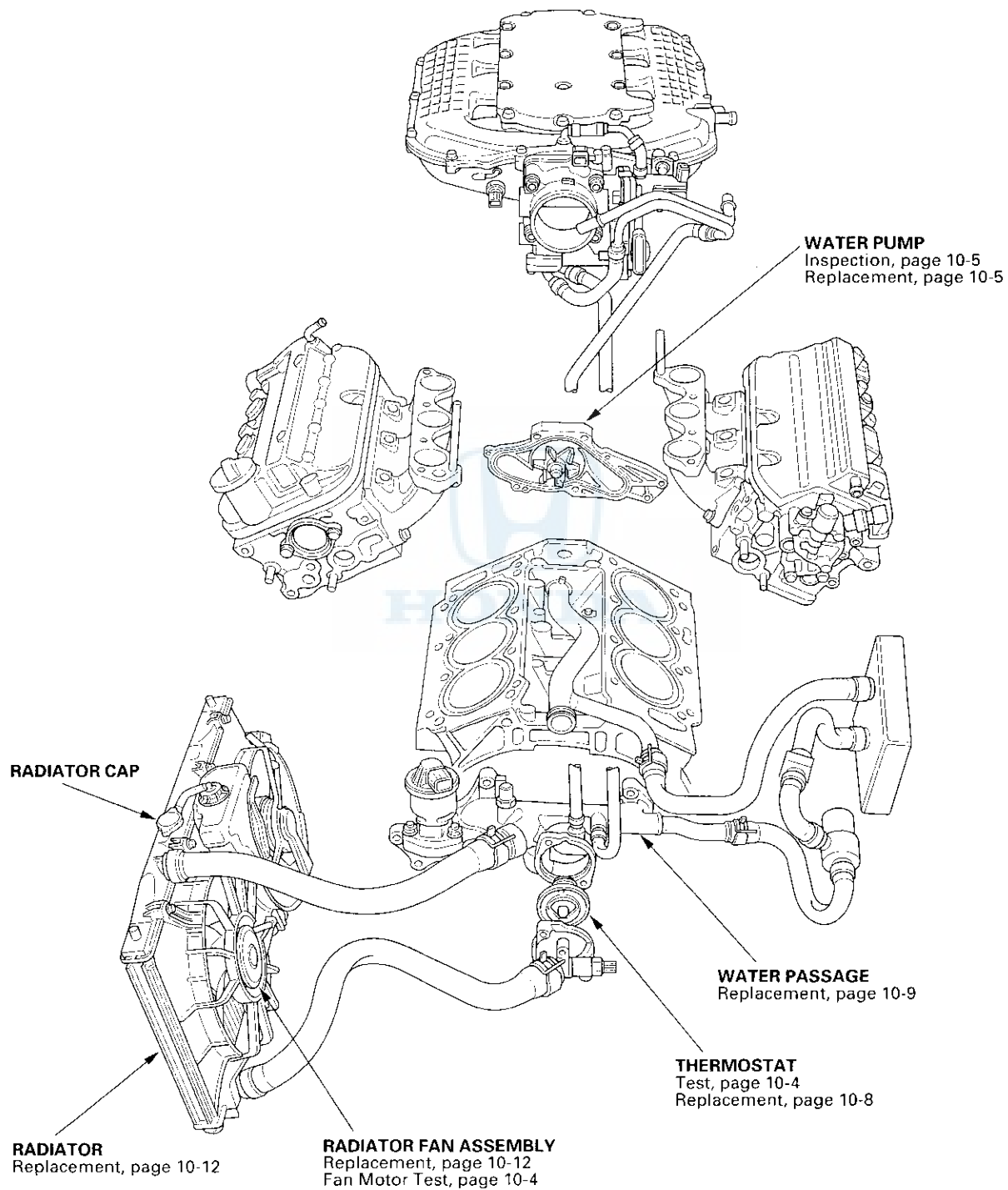
Fan Controls

Component Location Index	10-13
Symptom Troubleshooting Index	10-14
Circuit Diagram	10-15
Radiator Fan High Speed Circuit Troubleshooting	10-16



Cooling System

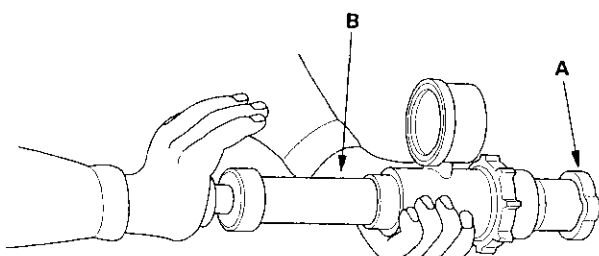
Component Location Index





Radiator Cap Test

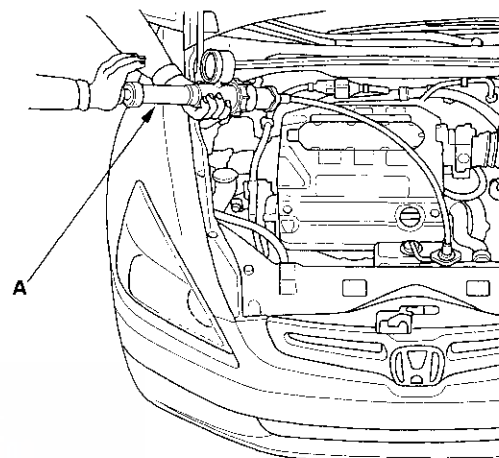
1. Remove the radiator cap (A), wet its seal with engine coolant, then install it on a commercially available pressure tester (B).



2. Apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm², 14—18 psi).
3. Check for a drop in pressure.
4. If the pressure drops, replace the cap.

Radiator Test

1. Wait until the engine is cool, then carefully remove the radiator cap, and fill the radiator with engine coolant to the top of the filler neck.
2. Attach a commercially available pressure tester (A) to the radiator, and apply a pressure of 93—123 kPa (0.95—1.25 kgf/cm², 14—18 psi).

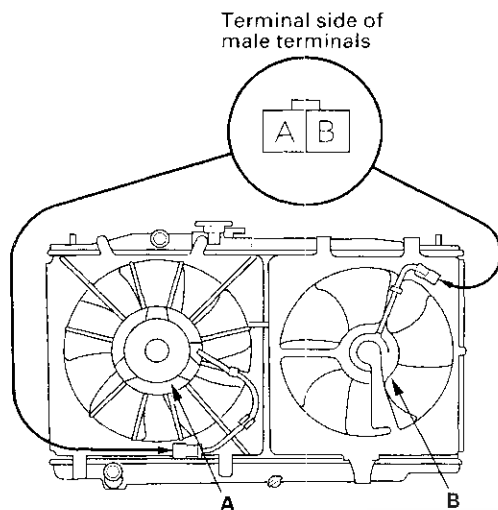


3. Inspect for engine coolant leaks and a drop in pressure.
4. Remove the tester, then reinstall the radiator cap.

Cooling System

Fan Motor Test

1. Disconnect the 2P connectors from the radiator fan motor (A) and A/C condenser fan motor (B).



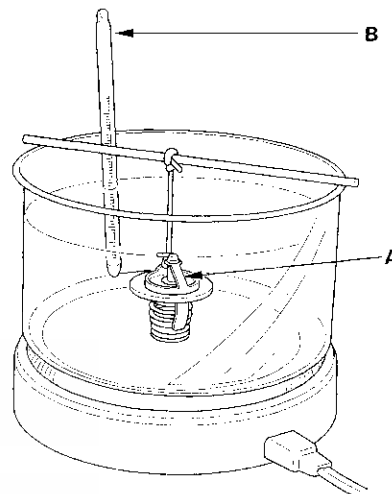
2. Test the motor by connecting battery power to the B terminal and ground to the A terminal.
3. If the motor fails to run or does not run smoothly, replace it.

Thermostat Test

Replace the thermostat if it is open at room temperature.

To test a closed thermostat:

1. Suspend the thermostat (A) in a container of water. Do not let the thermometer (B) touch the bottom of the hot container.



2. Heat the water and check the temperature with a thermometer. Check the temperature at which the thermostat first opens, and at which it is fully open.
3. Measure the lift height of the thermostat when it is fully open.

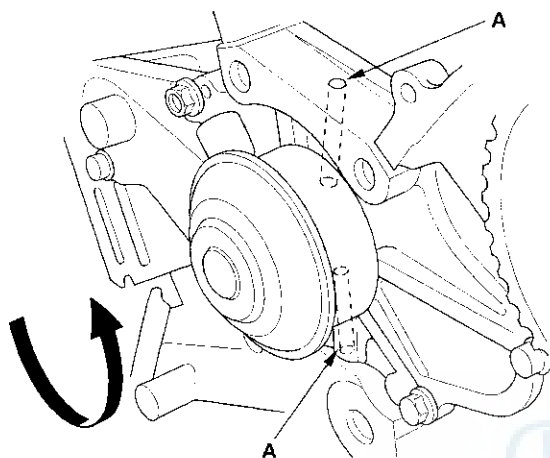
Standard Thermostat

Lift Height: Above 10.0 mm (0.39 in.)
Starts Opening: 169—176 °F (76—80 °C)
Fully Open: 194 °F (90 °C)



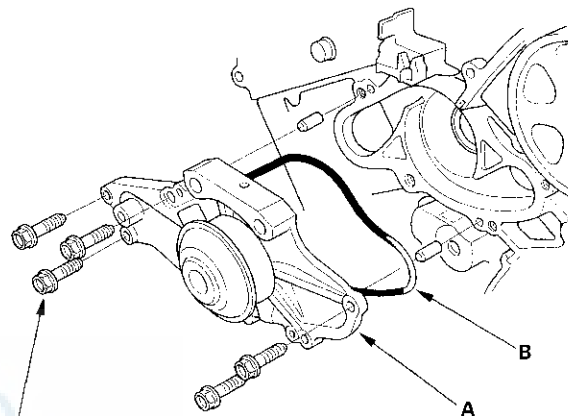
Water Pump Inspection

1. Remove the timing belt (see page 6-16).
2. Turn the water pump pulley counterclockwise. Check that it turns freely.
3. Check for signs of seal leakage. A small amount of "weeping" from the bleed holes (A) is normal.



Water Pump Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the timing belt (see page 6-16).
3. Remove the timing belt adjuster (see page 6-31).
4. Remove the water pump (A) by removing the five bolts.



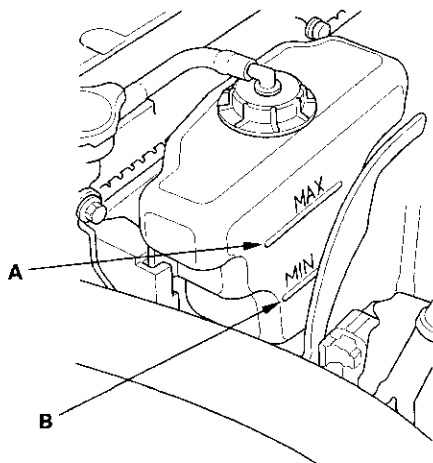
6 x 1.0 mm
12 N·m (1.2 kgf·m, 8.7 lbf·ft)

5. Inspect and clean the O-ring groove and the mating surface with the cylinder block.
6. Install the water pump with a new O-ring (B) in the reverse order of removal.
7. Clean up any spilled engine coolant.
8. Install the timing belt adjuster (see page 6-31).
9. Install the timing belt (see page 6-19).
10. Refill the radiator with engine coolant, then bleed the air from the cooling system (see step 8 on page 10-7).

Cooling System

Coolant Check

1. Look at the coolant level in the coolant reservoir. Make sure it is between the MAX mark (A) and MIN mark (B).



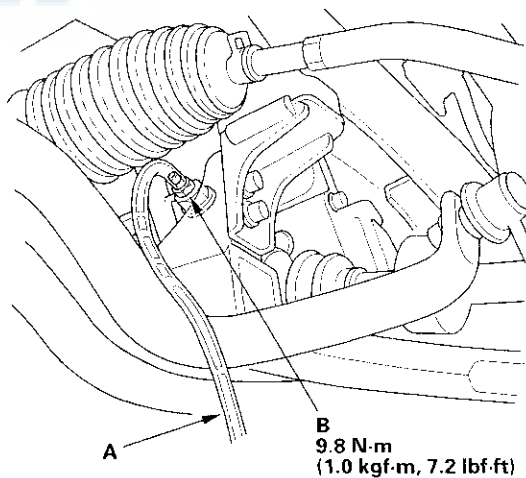
2. If the coolant level in the coolant reservoir is at or below the MIN mark, add coolant to bring it up to the MAX mark, then inspect the cooling system for leaks.

Coolant Replacement

1. Start the engine. Set the heater temperature control dial to maximum heat, then turn off the ignition switch. Make sure the engine and radiator are cool to the touch.
2. Remove the radiator cap.
3. Loosen the radiator drain plug (A), and drain the coolant.



4. Install a rubber hose (A) on the drain bolt (B) located at the rear of the cylinder block, then loosen the drain bolt.

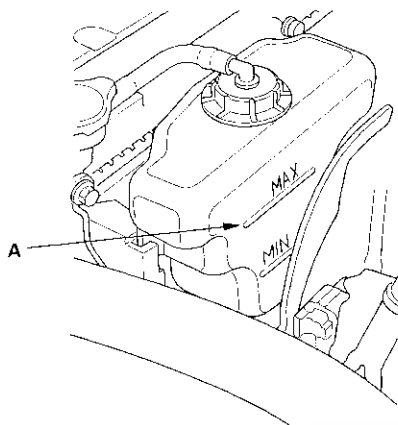


5. When the coolant stops draining, tighten the drain bolt. Remove the rubber hose.
6. Tighten the radiator drain plug securely.



7. Remove, drain, and reinstall the reserve tank.

8. Fill the reserve tank to the MAX mark (A) with Honda All Season Antifreeze/Coolant Type 2 (P/N OL999-9001).



9. Pour Honda All Season Antifreeze/Coolant Type 2 into the radiator up to the base of the filler neck.

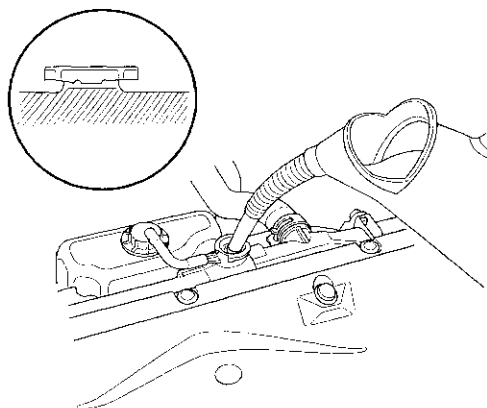
NOTE:

- Always use Honda All Season Antifreeze/Coolant Type 2 (P/N OL999-9001). Using a non-Honda coolant can result in corrosion, causing the cooling system to malfunction or fail.
- Honda All Season Antifreeze/Coolant Type 2 is a mixture of 50 % antifreeze and 50 % water. Do not add water.

Engine Coolant Capacities (Including the reserve tank capacity of 0.6 L (0.16 US gal))

After Coolant Change: 6.7 L (1.77 US gal)

After Engine Overhaul: 8.4 L (2.22 US gal)



10. Install the radiator cap loosely.

11. Start the engine and let it run until it warms up (the radiator fan comes on at least twice).

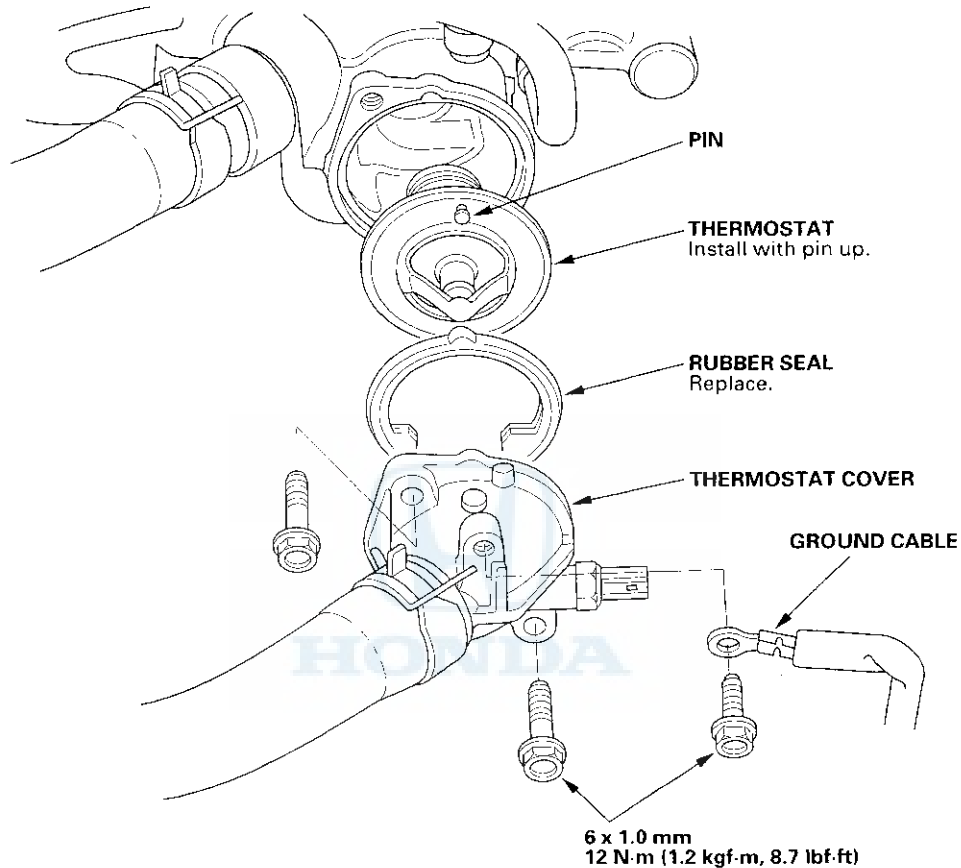
12. Turn off the engine. Check the level in the radiator and add Honda All Season Antifreeze/Coolant Type 2, if needed.

13. Put the radiator cap on tightly, then run the engine again, and check for leaks.

Cooling System

Thermostat Replacement

1. Remove the air cleaner housing assembly (see page 11-382).
2. Drain the engine coolant (see page 10-6).
3. Remove the ground cable and thermostat cover, then remove the thermostat.

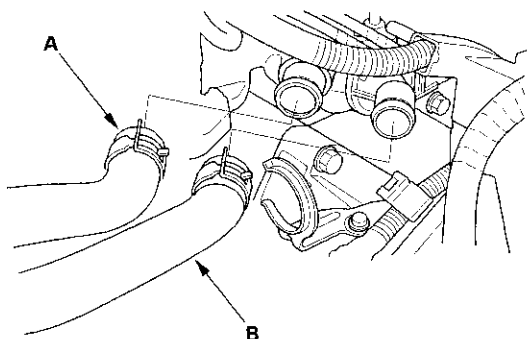


4. Install the thermostat with a new rubber seal.
5. Refill the radiator with engine coolant, then bleed the air from the cooling system (see step 8 on page 10-7).
6. Clean up any spilled engine coolant.

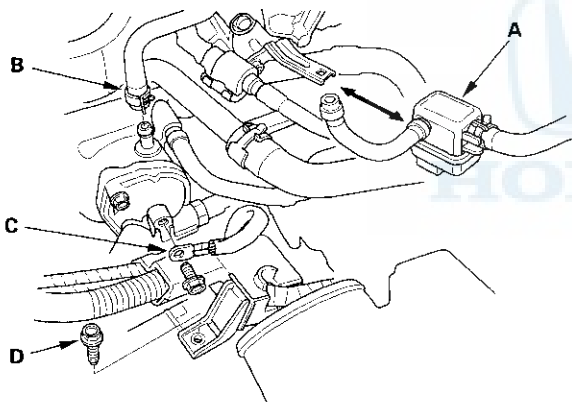


Water Passage Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the intake manifold (see page 9-3).
3. Remove the upper radiator hose (A) and lower radiator hose (B).

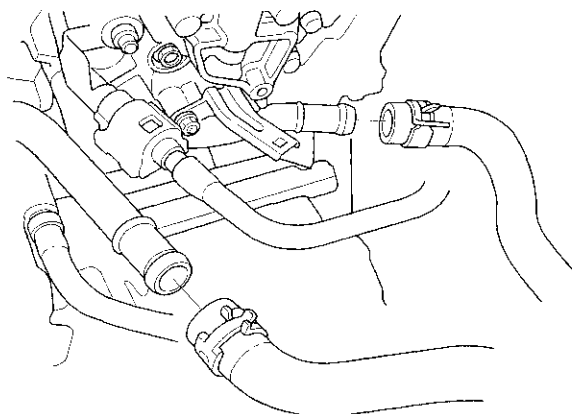


4. Remove the purge joint (A) from the bracket.



5. Remove the water bypass hose (B), ground cable (C), and harness holder mounting bolt (D).

6. Remove the heater hoses.

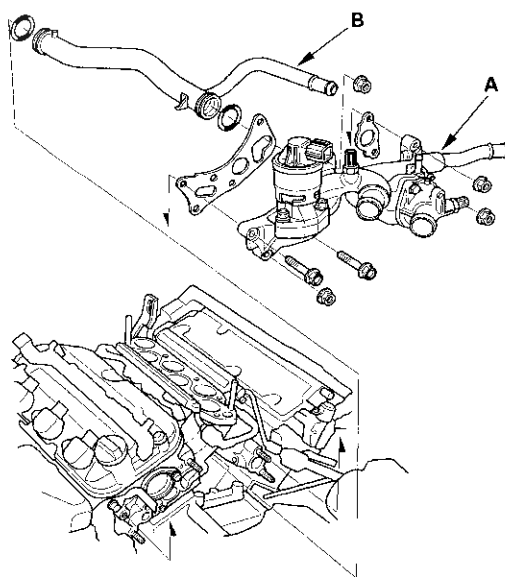


7. Remove the engine wire harness connectors from the water passage.

- Engine coolant temperature (ECT) sensor 1 connector
- Engine coolant temperature (ECT) sensor 2 connector
- Exhaust gas recirculation (EGR) valve connector

8. Remove the harness clamp bracket from the rear cylinder head (see step 48 on page 5-8).

9. Remove the water passage (A) and connecting pipe (B).

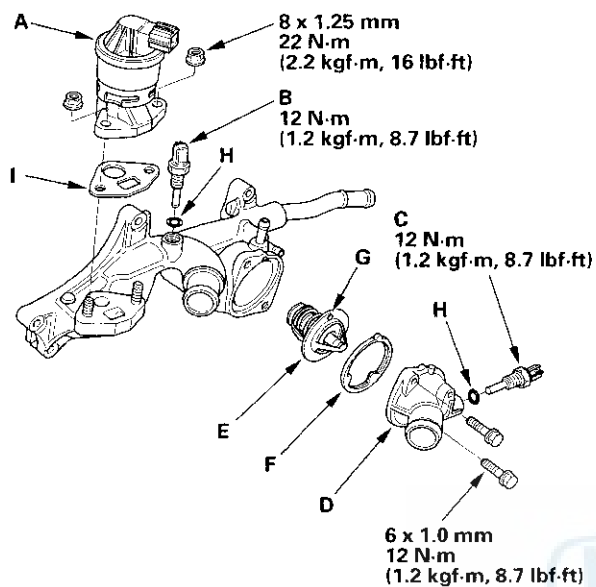


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Cooling System

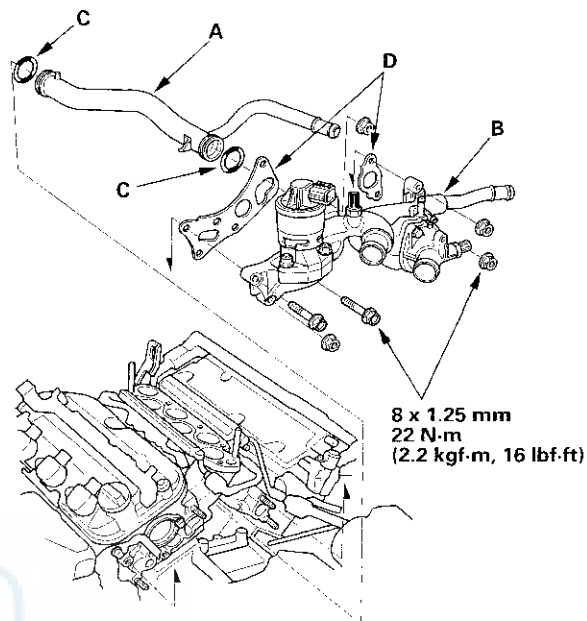
Water Passage Replacement (cont'd)

10. Remove the EGR valve (A), ECT sensor 1 (B), ECT sensor 2 (C), thermostat cover (D), and thermostat (E).

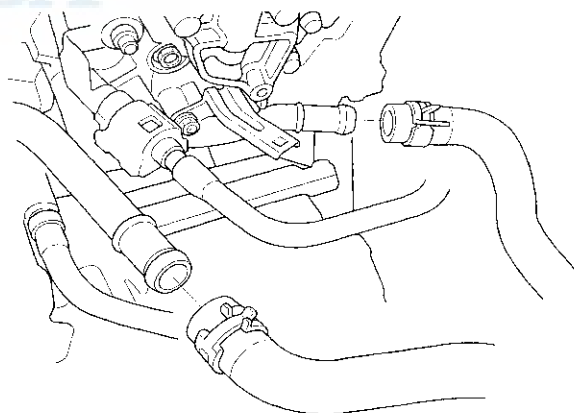


11. Install the new rubber seal (F) to the thermostat, then install the thermostat with pin (G) up, and install the thermostat cover.
12. Install the ECT sensor 1 and ECT sensor 2, using the new O-rings (H).
13. Install the EGR valve, using a new gasket (I).

14. Install the connecting pipe (A) and water passage (B), using the new O-rings (C) and new gaskets (D).

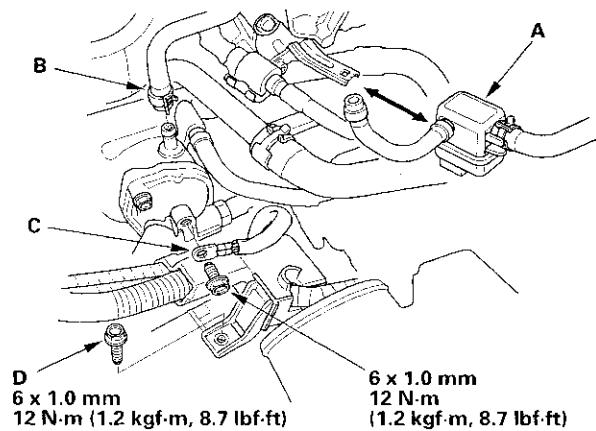


15. Install the harness clamp bracket to the rear cylinder head (see step 35 on page 5-16).
16. Install the heater hoses.



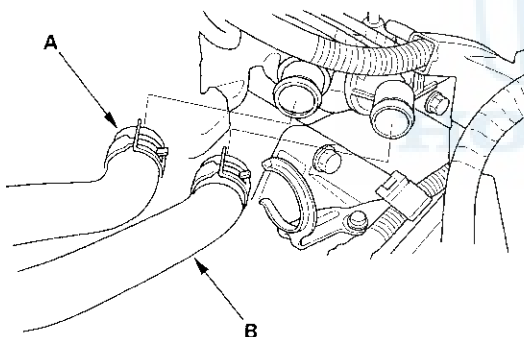


17. Install the purge joint (A) to the bracket.



18. Install the water bypass hose (B), ground cable (C), and harness holder mounting bolt (D).

19. Install the upper radiator hose (A) and lower radiator hose (B).



20. Install the intake manifold (see page 9-5).

21. After installation, check that all tubes, hoses, and connectors are installed correctly.

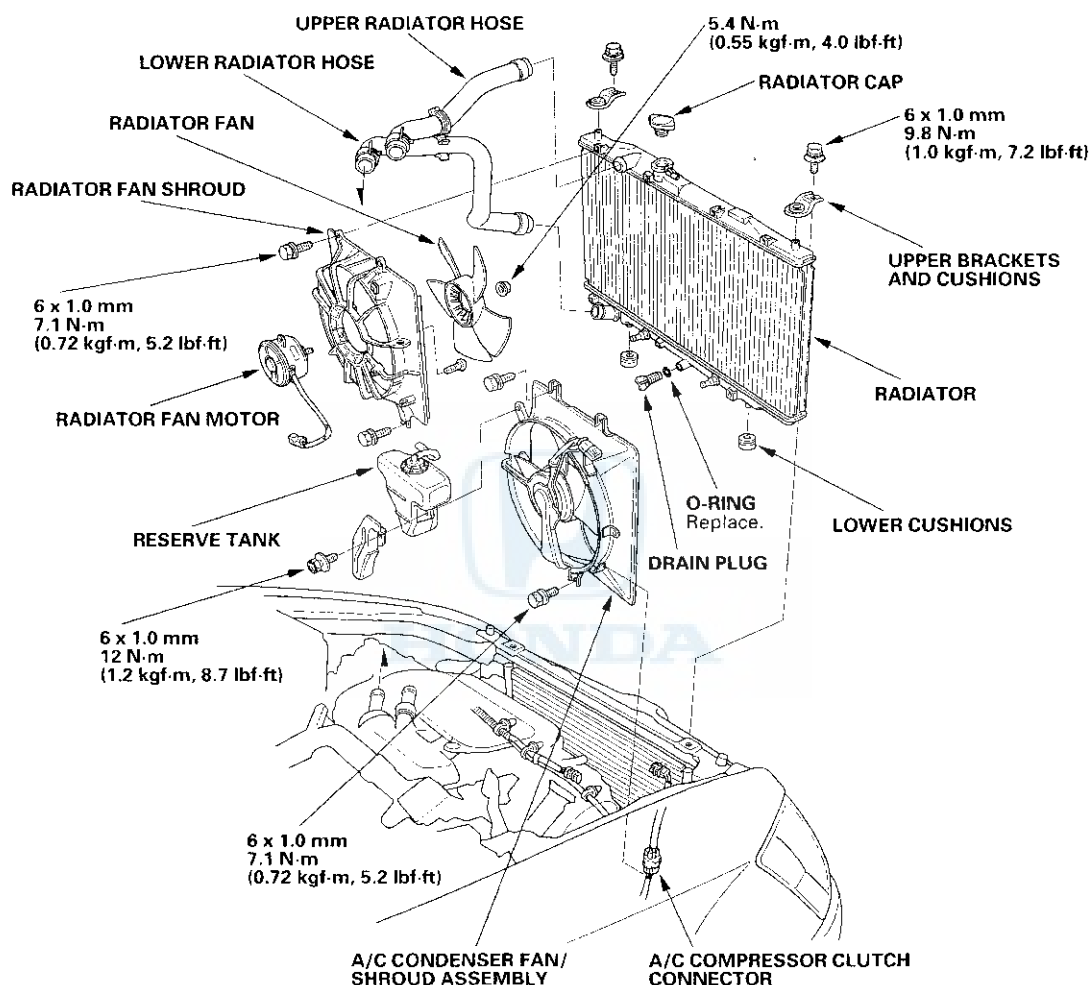
22. Refill the radiator with engine coolant, then bleed air from the cooling system (see step 8 on page 10-7).

23. Clean up any spilled engine coolant.

Cooling System

Radiator and Fan Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the front grille cover (see step 1 on page 20-111).
3. Remove the automatic transmission fluid (ATF) cooler hoses from the radiator (see page 14-256). Remove the upper radiator hose and lower radiator hose from the radiator.

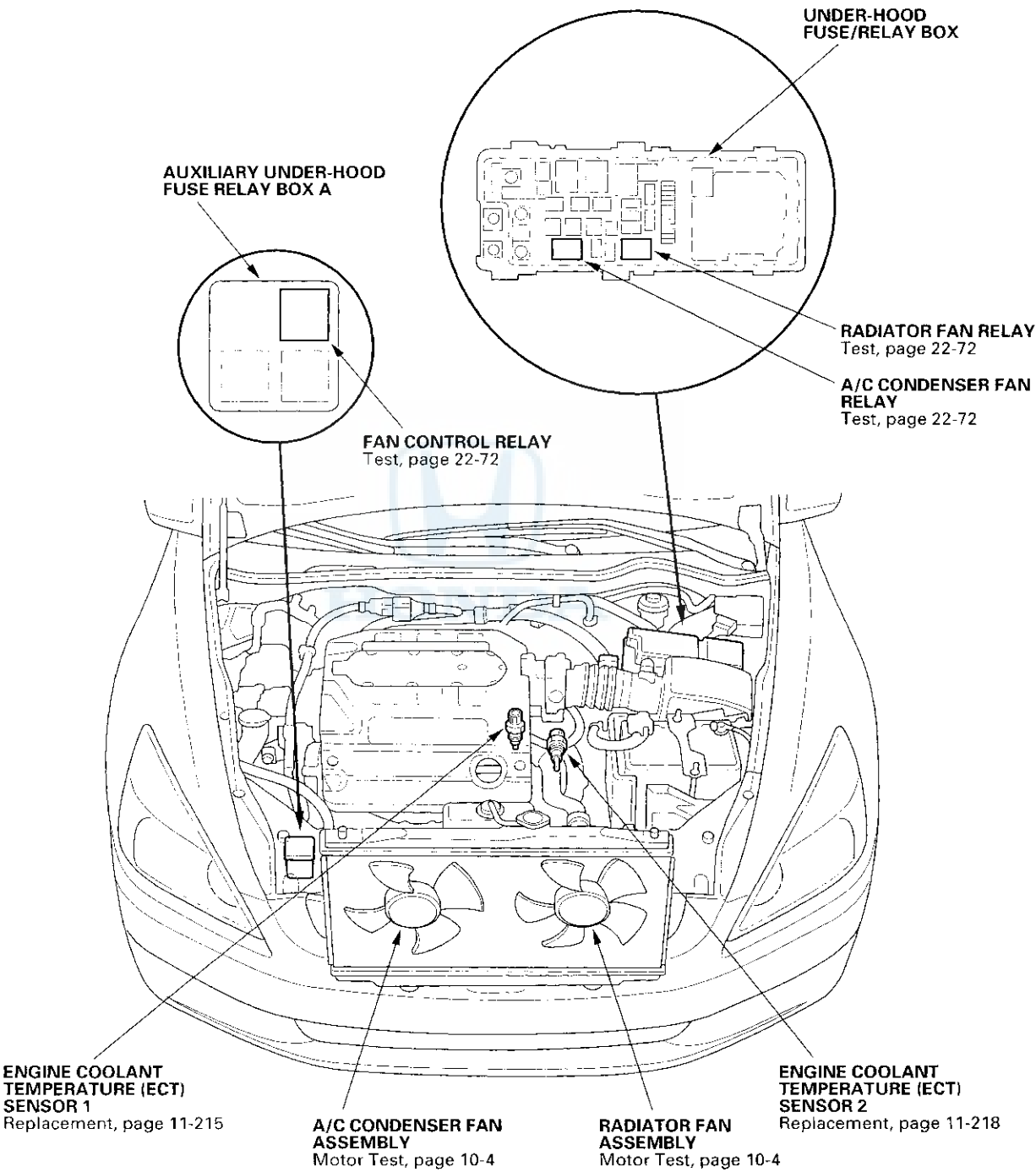


4. Disconnect the fan motor connectors. Remove the harness clamps and A/C compressor clutch connector.
5. Remove the upper bracket cushions, then pull up the radiator.
6. Remove the fan shroud assemblies and other parts from the radiator.
7. Install the radiator in the reverse order of removal. Make sure the upper and lower cushions are set securely.
8. Fill the radiator with engine coolant, then bleed the air from the cooling system (see step 8 on page 10-7).



Fan Controls

Component Location Index



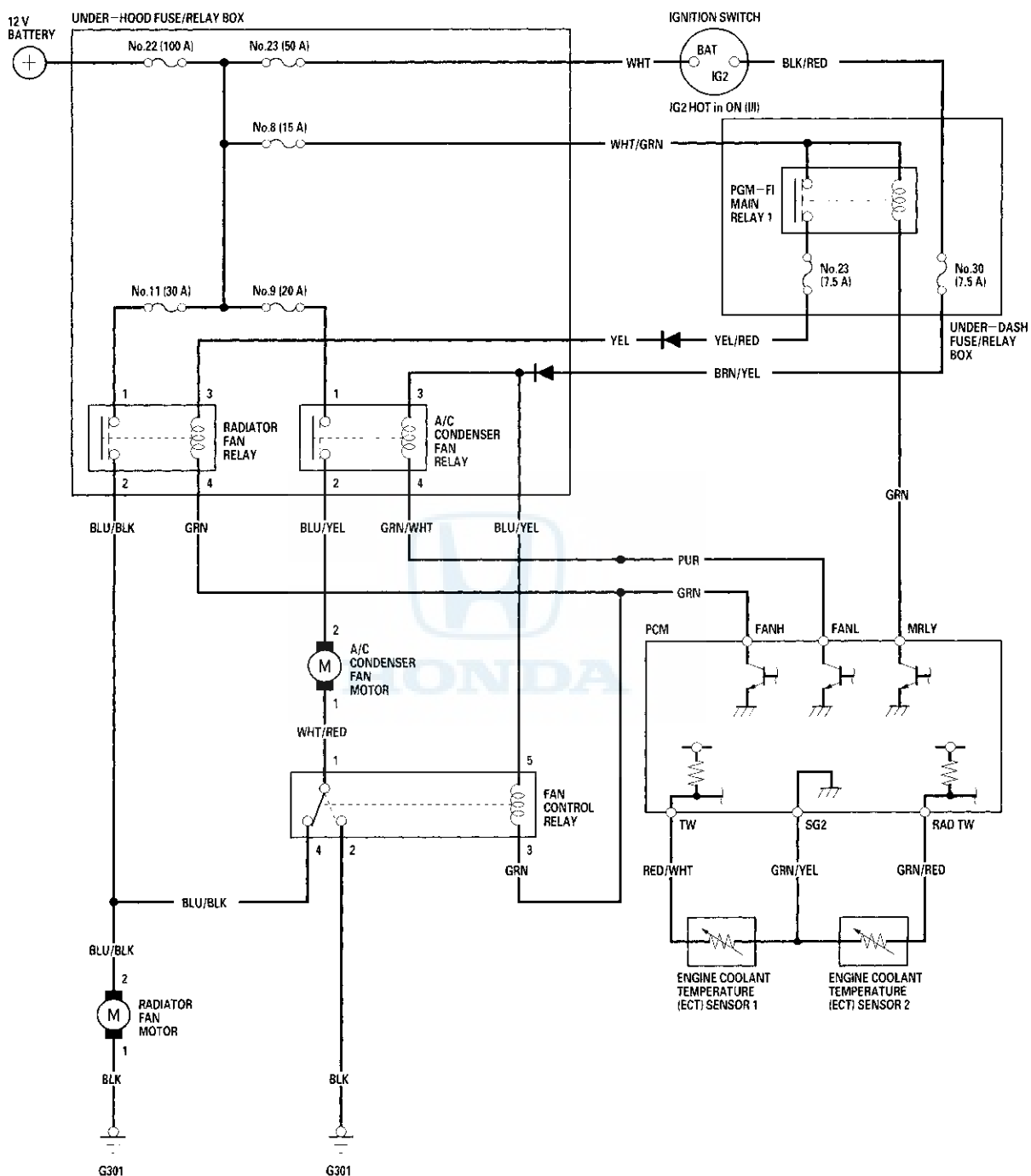
Fan Controls

Symptom Troubleshooting Index

Symptom	Diagnostic Procedure	Also check for
Engine overheats	<ol style="list-style-type: none"> 1. Inspect the water pump (see page 10-5). 2. Check the thermostat (see page 10-4). 3. Check for any engine coolant leakage (from gaskets, hoses, O-rings, etc.). 4. Check for dirt, leaves, or insects on radiator and condenser. 5. Check for a damaged or deformed fan shroud. 6. Check for a plugged or deteriorated radiator hoses. 7. Check the radiator cap (see page 10-3). 8. Inspect the fan motors (see page 10-4) or fan relays (see page 22-72). 9. Check for plugged heater core or hoses. 10. Check the coolant level. 11. Check for deteriorated coolant. 12. Check for a damaged cylinder head gasket. 	
The radiator fan runs at low speed, but does not run at high speed when the engine coolant temperature is above 206 °F (97 °C)	Radiator fan high speed circuit troubleshooting (see page 10-16).	Cleanliness and tightness of all connectors
With the A/C off and the engine coolant temperature at 206 °F (97 °C) or below, the A/C condenser fan runs at high speed and the radiator fan does not run. When the engine coolant temperature is above 206 °F (97 °C), both fans run at high speed	Remove the fan control relay, and test. <ul style="list-style-type: none"> • If the relay is faulty, replace it. • If the relay is OK, repair a short in the wire between fan control relay 5P socket terminal No. 1 and condenser fan motor 2P connector terminal No. 1. 	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at high speed with the ignition switch ON (II), the A/C off, and the engine coolant temperature below 204 °F (95 °C)	Repair a short in the wire between radiator fan relay 4P socket terminal No. 4 and PCM connector terminal E12.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan run at low speed with the ignition switch ON (II) and the A/C off	Repair a short in the wire between A/C condenser fan relay 4P socket terminal No. 4 and PCM connector terminal E6.	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at low speed with the A/C on	Radiator and A/C condenser fans low speed circuit troubleshooting (see page 21-65).	Cleanliness and tightness of all connectors
The A/C condenser fan does not run at all. The radiator fan does not run at low speed, but it runs at high speed	A/C condenser fans high speed circuit troubleshooting (see page 21-69).	Cleanliness and tightness of all connectors
Both the radiator fan and the A/C condenser fan do not run at high speed when the engine coolant temperature is above 206 °F (97 °C)	Repair an open in the wire between radiator fan relay 4P socket terminal No. 4 and PCM connector terminal E12.	Cleanliness and tightness of all connectors



Circuit Diagram



Fan Controls

Radiator Fan High Speed Circuit Troubleshooting

1. Remove the radiator fan relay from the under-hood fuse/relay box, and test it (see page 22-72).

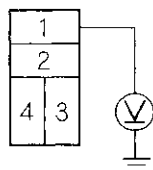
Is the relay OK?

YES—Go to step 2.

NO—Replace the radiator fan relay. ■

2. Turn the ignition switch ON (II).
3. Measure the voltage between radiator fan relay 4P socket terminal No.1 and body ground.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

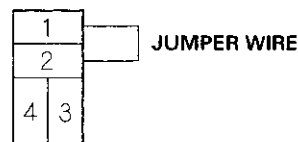
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-hood fuse/relay box. ■

4. Connect radiator fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

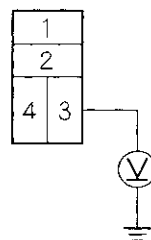
Does the radiator fan run at high speed?

YES—Go to step 5.

NO—Repair an open in the wire between radiator fan relay 4P socket terminal No. 2 and radiator fan motor 2P connector terminal No. 2, or open between terminal No. 1 and body ground. ■

5. Measure voltage between radiator fan relay 4P socket terminal No. 3 and body ground with the ignition switch ON (II).

RADIATOR FAN RELAY 4P SOCKET



Terminal side of female terminals

Is there battery voltage?

YES—Repair an open in the wire between radiator fan relay 4P socket terminal No. 4 and the powertrain control module (PCM). ■

NO—Repair an open in the wire between radiator fan relay 4P socket terminal No. 3 and the under-dash fuse/relay box. ■

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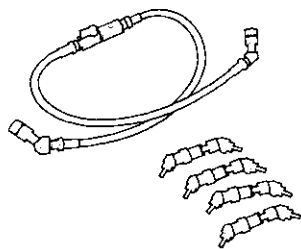
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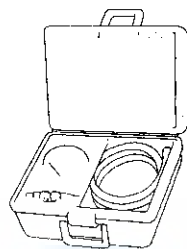
Fuel and Emissions Systems

Special Tools

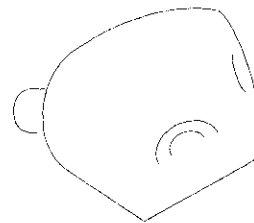
Ref. No.	Tool Number	Description	Qty
①	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
②	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
③	07NAJ-P07010A	Pressure Gauge Adapter	1
④	07SAZ-001000A	Backprobe Set	2
⑤	07ZAJ-S5A0200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	1
⑥-2	07406-0070300	A/T Low Pressure Gauge W/Panel	1
⑥-3	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	1
⑥-4	07MAJ-PY40120	A/T Pressure Hose, Adapter	1
⑦	07406-004000A	Fuel Pressure Gauge	1



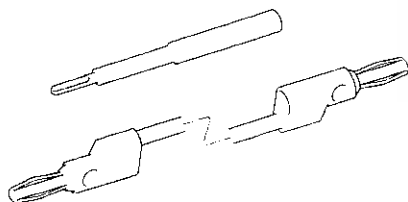
①



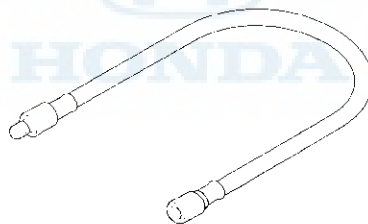
②



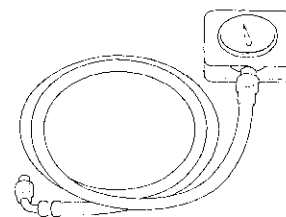
③



④



⑤



⑥-1, ⑥-2, ⑥-3, ⑥-4



⑦



General Troubleshooting Information

Intermittent Failures

The term “intermittent failure” means a system may have had a failure, but it checks OK now. If the malfunction indicator lamp (MIL) on the dash does not come on, check for poor connections or loose pins at all connectors related to the circuit that you are troubleshooting. If the MIL was on but then went out, the original problem may have been an intermittent one.

Opens and Shorts

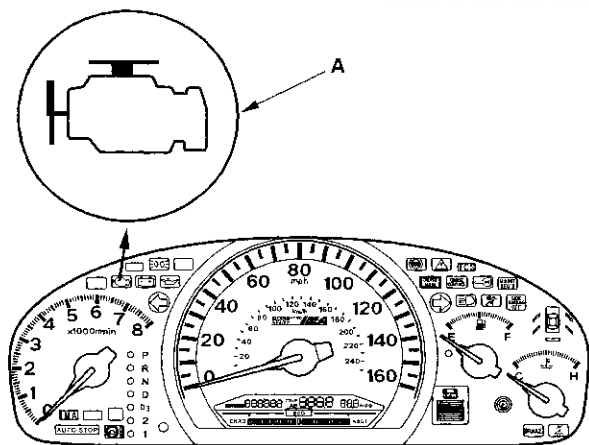
“Open” and “Short” are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won’t work at all. With complex electronics (such as PCMs) this can sometimes mean something works, but not the way it’s supposed to.

How to Use the HDS (Honda Diagnostic System)

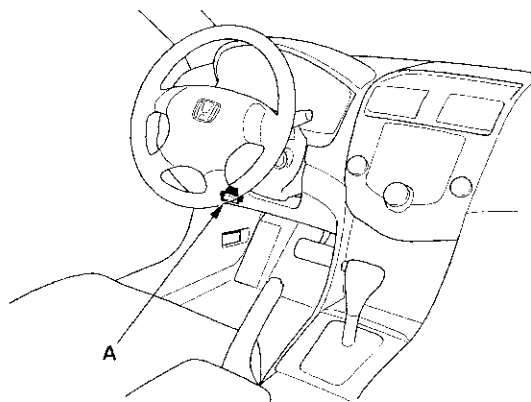
If the MIL (Malfunction Indicator Lamp) has come on

1. Start the engine and check the MIL (A).

NOTE: If the ignition switch is turned ON (II), and the engine is not started, the MIL will stay on for 15–20 seconds (see page 11-63).



2. If the MIL stays on, connect the HDS to the data link connector (DLC) (A) located under the driver’s side of the dashboard.



3. Turn the ignition switch ON (II).
4. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data. Refer to the DTC troubleshooting and begin the appropriate troubleshooting procedure.

NOTE:

- Freeze data indicates the engine conditions when the first malfunction, misfire, or fuel trim malfunction was detected.
- The HDS can read the DTC, freeze data, current data, and other powertrain control module (PCM) data.
- For specific operations, refer to the user’s manual that came with the HDS.

5. If no DTCs are found, go to MIL troubleshooting (see page 11-199).

If the MIL did not stay on

If the MIL did not stay on but there is a driveability problem, do the symptom troubleshooting.

If you can’t duplicate the DTC

Some of the troubleshooting requires you to reset the PCM and try to duplicate the DTC. If the problem is intermittent and you can’t duplicate the code, do not continue through the procedure. To do so will only result in confusion and possibly, a needlessly replaced PCM.

(cont’d)

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

HDS Clear Command

The PCM stores various specific data to correct the system even if there is no electrical power such as when the battery negative terminal or No. 8 FI ECU (PCM) (15 A) fuse are disconnected. Stored data based on failed parts should be cleared by using the "CLEAR COMMAND" of the HDS, if parts are replaced.

The HDS has three kinds of clear commands to meet this purpose. They are DTC clear, PCM reset, and CKP pattern clear. DTC clear command erases all stored DTC codes, freeze data, and readiness codes. This must be done with the HDS after reproducing the DTC during troubleshooting.

The PCM reset command erases all stored DTC codes, freeze data, readiness codes, and all specific data to correct the system except CKP pattern. If the CKP pattern data in the PCM was cleared, you must do the CKP pattern learn procedure. The CKP pattern clear command erases only CKP pattern data. This command is for repair of a misfire or the CKP sensor.

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

PCM Reset

This command clears stored specific data from each vehicle such as DTCs, freeze data, and readiness codes. It does not clear CKP pattern data.

1. Reset the PCM with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-340).

CKP Pattern Clear/CKP Pattern Learn

NOTE: The ECT needs to be at 176 °F (80 °C) or higher.

1. Clear the CKP pattern with the HDS while the engine is stopped.
2. Turn the ignition switch OFF.
3. Turn the ignition switch ON (II), and wait 30 seconds.
4. Select CRANK PATTERN in the ADJUSTMENT MENU on the HDS.
5. Select CRANK PATTERN LEARNING and follow the procedure showed on the screen.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait 30 seconds. The CKP learning procedure is completed.



How to End a Troubleshooting Session (required after any troubleshooting)

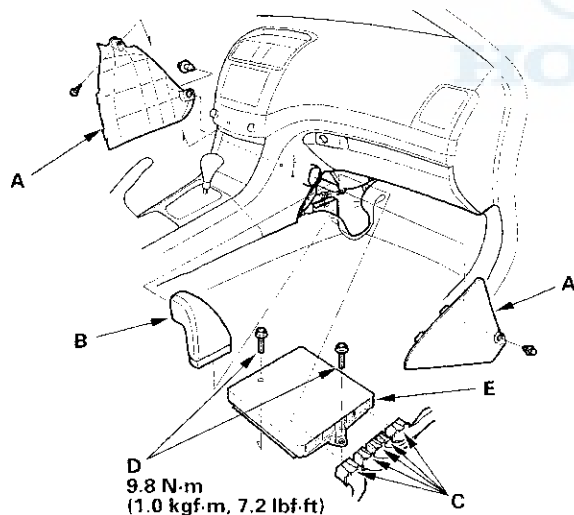
1. Reset the PCM with the HDS.
2. Do the PCM idle learn procedure (see page 11-340).
3. Turn the ignition switch OFF.
4. Disconnect the HDS from the DLC.

NOTE: The PCM is part of the immobilizer system. If you replace the PCM, it will have a different immobilizer code. In order for the engine to start, you must rewrite the immobilizer code with the HDS.

How to Remove the PCM for Testing

If DTC troubleshooting requires voltage or resistance checks at the PCM connectors, remove the PCM and test it.

1. Jump the SCS line with the HDS.
2. Remove the center lower covers (A).



3. Remove the duct (B).

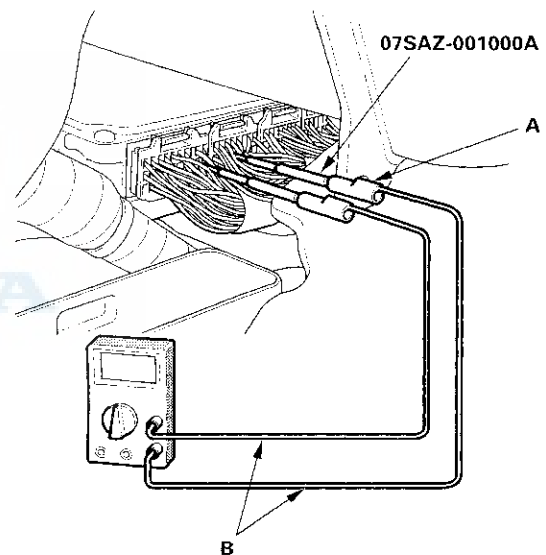
4. Disconnect the PCM connectors (C).
5. Remove the bolts (D), then remove the PCM (E).
6. Install the PCM in the reverse order of removal.
7. Open the SCS line with the HDS.

How to Troubleshoot Circuits at the PCM

Special Tools Required

- Digital multimeter KS-AHM-32-003 (1) or a commercially available digital multimeter
- Backprobe set 07SAZ-001000A (2)

1. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter.



(cont'd)

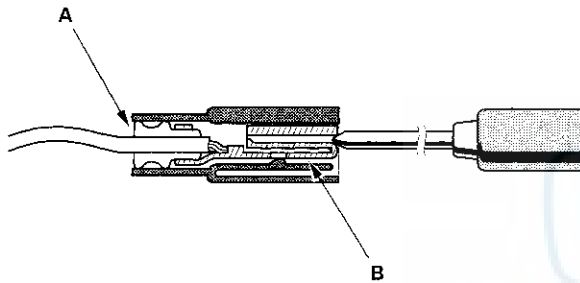
Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

2. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.
3. If you cannot get to the wire side of the connector or the wire side is sealed (A), disconnect the connector and probe the terminals (B) from the terminal side. Do not force the probe into the connector.

NOTICE

Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.



PCM Updating and Substitution for Testing

Special Tools Required

Honda interface module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not have the latest software loaded.

NOTE: Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

How to Update the PCM

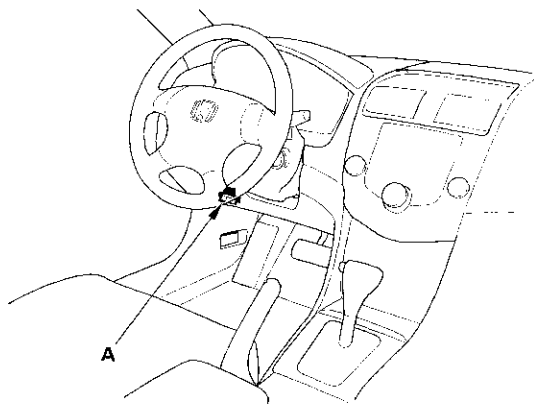
NOTE:

- To ensure the latest program is installed, do a PCM update whenever the PCM is substituted or replaced.
- You can not update a PCM with the program it already has. It will only accept a new program.
- Before you update the PCM, make sure the vehicle's battery is fully charged.
- To prevent PCM damage, do not operate anything electrical (audio system, brakes, A/C, power windows, moonroof, door locks, etc.) during the update.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (# 3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent PCM damage.

1. Turn the ignition switch ON (II). Do not start the engine.



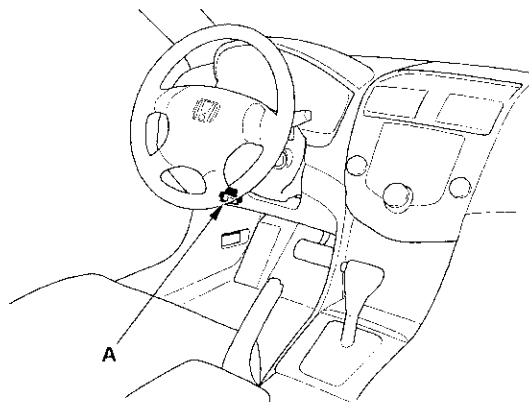
2. Connect the HDS or the Honda interface module (HIM) to the data link connector (DLC) (A) located under the driver's side of the dashboard.



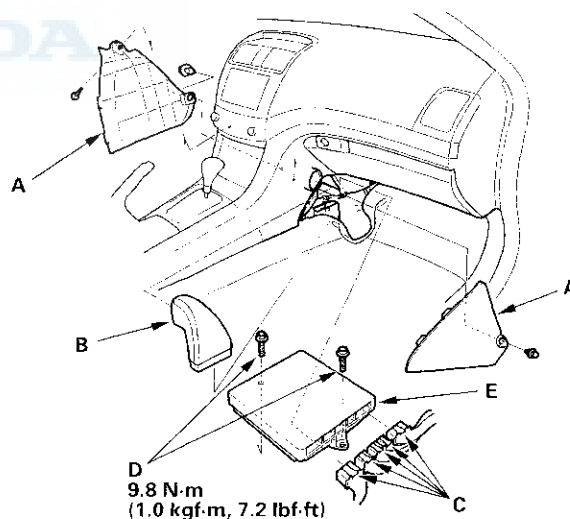
3. Do the PCM update procedure as described on the HIM label and in the PCM update system.
4. Check for DTCs with the HDS. If DTC U0300 is indicated, go to troubleshooting U0300, then back to "PCM Updating". If DTC is not indicated, go to step 5.
5. Do the PCM idle learn procedure (see page 11-340).
6. Do the CKP pattern clear/pattern learn procedure.

How to Substitute the PCM

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Remove the center lower cover (A).



6. Remove the duct (B).
7. Disconnect the PCM connectors (C).
8. Remove the bolts (D), then remove the PCM (E).

(cont'd)

Fuel and Emissions Systems

General Troubleshooting Information (cont'd)

9. Install the PCM in the reverse order of removal.

10. Open the SCS with the HDS.

11. Turn the ignition switch ON (II).

NOTE: DTC P0630 "VIN Not Programmed or Mismatch" will be stored at this time because VIN has not been programmed into the PCM, but ignore it and continue this procedure.

12. Input the VIN to the PCM with the HDS.

13. Rewrite the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.

14. Reset the PCM with the HDS.

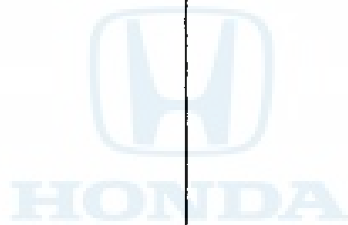
15. Do the PCM idle learn procedure (see page 11-340).

16. Do the CKP pattern learn procedure.

OBD Status

The OBD status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully finished. The results of diagnostic tests for the DTC are displayed as:

- **PASSED:** On board diagnosis is successfully finished.
- **FAILED:** On board diagnosis has finished but failed.
- **EXECUTING:** The vehicle is in enable criteria conditions for the DTC and the on board diagnosis is running.
- **NOT COMPLETED:** The on board diagnosis was running but is out of the enable conditions of the DTC.
- **OUT OF CONDITION:** The vehicle has stayed out of the enable conditions of the DTC.





DTC Troubleshooting Index

DTC (MIL indication ¹⁾)	Temporary DTC	Detection Item	MIL	Note
P0096 (10)	—	Intake Air Temperature (IAT) Sensor 2 Circuit Range/Performance Problem	ON	(see page 11-68)
P0097 (10)	—	Intake Air Temperature (IAT) Sensor 2 Circuit Low Voltage	ON	(see page 11-69)
P0098 (10)	—	Intake Air Temperature (IAT) Sensor 2 Circuit High Voltage	ON	(see page 11-70)
P0101 (50)	—	Mass Air Flow (MAF) Sensor Range/Performance Problem	ON	(see page 11-72)
P0102 (50)	—	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see page 11-74)
P0103 (50)	—	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see page 11-77)
P0107 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-79)
P0108 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-81)
P0112 (10)	—	Intake Air Temperature (IAT) Sensor 1 Circuit Low Voltage	ON	(see page 11-83)
P0113 (10)	—	Intake Air Temperature (IAT) Sensor 1 Circuit High Voltage	ON	(see page 11-84)
P0116 (86)	P0116	Engine Coolant Temperature (ECT) Sensor 1 Range/Performance Problem	ON	(see page 11-86)
P0117 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-87)
P0118 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see page 11-88)
P0122 (7)	—	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see page 11-222)
P0123 (7)	—	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-225)
P0125 (86)	P0125	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see page 11-90)
P0128 (87)	P0128	Cooling System Malfunction	ON	(see page 11-91)
P0133 (157)	P0133	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Slow Response	ON	(see page 11-93)
P0134 (151)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater System Malfunction	ON	(see page 11-94)
P0135 (151)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-96)
P0137 (161)	P0137	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Low Voltage	ON	(see page 11-100)
P0138 (161)	P0138	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit High Voltage	ON	(see page 11-102)
P0139 (161)	P0139	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Slow Response	ON	(see page 11-104)
P0141 (163)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-105)
P0153 (158)	P0153	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Slow Response	ON	(see page 11-93)
P0154 (152)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater System Malfunction	ON	(see page 11-94)
P0155 (152)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-96)
P0157 (162)	P0157	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Low Voltage	ON	(see page 11-100)
P0158 (162)	P0158	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit High Voltage	ON	(see page 11-102)
P0159 (162)	P0159	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Slow Response	ON	(see page 11-104)
P0161 (164)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-105)
P0171 (153)	P0171	Rear Bank (Bank 1) Fuel System Too Lean	ON	(see page 11-109)
P0172 (153)	P0172	Rear Bank (Bank 1) Fuel System Too Rich	ON	(see page 11-109)
P0174 (154)	P0174	Front Bank (Bank 2) Fuel System Too Lean	ON	(see page 11-109)
P0175 (154)	P0175	Front Bank (Bank 2) Fuel System Too Rich	ON	(see page 11-109)
P0222 (7)	—	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-228)
P0223 (7)	—	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-231)

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

(cont'd)

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

DTC (MIL indication ¹)	Temporary DTC	Detection Item	MIL	Note
P0300 (77) and some of P0301 (71), P0302 (72), P0303 (73), P0304 (74), P0305 (75), P0306 (76)	P0300 and some of P0301, P0302, P0303, P0304, P0305, P0306	Random Misfire Detected	ON	(see page 11-110)
P0301 (71)	P0301	No. 1 Cylinder Misfire Detected	ON	(see page 11-113)
P0302 (72)	P0302	No. 2 Cylinder Misfire Detected	ON	(see page 11-113)
P0303 (73)	P0303	No. 3 Cylinder Misfire Detected	ON	(see page 11-113)
P0304 (74)	P0304	No. 4 Cylinder Misfire Detected	ON	(see page 11-113)
P0305 (75)	P0305	No. 5 Cylinder Misfire Detected	ON	(see page 11-113)
P0306 (76)	P0306	No. 6 Cylinder Misfire Detected	ON	(see page 11-113)
P0325 (23)		Knock Sensor Circuit Malfunction	ON	(see page 11-121)
P0335 (4)		Crankshaft Position (CKP) Sensor A No Signal	ON	(see page 11-123)
P0339 (4)		Crankshaft Position (CKP) Sensor A Intermittent Interruption	ON	(see page 11-125)
P0340 (9)		Camshaft Position (CMP) Sensor No Signal	ON	(see page 11-126)
P0344 (9)		Camshaft Position (CMP) Sensor Intermittent Interruption	ON	(see page 11-128)
P0385 (54)		Crankshaft Position (CKP) Sensor B No Signal	ON	(see page 11-123)
P0389 (54)		Crankshaft Position (CKP) Sensor B Intermittent Interruption	ON	(see page 11-125)
P0401 (80)	P0401	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-393)
P0404 (12)	P0404	Exhaust Gas Recirculation (EGR) Control Circuit Range/Performance Problem	ON	(see page 11-395)
P0406 (12)		Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-398)
P0420 (165)	P0420	Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)	ON	(see page 11-388)
P0430 (166)	P0430	Front Bank Catalyst System Efficiency Below Threshold (Bank 2)	ON	(see page 11-388)
P0443 (92)		Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-409)
P0451 (91)	P0451	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see page 11-413)
P0452 (91)		Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-414)
P0453 (91)		Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-417)
P0455 (90)		Evaporative Emission (EVAP) System Large Leak Detected	ON	(see page 11-420)
P0456 (90)	P0456	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-420)
P0457 (90)	P0457	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see page 11-423)
P0461 (121)		Fuel Level Sensor Circuit Range/Performance Problem	ON	(see page 11-343)
P0462 (121)		Fuel Level Sensor Circuit Low Voltage	ON	(see page 11-343)
P0463 (121)		Fuel Level Sensor Circuit High Voltage	ON	(see page 11-344)
P0496 (92)	P0496	Evaporative Emission (EVAP) System High Purge Flow	ON	(see page 11-425)
P0497 (90)	P0497	Evaporative Emission (EVAP) System Low Purge Flow	ON	(see page 11-426)
P0498 (117)		Evaporative Emission (EVAP) Canister Vent Shut Valve Control Circuit Low Voltage	ON	(see page 11-429)
P0499 (117)		Evaporative Emission (EVAP) Canister Vent Shut Valve Control Circuit High Voltage	ON	(see page 11-432)
P0506 (14)	P0506	Idle Control System RPM Lower than Expected	ON	(see page 11-325)
P0507 (14)	P0507	Idle Control System RPM Higher than Expected	ON	(see page 11-327)
P0522 (22)		Engine Oil Pressure (EOP) Sensor Circuit Low Voltage	ON	(see page 11-267)
P0523 (22)		Engine Oil Pressure (EOP) Sensor Circuit High Voltage	ON	(see page 11-269)
P0532 (191)		A/C Pressure Sensor Circuit Low Voltage	OFF	(see page 11-328)
P0533 (191)		A/C Pressure Sensor Circuit High Voltage	OFF	(see page 11-330)
P0557 (49)		Brake Booster Pressure Sensor Circuit Low Voltage	OFF	(see page 11-129)
P0558 (49)		Brake Booster Pressure Sensor Circuit High Voltage	OFF	(see page 11-131)

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.



DTC (MIL indication ^{*1})	Temporary DTC	Detection Item	MIL	Note
P0563 (34)	—	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	ON	(see page 11-134)
P0602 (196)	—	Powertrain Control Module (PCM) (PGM-FI System) Programming Error	ON	(see page 11-137)
P0603 (131)	—	Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-137)
P060A (131)	—	Powertrain Control Module (PCM) (A/T system) Internal Control Module Malfunction	ON	(see page 11-138)
P0627 (169)	—	Fuel Pump Control (FPC) System Malfunction	ON	(see page 11-345)
P0630 (139)	—	VIN Not Programmed or Mismatch	ON	(see page 11-139)
P0685 (135)	P0685	Powertrain Control Module (PCM) Power Control Circuit Malfunction	ON	(see page 11-140)
P07xx (70) ^{*2}	—	Automatic Transaxle System Malfunction	ON	Refer to the Automatic Transmission DTC Troubleshooting Index
P07xx (70) ^{*2}	—	Automatic Transaxle System Malfunction	OFF	Refer to the Automatic Transmission DTC Troubleshooting Index
P0A14 (195)	—	Front Engine Mount Actuator Circuit Malfunction	OFF	(see page 11-283)
P0A15 (195)	—	Front Engine Mount Actuator Control Circuit Low Current	OFF	(see page 11-286)
P0A16 (195)	—	Front Engine Mount Actuator Control Circuit High Current	OFF	(see page 11-290)
P0AB6 (195)	—	Rear Engine Mount Actuator Circuit Malfunction	OFF	(see page 11-283)
P0AB7 (195)	—	Rear Engine Mount Actuator Control Circuit Low Current	OFF	(see page 11-286)
P0AB8 (195)	—	Rear Engine Mount Actuator Control Circuit High Current	OFF	(see page 11-290)
P0AC4 (69)	—	IMA System Malfunction	ON	Refer to IMA System DTC Troubleshooting Index
P1077 (106)	P1077	Intake Manifold Tuning (IMT) Valve Stuck Short	ON	(see page 11-374)
P1078 (106)	P1078	Intake Manifold Tuning (IMT) Valve Stuck Long	ON	(see page 11-377)
P1109 (13)	—	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-140)
P1116 (86)	—	Engine Coolant Temperature (ECT) Sensor 1 Performance Problem	ON	(see page 11-141)
P1128 (5)	P1128	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-143)
P1129 (5)	P1129	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-144)
P1172 (157)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Out of Range High	ON	(see page 11-146)
P1174 (158)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Out of Range High	ON	(see page 11-146)
P1297 (20)	—	Electric Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-147)
P1298 (20)	—	Electric Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-149)
P1454 (91)	P1454	Fuel Tank Pressure (FTP) Sensor Range/Performance Problem	ON	(see page 11-433)

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

* 2: The D indicator and the MIL may come on simultaneously. If using the HDS, you must select the A/T mode to read these DTCs.

(cont'd)

Fuel and Emissions Systems

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *)	Temporary DTC	Detection Item	MIL	Note
P15AB (195)		Engine Mount Control Unit Power Source Circuit Low Voltage	OFF	(see page 11-293)
P15AC (195)		Engine Mount Control Unit Internal Circuit Malfunction	OFF	(see page 11-296)
P15AD (195)		Engine Mount Control Unit Internal Circuit Malfunction	OFF	(see page 11-297)
P15AE (195)		Cylinder Pause Signal Malfunction	OFF	(see page 11-298)
P15AF (195)		Camshaft Position (CMP) Signal Malfunction	OFF	(see page 11-300)
P15B0 (195)		Crankshaft Position (CKP) Signal Malfunction	OFF	(see page 11-304)
P15B1 (195)		Camshaft Position (CMP) Sensor/Crankshaft Position (CKP) Sensor Signal Incorrect Correlation	OFF	(see page 11-308)
P1601 (69)		IMA System Malfunction	OFF	Refer to IMA System DTC Troubleshooting Index
P1683 (40)		Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-234)
P1684 (40)		Throttle Valve Return Spring Performance Problem	ON	(see page 11-235)
P16C0 (196)		Powertrain Control Module (PCM) (A/T system) Programming Error	ON	(see page 11-151)
P16C4 (195)		Engine Mount Actuator Control Power Circuit Stuck OFF	OFF	(see page 11-311)
P16C5 (195)		Engine Mount Actuator Control Power Circuit Stuck ON	OFF	(see page 11-316)
P16C6 (195)		Engine Mount Actuator High Voltage During Function Test	OFF	(see page 11-318)
P16C7 (195)		Rear Engine Mount Actuator High Current	OFF	(see page 11-320)
P16C8 (195)		Front Engine Mount Actuator High Current	OFF	(see page 11-320)
P16C9 (195)		Engine Mount Control Unit Internal Circuit Malfunction	OFF	(see page 11-321)
P2101 (40)		Throttle Actuator System Malfunction	ON	(see page 11-236)
P2108 (40)		Throttle Actuator Control Module Problem	ON	(see page 11-238)
P2118 (40)		Throttle Actuator Current Range/Performance Problem	ON	(see page 11-239)
P2122 (37)		Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit Low Voltage	ON	(see page 11-240)
P2123 (37)		Accelerator Pedal Position (APP) Sensor A (Throttle Position Sensor D) Circuit High Voltage	ON	(see page 11-243)
P2127 (37)		Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit Low Voltage	ON	(see page 11-245)
P2128 (37)		Accelerator Pedal Position (APP) Sensor B (Throttle Position Sensor E) Circuit High Voltage	ON	(see page 11-248)
P2135 (7)		Throttle Position (TP) Sensor A/B Voltage Incorrect Correlation	ON	(see page 11-250)
P2138 (37)		Accelerator Pedal Position (APP) Sensor A/B (Throttle Position Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-252)
P2176 (40)		Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-254)
P2183 (192)	P2183	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	(see page 11-152)
P2184 (192)		Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-154)
P2185 (192)		Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-155)
P2195 (155)		Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Signal Stuck Lean	ON	(see page 11-157)
P2197 (156)		Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Signal Stuck Lean	ON	(see page 11-157)
P2227 (13)	P2227	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see page 11-158)
P2228 (13)		Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-159)
P2229 (13)		Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-159)

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.



DTC (MIL indication*)	Temporary DTC	Detection Item	MIL	Note
P2237 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Line High Voltage	ON	(see page 11-160)
P2238 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Line Low Voltage	ON	(see page 11-162)
P2240 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Line High Voltage	ON	(see page 11-160)
P2241 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Line Low Voltage	ON	(see page 11-162)
P2243 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Line High Voltage	ON	(see page 11-164)
P2245 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Line Low Voltage	ON	(see page 11-166)
P2247 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Line High Voltage	ON	(see page 11-164)
P2249 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Line Low Voltage	ON	(see page 11-166)
P2251 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Line High Voltage	ON	(see page 11-168)
P2252 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Line Low Voltage	ON	(see page 11-170)
P2254 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Line High Voltage	ON	(see page 11-168)
P2255 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Line Low Voltage	ON	(see page 11-170)
P2270 (161)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Signal Stuck Lean	ON	(see page 11-172)
P2271 (161)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Signal Stuck Rich	ON	(see page 11-172)
P2272 (162)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Signal Stuck Lean	ON	(see page 11-172)
P2273 (162)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Signal Stuck Rich	ON	(see page 11-172)
P2279 (109)	P2279	Intake Air System Leak	ON	(see page 11-405)
P2413 (12)	P2413	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-399)
P2422 (117)	P2422	Evaporative Emission (EVAP) Canister Vent Shut Valve Closed Malfunction	ON	(see page 11-433)
P2552 (40)	—	Throttle Actuator Control Module Relay Malfunction	ON	(see page 11-256)
P2610 (132)	—	Powertrain Control Module (PCM) Internal Power Off Timer Performance Problem	ON	(see page 11-173)
P2627 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-174)
P2628 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-176)
P2630 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage	ON	(see page 11-174)
P2631 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) LABEL Circuit High Voltage	ON	(see page 11-176)
P2646 (114)	—	VTEC System Stuck OFF	ON	(see page 11-272)
P2647 (114)	—	VTEC System Stuck ON	ON	(see page 11-274)
P2648 (21)	—	VTEC Solenoid Valve Circuit High Voltage	ON	(see page 11-276)
P2649 (21)	—	VTEC Solenoid Valve Circuit Low Voltage	ON	(see page 11-278)
P2A00 (157)	—	Rear A/F Sensor Circuit Range/Performance Problem (Bank 1, Sensor 1)	ON	(see page 11-179)
P2A03 (158)	—	Front A/F Sensor Circuit Range/Performance Problem (Bank 2, Sensor 1)	ON	(see page 11-179)
U0037 (112)	—	IMA-CAN Malfunction (BUS-OFF)	ON	(see page 11-180)
U0073 (126)	—	F-CAN Malfunction (BUS-OFF)	OFF	(see page 11-185)
U0107 (30)	—	Lost Communication With Throttle Actuator Control Module	ON	(see page 11-258)
U0110 (112)	—	IMA-CAN Malfunction (Motor Control Module (MCM)-(Battery Condition Monitor CPU)-Powertrain Control Module (PCM))	ON	(see page 11-187)
U0121 (126)	—	F-CAN Malfunction (ABS/TCS-PCM)	OFF	(see page 11-189)
U0155 (126)	—	F-CAN Malfunction (Gauge Control Module-PCM)	OFF	(see page 11-185)
U0164 (112)	—	IMA-CAN Malfunction (A/C Compressor Driver-Powertrain Control Module (PCM))	ON	(see page 11-191)
U0300 (131)	—	PGM-FI System and A/T System Program Version Mismatch	ON	(see page 11-194)
U1101 (126)	—	F-CAN Malfunction (ACM-PCM)	OFF	(see page 11-195)
U1201 (112)	—	IMA-CAN Malfunction (Motor Control Module (MCM)-(Motor Control CPU)- Powertrain Control Module (PCM))	ON	(see page 11-197)

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

Fuel and Emissions Systems

Symptom Troubleshooting Index

When the vehicle has one of these symptoms, check for a diagnostic trouble code (DTC) with the HDS. If there is no DTC, do the diagnostic procedure for the symptom, in the sequence listed, until you find the cause.

Symptom	Diagnostic procedure	Also check for
Engine will not start (MIL works OK, no DTCs set, IMA motor works OK)	<ol style="list-style-type: none"> 1. Test the 12 V battery (see page 22-71). 2. Troubleshoot the starter circuit (see page 4-5). 3. Check the fuel pressure (see page 11-356). 	<ul style="list-style-type: none"> • Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken timing belt • Contaminated fuel
Engine will not start (MIL comes on and stays on, or never comes on at all, no DTCs set, starter or IMA motor works OK)	Troubleshoot the MIL circuit (see page 11-199).	
Engine will not start (immobilizer indicator stays on or flashes)	Troubleshoot the immobilizer system (see page 22-277).	
Engine starts but stalls immediately (MIL works OK, no DTCs set)	Troubleshoot the immobilizer system (see page 22-277).	
Engine is hard to start (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Test the 12 V battery (see page 22-71). 2. Check the fuel pressure (see page 11-356). 3. Clean the throttle body (see page 11-381). 	<ul style="list-style-type: none"> • Low compression • Intake air leaks • Contaminated fuel • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-340). 2. Check the idle speed (see page 11-339). 3. Clean the throttle body (see page 11-381). 	
Cold fast idle too high (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-340). 2. Check the idle speed (see page 11-339). 3. Do the throttle position learning check (see page 11-381). 	
Idle speed fluctuates (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-340). 2. Check the idle speed (see page 11-339). 3. Do the carbon accumulation check (see page 11-381). 	Intake vacuum leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Troubleshoot the EPS signal circuit (see page 11-336). 2. Do the carbon accumulation check (see page 11-381). 	
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	Troubleshoot the EPS signal circuit (see page 11-336).	
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-356).	<ul style="list-style-type: none"> • Low compression • Incorrect camshaft timing • Incorrect engine oil level
Engine stalls (MIL works OK, no DTCs set)	<ol style="list-style-type: none"> 1. Do the PCM idle learn procedure (see page 11-340). 2. Check the fuel pressure (see page 11-356). 3. Check the idle speed (see page 11-339). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-338). 	<ul style="list-style-type: none"> • Intake air leaks • Faulty harness and sensor connections



Symptom	Diagnostic procedure	Also check for
Auto idle stop system does not work	<ol style="list-style-type: none">1. Troubleshoot the brake pedal position switch signal circuit (see page 11-338).2. Troubleshoot the idle stop switch signal circuit (see page 11-334).3. Check the brake booster pressure sensor hose.	Brake booster vacuum hose clogged/cracked/poor connection
Difficult to refuel (MIL works OK, no DTCs set)	<ol style="list-style-type: none">1. Check the fuel vent tube between the EVAP canister and the fuel tank.2. Check the fuel tank vapor recirculation tube between the fuel pipe and the fuel tank.3. Replace the fuel tank (see page 11-367).	Malfunctioning gas station filling nozzle.
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank (see page 11-367).	Malfunctioning gas station filling nozzle.



Fuel and Emissions Systems

System Description

Electronic Control System

The functions of the fuel and emission control systems are managed by the powertrain control module (PCM).

Self-diagnosis

The PCM detects a failure of a signal from a sensor or from another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in the first or second drive cycle. When a DTC is stored, the PCM turns on the malfunction indicator lamp (MIL) by supplying ground to the MIL circuit.

- **One Drive Cycle Detection Method**

When an abnormality occurs in the signal from a sensor or from another control unit, the PCM stores a Temporary DTC and a DTC at the same time for the failure and turns on the MIL immediately.

- **Two Drive Cycle Detection Method**

When an abnormality occurs in the signal from a sensor or from another control unit in the first drive cycle, the PCM stores a Temporary DTC. The MIL does not come on. If the failure continues in the second drive cycle, the PCM stores a DTC and turns on the MIL.

Fail-safe Function

When an abnormality occurs in the signal from a sensor or from another control unit, the PCM ignores that signal and assumes a pre-programmed value that allows the engine to continue running. A DTC is stored, and the MIL comes on.

MIL Bulb Check and Readiness Code Condition

When the ignition switch is first turned ON (II), the PCM supplies ground to the MIL circuit for 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes out.

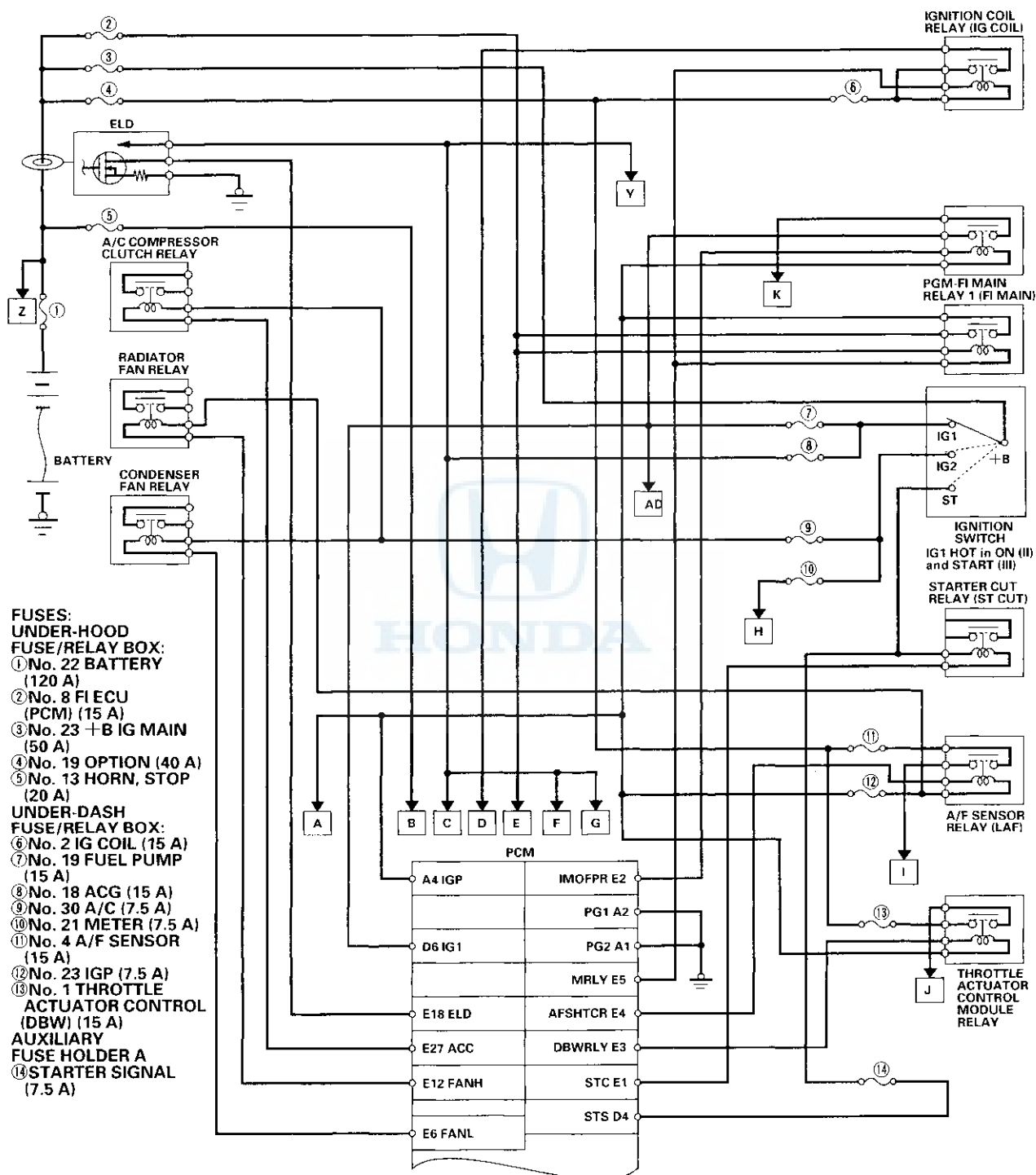
Self Shut Down (SSD) Mode

After the ignition switch is turned OFF, the PCM stays on (up to 15 minutes) to monitor the vehicle. If the PCM connector is disconnected during this time, the PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after turning the ignition switch OFF.





PCM Electrical Connections

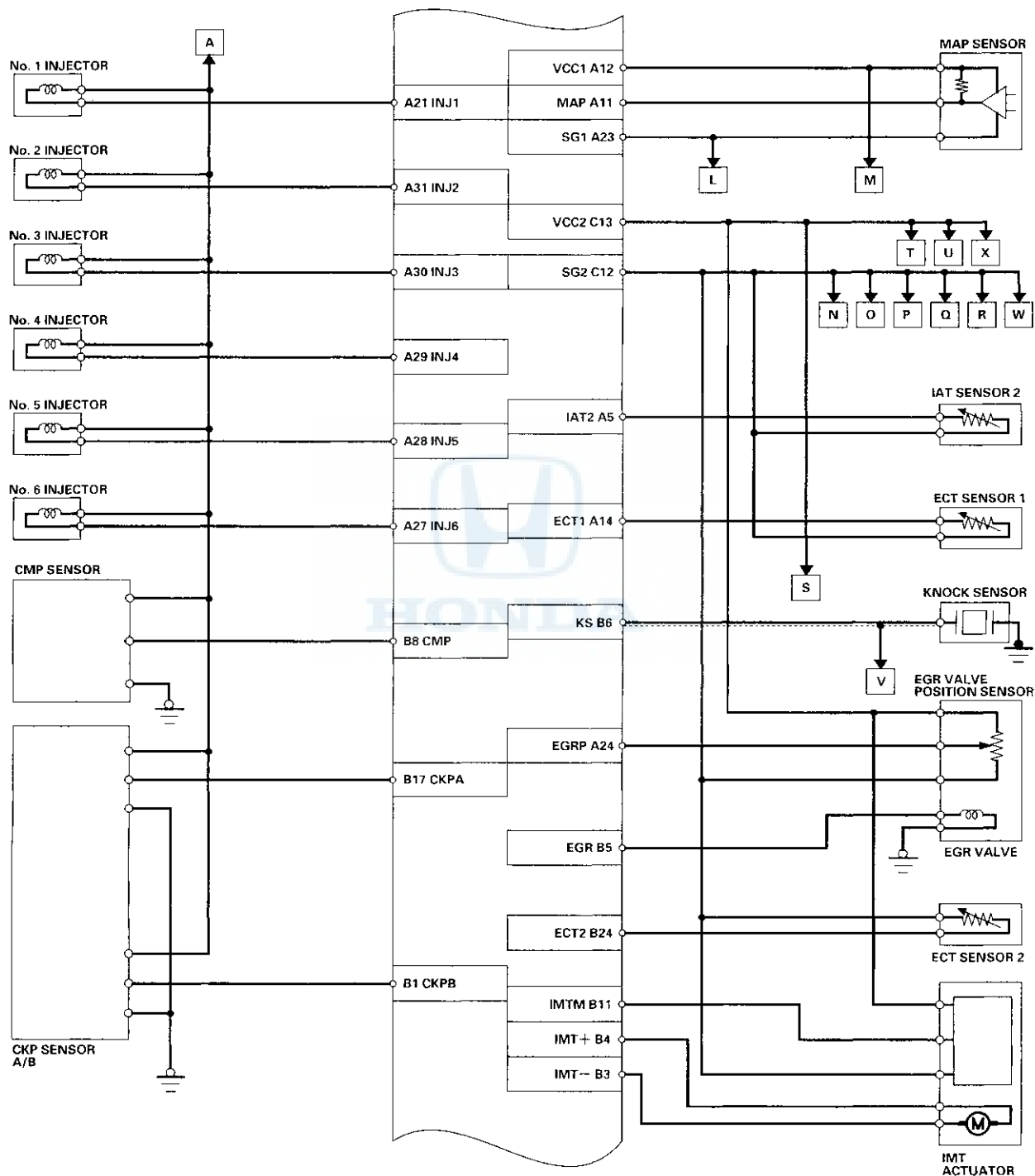


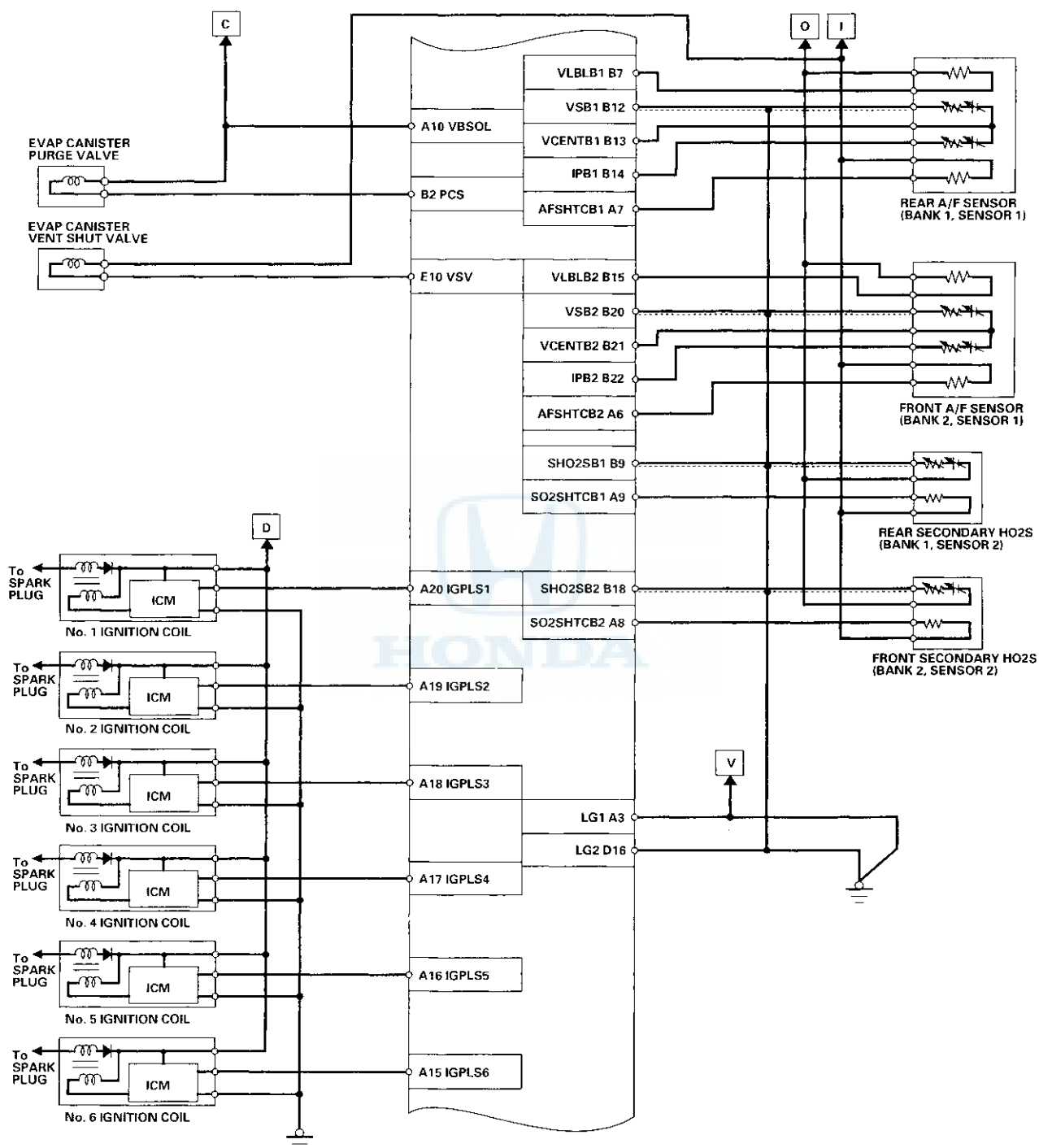
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Fuel and Emissions Systems

System Description (cont'd)

PCM Electrical Connections (cont'd)



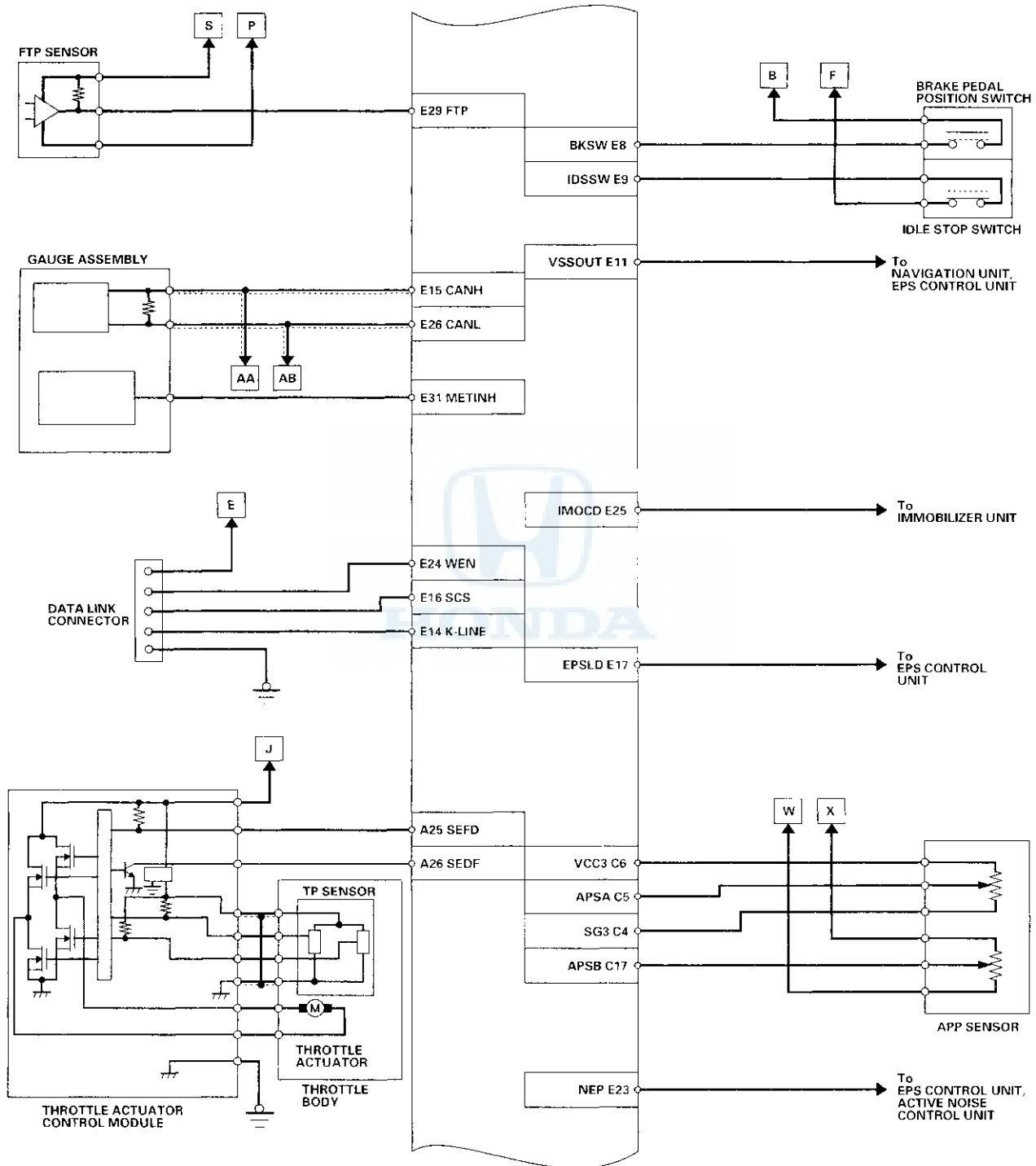


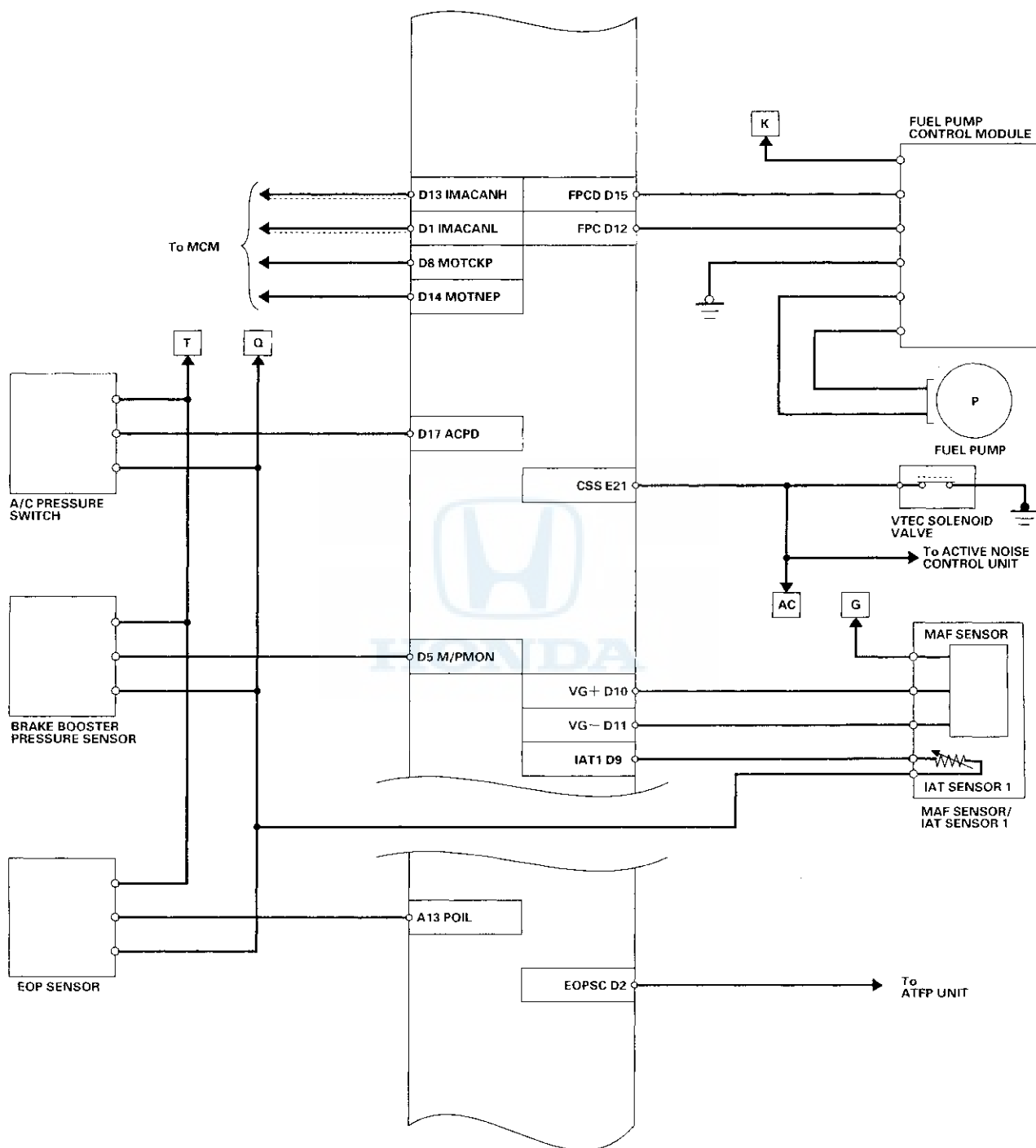
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Fuel and Emissions Systems

System Description (cont'd)

PCM Electrical Connections (cont'd)



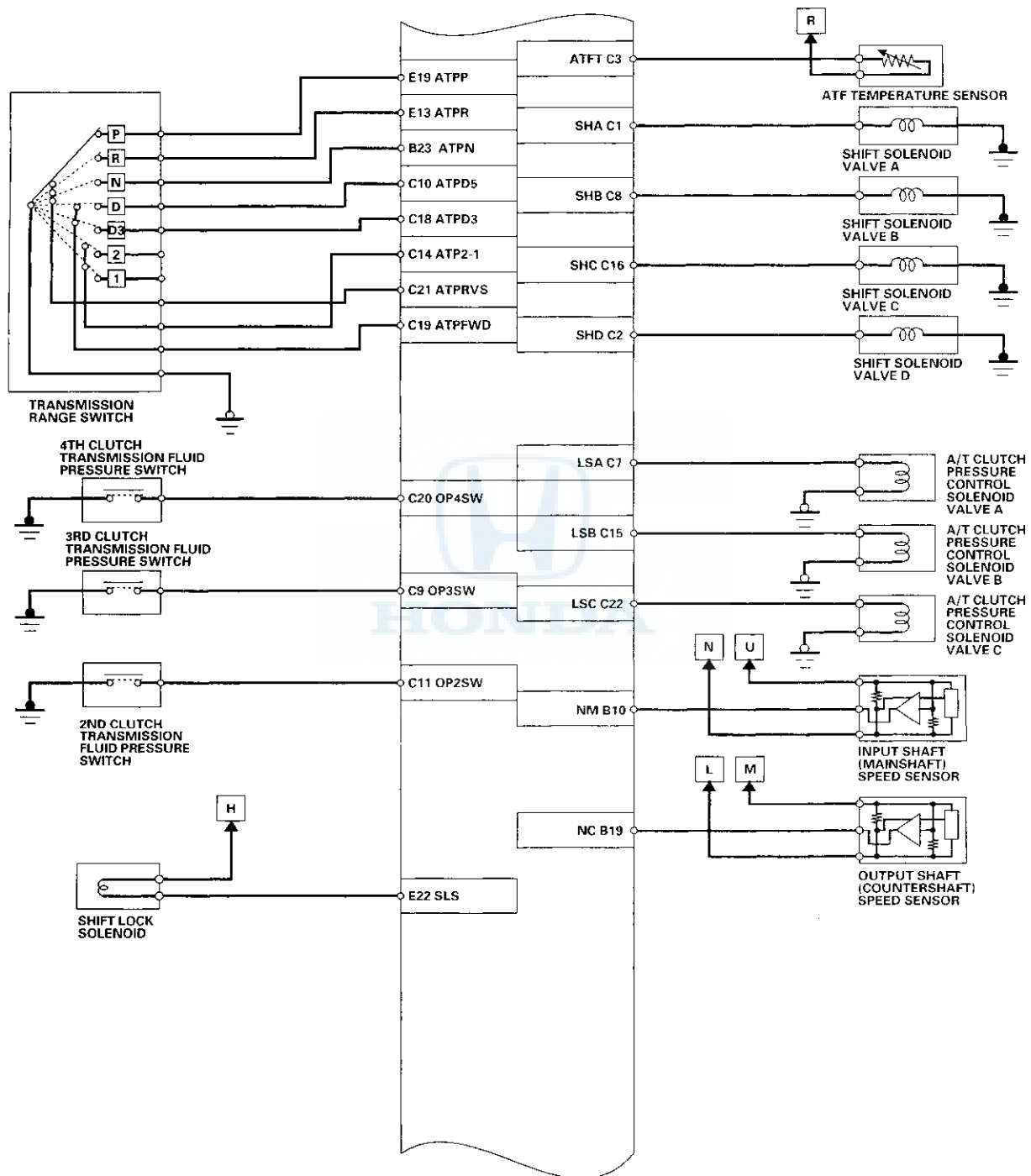


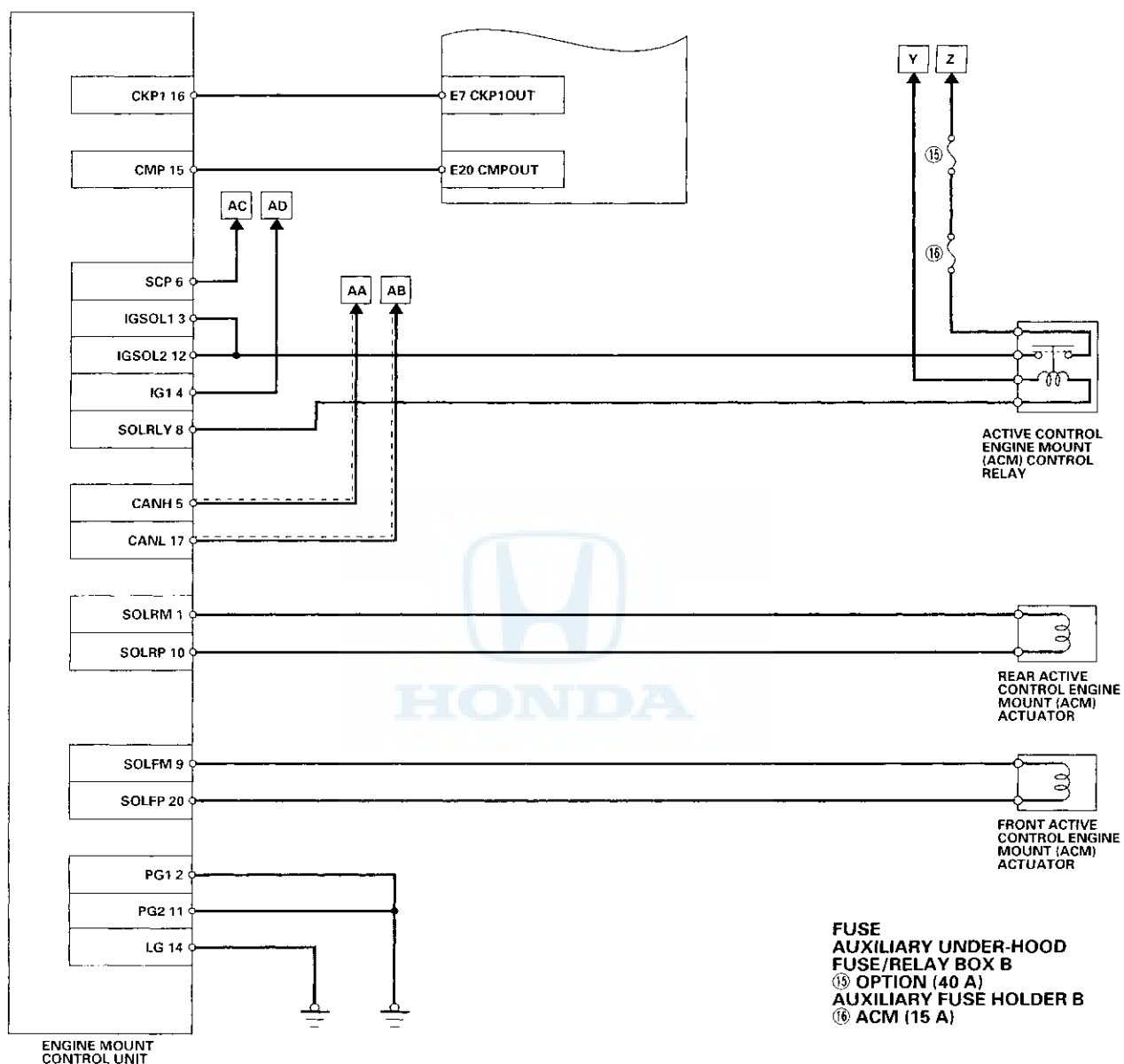
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Fuel and Emissions Systems

System Description (cont'd)

PCM Electrical Connections (cont'd)





PCM A (31P)									PCM B (24P)									PCM C (22P)									PCM D (17P)									PCM E (31P)														
1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9	1	2	3	4	5	6	7	8	9						
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31							
23	24	25	26	27	28	29	30	31	17	18	19	20	21	22	23	24	25	16	17	18	19	20	21	22	23	24	13	14	15	16	17	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40

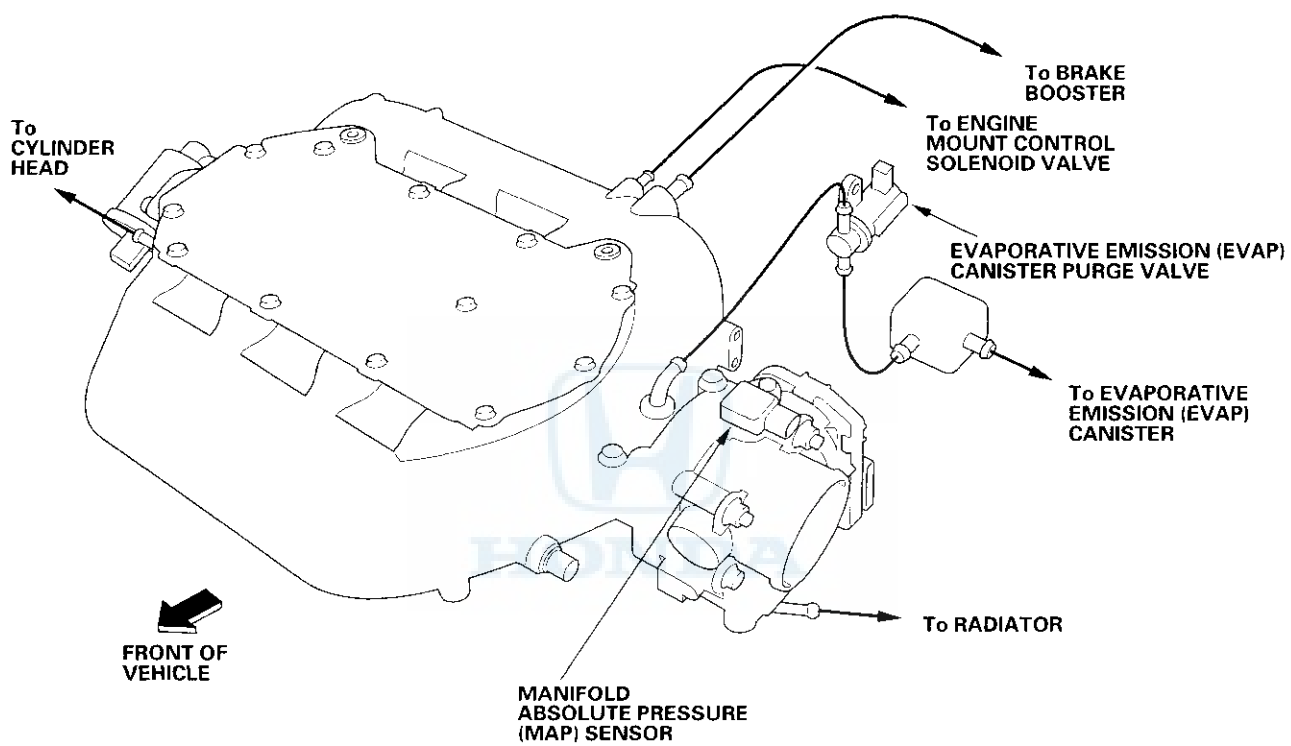
TERMINAL LOCATIONS

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Fuel and Emissions Systems

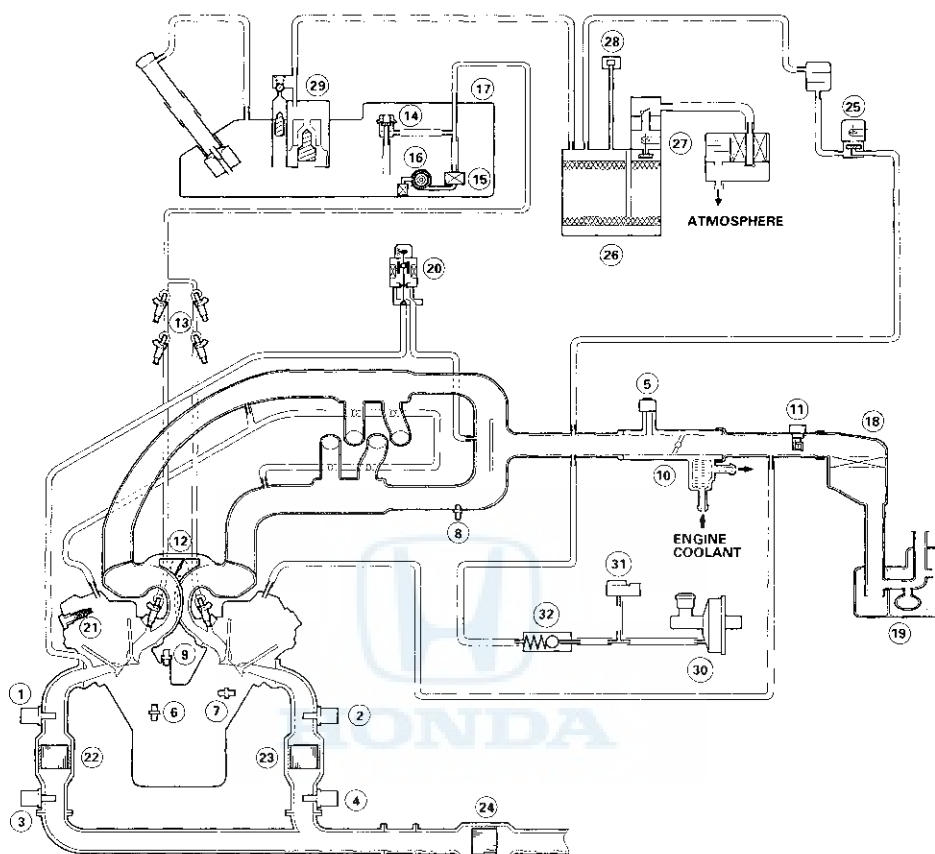
System Description (cont'd)

Vacuum Hose Routing





Vacuum Distribution



- | | |
|---|---|
| ① FRONT AIR FUEL RATIO (A/F) SENSOR (BANK 2, SENSOR 1) | ⑮ AIR CLEANER |
| ② REAR AIR FUEL RATIO (A/F) SENSOR (BANK 1, SENSOR 1) | ⑯ RESONATOR |
| ③ FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO ₂ S) (BANK 2, SENSOR 2) | ⑰ EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR |
| ④ REAR SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO ₂ S) (BANK 1, SENSOR 2) | ⑱ POSITIVE CRANKCASE VENTILATION (PCV) VALVE |
| ⑤ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR | ⑳ FRONT WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) |
| ⑥ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1 | ㉑ REAR WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) |
| ⑦ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2 | ㉒ THREE WAY CATALYTIC CONVERTER (TWC) |
| ⑧ INTAKE AIR TEMPERATURE (IAT) SENSOR 2 | ㉓ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE |
| ⑨ KNOCK SENSOR | ㉔ EVAPORATIVE EMISSION (EVAP) CANISTER |
| ⑩ THROTTLE BODY | ㉕ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE |
| ⑪ MASS AIR FLOW (MAF) SENSOR/INTAKE AIR TEMPERATURE (IAT) SENSOR 1 | ㉖ FUEL TANK PRESSURE (FTP) SENSOR |
| ⑫ INTAKE MANIFOLD TUNING (IMT) ACTUATOR | ㉗ FUEL TANK VAPOR CONTROL VALVE |
| ⑬ INJECTOR | ㉘ BRAKE BOOSTER |
| ⑭ FUEL PRESSURE REGULATOR | ㉙ BRAKE BOOSTER PRESSURE SENSOR |
| ⑮ FUEL FILTER | ㉚ CHECK VALVE |
| ⑯ FUEL PUMP | |
| ⑰ FUEL TANK | |

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector A (31P)

1 PG2	2 PG1	3 LG1	4 IGP	5 IAT2	6 AFSHTC B2	7 AFSHTC B1						8 SO2S HTCB2	9 SO2S HTCB1
10 VBSOL	11 MAP	12 VCC1	13 POIL	14 ECT1	15 IGPLS6	16 IGPLS5	17 IGPLS4	18 IGPLS3	19 IGPLS2	20 IGPLS1	21 INJ1		
	23 SG1	24 EGRP		25 SEFD	26 SEDF		27 INJ6	28 INJ5	29 INJ4	30 INJ3	31 INJ2		

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PG2 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
3	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
4	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM circuit	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
5	RED/YEL	IAT2 (INTAKE AIR TEMPERATURE (IAT) SENSOR 2)	Detects IAT sensor 2 signal	With ignition switch ON (II): about 0.1–4.8 V (depending on intake air temperature)
6	GRN/WHT	AFSHTCB2 (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL BANK 2)	Drives front A/F sensor heater (Bank 2, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
7	BLK/WHT	AFSHTCB1 (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL BANK 1)	Drives rear A/F sensor heater (Bank 1, sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V or pulses
8	GRN/RED	SO2SHTCB2 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL BANK 2)	Drives front secondary HO2S heater (Bank 2, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
9	BLK/WHT	SO2SHTCB1 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER CONTROL BANK 1)	Drives rear secondary HO2S heater (Bank 1, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
10	BLK/YEL	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valves	With ignition switch ON (II): battery voltage With ignition switch OFF: 0 V
11	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3 V At idle: about 1.0 V (depending on engine speed)
12	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V
13	BLU/YEL	POIL (ENGINE OIL PRESSURE SENSOR)	Detects engine oil pressure sensor signal	With ignition switch ON (II): about 0.8–1.6 V (depending on engine oil pressure)
14	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1–4.8 V (depending on engine coolant temperature)



PCM Inputs and Outputs at Connector A (31P)

1 PG2	2 PG1	3 L.G1	4 IGP	5 IAT2	6 AFSHTC B2	7 AFSHTC B1			8 SO2S HTCB2	9 SO2S HTCB1	
10 VBSOL	11 MAP	12 VCC1	13 POIL	14 ECT1	15 IGPLS6	16 IGPLS5	17 IGPLS4	18 IGPLS3	19 IGPLS2	20 IGPLS1	21 INJ1
	23 SG1	24 EGRP		25 SEFD	26 SEDF		27 INJ6	28 INJ5	29 INJ4	30 INJ3	31 INJ2

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
15	BRN/WHT	IGPLS6 (No. 6 IGNITION COIL PULSE)	Drives No. 6 ignition coil	With ignition switch ON (II): 0 V With engine running: pulses
16	BLK/RED	IGPLS5 (No. 5 IGNITION COIL PULSE)	Drives No. 5 ignition coil	
17	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
18	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
19	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
20	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	
21	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
23	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
24	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: 1.2–3.0 V (depending on EGR valve lift)
25	GRN	SEFD (THROTTLE ACTUATOR CONTROL SERIAL SIGNAL)	Sends throttle actuator control serial signal	
26	BLU	SEDF (THROTTLE ACTUATOR CONTROL SERIAL SIGNAL)	Detects throttle actuator control serial signal	
27	WHT/BLU	INJ6 (No. 6 INJECTOR)	Drives No. 6 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
28	BLK/RED	INJ5 (No. 5 INJECTOR)	Drives No. 5 injector	
29	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
30	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
31	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector B (24P)

1 CKPB	2 PCS	3 IMT-	4 IMT+	5 EGR		6 KS	7 VLBL B1
8 CMP	9 SHO2S B1	10 NM	11 IMTM	12 VSB1	13 VCENT B1	14 IPB1	15 VLBL B2
17 CKPA	18 SHO2S B2	19 NC		20 VSB2	21 VCENT B2	22 IPB2	23 ATPN
							24 ECT2

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/RED	CKPB (CRANKSHAFT POSITION (CKP) SENSOR B)	Drives CKP sensor B signal	With engine running: pulses
2	RED/YEL	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 140 °F (60 °C): battery voltage With engine running, engine coolant above 140 °F (60 °C): duty controlled
3	WHT/RED	IMT- (INTAKE MANIFOLD TUNING (IMT) ACTUATOR -SIDE)	Ground for IMT actuator	With ignition switch ON (II): battery voltage
4	WHT/BLU	IMT+ (INTAKE MANIFOLD TUNING (IMT) ACTUATOR +SIDE)	Drives IMT actuator	With ignition switch ON (II): battery voltage
5	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
6	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
7	WHT	VLBLB1 (LABEL RESISTOR BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) LABEL signal	With engine running: 0.4—4.6 V
8	YEL	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detects CMP sensor signal	With engine running: pulses
9	GRN	SHO2SB1 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) BANK 1, SENSOR 2)	Detects rear secondary HO2S (Bank 1, sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
10	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): 0 V or about 5 V With engine at idling in neutral position: about 2.5 V
11	WHT/BLK	IMTM (INTAKE MANIFOLD TUNING (IMT) ACTUATOR MONITOR)	Detects IMT actuator position	With engine running: about 5 V With engine speed above 3,800 rpm: about 0 V



PCM Inputs and Outputs at Connector B (24P)

1 CKPB	2 PCS	3 IMT-	4 IMT+	5 EGR		6 KS	7 VLBL B1
8 CMP	9 SHO2S B1	10 NM	11 IMTM	12 VSB1	13 VCENT B1	14 IPB1	15 VLBL B2
17 CKPA	18 SHO2S B2	19 NC		20 VSB2	21 VCENT B2	22 IPB2	23 ATPN
							24 ECT2

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
12	BLU	VSB1 (VS CELL +BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) VS CELL signal	With engine running: 3.4—4.8 V
13	RED	VCENTB1 (VIRTUAL GROUND BANK 1)	Reference voltage supply for rear A/F sensor (Bank 1, sensor 1)	With fully warmed up engine at idle: 3.4—3.8 V
14	GRN	IPB1 (IP CELL +BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) pump cell	With engine running: 2.0—5.6 V
15	WHT/RED	VLBLB2 (LABEL RESISTER BANK 2)	Detects front A/F (Bank 2, sensor 1) LABEL signal	With engine running: 0.4—4.6 V
17	BLU	CKPA (CRANKSHAFT POSITION (CKP) SENSOR A)	Detects CKP sensor A signal	With engine running: pulses
18	WHT	SHO2SB2 (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) BANK 2, SENSOR 2)	Detects front secondary HO2S (Bank 2, sensor 2) signal	With throttle fully opened from idle with fully warmed up engine: above 0.6 V With throttle quickly closed: below 0.4 V
19	BLU	NC (OUTPUT SHAFT SPEED SENSOR)	Detects output shaft speed sensor signals	With ignition switch ON (II): 0 V or about 5 V With driving: pulses
20	RED/BLU	VSB2 (VS CELL +BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) VS CELL signal	With engine running with fully warmed up engine: 3.4—4.8 V
21	RED/WHT	VCENTB2 (VIRTUAL GROUND BANK 2)	Reference voltage supply for front A/F sensor (Bank 2, sensor 1)	With fully warmed up engine at idle: 3.4—4.8 V
22	GRN/RED	IPB2 (IP CELL +BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) pump cell	With engine running: 2.0—5.6 V
23	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH NEUTRAL POSITION)	Detects transmission range switch neutral position signal	In neutral position: 0 V In any other position: battery voltage
24	GRN/RED	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector C (22P)

1 SHA	2 SHD		3 ATFT	4 SG3	5 APSA	6 VCC3	7 LSA
8 SHB	9 OP3 SW	10 ATPD	11 OP2 SW	12 SG2	13 VCC2	14 ATP2/1	15 LSB
16 SHC	17 APSB	18 ATPD3	19 ATP FWD	20 OP4 SW		21 ATP RVS	22 LSC

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU/YEL	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	In the R position, 2nd and 3rd gears in the D and D3 positions: battery voltage In the Park and neutral positions, 1st, 4th, and 5th gears in the D and D3 positions: 0 V
2	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	In the neutral position, and in the D and D3 positions during no lock-up condition: 0 V In the Park and R positions, and in the D and D3 positions during lock-up condition: battery voltage
3	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With ignition switch ON (II): about 0.2—4.0 V (depending on ATF temperature) With ignition switch OFF: 0 V
4	GRN/WHT	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
5	RED/BLU	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.5 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
6	YEL/GRN	VCC3 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V
7	RED	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With the ignition switch ON (II): pulses
8	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	In the Park, R, and neutral positions, 1st, 2nd, and 5th gears in the D and D3 positions: battery voltage In 3rd and 4th gears in the D and D3 positions: 0 V
9	BLU/WHT	OP3SW (3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 3rd clutch transmission fluid pressure switch input	With ignition switch ON (II): Without 3rd clutch pressure: about 5 V With 3rd clutch pressure: about 0 V
10	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D POSITION)	Detects transmission range switch D signal input	In D: 0 V In any other position: battery voltage
11	BLU/BLK	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch input	With ignition switch ON (II): Without 2nd clutch pressure: about 5 V With 2nd clutch pressure: about 0 V
12	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
13	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor voltage	With ignition switch ON (II): about 5 V With ignition switch OFF: 0 V



PCM Inputs and Outputs at Connector C (22P)

1 SHA	2 SHD		3 ATFT	4 SG3	5 APSA	6 VCC3	7 LSA
8 SHB	9 OP3 SW	10 ATPD	11 OP2 SW	12 SG2	13 VCC2	14 ATP2-1	15 LSB
16 SHC	17 APSB	18 ATPD3	19 ATP FWD	20 OP4 SW		21 ATP RVS	22 LSC

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
14	BLU	ATP2-1 (TRANSMISSION RANGE SWITCH 1ST POSITION)	Detects transmission range switch 2/1 signal input	In 2/1: 0 V In any other position: battery voltage
15	BRN/WHT	LSB (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B)	Drives A/T clutch pressure control solenoid valve B	With ignition switch ON (II): pulses
16	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	In 1st, 3rd, and 5th gears in the D and D3 positions: battery voltage In the Park, R, and neutral positions, in 2nd and 4th gears in the D and D3 positions: 0 V
17	RED/YEL	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.2 V
18	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission range switch D3 signal	In D3: 0 V In any other position: battery voltage
19	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D3/D)	Detects transmission range switch D3/D signal	In D, D3: 0 V In any other position: battery voltage
20	BLU/YEL	OP4SW (4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 4th clutch transmission fluid pressure switch input	With ignition switch ON (II): Without 4th clutch pressure: about 5 V With 4th clutch pressure: about 0 V
21	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch Park, R, neutral position signal input	In Park, R, neutral position: about 0 V In any other position: battery voltage
22	GRN/RED	LSC (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C)	Drives A/T clutch pressure control solenoid valve C	With ignition switch ON (II): pulses

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector D (17P)

1 IMA CANL	2 EOPSC	3	4 STS	5 M/P MON	6 IG1
7	8 MOT CRK	9 IAT1	10 VG+	11 VG-	12 FPC
13 IMA CANH	14 MOT NEP	15 FPCD	16 LG2	17 ACPD	

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	IMACANL (CAN COMMUNICATION SIGNAL LOW)	Detects communication signal to MCM	With ignition switch ON (II): pulses
2	ORN	EOPSC	Detects and sends auxiliary transmission fluid pump driver signal	With ignition switch ON (II): pulses
4	LT BLU	STS (STARTER SWITCH SIGNAL)	Detects starter cut relay (ST CUT)	With starter switch ON (III): battery module With starter switch OFF: 0 V
5	WHT	M/PMON (BRAKE BOOSTER PRESSURE MONITOR)	Detects brake booster pressure sensor signal	With ignition switch ON (II): about 1.0–3.0 V (depending on brake booster vacuum)
6	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage With ignition switch OFF: 0 V
8	RED	MOTCRK (MOTOR CONTROL MODULE MOTOR ROTOR POSITION SIGNAL)	Detects motor rotor position signal	With IMA rotor operating: pulses
9	RED/YEL	IAT1 (INTAKE AIR TEMPERATURE (IAT) SENSOR 1)	Detects IAT sensor 1 (in the MAF sensor) signal	With ignition switch ON (II): about 0.1–4.8 V (depending on intake air temperature)
10	RED/GRN	VG+ (MASS AIR FLOW (MAF) SENSOR +SIDE)	Detects MAF sensor signal	At idle: 1.1–1.6 V
11	BLK/RED	VG- (MASS AIR FLOW (MAF) SENSOR -SIDE)	Ground for MAF sensor signal	
12	BLU	FPC (FUEL PUMP CONTROL)	Detects fuel pump control signal	With ignition switch ON (II): pulses With ignition switch OFF: 0 V
13	WHT	IMACANH (CAN COMMUNICATION SIGNAL HIGH)	Detects communication signal to MCM	With ignition switch ON (II): pulses
14	LT GRN	MOTNEP (MOTOR CONTROL MODULE ENGINE SPEED SIGNAL)	Sends engine speed signal to MCM	With engine running: pulses
15	PNK	FPCD (FUEL PUMP CONTROL MODULE DIAGNOSIS)	Detects fuel pump control module diagnosis	With ignition switch ON (II): 0 V At idle: about 10 V
16	BRN	LG2 (LOGIC GROUND)	Ground circuit for PCM	Less than 1.0 V at all times
17	LT GRN	ACPD (A/C PRESSURE SENSOR)	Detects A/C pressure sensor signal	Drives A/C: 0.3–4.8 V (depending on A/C pressure)



PCM Inputs and Outputs at Connector E (31P)

1 STC	2 IMO FPR	3 DBW RLY	4 AFS HTCR	5 MRLY	6 FANL	7 CKPOUT			8 BKSW	9 IDSSW	
10 VSV	11 VSS OUT	12 FANH	13 ATPR	14 K-LINE	15 CANH	16 SCS	17 EPSLD	18 ELD	19 ATPP	20 CMP OUT	21 CSS
22 SLS	23 NEP	24 WEN		25 IMO CD	26 CANL		27 ACC		29 FTP		31 MET INH

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	PNK	STC (STARTER CUT RELAY)	Drives starter cut relay	With ignition switch in START position: battery voltage
2	BRN	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	0 V for 2 seconds after turning ignition switch ON (I), then battery voltage
3	LT BLU	DBWRLY (THROTTLE ACTUATOR CONTROL MODULE (DBW) RELAY)	Drives throttle actuator control module (DBW) relay	With ignition switch ON (II): 0 V
4	PNK	AFSHTCR (AIR FUEL RATIO (A/F) SENSOR RELAY)	Drives A/F sensor relay	With ignition switch ON (II): 0 V
5	GRN	MRLY (PGM-FI MAIN RELAY)	Drives PGM-FI main relay 1 (FI MAIN) Power source for DTC memory	With ignition switch ON (II): 0 V With ignition switch OFF: battery voltage
6	PUR	FANL (RADIATOR FAN RELAY LOW)	Drives condenser fan relay	With ignition switch ON (II): battery voltage
7	WHT	CKPOUT (CRANKSHAFT POSITION (CKP) OUTPUT SIGNAL)	Sends CKP signal to MCM	With ignition switch ON (II): pulses
8	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
9	BRN/BLK	IDSSW (IDLE STOP SWITCH)	Detects idle stop switch signal	With ignition switch ON (II) and brake pedal released: battery voltage With ignition switch ON (II) and brake pedal pressed: about 0 V
10	LT GRN/RED	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
11	BLU	VSSOUT (VEHICLE SPEED SENSOR OUTPUT SIGNAL)	Sends vehicle speed sensor signal	Depending on vehicle speed: pulses
12	WHT	FANH (RADIATOR FAN RELAY, FAN CONTROL RELAY HIGH)	Drives radiator fan relay, fan control relay	With ignition switch ON (II): battery voltage
13	GRY	ATPR (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch R signal input	In R: 0 V In any other position: battery voltage
14	BLU	K-LINE	Sends and receives HDS signal	With ignition switch ON (II): pulses or battery voltage
15	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): pulses

(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Inputs and Outputs at Connector E (31P)

1 STC	2 IMO FPR	3 DBW RLY	4 AFS HTCR	5 MRLY	6 FANL	7 CKPOUT				8 BKSW	9 IDSSW
10 VSV	11 VSS OUT	12 FANH	13 ATPR	14 K-LINE	15 CANH	16 SCS	17 EPSLD	18 ELD	19 ATPP	20 CMP OUT	21 CSS
22 SLS	23 NEP	24 WEN		25 IMO CD	26 CANL		27 ACC		29 FTP		31 MET INH

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
16	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With the service check signal shorted with the HDS: about 0 V With the service check signal opened: about 5V
17	BLU/YEL	EPSLD (ELECTRICAL POWER STEERING LOAD DETECT)	Detects power steering load signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage momentarily
18	ORN	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1—4.8 V (depending on electrical load)
19	GRN	ATPP (TRANSMISSION RANGE SWITCH PARK)	Detects transmission range switch Park signal	In Park: 0 V In any other position: battery voltage
20	RED	CMPOUT (CAMSHAFT POSITION (CMP) OUTPUT SIGNAL)	Sends CMP signal to motor control module	With ignition switch ON (II): pulses
21	RED/WHT	CSS (VTEC SOLENOID VALVE)	Drives VTEC solenoid valve	At idle: about 0 V
22	LT BLU	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in Park, brake pedal pressed, and accelerator released: 0 V
23	BLU/RED	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
24	PNK	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
25	YEL	IM OCD (IMMOBILIZER CODE)	Detects immobilizer signal	
26	BLK	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): pulses
27	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
29	LT GRN	FTP (FUEL TANK PRESSURE (FTP) SENSOR)	Detects FTP sensor signal	With ignition switch ON (II) and fuel fill cap removed: about 2.5 V
31	ORN	METINH (METER DISPLAY INHIBIT SIGNAL)	Sends inhibit signal	With ignition switch ON (II): about 10 V



PGM-FI System

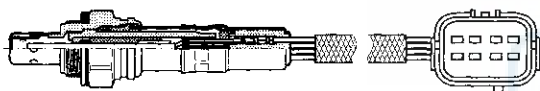
The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Air Conditioning (A/C) Compressor Clutch Relay

When the PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

Air Fuel Ratio (A/F) Sensor

The A/F sensor operates over a wide air/fuel range. The A/F sensor is installed upstream of the WU-TWC, and sends signals to the PCM which varies the duration of fuel injection accordingly.

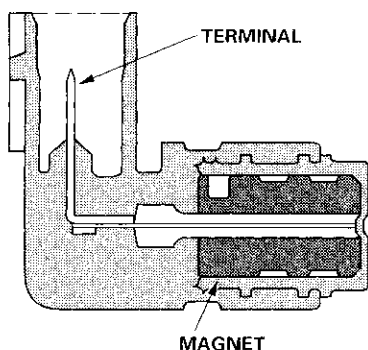


Barometric Pressure (BARO) Sensor

The BARO sensor is inside the PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

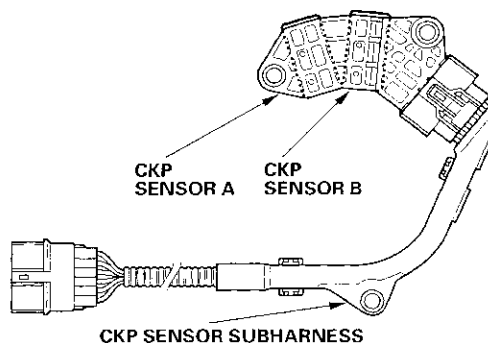
Camshaft Position (CMP) Sensor

The CMP sensor input is used by the PCM to determine ignition timing at start up (cranking) and when crank angle is abnormal.



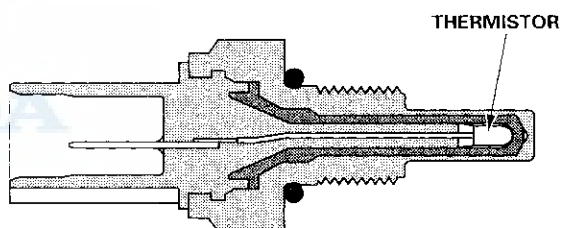
Crankshaft Position (CKP) Sensor

The CKP sensor detects crankshaft speed and is used by the PCM to determine ignition timing and timing for fuel injection of each cylinder as well as detecting engine misfire.



Engine Coolant Temperature (ECT) Sensor 1/2

The ECT sensor 1/2 is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the engine coolant temperature increases.



Ignition Timing Control

The PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature.

Injector Timing and Duration

The PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.

By monitoring long term fuel trim, the PCM detects long term malfunctions in the fuel system and sets a diagnostic trouble code (DTC).

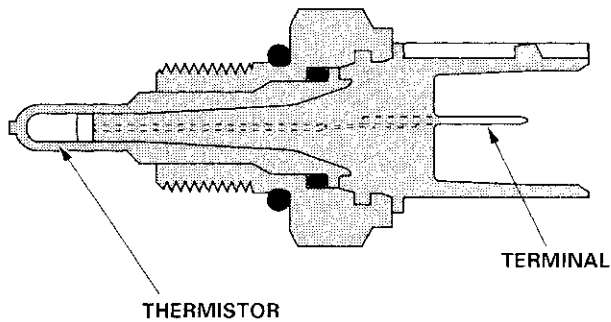
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Fuel and Emissions Systems

System Description (cont'd)

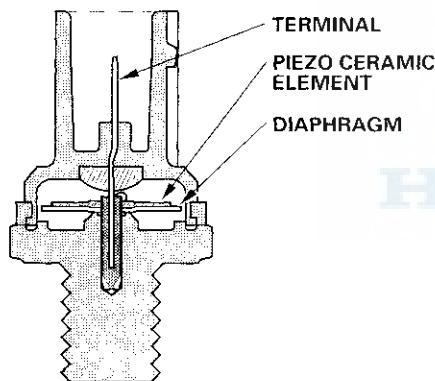
Intake Air Temperature (IAT) Sensor 2

The IAT sensor 2 is a temperature dependent resistor (thermistor). The resistance of the thermistor decreases as the intake air temperature increases.



Knock Sensor

The knock control system adjusts the ignition timing to minimize knock.



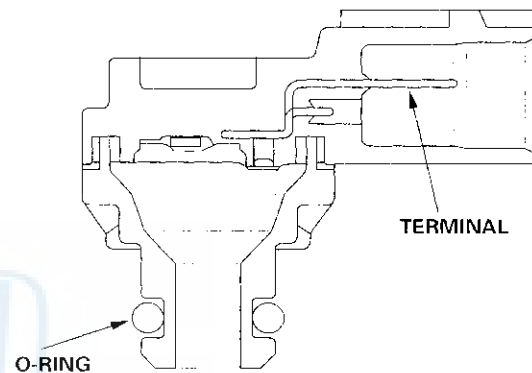
Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)

The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15–20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in How to Set Readiness Codes (see page 11-63).

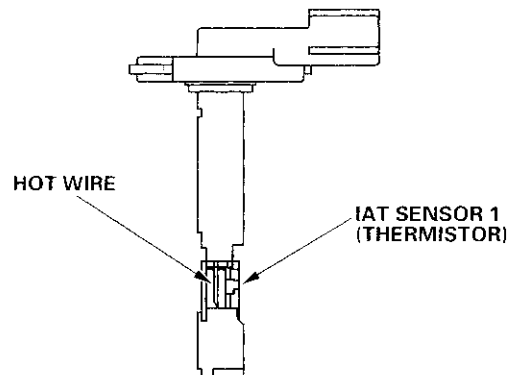
Manifold Absolute Pressure (MAP) Sensor

The MAP sensor converts manifold absolute pressure into electrical signals to the PCM.



Mass Air Flow (MAF) Sensor/Intake Air Temperature (IAT) Sensor 1

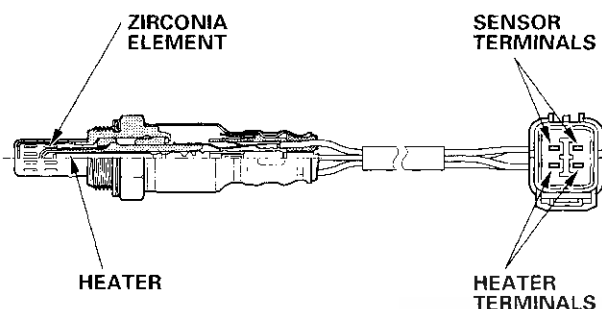
The MAF sensor/IAT sensor 1 contains a hot wire and a thermistor. It is located in the intake air passage. The resistance of the hot wire and thermistor change due to intake air temperature and air flow. The control circuit in the MAF sensor controls the current to keep the hot wire at a set temperature. The current is converted to voltage in the control circuit, then output to the PCM.





Secondary Heated Oxygen Sensor (Secondary HO2S)

The secondary HO2S detects the oxygen content in the exhaust gas downstream of the warm up three way catalytic converter (WU-TWC), and sends signals to the PCM. To stabilize its output, the sensor has an internal heater. The PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is on the WU-TWC.



Electronic Throttle Control System

The throttle is electronically controlled by the electronic throttle control system. Refer to the System Diagram to see a functional layout of the system.

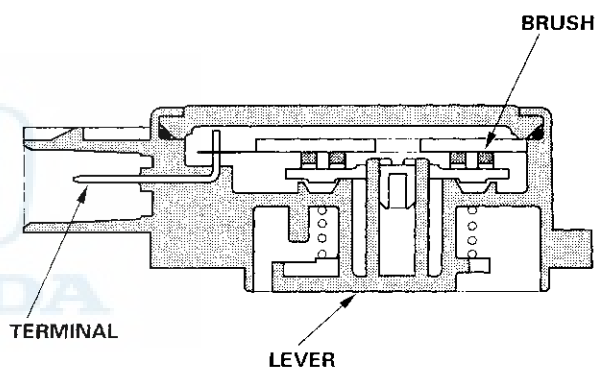
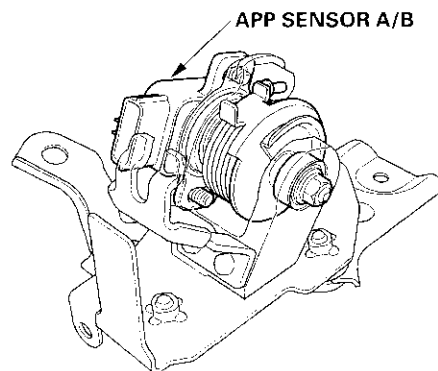
Idle control: When the engine is idling, the PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the PCM opens the throttle valve depending on the accelerator pedal position (APP) sensor signal.

Cruise control: The PCM controls the throttle actuator to maintain set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

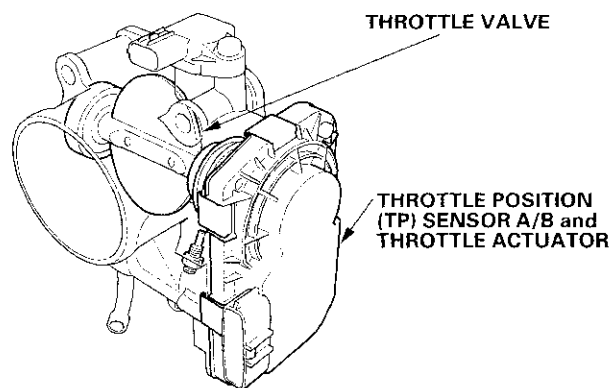
Accelerator Pedal Position (APP) Sensor

As the accelerator pedal position changes, the sensor varies the signal voltage to the PCM.



Throttle Body

The throttle body is a single-barrel side draft type. The lower portion of the throttle valve is heated by engine coolant from the cylinder head to prevent icing of the throttle plate.



(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

Idle Control System

When the engine is cold, the A/C compressor is on, the transmission is in gear, the brake pedal is pressed, the power steering load is high, or the DC-DC converter is charging, the PCM controls current to the throttle actuator to maintain the correct idle speed.

Brake Pedal Position Switch

The brake pedal position switch signals the PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal

The EPS signals the PCM when the power steering load is high.

Idle Stop Switch

The idle stop switch signals the PCM when the brake pedal is pressed.

Fuel Supply System

Fuel Cutoff Control

During deceleration with the accelerator pedal closed, current to the injectors is cut off to improve fuel economy at engine speeds over 530 rpm (with auto idle stop and brake pedal pressed), 750 rpm (with auto idle stop and brake pedal released), 1,124 rpm (without auto idle stop). Fuel cutoff control also occurs when the engine speed exceeds 6,600 rpm, regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the PCM cuts the fuel at engine speeds over 5,000 rpm. Engine speed of fuel cut is lower on a cold engine.

Fuel Pump Control

When the ignition is turned on, the PCM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump (fuel pump control module) for 2 seconds to pressurize the fuel system. With the engine running, the PCM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is on, the PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump (fuel pump control module).

PGM-FI Main Relay 1 and 2

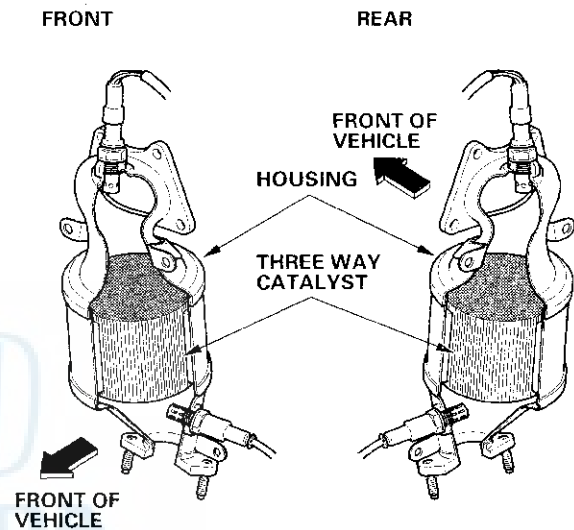
PGM-FI main relay 1 (FI MAIN) is energized whenever the ignition switch is ON (II) to supply battery voltage to the PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned ON (II), and when the engine is cranking or running.

Catalytic Converter System

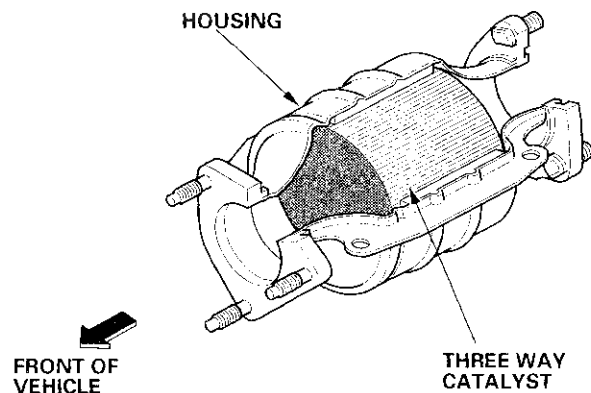
Warm Up/Three Way Catalytic Converter (WU-TWC) and Three Way Catalytic Converter (TWC)

The WU-TWC/TWC converts hydrocarbons (HC), carbon monoxide (CO), and oxides of nitrogen (NOx) in the exhaust gas to carbon dioxide (CO₂), nitrogen (N₂), and water vapor.

WU-TWC: (ATTACHED TO THE CYLINDER HEAD)



TWC: (UNDER THE FLOOR)





Exhaust Gas Recirculation (EGR) System

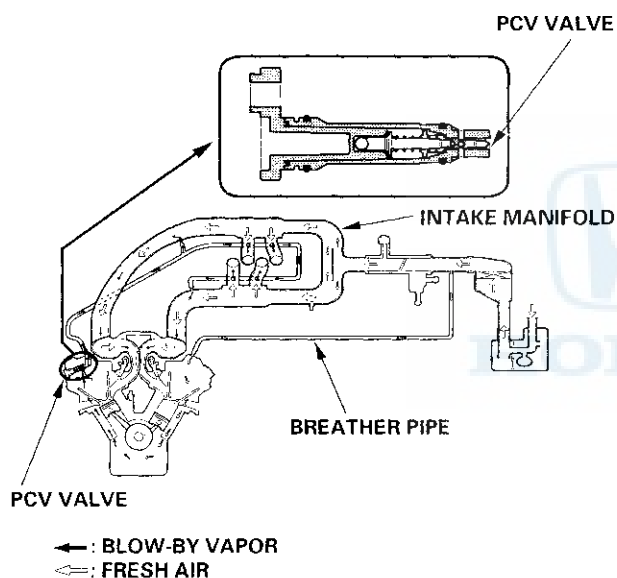
Refer to the System Diagram to see a functional layout of the system.

EGR Valve

The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



Evaporative Emission (EVAP) Control System

Refer to the System Diagram to see a functional layout of the system.

EVAP Canister

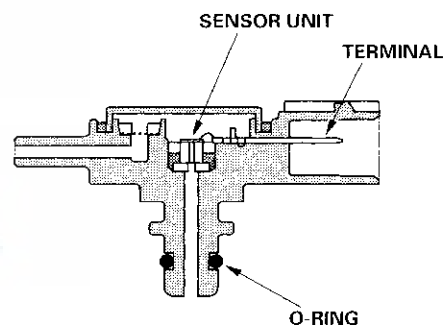
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged from the EVAP canister into the engine and burned.

EVAP Canister Purge Valve

When the engine coolant temperature is below 140 °F (60 °C), the PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.

Fuel Tank Pressure (FTP) Sensor

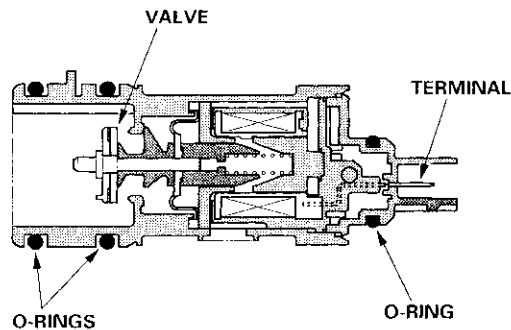
The FTP sensor converts fuel tank absolute pressure into an electrical input to the PCM during the EVAP leak check.



EVAP Canister Vent Shut Valve

The EVAP canister vent shut valve is on the EVAP canister.

The EVAP canister vent shut valve controls the venting of the EVAP canister.



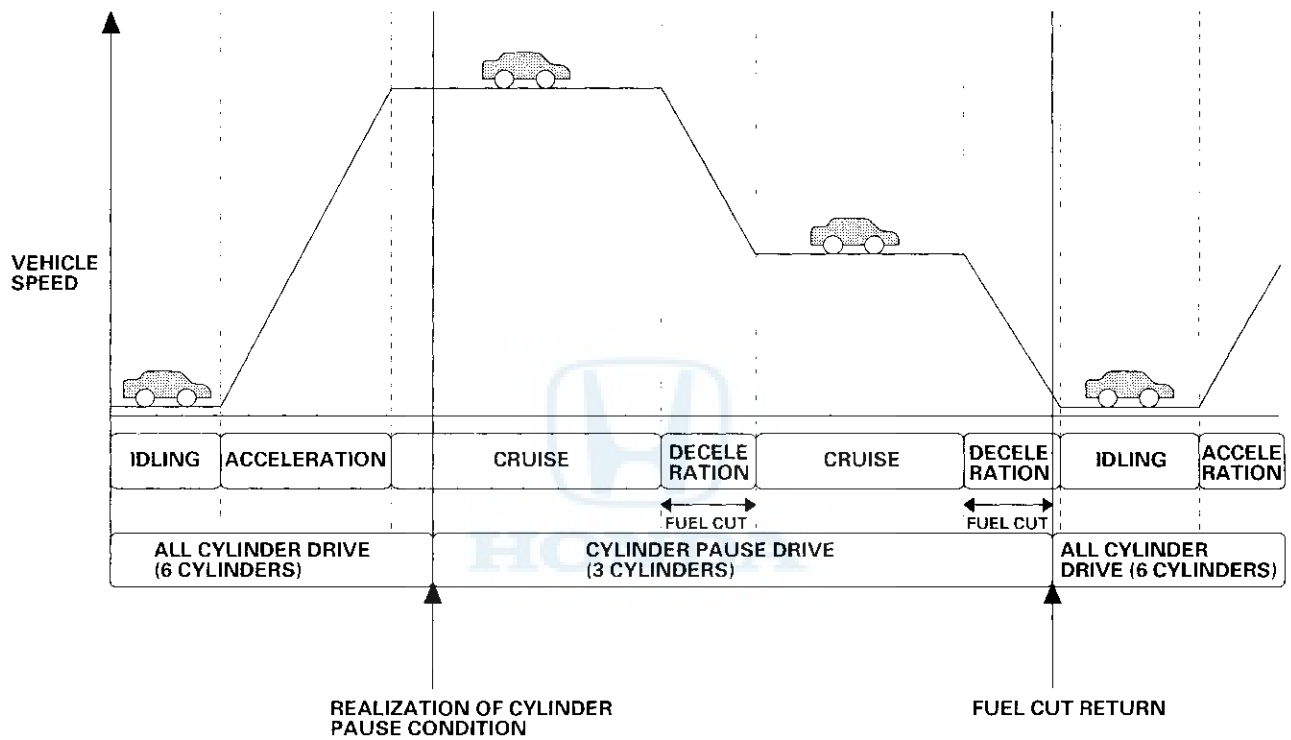
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

Variable Cylinder Management (VCM) System

The i-VTEC (intelligent variable valve timing and lift electric control system) adopts a cylinder pause VTEC (variable cylinder system). The cylinder pause VTEC system pauses the intake and exhaust valves on the rear bank under certain conditions such as cruise and fuel cut (see illustration below). Since the valves on the rear bank are closed, the frictional losses from valve spring compression and pumping are reduced because no air is compressed in the rear bank. This reduces engine drag.



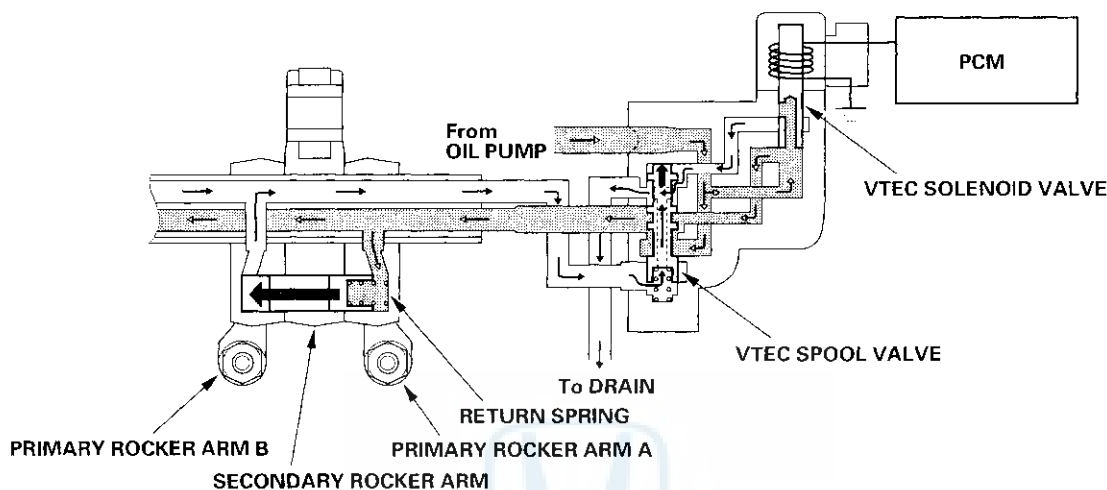
The vibration generated by three-cylinder operation is counteracted by an active control engine mount system.



Operation

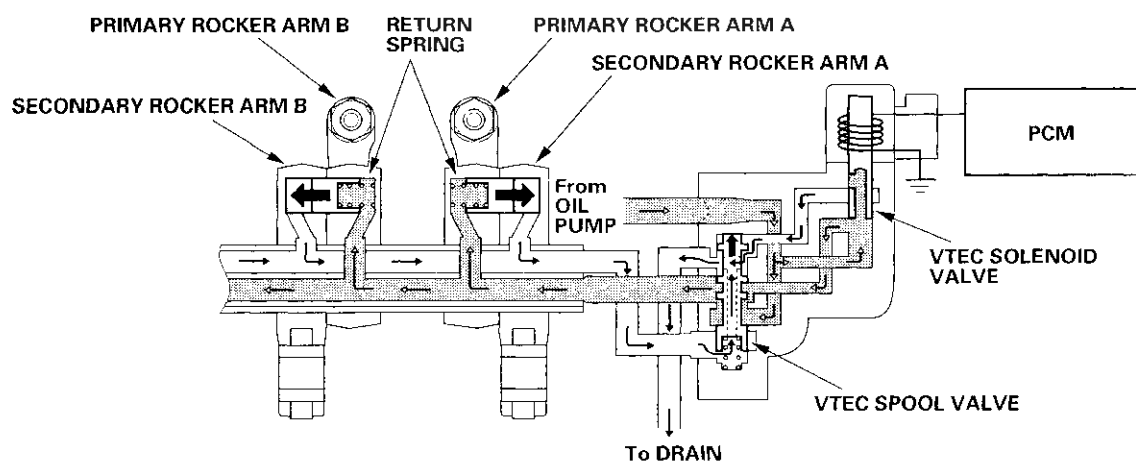
During 6 Cylinder Mode (Intake valve side)

The VTEC spool valve switches oil pressure. Oil pressure then enters primary rocker arm A from the oil passage in the intake rocker shaft, and it moves the VTEC switching piston in the rocker arm. This causes the VTEC switching piston to slide into primary rocker arm B, locking primary rocker arms A and B together. Primary rocker arms A and B are then actuated by the secondary rocker arm.



During 6 Cylinder Mode (exhaust valve side)

The VTEC spool valve switches oil pressure. Oil pressure then enters primary rocker arm A from the oil passage in the exhaust rocker shaft, and it moves the VTEC switching piston in the rocker arm. This causes the VTEC switching piston to slide into primary rocker arm B, locking primary rocker arms A and B together. Primary rocker arms A and B are then actuated by the secondary rocker arm.



When the engine is off, the VTEC switching piston is held in the engaged position by the return spring. This allows the rocker arms to operate when oil pressure is low during cranking.

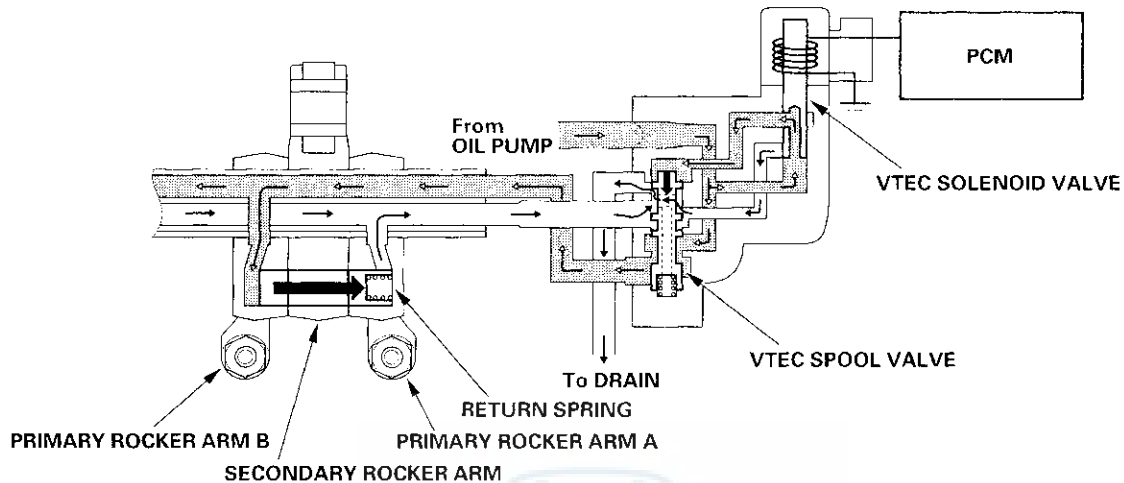
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Fuel and Emissions Systems

System Description (cont'd)

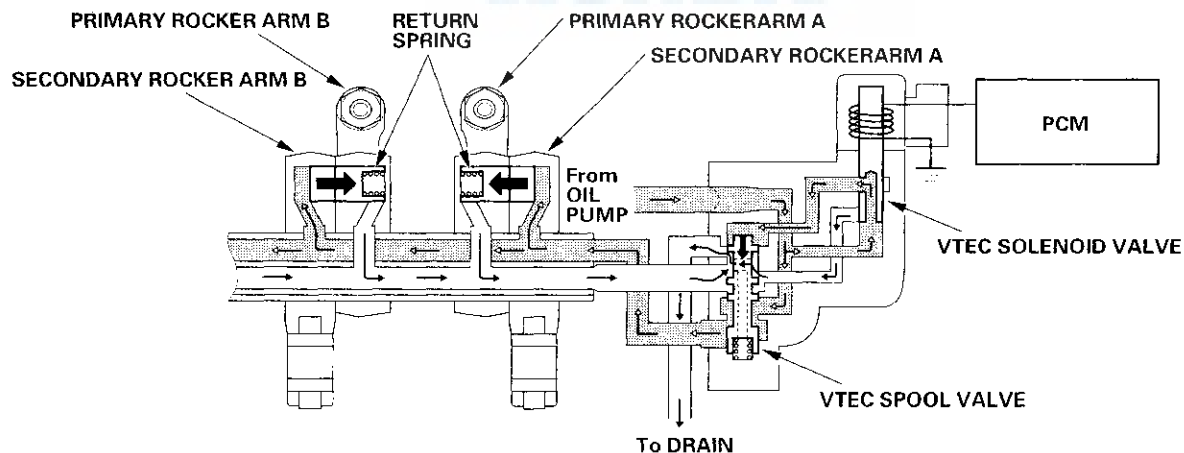
During Cylinder Pause Mode (intake valve side)

The VTEC spool valve switches oil pressure. Oil pressure then enters primary rocker arm B from the oil passage in the intake rocker shaft. This forces the VTEC switching piston into primary rocker arm A against the return spring and disengages the primary rocker arms from the secondary arm to stop valve actuation. The secondary rocker arm uses a lost motion spring to maintain tension.



During Cylinder Pause Mode (exhaust valve side)

The VTEC spool valve switches oil pressure. Oil pressure then enters primary rocker arm B from the oil passage in the exhaust rocker shaft. This forces the VTEC switching piston into primary rocker arm A against the return spring and disengages the primary rocker arms from the secondary arm to stop valve actuation. The secondary rocker arm uses a lost motion spring to maintain tension.

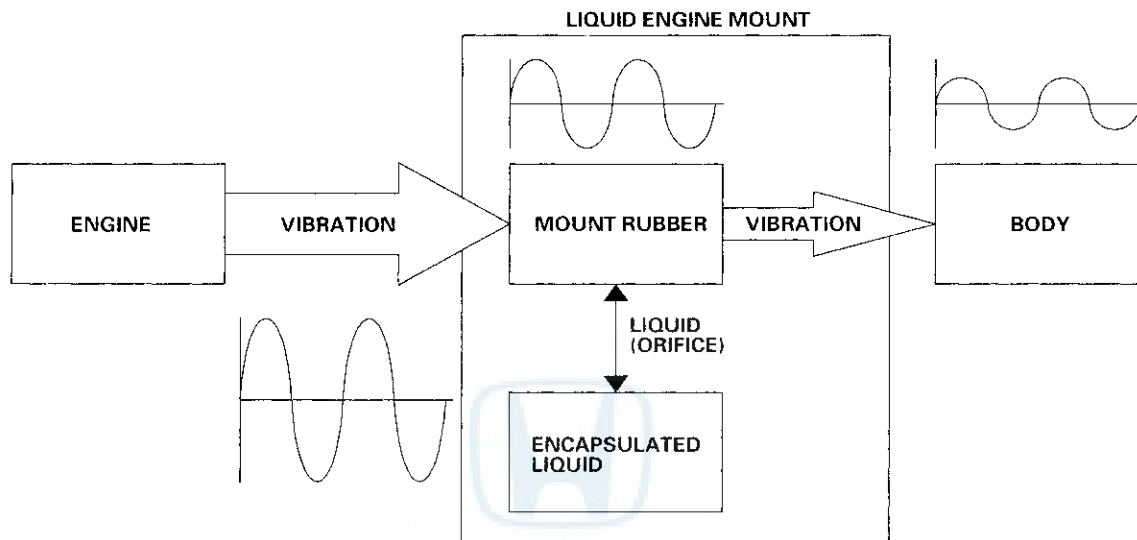




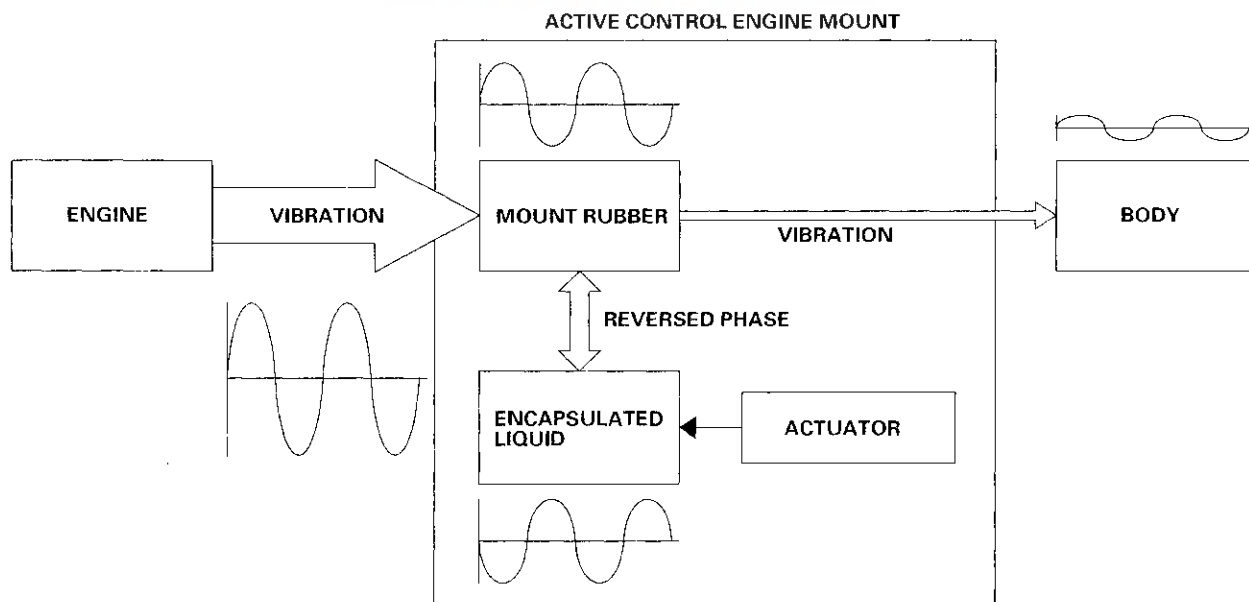
Active Control Engine Mount (ACM) System

The active control engine mount (ACM) system decreases engine-to-chassis vibration at low rpm and when the engine is in cylinder pause mode. The system includes conventional, liquid-filled engine mounts that absorb vibration. In addition, the front and rear engine mount contains an actuator that cancels engine vibration by producing a counter, or reverse vibration. The transmission has standard rubber mounts.

CONVENTIONAL LIQUID ENGINE MOUNT:



ACTIVE CONTROL ENGINE MOUNT:



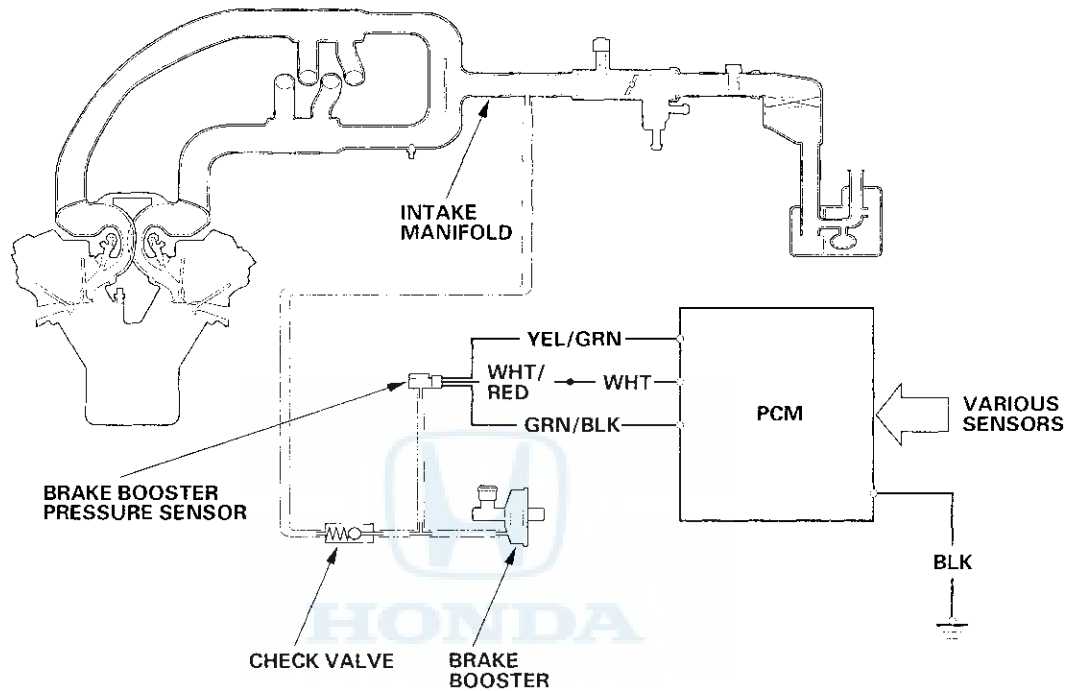
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Fuel and Emissions Systems

System Description (cont'd)

Brake Booster Pressure Sensor System Diagram

The brake booster pressure sensor converts brake booster vacuum into an electrical input to the PCM. This input is used to control idle stop operations.



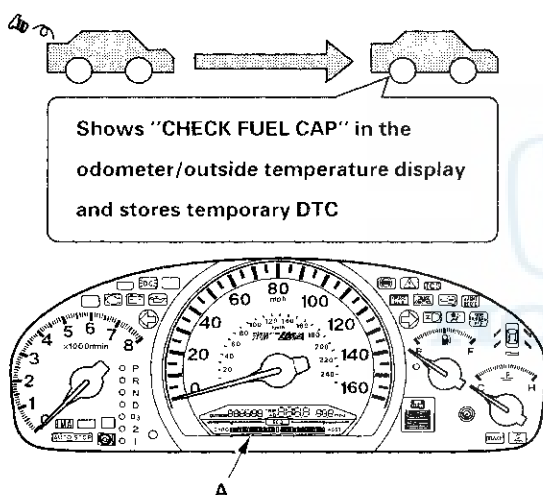


Fuel Cap Warning Message

The PCM detects whether the fuel fill cap is loose or missing under certain conditions and alerts the driver by showing the information in the odometer/outside temperature display. If the PCM detects a small volume leak, the MIL may come on during the second drive cycle and store a DTC.

First drive cycle

During the first drive cycle after a cold start, the PCM alerts the driver to check the fuel fill cap by showing a "CHECK FUEL CAP" message in the odometer/outside temperature display (A), and it stores Temporary DTC P0457 "Evaporative Emission (EVAP) System Leak Detected/Fuel Cap Loose or Missing". Tightening the fuel cap does not make the message go off immediately.



To make the message go off

Tighten the fuel fill cap three clicks, and do this procedure several times.

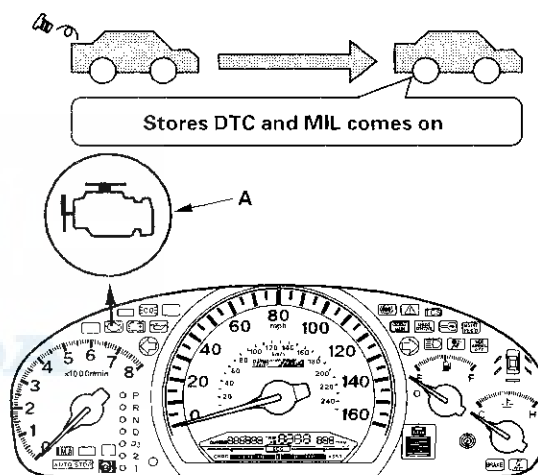
1. Turn the ignition switch OFF.
2. Start the engine, and drive at a steady speed over 28 mph (45 km/h), without moving the accelerator pedal, for about 1 minute.

Second drive cycle

During the second drive cycle after a cold start, if the fuel fill cap is still loose or missing, the PCM alerts the driver to check the fuel fill cap by showing a "CHECK FUEL CAP" message in the odometer/outside temperature display as same as the first drive cycle. Tightening the fuel cap does not make the message go off immediately.

Third drive cycle

During the third drive cycle after a cold start, if the fuel fill cap is still loose or missing, the PCM stores DTC P0457 "Evaporative Emission (EVAP) System Leak Detected/Fuel Cap Loose or Missing". The malfunction indicator lamp (MIL) (A) comes on, and the "CHECK FUEL CAP" message goes off.



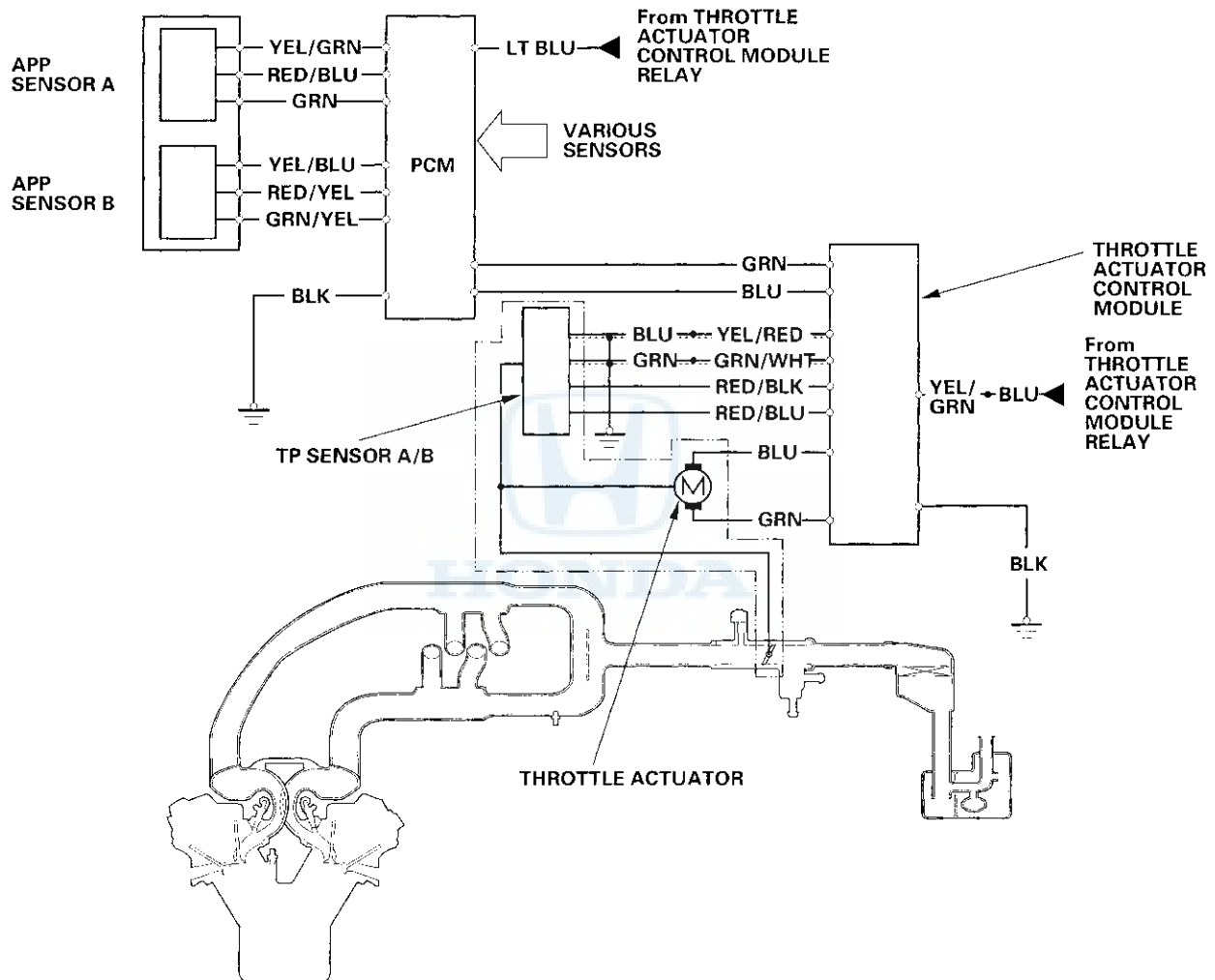
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Fuel and Emissions Systems

System Description (cont'd)

Electronic Throttle Control System Diagram

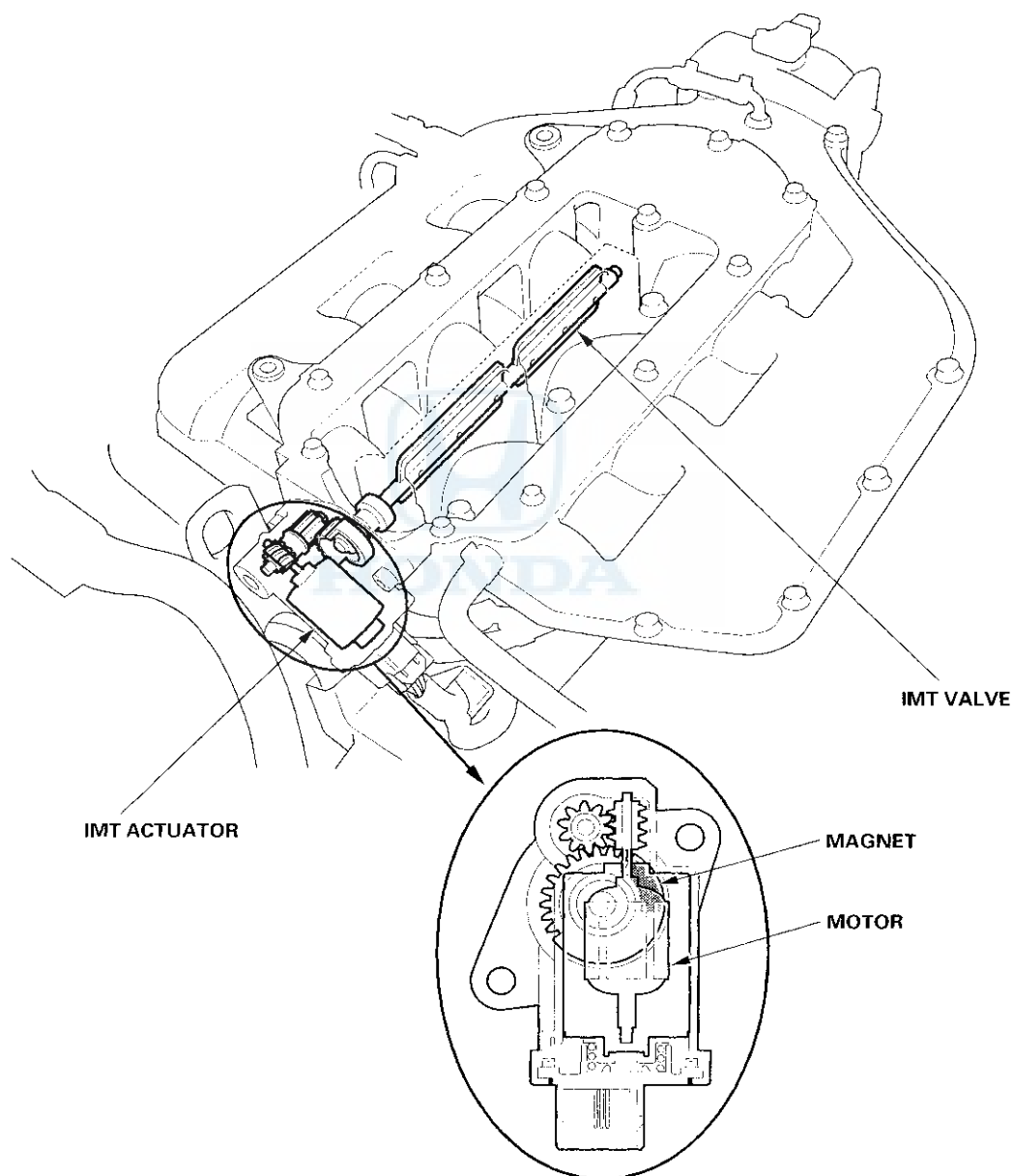
The electronic throttle control system consists of the throttle actuator, throttle position (TP) sensor A/B, accelerator pedal position (APP) sensor A/B, throttle actuator control module, and the PCM. The throttle is electronically controlled by this system.





Intake Manifold Tuning (IMT) Valve System

Engine power is enhanced by closing and opening the intake manifold tuning (IMT) valve which changes the effective length of the intake runners. When the valve is closed, there is high torque at low engine speed. When the valve is open, there is high torque at high engine speed.



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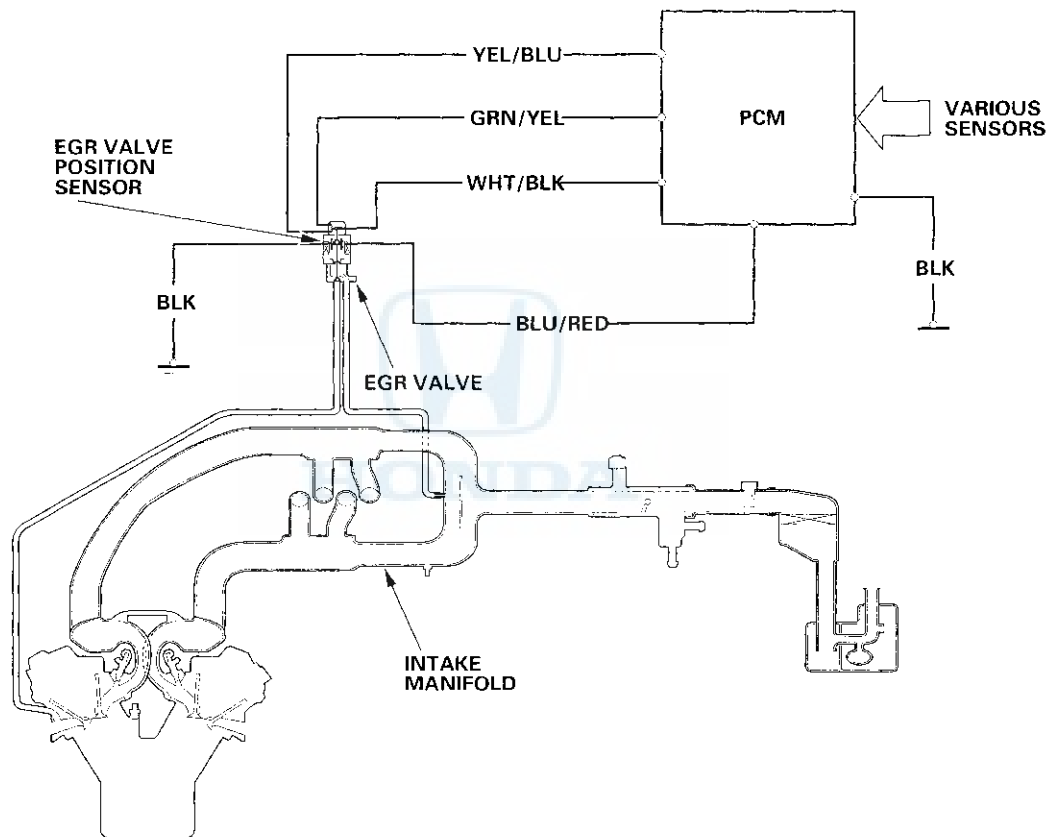
Fuel and Emissions Systems

System Description (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram

The EGR system reduces oxides of nitrogen (NOx) emissions by recirculating exhaust gas through the EGR valve and the intake manifold into the combustion chambers. The PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the PCM. The PCM then compares it with the ideal lift in its memory (based on signals sent from other sensors). If there is any difference between the two, the PCM cuts current to the EGR valve.

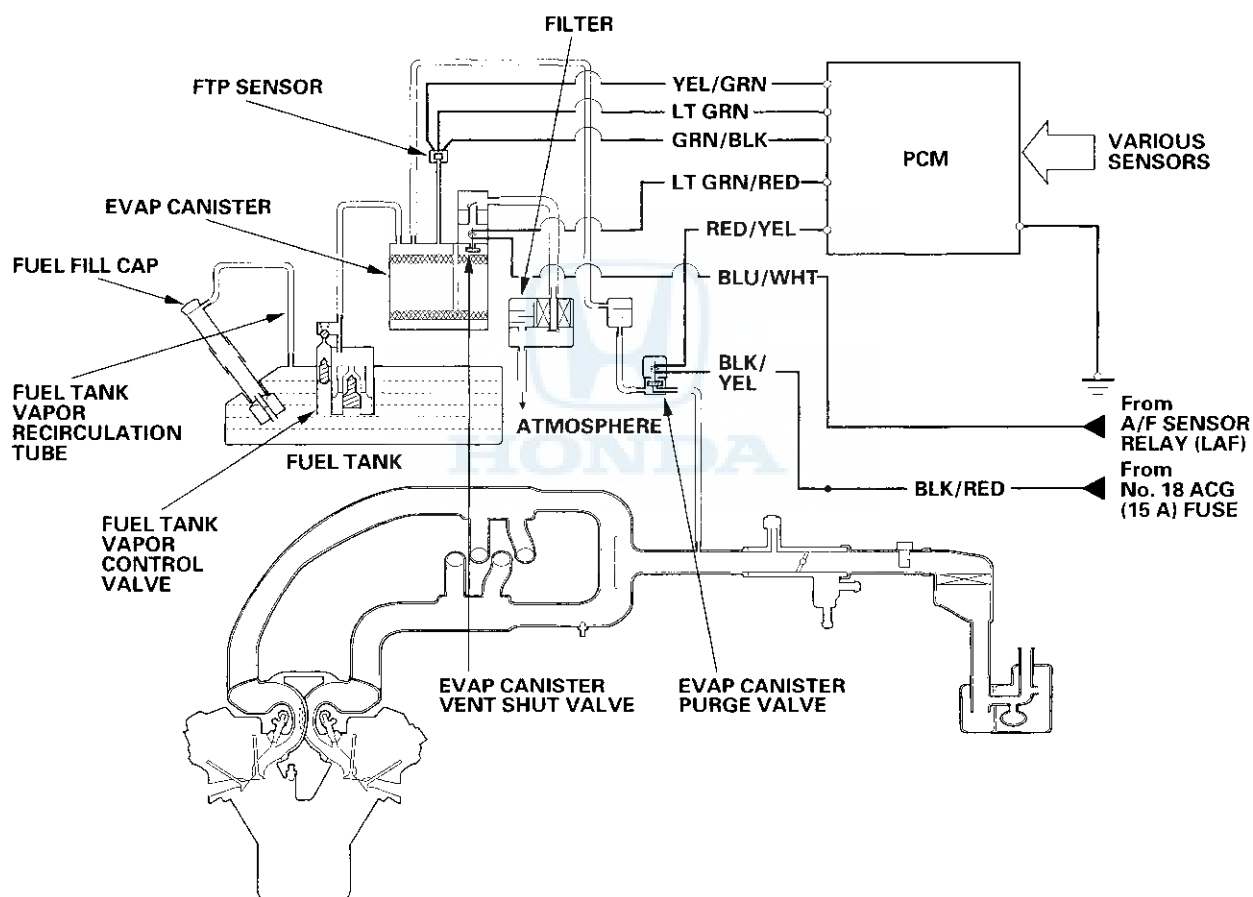




Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping to the atmosphere. Vapor from the fuel tank is temporarily stored in the EVAP canister until it can be purged from the canister into the engine and burned.

- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 140 °F (60 °C).
- During refueling, the fuel tank vapor control valve opens with the pressure in the fuel tank, and feeds the fuel vapor to the EVAP canister.

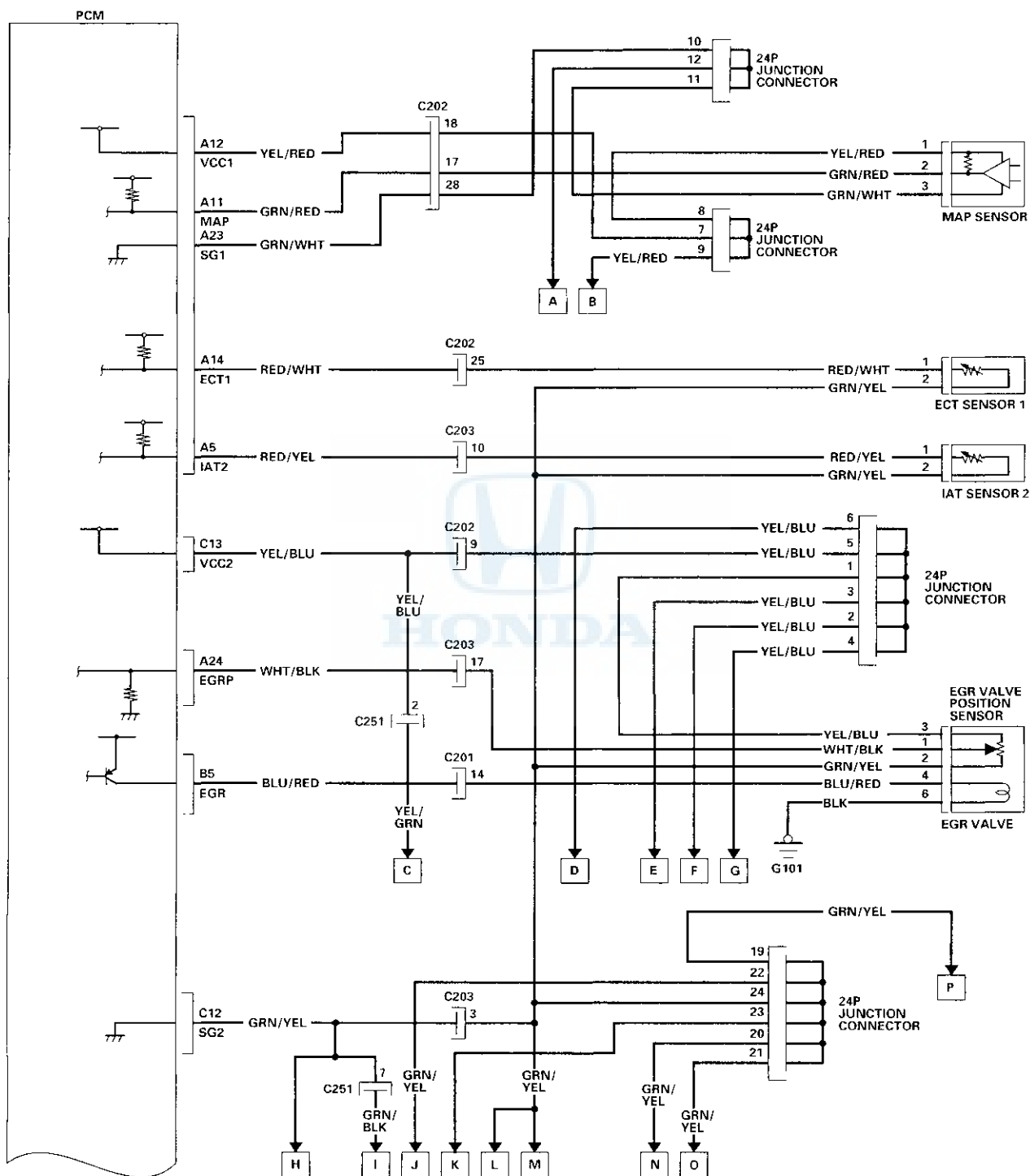


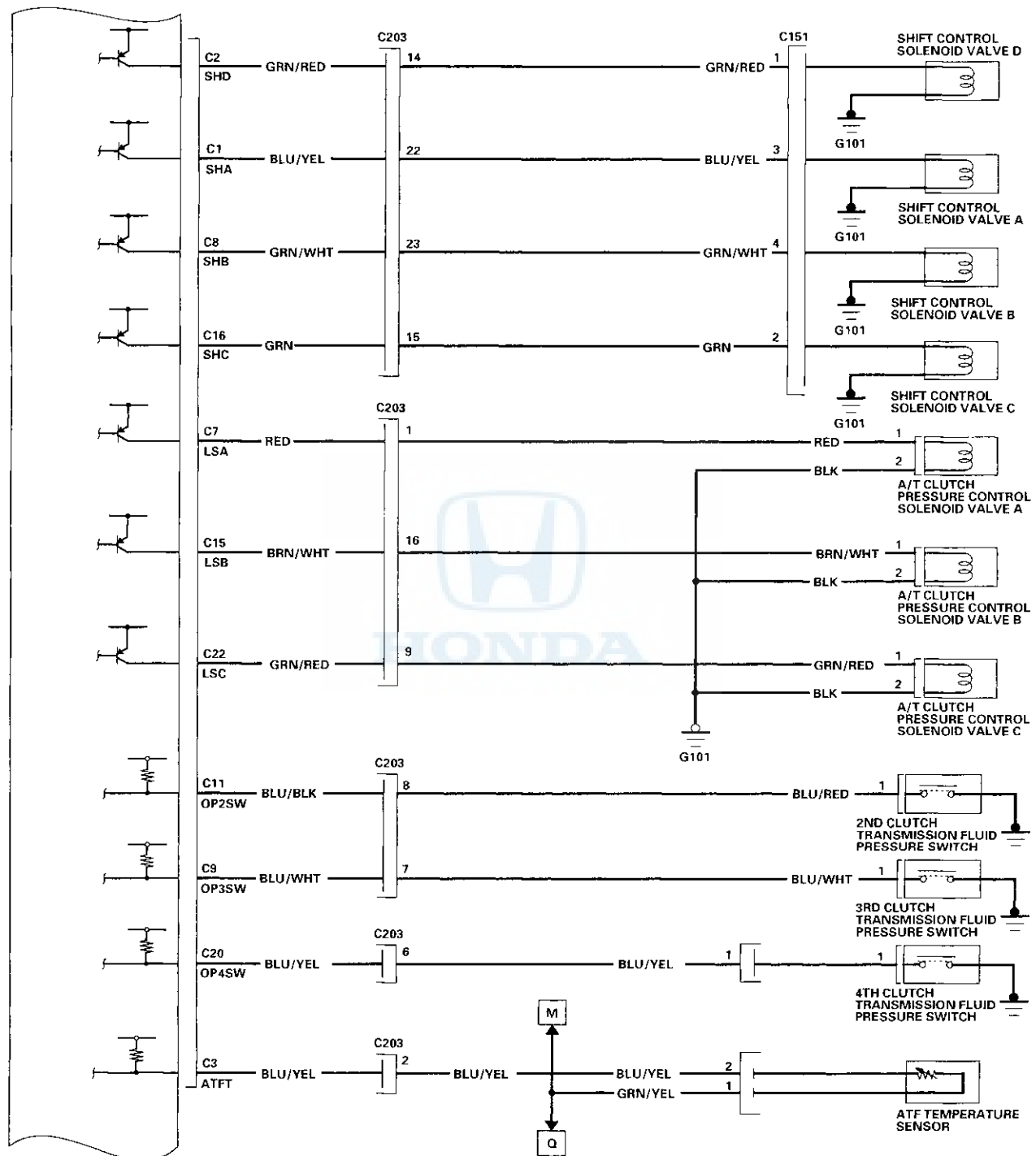
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram



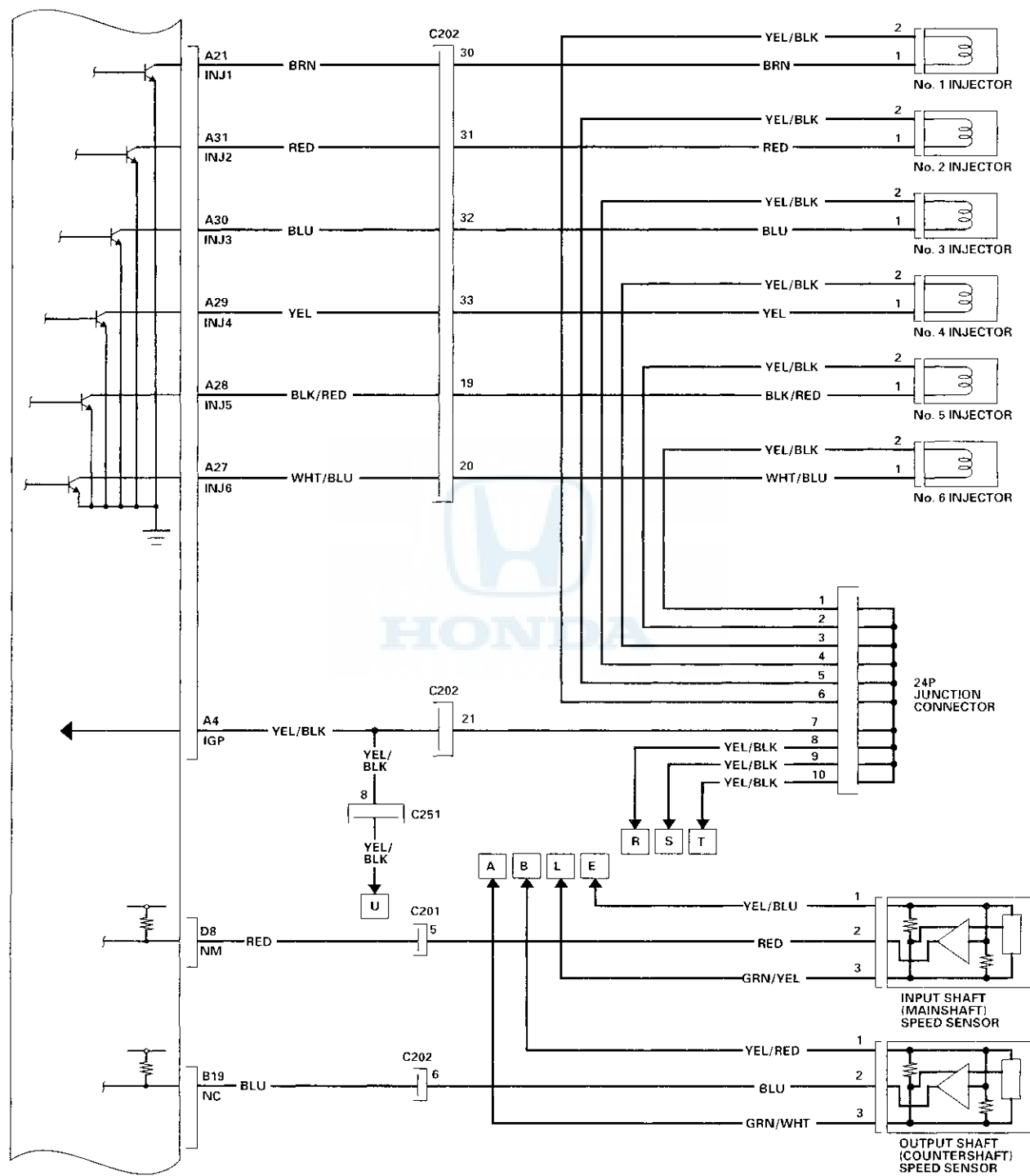


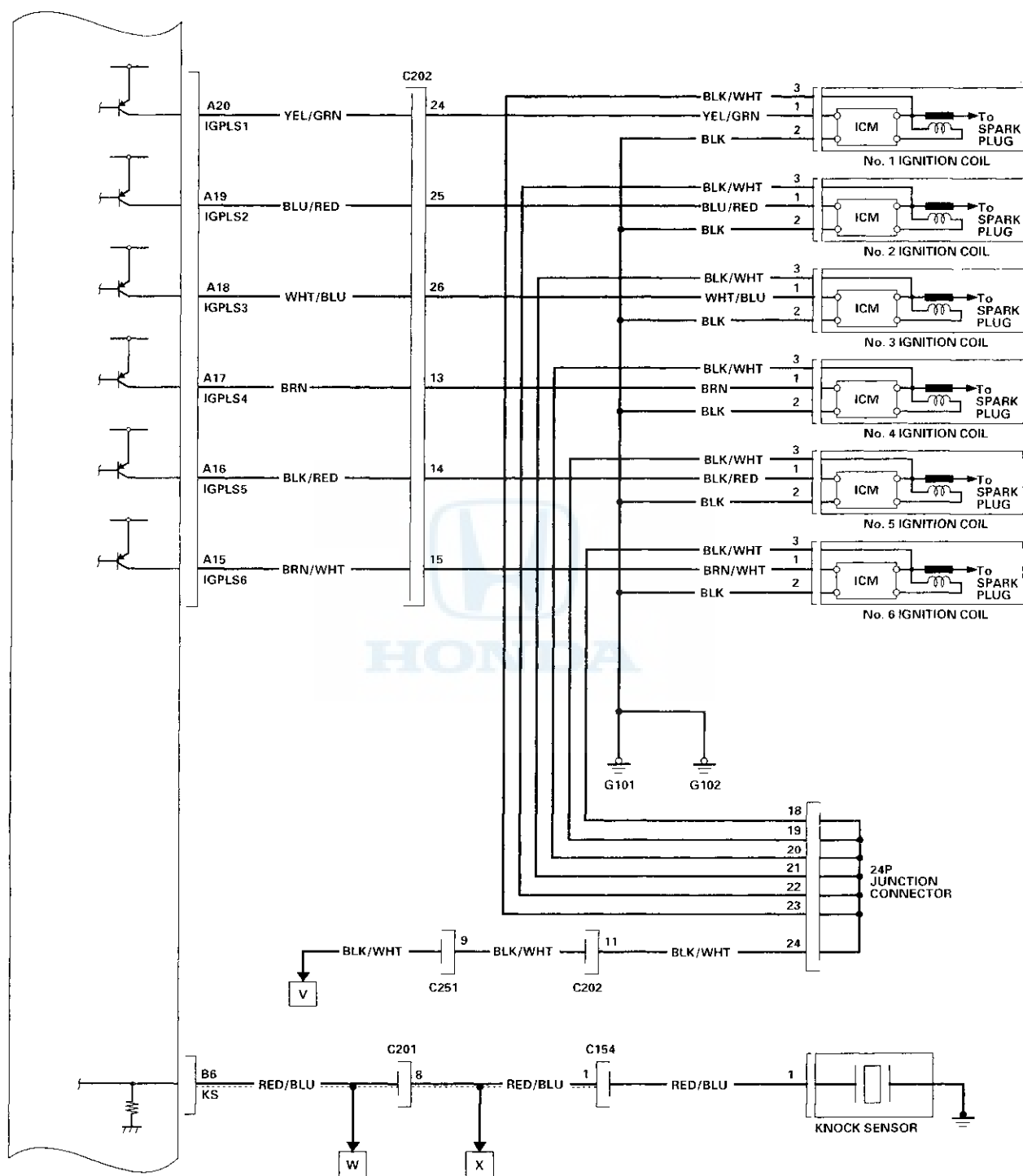
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



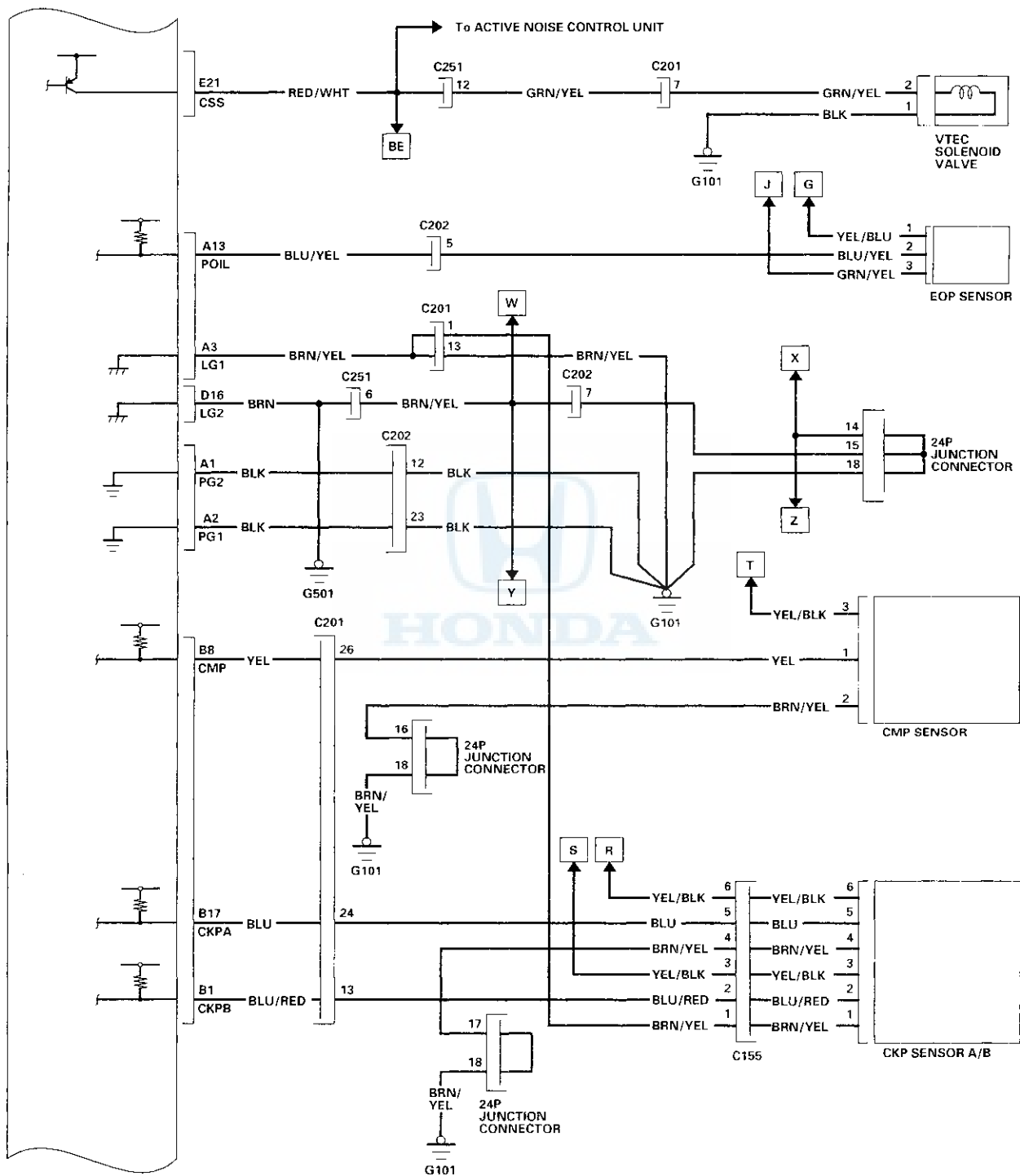


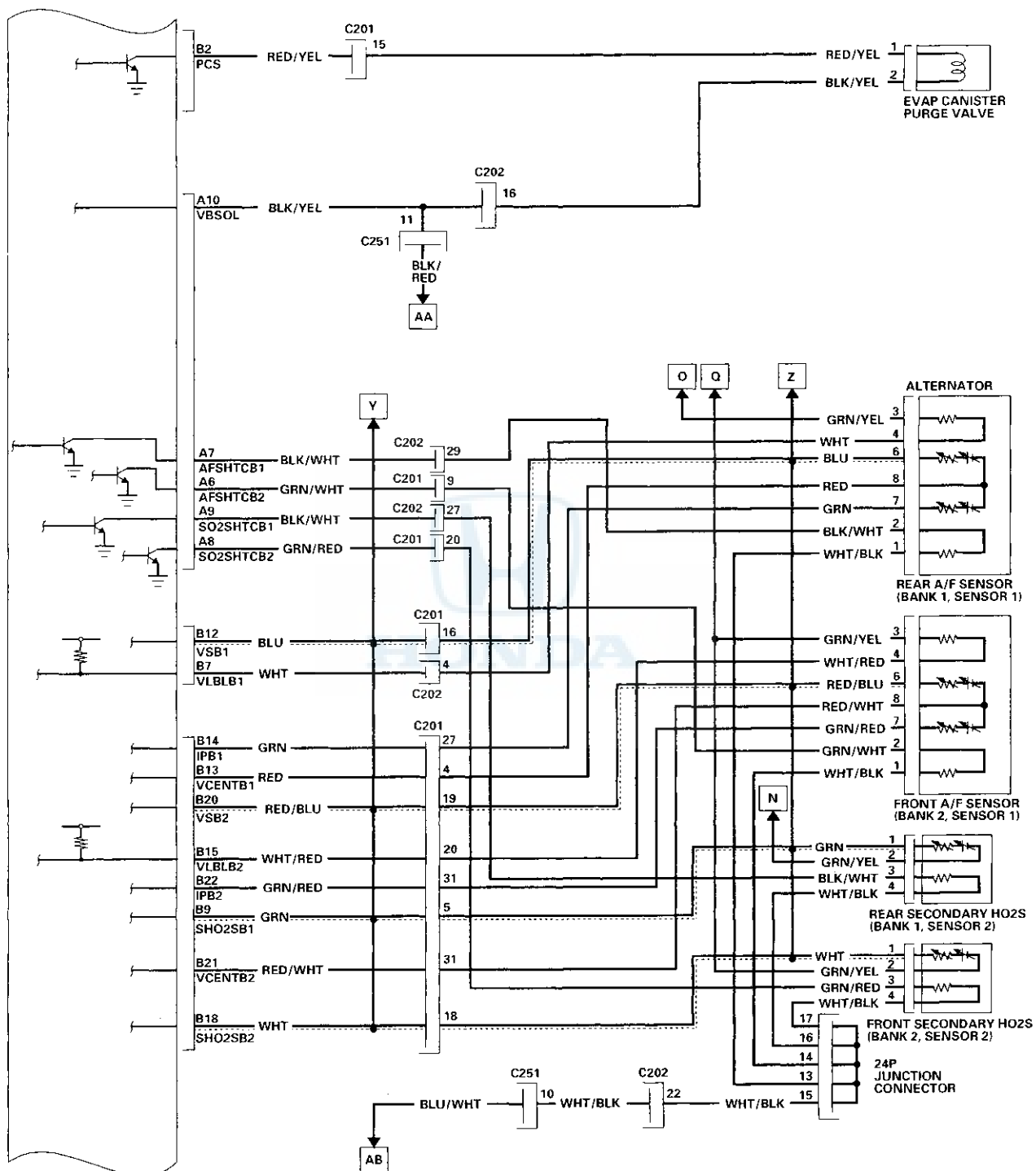
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



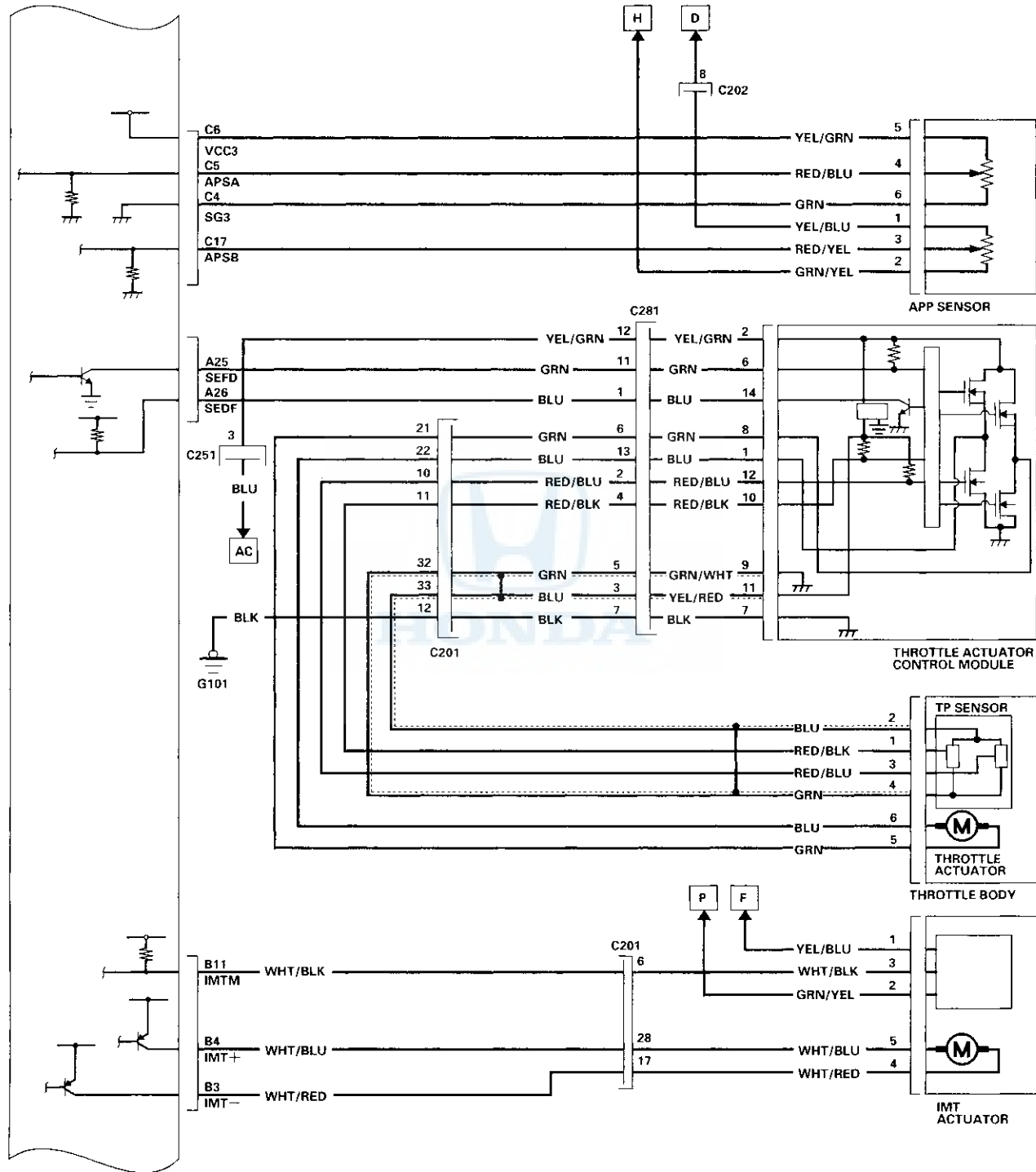


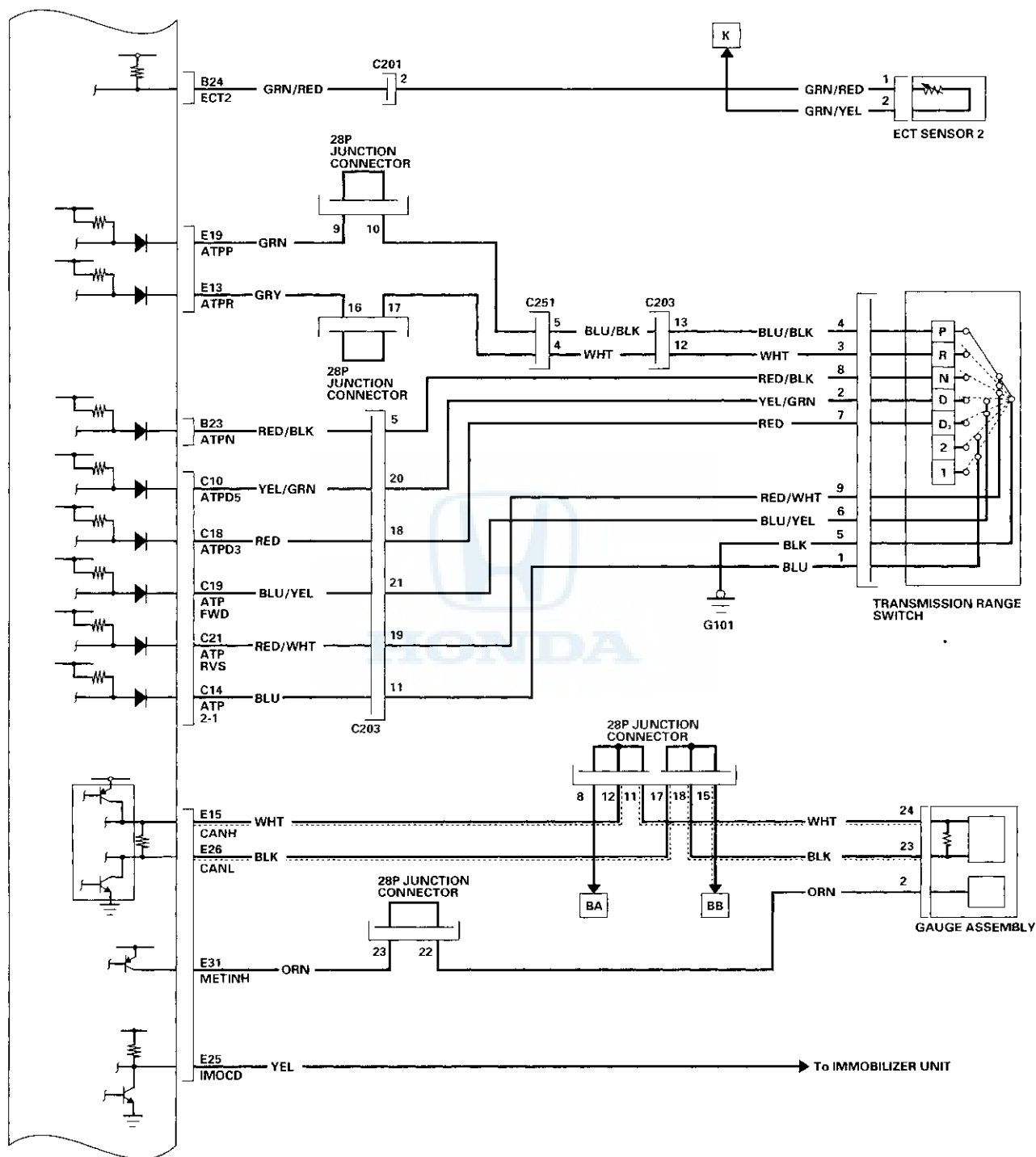
(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



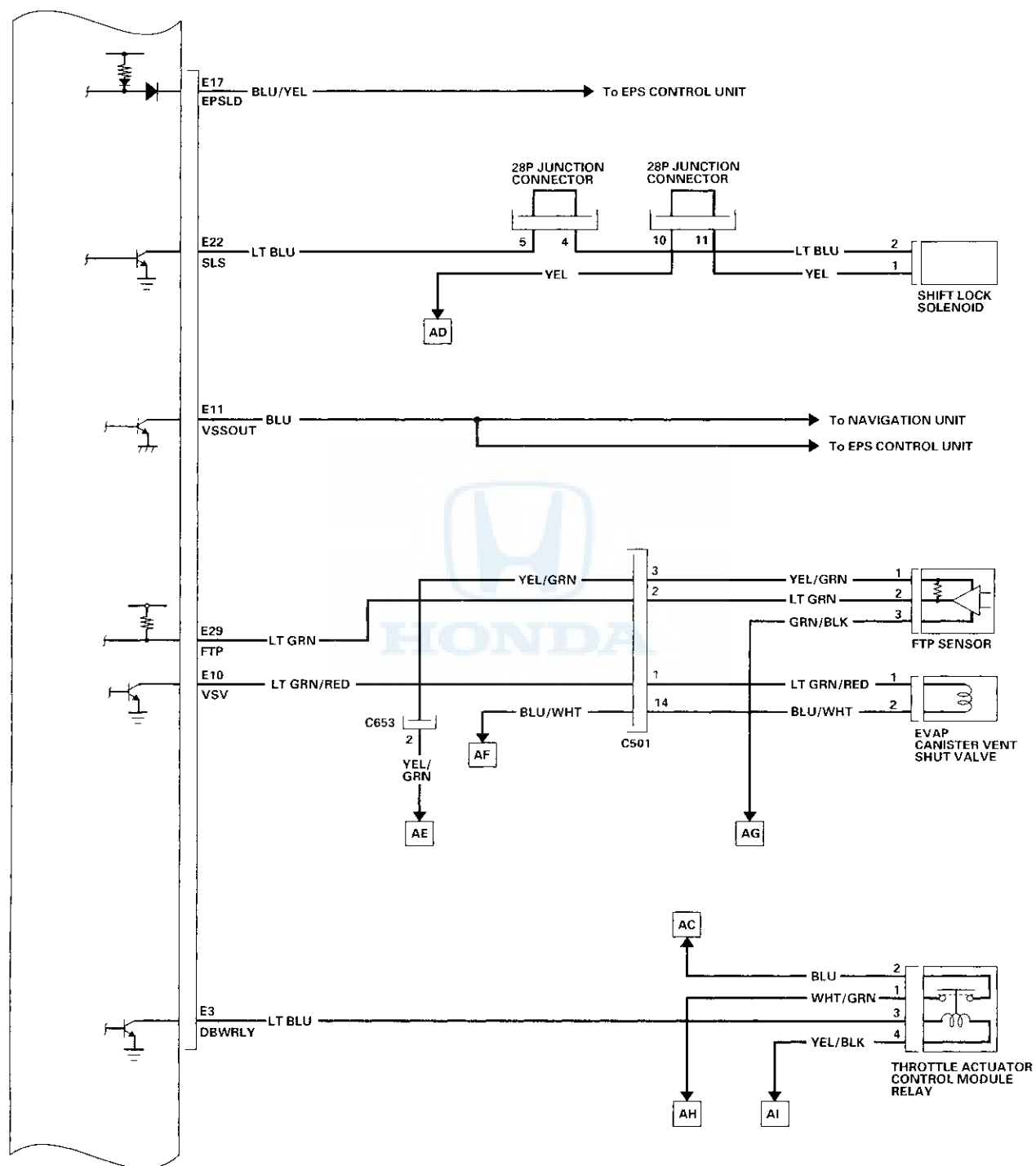


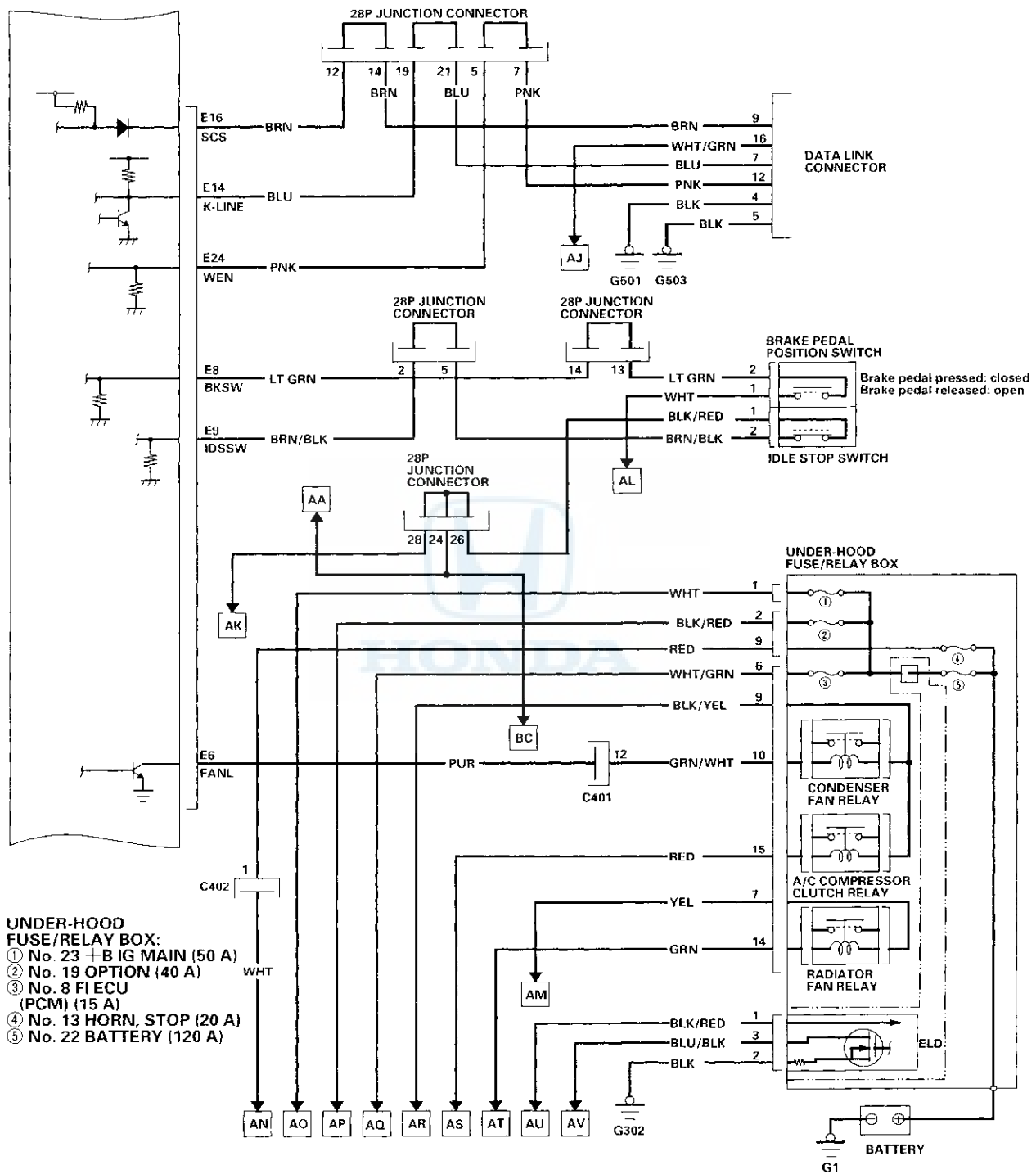
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



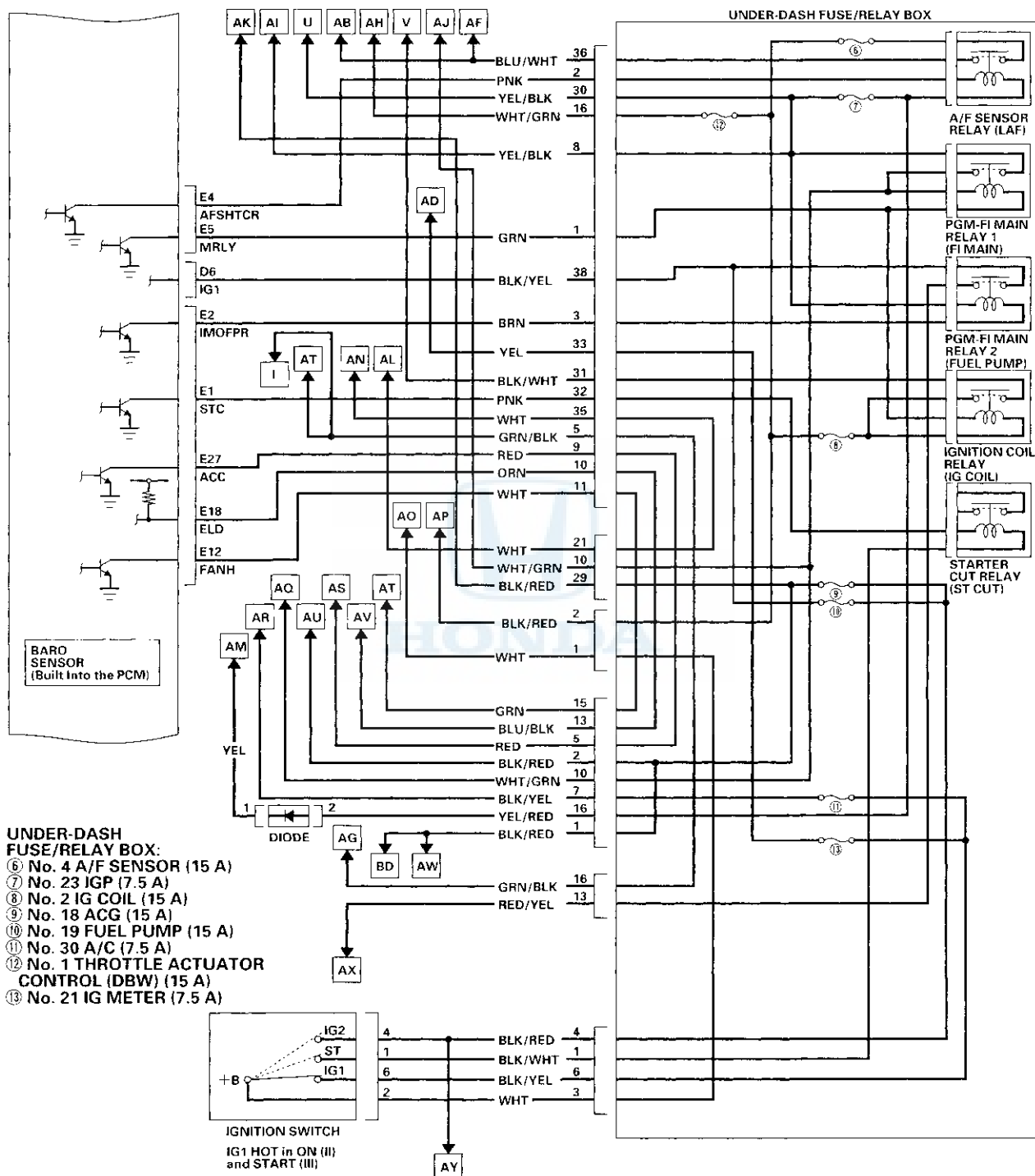


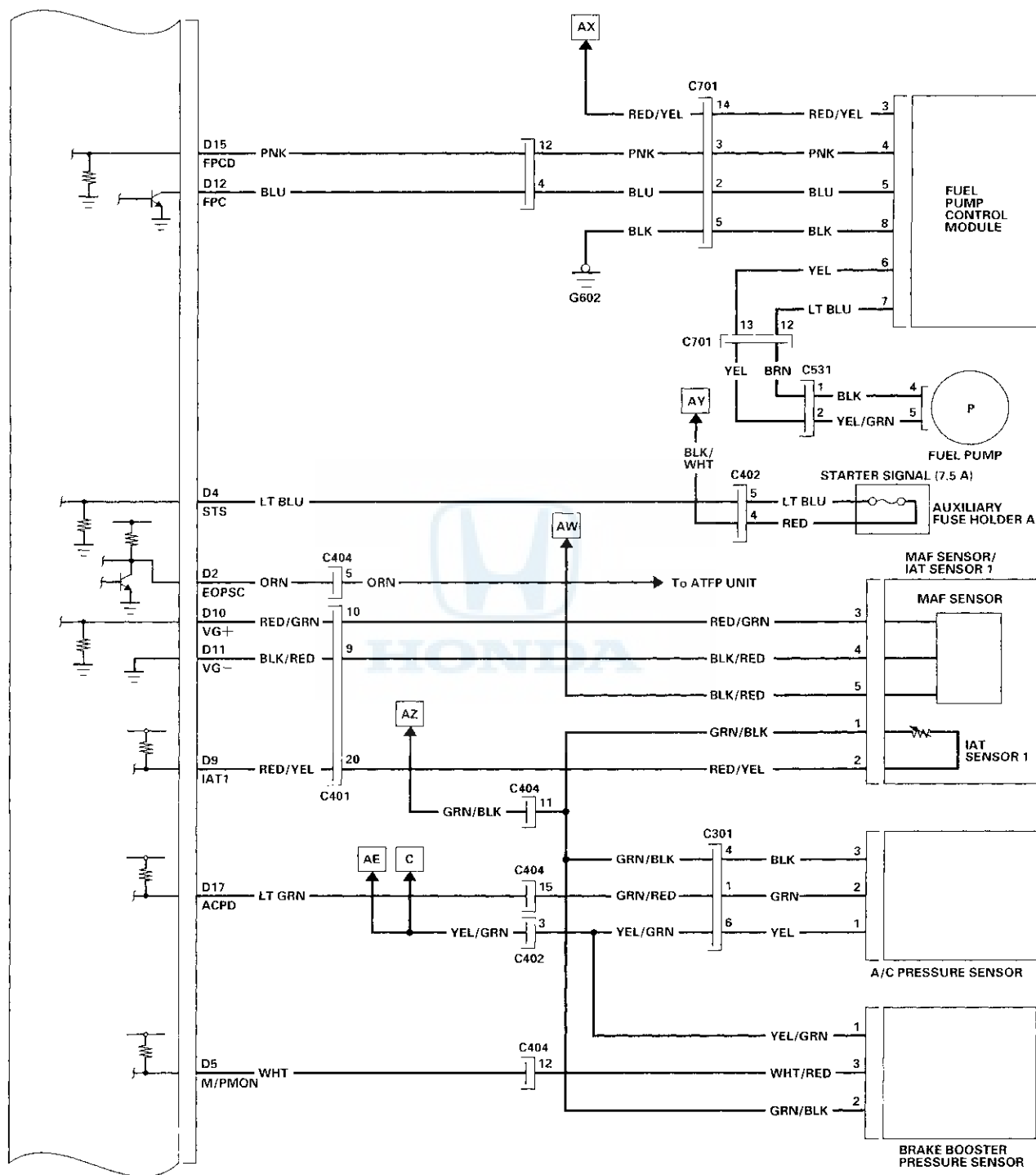
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Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)



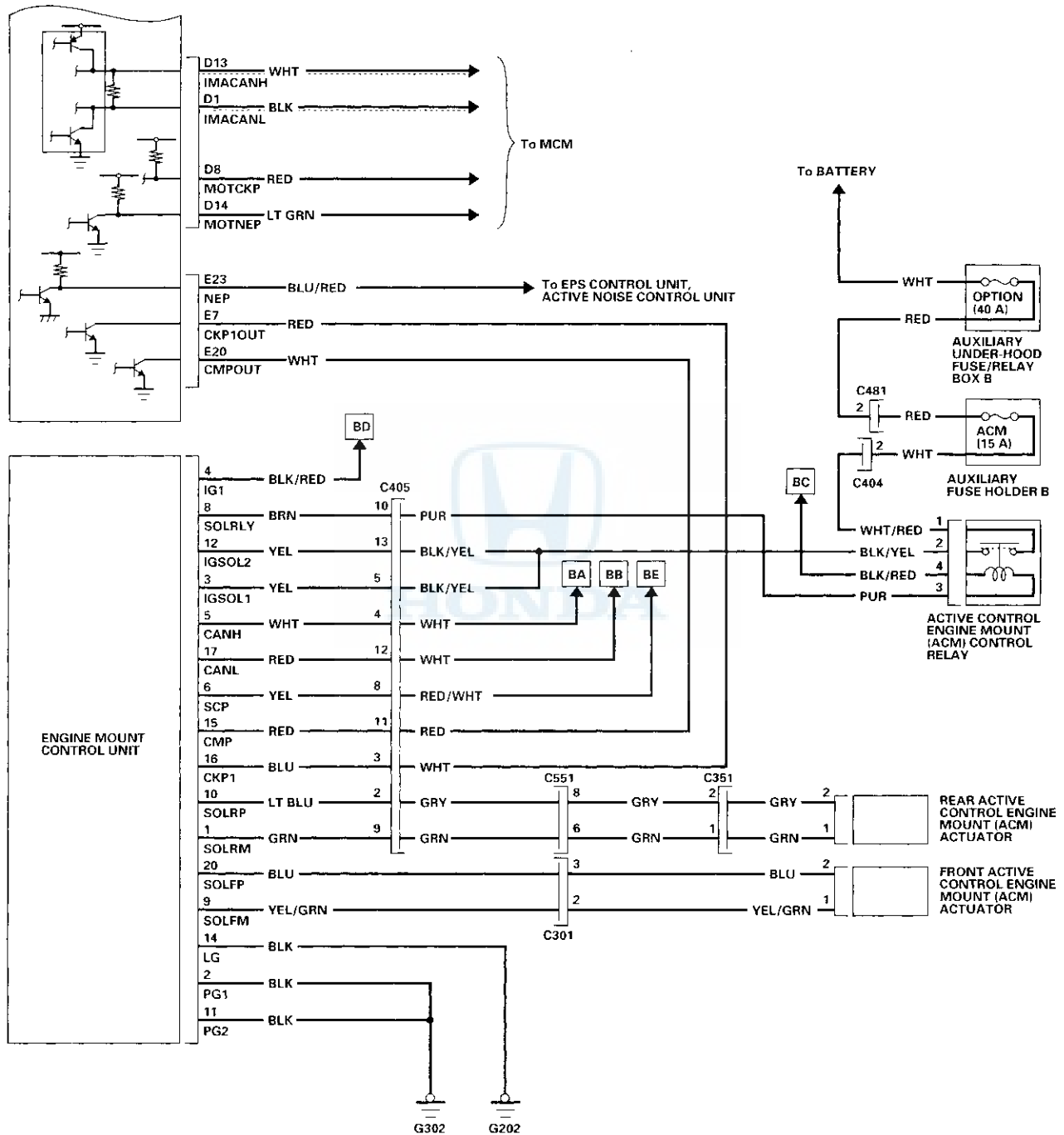


(cont'd)

Fuel and Emissions Systems

System Description (cont'd)

PCM Circuit Diagram (cont'd)





How to Set Readiness Codes

Malfunction Indicator Lamp (MIL) Indication (In Relation to Readiness Codes)

The vehicle has certain “readiness codes” that are part of the on-board diagnostics for the emissions systems. If the vehicle’s battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been reset, these readiness codes are reset. In some states, part of the emissions testing is to make sure these codes are set to complete. If all of them are not set to complete, the vehicle may fail the emission test, or the test cannot be finished.

To check if the readiness codes are set to complete, turn the ignition switch ON (II), but do not start the engine. The MIL will come on for 15–20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not set to complete. To set readiness codes from incomplete to complete, do the procedure for the appropriate code.

To check the status of a specific DTC system, check the OBD status in the DTC MENU with the HDS (see page 11-8). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor and Readiness Code

NOTE:

- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, DTCs are cleared, or when the PCM is reset with the HDS.
- Low ambient temperatures or excessive stop-and-go traffic may increase the drive time needed to switch the readiness code from incomplete to complete.
- The readiness code will not switch to complete until all the enable criteria are met.
- If a fault in the secondary HO2S system caused the MIL to come on, the readiness code cannot be set to complete until you correct the fault.

Enable Criteria

- ECT at 158 °F (70 °C) or higher.
- Intake air temperature (IAT) at 14.7 °F (–9.6 °C) or higher.
- Vehicle speed sensor (VSS) reads more than 3 mph (5 km/h).

Procedure

1. Connect the HDS to the vehicle’s data link connector (DLC), and bring up the READINESS CODEs screen for Catalyst in the DTCs MENU.
2. Start the engine.
3. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. After about 5 miles (8 km), the readiness code should switch to completed.
4. If the readiness code is still not set to complete, check for a Temporary DTC with the HDS. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

(cont’d)

Fuel and Emissions Systems

How to Set Readiness Codes (cont'd)

Evaporative Emissions (EVAP) Control System Monitor and Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, DTCs are cleared, or when the PCM is reset with the HDS.

Enable Criteria

- Battery voltage is higher than 10.5 V.
- Engine at idle.
- ECT sensor between 176 °F (80 °C) and 212 °F (100 °C).
- MAP sensor less than 46.6 kPa (14 in.Hg, 350 mmHg).
- Vehicle speed 0 mph (0 km/h).
- IAT sensor between 32 °F (0 °C) and 212 °F (100 °C).

Procedure

1. Connect the HDS to the vehicle's data link connector (DLC).
2. Start the engine.
3. Select EVAP TEST in the INSPECTION MENU with the HDS, then select the FUNCTION TEST in the EVAP TEST MENU.
 - If the functions are normal, readiness is complete.
 - If the functions are not normal, go to the next step.
4. If the readiness code is still not set to complete, check for a Temporary DTC. If there is no DTC, one or more of the enable criteria were probably not met; repeat the procedure.

Air Fuel Ratio (A/F) Sensor Monitor and Readiness Code

NOTE:

- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, DTCs are cleared, or when the PCM is reset with the HDS.

Enable Criteria

ECT at 158 °F (70 °C) or higher.

Procedure

1. Start the engine.
2. Test-drive the vehicle under stop-and-go conditions with short periods of steady cruise. During the drive, decelerate (with the throttle fully closed) for 9 seconds. After about 3.5 miles (5.6 km), the readiness code should switch from incomplete to complete.
3. Check the readiness codes screen for the air fuel ratio (A/F) sensor in the DTCs MENU with the HDS.
 - If the screen shows complete, readiness is complete.
 - If the screen shows not complete, go to the next step.
4. Check for a Temporary DTC. If there is no DTC, the enable criteria was probably not met. Select the DATA LIST Menu. Check the ECT in the ALL DATA LIST with the HDS. If the ECT is lower than 158 °F (70 °C), run the engine until it is higher than 158 °F (70 °C), then repeat the procedure.



Air Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, DTCs are cleared, or when the PCM is reset with the HDS.

Procedure

1. Start the engine, and let it idle for 1 minute. The readiness code should switch from incomplete to complete.
2. If the readiness code is still not set to complete, check for a temporary DTC. If there is no DTC, repeat the procedure.

Misfire Monitor and Readiness Code

- This readiness code is always set to available because misfiring is continuously monitored.
- Monitoring pauses, and the misfire counter resets, if the vehicle is driven over a rough road.
- Monitoring also pauses, and the misfire counter holds at its current value, if the throttle position changes more than a predetermined value, or if driving conditions fall outside the range of any related enable criteria.

Fuel System Monitor and Readiness Code

- This readiness code is always set to available because the fuel system is continuously monitored during closed loop operation.
- Monitoring pauses when the catalytic converter, EVAP control system, and A/F sensor monitors are active.
- Monitoring also pauses when any related enable criteria are not being met. Monitoring resumes when the enable criteria is again being met.

Comprehensive Component Monitor and Readiness Code

This readiness code is always set to available because the comprehensive component monitor is continuously running whenever the engine is cranking or running.

EGR Monitor and Readiness Code

NOTE:

- Do not turn the ignition switch off during the procedure.
- All readiness codes are cleared when the battery is disconnected, DTCs are cleared, or when the PCM is set with the HDS.

Enable Criteria

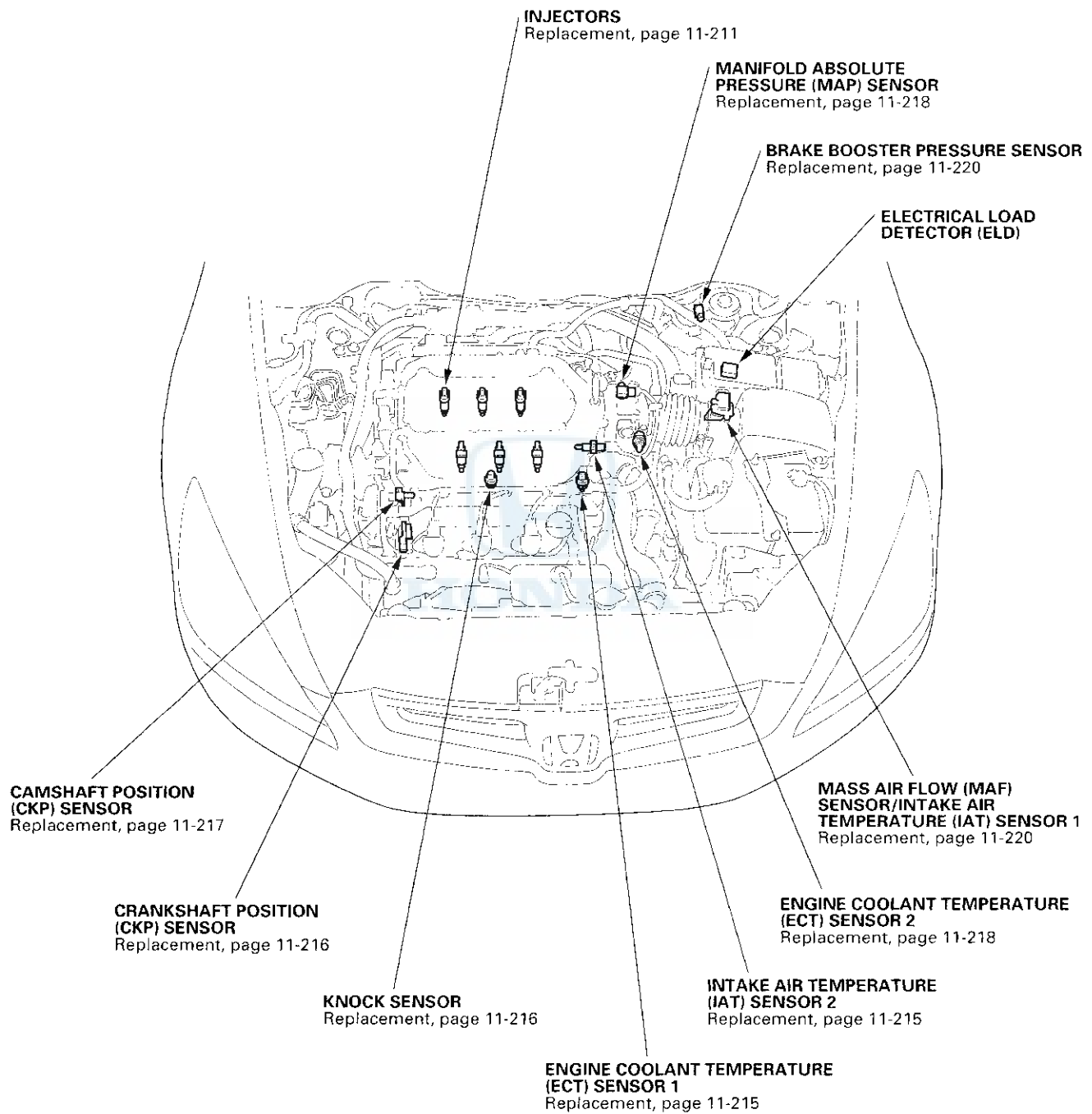
ECT at 176 °F (80 °C) or higher.

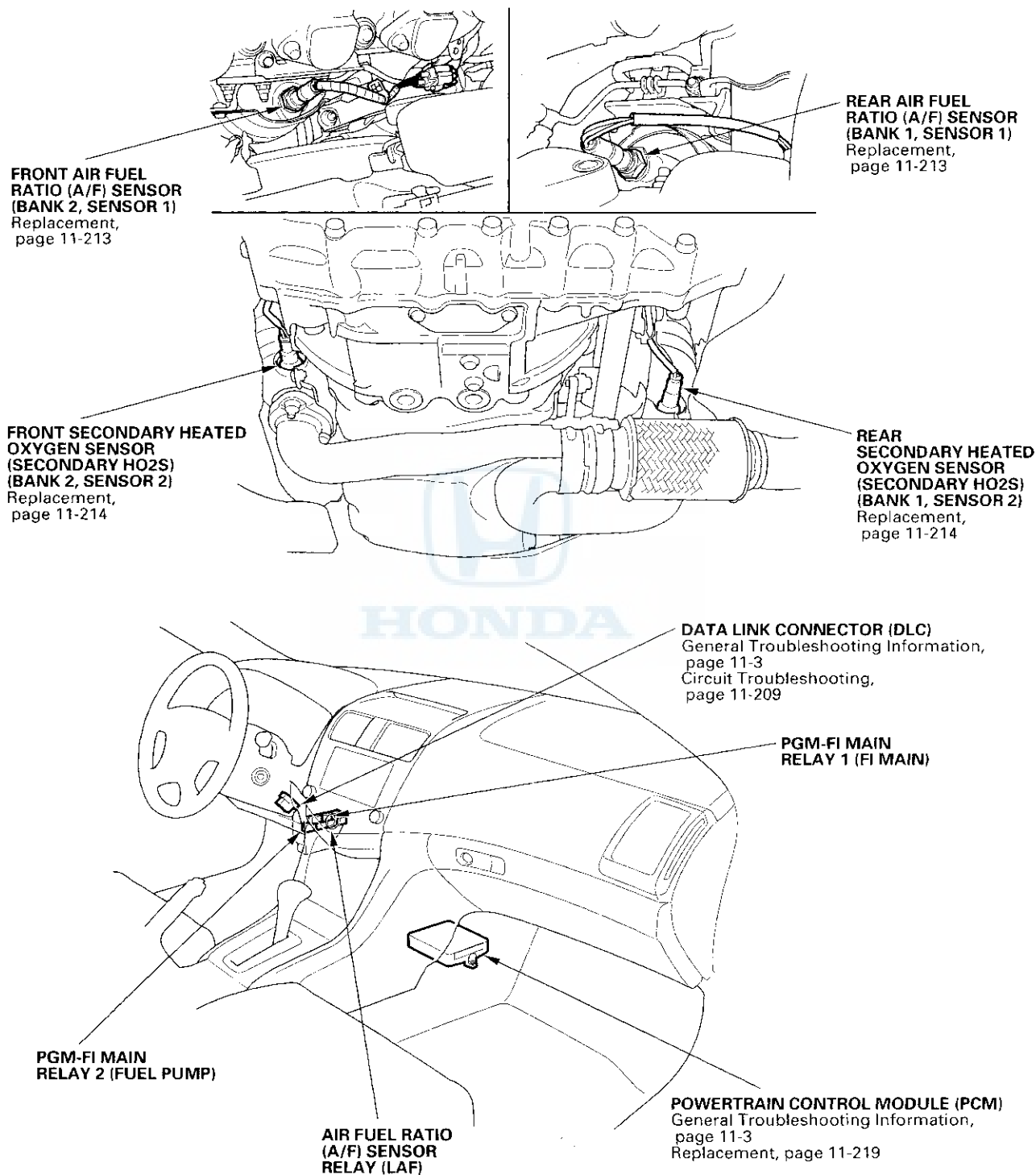
Procedure

1. Connect the HDS to the vehicle's data link connector (DLC).
2. Start the engine.
3. Drive at a steady speed with the transmission in D, 50—62 mph (80—100 km/h) or above for more than 10 seconds.
4. With the transmission in D, decelerate from 62 mph (100 km/h) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.
5. Check the OBD status screen for DTC P0401 in the DTC's MENU with the HDS.
 - If it is passed, readiness is complete.
 - If it is not passed, go to step 3 and retest.

PGM-FI System

Component Location Index





PGM-FI System

DTC Troubleshooting

DTC P0096: IAT Sensor 2 Circuit Range/Performance Problem

1. Check for poor connections or loose terminals at ECT sensor 1 and IAT sensor 2.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connectors or terminals, then go to step 15.

2. Remove IAT sensor 2 (see page 11-215).
3. Allow IAT sensor 2 to cool to 77 °F (25 °C).
4. Note the ambient temperature.
5. Connect IAT sensor 2 to its 2P connector, but do not install it into the intake manifold.
6. Turn the ignition switch ON (II).
7. Note the value of IAT SENSOR 2 quickly in the DATA LIST with the HDS.
8. Compare the value of IAT SENSOR 2 and the ambient temperature.
Does the value of IAT SENSOR 2 differ 5.4 °F (3 °C) or more?
YES—Go to step 13.
NO—Go to step 9.
9. Disconnect IAT sensor 2 from the 2P connector.
10. Blow hot air on IAT sensor 2 with a hair dryer.
11. Connect IAT sensor 2 to its 2P connector, but do not install it into the intake manifold.

12. Check IAT SENSOR 2 in the DATA LIST with the HDS.

Did IAT SENSOR 2 change 58 °F (32 °C) or more?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at IAT sensor 2 and the PCM. ■

NO—Go to step 13.

13. Turn the ignition switch OFF.
14. Replace IAT sensor 2 (see page 11-215).
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0096 is indicated, check for poor connections or loose terminals at IAT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P0097: IAT Sensor 2 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check IAT SENSOR 2 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at IAT sensor 2 and the PCM. ■

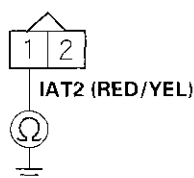
3. Turn the ignition switch OFF.
4. Disconnect IAT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check IAT SENSOR 2 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 7.

NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (31P).
10. Check for continuity between IAT sensor 2 2P connector terminal No. 1 and body ground.

IAT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between IAT sensor 2 and the PCM (A5), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace IAT sensor 2 (see page 11-215).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0097 is indicated, check for poor connections or loose terminals at IAT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

18. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0097 is indicated, check for poor connections or loose terminals at IAT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0098: IAT Sensor 2 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check IAT SENSOR 2 in the DATA LIST with the HDS.

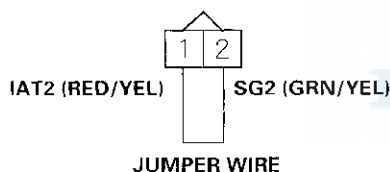
Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at IAT sensor 2 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect IAT sensor 2 2P connector.
5. Connect IAT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

IAT SENSOR 2 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check IAT SENSOR 2 in the DATA LIST with the HDS.

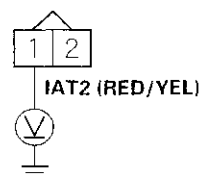
Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

YES—Go to step 8.

NO—Go to step 18.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from IAT sensor 2 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between IAT sensor 2 2P connector terminal No. 1 and body ground.

IAT SENSOR 2 2P CONNECTOR



Wire side of female terminals

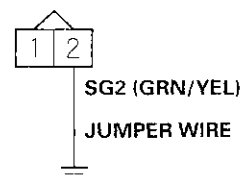
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 17.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (22P).
15. Connect IAT sensor 2 2P connector terminal No. 2 to body ground with a jumper wire.

IAT SENSOR 2 2P CONNECTOR

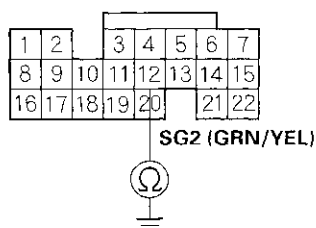


Wire side of female terminals



16. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

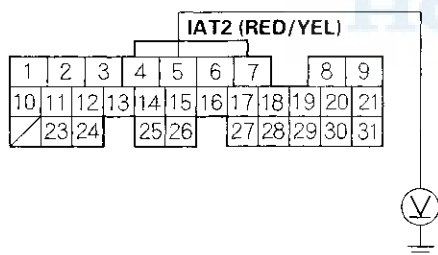
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (C12) and IAT sensor 2, then go to step 20.

17. Measure voltage between PCM connector terminal A5 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (A5) and IAT sensor 2, then go to step 20.

NO—Go to step 25.

18. Turn the ignition switch OFF.
19. Replace IAT sensor 2 (see page 11-215).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-340).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0098 is indicated, check for poor connections or loose terminals at IAT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0098 is indicated, check for poor connections or loose terminals at IAT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0101: MAF sensor Range/Performance Problem

NOTE: If DTC P1128, P1129, P2228, and/or P2229 are stored at the same time as DTC P0101, troubleshoot those DTCs first, then recheck for DTC P0101.

1. Note this freeze data:

- Engine speed
- Vehicle speed
- MAP sensor
- MAF sensor

2. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- Purge (PCS) line
- Throttle body
- Intake manifold
- Brake booster hose

Are there any leaks?

YES—Repair or replace the damaged part(s), then go to step 18.

NO—Go to step 3.

3. Check for damage or looseness at the air tube in the air cleaner.

Is it OK?

YES—Go to step 4.

NO—Reconnect or replace the air tube in the air cleaner, then go to step 16.

4. Check for a dirty air cleaner.

Is it dirty?

YES—Replace the air cleaner element (see page 11-382), then go to step 16.

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Turn the ignition switch ON (II).

7. Check the MAF SENSOR in the DATA LIST with the HDS.

Is there about 0.2 gm/s or 0.5 V?

YES—Go to step 8.

NO—Go to step 14.

8. Start the engine.

9. Vary the engine speed between 2,000 rpm and 3,000 rpm.

10. Check the MAF SENSOR in the DATA LIST with the HDS.

Does the reading change?

YES—Go to step 11.

NO—Go to step 14.

11. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

12. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

13. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 14.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check the poor connections or loose terminals at the MAF sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 12 and recheck.



14. Turn the ignition switch OFF.
15. Replace the MAF sensor/IAT sensor 1 (see page 11-220).
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).
19. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0101 is indicated, check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19 and recheck.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0102: MAF Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

Is about 0 gm/s or 0.1 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the PCM. ■

3. Check the No. 18 ACG (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 4.

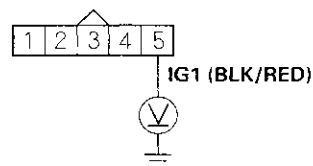
NO—Repair short in the wire between the MAF sensor and the No. 18 ACG (15 A) fuse, replace the fuse, then go to step 20.

4. Turn the ignition switch OFF.
5. Disconnect the MAF sensor/IAT sensor 1 5P connector.

6. Turn the ignition switch ON (II).

7. Measure voltage between MAF sensor/IAT sensor 1 5P connector terminal No. 5 and body ground.

MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

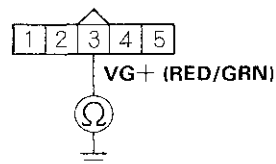
Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire between the No. 18 ACG (15 A) fuse and the MAF sensor, then go to step 20.

8. Turn the ignition switch OFF.
9. Measure resistance between MAF sensor/IAT sensor 1 5P connector terminal No. 3 and body ground.

MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

Is there 190—210 kΩ?

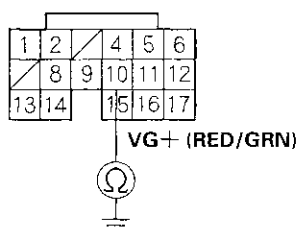
YES—Go to step 15.

NO—Go to step 10.



10. Jump the SCS line with the HDS.
11. Disconnect PCM connector D (17P).
12. Check for continuity between PCM connector terminal D10 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

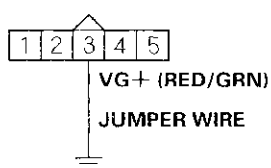
Is there continuity?

YES—Repair short in the wire between the PCM (D10) and the MAF sensor, then go to step 20.

NO—Go to step 13.

13. Connect MAF sensor/IAT sensor 1 5P connector terminal No. 3 to body ground with a jumper wire.

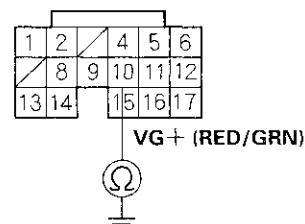
MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal D10 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

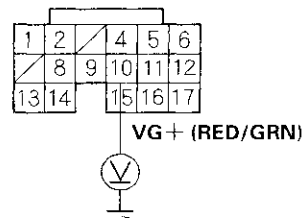
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (D10) and the MAF sensor, then go to step 20.

15. Reconnect the MAF sensor/IAT sensor 1 5P connector.
16. Start the engine. Hold the engine speed at 2,000 rpm without load (in Park or neutral).
17. Measure voltage between PCM connector terminal D10 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 1.5 V?

YES—Go to step 25.

NO—Go to step 18.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

18. Turn the ignition switch OFF.
19. Replace the MAF sensor/IAT sensor 1 (see page 11-220).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-340).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0102 is indicated, check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0102 is indicated, check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0103: MAF Sensor Circuit High Voltage

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the MAF SENSOR in the DATA LIST with the HDS.

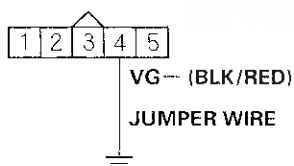
Is about 202 gm/s or 4.89 V or higher indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Disconnect the MAF sensor/IAT sensor 1 5P connector.
6. Disconnect PCM connector D (17P).
7. Connect MAF sensor/IAT sensor 1 5P connector terminal No. 4 to body ground with a jumper wire.

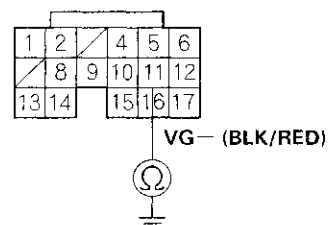
MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

8. Check for continuity between PCM connector terminal D11 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

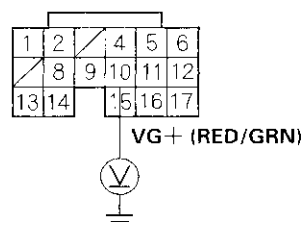
Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the PCM (D11) and the MAF sensor, then go to step 15.

9. Reconnect PCM connector D (17P).
10. Reconnect the MAF sensor/IAT sensor 1 5P connector.
11. Start the engine. Hold the engine speed at 2,000 rpm without load (in Park or neutral).
12. Measure voltage between PCM connector terminal D10 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 1.5 V?

YES—Go to step 20.

NO—Go to step 13.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.
14. Replace the MAF sensor/IAT sensor 1 (see page 11-220).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0103 is indicated, check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0103 is indicated, check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0107: MAP Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V, or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

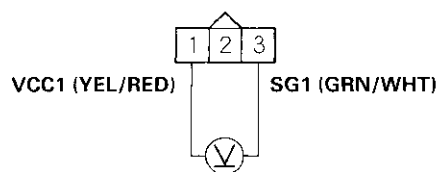
Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V, or less indicated?

YES—Go to step 9.

NO—Go to step 7.

7. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

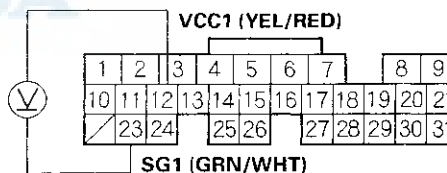
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 8.

8. Measure voltage between PCM connector terminals A12 and A23.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (A12) and the MAP sensor, then go to step 15.

NO—Go to step 20.

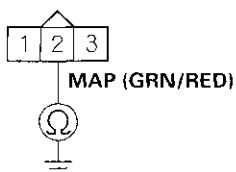
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (31P).
12. Check for continuity between MAP sensor 3P connector terminal No. 2 and body ground.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A11) and the MAP sensor, then go to step 15.

NO—Go to step 20.

13. Turn the ignition switch OFF.
14. Replace the MAP sensor (see page 11-218).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0107 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0107 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0108: MAP Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

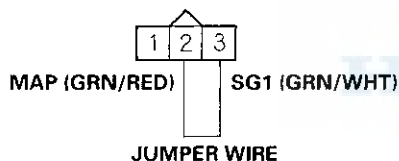
Is 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V, or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Connect MAP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

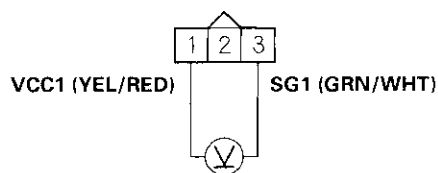
Is 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V, or more indicated?

YES—Go to step 8.

NO—Go to step 19.

8. Remove the jumper wire from the MAP sensor 3P connector.
9. Measure voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

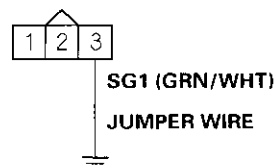
Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (31P).
13. Connect MAP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

MAP SENSOR 3P CONNECTOR



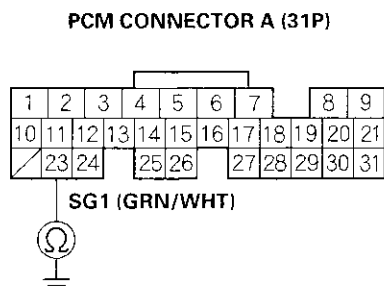
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

14. Check for continuity between PCM connector terminal A23 and body ground.

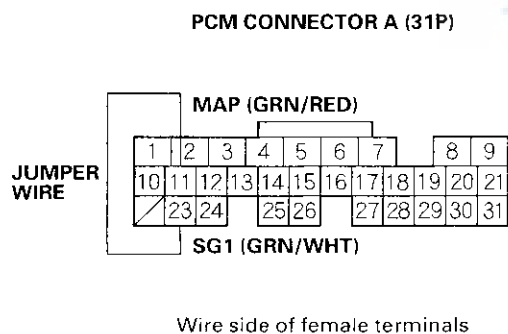


Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (A23) and the MAP sensor, then go to step 21.

15. Turn the ignition switch OFF.
16. Connect PCM connector terminals A11 and A23 with a jumper wire.



17. Turn the ignition switch ON (II).

18. Check the MAP SENSOR in the DATA LIST with the HDS.

Is 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V, or more indicated?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (A11) and the MAP sensor, then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the MAP sensor (see page 11-218).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-340).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0108 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

26. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
27. Check for Temporary DTCs or DTCs with the HDS.
- Are any Temporary DTCs or DTCs indicated?*
- YES**—If DTC P0108 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.
- NO**—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0112: IAT Sensor 1 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check IAT SENSOR 1 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at IAT sensor 1 and the PCM. ■

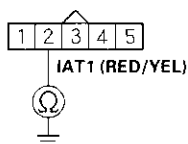
3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 1 5P connector.
5. Turn the ignition switch ON (II).
6. Check IAT SENSOR 1 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 7.

NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector D (17P).
10. Check for continuity between MAF sensor/IAT sensor 1 5P connector terminal No. 2 and body ground.

MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between IAT sensor 1 and the PCM (D9), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Reconnect all connectors.
13. Replace the MAF sensor/IAT sensor 1 (see page 11-220).
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0112 is indicated, check for poor connections or loose terminals at IAT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

18. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0112 is indicated, check for poor connections or loose terminals at IAT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0113: IAT Sensor 1 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check IAT SENSOR 1 in the DATA LIST with the HDS.

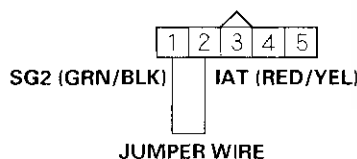
Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at IAT sensor 1 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 1 5P connector.
5. Connect MAF sensor/IAT sensor 1 5P connector terminals No. 1 and No. 2 with a jumper wire.

MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check IAT SENSOR 1 in the DATA LIST with the HDS.

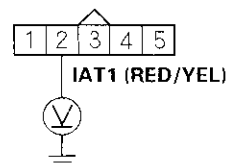
Is about -40°F (-40°C) or less, or 4.90 V or higher indicated?

YES—Go to step 8.

NO—Go to step 18.

8. Turn the ignition switch OFF.
9. Remove the jumper wire.
10. Turn the ignition switch ON (II).
11. Measure voltage between MAF sensor/IAT sensor 1 5P connector terminal No. 2 and body ground.

MAF SENSOR/IAT SENSOR 1 5P CONNECTOR



Wire side of female terminals

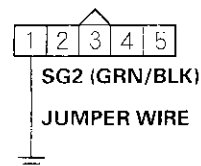
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 17.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (22P).
15. Connect MAF sensor/IAT sensor 1 5P connector terminal No. 1 to body ground with a jumper wire.

MAF SENSOR/IAT SENSOR 1 5P CONNECTOR

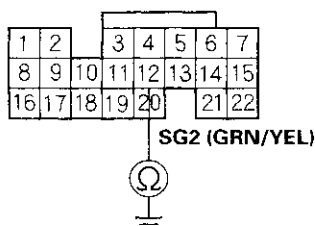


Wire side of female terminals



16. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

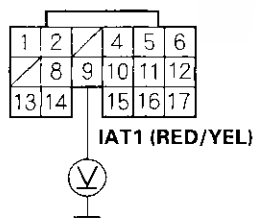
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (C12) and IAT sensor 1, then go to step 19.

17. Measure voltage between PCM connector terminal D9 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (D9) and IAT sensor 1, then go to step 19.

NO—Go to step 25.

18. Turn the ignition switch OFF.

19. Replace the MAF sensor/IAT sensor 1 (see page 11-220).

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

22. Reset the PCM with the HDS.

23. Do the PCM idle learn procedure (see page 11-340).

24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0113 is indicated, check for poor connections or loose terminals at IAT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0113 is indicated, check for poor connections or loose terminals at IAT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

DTC Troubleshooting (cont'd)

DTC P0116: ECT Sensor 1 Range/ Performance Problem

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 176 °F (80 °C) or higher, or 0.78 V or less indicated?

YES—Go to step 6.

NO—Go to step 3.
3. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18 °F (10 °C) or more?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

NO—Go to step 11.
6. Note the value of ECT SENSOR 1 in the DATA LIST with the HDS.
7. Turn the ignition switch OFF.
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch ON (II).

10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Does ECT SENSOR 1 change 18 °F (10 °C) or more?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-215).
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-340).
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0116 is indicated, check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1. If any other Temporary DTSs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P0117: ECT Sensor 1 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect ECT sensor 1 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

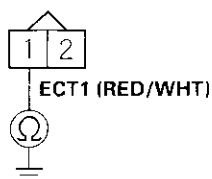
Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (31P).
10. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 1 and the PCM (A14), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-215).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0117 is indicated, check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

18. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0117 is indicated, check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0118: ECT Sensor 1 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

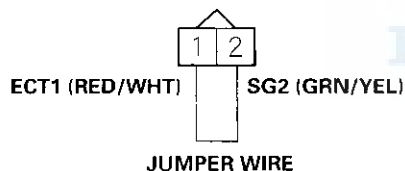
Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect ECT sensor 1 2P connector.
5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

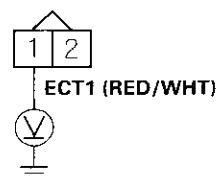
Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

YES—Go to step 8.

NO—Go to step 18.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from ECT sensor 1 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 1 2P connector terminal No. 1 and body ground.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

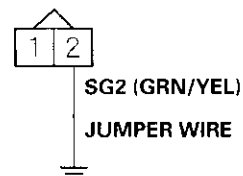
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 17.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (22P).
15. Connect ECT sensor 1 2P connector terminal No. 2 to body ground with a jumper wire.

ECT SENSOR 1 2P CONNECTOR

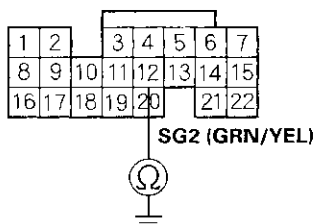


Wire side of female terminals



16. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

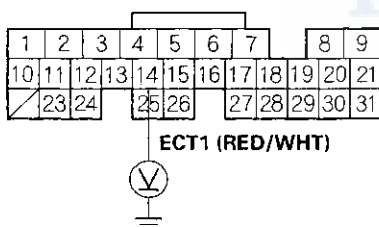
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (C12) and ECT sensor 1, then go to step 20.

17. Measure voltage between PCM connector terminal A14 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (A14) and ECT sensor 1, then go to step 20.

NO—Go to step 25.

18. Turn the ignition switch OFF.

19. Replace ECT sensor 1 (see page 11-215).

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

22. Reset the PCM with the HDS.

23. Do the PCM idle learn procedure (see page 11-340).

24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0118 is indicated, check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0118 is indicated, check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0125: ECT Sensor 1 Malfunction/Slow Response

1. Start the engine, and let it idle 5 minutes or more.
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 10 °F (– 12 °C) or less, or 4.45 V or more indicated?

YES—Go to step 9.

NO—Go to step 3.

3. Allow the engine to cool to 104 °F (40 °C) or less.
4. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
5. Start the engine, and let it idle.
6. Let the engine idle until ECT SENSOR 1 goes up 49 °F (27 °C) or more from the recorded temperature.
7. Note the value of ECT SENSOR 2 in the DATA LIST with the HDS.
8. Compare ECT SENSOR 2 and the recorded temperature.

Did ECT SENSOR 2 change 17 °F (9.5 °C) or more?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

NO—Check the thermostat (see page 10-4), then go to step 9.

9. Turn the ignition switch OFF.
10. Replace ECT sensor 1 (see page 11-215).
11. Turn the ignition switch ON (II).
12. Reset the PCM with the HDS.
13. Do the PCM idle learn procedure (see page 11-340).
14. Allow the engine to cool to the outside temperature.
15. Start the engine, and let it idle 20 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0125 is indicated, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P0125 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 14 and recheck.



DTC P0128: Cooling System Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the blower switch OFF.
4. Turn the A/C switch OFF.
5. Check the FAN CTRL in the DATA LIST with the HDS.

Is it OFF?

YES—Go to step 6.

NO—Wait until the FAN CTRL is off, then go to step 6.
6. Check the radiator fan operation.

Does the radiator fan keep running?

YES—Check the cooling system (see page 10-2). If the cooling system is OK, go to step 20.

NO—Go to step 7.
7. Let the engine cool until the coolant temperature is 104 °F (40 °C) or less.
8. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
9. Start the engine, and let it idle.
10. Let the engine idle until ECT SENSOR 1 goes up 49 °F (27 °C) or more from the recorded temperature.
11. Check ECT SENSOR 2 in the DATA LIST with the HDS.

12. Compare the recorded value of ECT SENSOR 2 and the present value of ECT SENSOR 2.

Did temperature rise 17 °F (9.5 °C) or more?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

NO—Test the thermostat (see page 10-4), then go to step 13.

13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Let the engine cool until the coolant temperature is between 21 °F (−6 °C) and 104 °F (40 °C).
16. Do the PCM idle learn procedure (see page 11-340).
17. Test-drive at a steady speed between 15—75 mph (24—120 km/h) for 10 minutes.
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0128 is indicated, check the cooling system, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check the cooling system, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15 and recheck.

(cont'd)

PGM-FI System

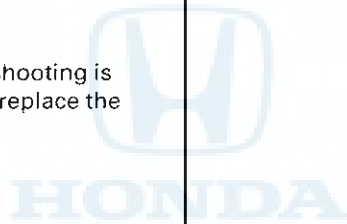
DTC Troubleshooting (cont'd)

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
21. Let the engine cool until the coolant temperature is between 21 °F (−6 °C) and 104 °F (40 °C).
22. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
23. Test-drive at a steady speed between 15–75 mph (24–120 km/h) for 10 minutes.
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0128 is indicated, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P0133: Rear A/F Sensor (Bank 1, Sensor 1) Slow Response

DTC P0153: Front A/F Sensor (Bank 2, Sensor 1) Slow Response

NOTE:

- If DTC P0139 and/or P0159* is stored at the same time as DTC P0133 and/or P0153*, troubleshoot DTC P0139 and/or P0159* first, then recheck for DTC P0133 and/or P0153*.
- Information marked with an asterisk (*) applies to the front bank.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature above 176 °F (80 °C)
 - Transmission in D position
 - Drive the vehicle speed at 25 mph (40 km/h) or less for 5 minutes, then drive at steady speed between 26 mph (41 km/h) and 81 mph (130 km/h)
5. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see page 11-213).

8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-340).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
 - Engine coolant temperature above 176 °F (80 °C)
 - Transmission in D position
 - Drive the vehicle speed at 25 mph (40 km/h) or less for 5 minutes, then drive at steady speed between 26 mph (41 km/h) and 81 mph (130 km/h)
13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0133 and/or P0153* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0133 and/or P0153* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11 and recheck.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0134: Rear A/F Sensor (Bank 1, Sensor 1) Heater System Malfunction

DTC P0154: Front A/F Sensor (Bank 2, Sensor 1) Heater System Malfunction

NOTE:

- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

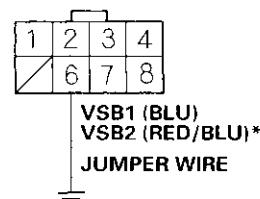
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 6 to body ground with a jumper wire.

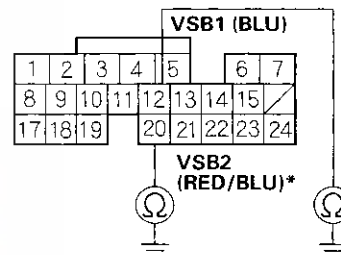
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B12 (B20)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

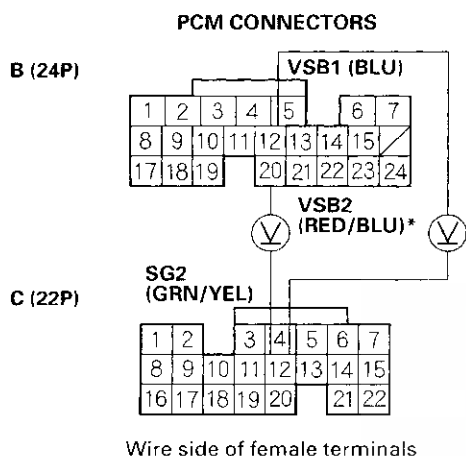
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (B12 (B20)*) and the A/F sensor (Sensor 1), then go to step 15.



11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (24P).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
13. Measure voltage between PCM connector terminals B12 (B20)* and C12.



Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (see page 11-213).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0134 and/or P0154* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0134 and/or P0154* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was update, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0135: Rear A/F Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction

DTC P0155: Front A/F Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0135 and/or P0155 indicated?*

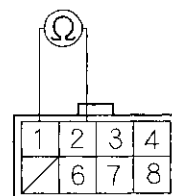
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay, and the PCM. ■

5. Turn the ignition switch OFF.
 6. Check these fuses:
 - No. 19 OPTION (40 A) fuse in the under-hood fuse/relay box.
 - No. 4 A/F SENSOR (15 A) fuse in the under-dash fuse/relay box.
 - No. 23 IGP (7.5 A) fuse in the under-dash fuse/relay box.
- Are any of the fuses blown?*
- YES**—Repair short in the wire between the A/F sensors, the A/F sensor relay, and the fuses, then go to step 24.
- NO**—Go to step 7.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.

8. At the sensor side, measure resistance between A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 2.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

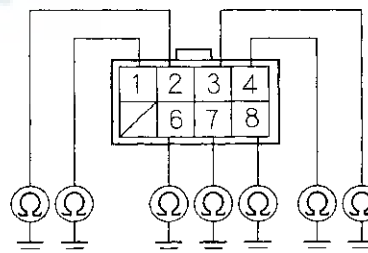
Is there 2.5 – 3.2 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 22.

9. Check for continuity between each terminal at the A/F sensor (Sensor 1) 8P connector and body ground.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

Is there continuity?

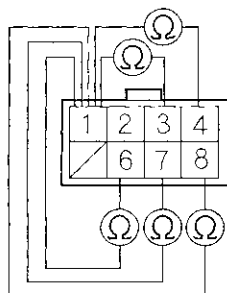
YES—Go to step 22.

NO—Go to step 10.



10. Check for continuity between A/F sensor (Sensor 1) 8P connector terminals No. 1 and No. 3, No. 4, No. 6, No. 7, and No. 8 individually.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 22.

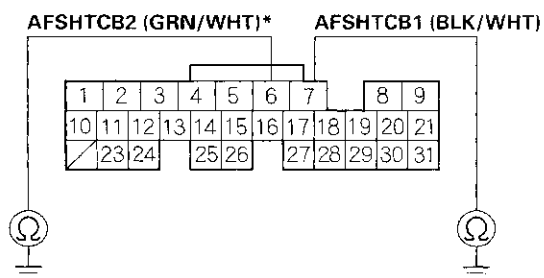
NO—Go to step 11.

11. Jump the SCS line with the HDS.

12. Disconnect PCM connector A (31P).

13. Check for continuity between PCM connector terminal A7 (A6)* and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

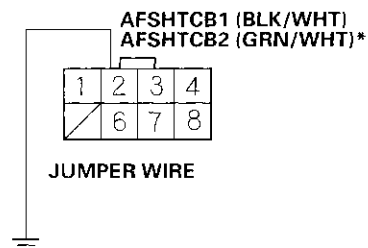
Is there continuity?

YES—Repair short in the wire between the PCM (A7 (A6)*) and the A/F sensor (Sensor 1), then go to step 23.

NO—Go to step 14.

14. Connect A/F sensor (Sensor 1) 8P connector terminal No. 2 to body ground with a jumper wire.

A/F SENSOR (SENSOR 1) 8P CONNECTOR

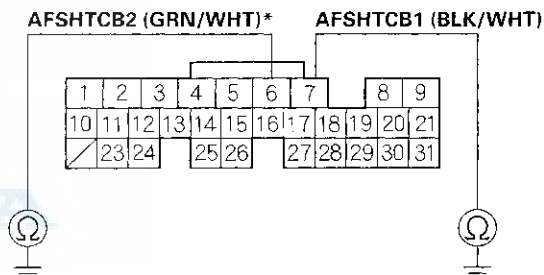


JUMPER WIRE

Wire side of female terminals

15. Check for continuity between PCM connector terminal A7 (A6)* and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

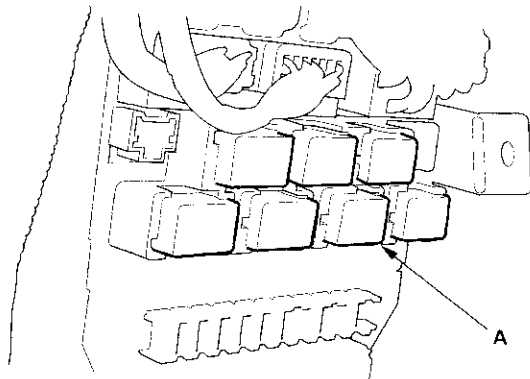
NO—Repair open in the wire between the PCM (A7 (A6)*) and the A/F sensor (Sensor 1), then go to step 23.

(cont'd)

PGM-FI System

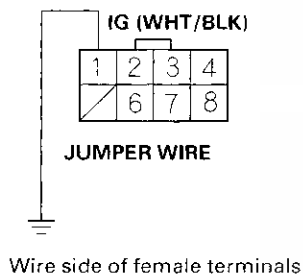
DTC Troubleshooting (cont'd)

16. Remove the A/F sensor relay (A).



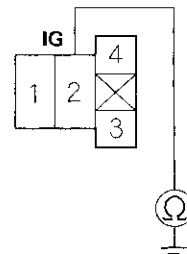
17. Connect A/F sensor (Sensor 1) 8P connector terminal No. 1 to body ground with a jumper wire.

A/F SENSOR (SENSOR 1) 8P CONNECTOR



18. Check for continuity between A/F sensor relay 4P connector terminal No. 2 and body ground.

A/F SENSOR RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

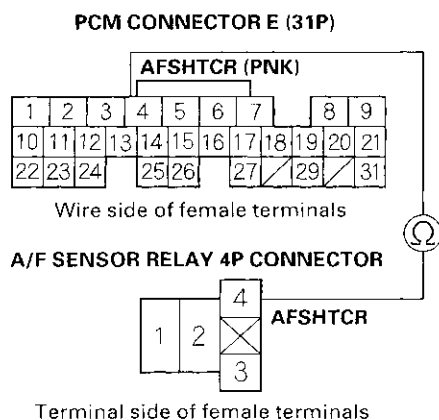
YES—Go to step 19.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay, then go to step 23.

19. Disconnect PCM connector E (31P).



20. Check for continuity between PCM connector terminal E4 and A/F sensor relay 4P connector terminal No. 4.



Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (E4) and the A/F sensor relay, then go to step 23.

21. Check the A/F sensor relay (see page 22-72).

Is the A/F sensor relay OK?

YES—Go to step 29.

NO—Replace the A/F sensor relay, then go to step 23.

22. Replace the A/F sensor (Sensor 1) (see page 11-213).
23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the PCM with the HDS.
26. Do the PCM idle learn procedure (see page 11-340).

27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0135 and/or P0155* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26 and recheck.

29. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

30. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0135 and/or P0155* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the A/F sensor relay, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0137: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Low Voltage

DTC P0157: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Low Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 0.29 V or less?

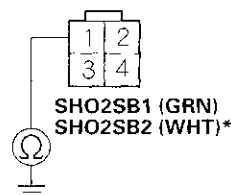
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch ON (II).
8. Check the HO2S S2 in the DATA LIST with the HDS.
Does the voltage stay at 0.29 V or less?
YES—Go to step 9.
NO—Go to step 13.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (24P).

12. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 1 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B9 (B18)*) and the secondary HO2S (Sensor 2), then go to step 15.

NO—Go to step 23.

13. Turn the ignition switch OFF.
14. Replace the secondary HO2S (Sensor 2) (see page 11-214).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).
19. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.



20. Test-drive under these conditions:

- Engine coolant temperature above 176 °F (80 °C)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm
- Drive 1 minute or more

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0137 and/or P0157* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 19 and recheck.

23. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

24. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

25. Test-drive under these conditions:

- Engine coolant temperature above 176 °F (80 °C)
- Transmission in D position
- Engine speed at 1,500—3,000 rpm
- Drive 1 minute or more

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0137 and/or P0157* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0138: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit High Voltage

DTC P0158: Front Secondary HO2S (Bank 2, Sensor 2) Circuit High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check the HO2S S2 in the DATA LIST with the HDS.

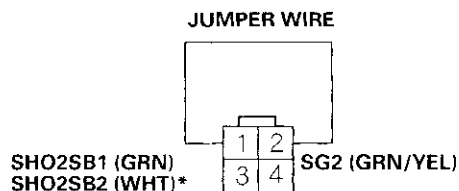
Does the voltage stay at 1.25 V or more?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch ON (II).
9. Check the HO2S S2 in the DATA LIST with the HDS.

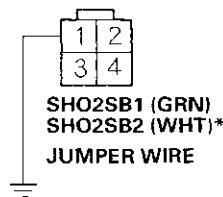
Does the voltage stay at 1.25 V or more?

YES—Go to step 10.

NO—Go to step 19.

10. Turn the ignition switch OFF.
11. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
12. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 1 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).
14. Check the HO2S S2 in the DATA LIST with the HDS.

Does the voltage stay at 1.25 V or more?

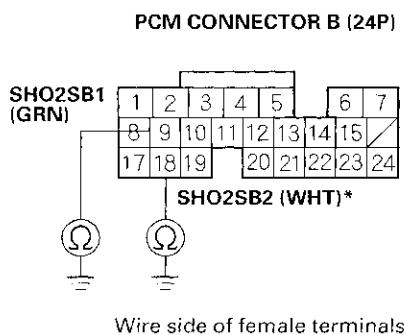
YES—Go to step 15.

NO—Repair open in the wire between the PCM (C12) and the secondary HO2S (Sensor 2), then go to step 21.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector B (24P).



18. Check for continuity between PCM connector terminal B9 (B18)* and body ground.



Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (B9 (B18)*) and the secondary HO2S (Sensor 2), then go to step 21.

19. Turn the ignition switch OFF.
20. Replace the secondary HO2S (Sensor 2) (see page 11-214).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-340).
25. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
26. Test-drive under these conditions:
- Engine coolant temperature above 176 °F (80 °C)
 - Transmission in D position
 - Engine speed at 1,500—3,000 rpm
 - Drive 1 minute or more

27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0138 and/or P0158* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 19 and recheck.

29. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
30. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
31. Test-drive under these conditions:
- Engine coolant temperature above 176 °F (80 °C)
 - Transmission in D position
 - Engine speed at 1,500—3,000 rpm
 - Drive 1 minute or more
32. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0138 and/or P0158* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0139: Rear Secondary HO2S (Bank 1, Sensor 2) Slow Response

DTC P0159: Front Secondary HO2S (Bank 2, Sensor 2) Slow Response

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature above 176 °F (80 °C)
 - Transmission in D position
 - Vehicle speed between 35 mph (56 km/h) and 55 mph (88 km/h)
 - Drive 5 minutes or more
5. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.
6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-214).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-340).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

12. Test-drive under these conditions:

- Engine coolant temperature above 176 °F (80 °C)
- Transmission in D position
- Vehicle speed between 35 mph (56 km/h) and 55 mph (88 km/h)
- Drive 5 minutes or more

13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0139 and/or P0159* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0139 and/or P0159* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11 and recheck.



DTC P0141: Rear Secondary HO2S (Bank 1, Sensor 2) Heater Circuit Malfunction

DTC P0161: Front Secondary HO2S (Bank 2, Sensor 2) Heater Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■

5. Turn the ignition switch OFF.
6. Check these fuses:
 - No. 19 OPTION (40 A) fuse in under-hood fuse/relay box.
 - No. 4 A/F SENSOR (15 A) fuse in under-dash fuse/relay box.
 - No. 23 IGP (7.5 A) fuse in under-dash fuse/relay box.

Are any of the fuses blown?

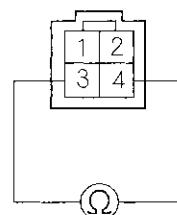
YES—Repair short in the wire between the A/F sensors, the A/F sensor relay, and the fuses, then go to step 22.

NO—Go to step 7.

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.

8. At the secondary HO2S (Sensor 2) side, measure resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

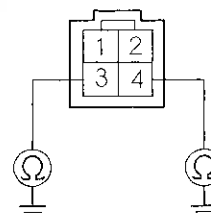
Is there 5.4–6.6 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 21.

9. Check for continuity between body ground and secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4 individually.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 21.

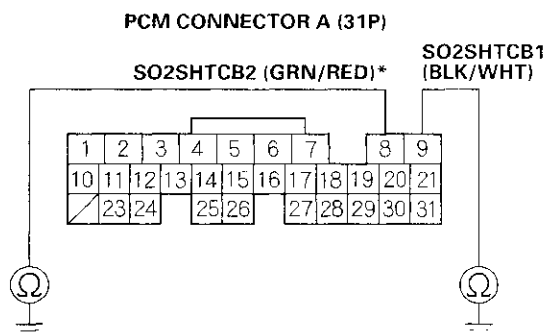
NO—Go to step 10.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (31P).
12. Check for continuity between PCM connector terminal A9 (A8)* and body ground.



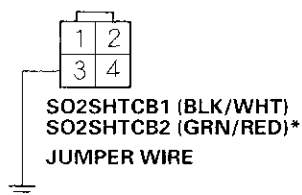
Is there continuity?

YES—Repair short in the wire between the PCM (E9 (E8)*) and the secondary HO2S (Sensor 2), then go to step 22.

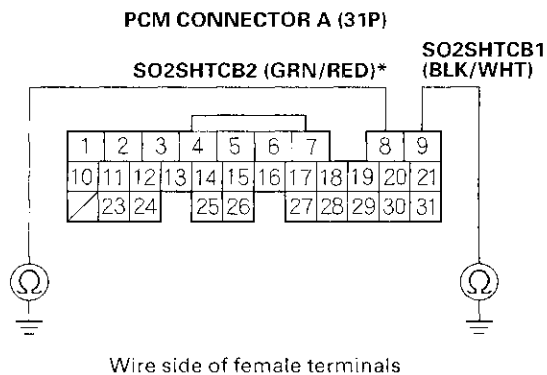
NO—Go to step 13.

13. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



14. Check for continuity between PCM connector terminal A9 (A8)* and body ground.

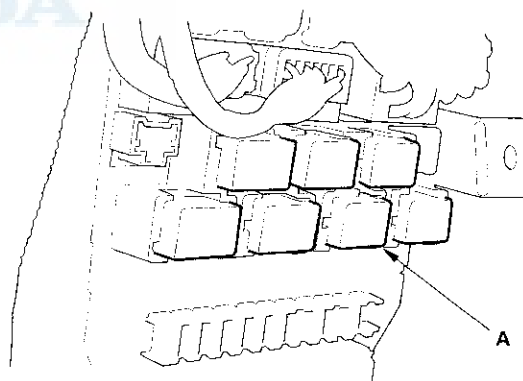


Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (A9 (A8)*) and the secondary HO2S (Sensor 2), then go to step 22.

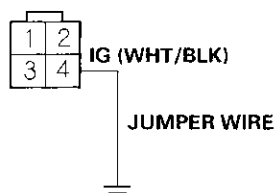
15. Remove the left kick panel (see page 20-45), then remove the A/F sensor relay (A) from the under-dash fuse/relay box.





16. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 4 to body ground with a jumper wire.

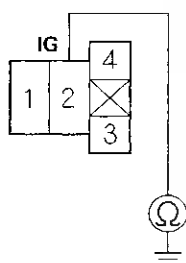
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

17. Check for continuity between A/F sensor relay 4P connector terminal No. 2 and body ground.

A/F SENSOR RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

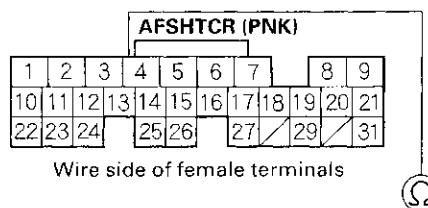
YES—Go to step 18.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the A/F sensor relay, then go to step 22.

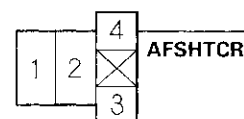
18. Disconnect PCM connector E (31P).

19. Check for continuity between PCM connector terminal E4 and A/F sensor relay 4P connector terminal No. 4.

PCM CONNECTOR E (31P)



A/F SENSOR RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the PCM (E4) and the A/F sensor relay, then go to step 22.

20. Test the A/F sensor relay (see page 22-72).

Is the A/F sensor relay OK?

YES—Go to step 28.

NO—Replace the A/F sensor relay, then go to step 22.

21. Replace the secondary HO2S (Sensor 2) (see page 11-214).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-340).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0141 and/or P0161^{*} is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 27.

27. Monitor the OBD STATUS for DTC P0141 and/or P0161^{*} in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 25 and recheck.

28. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0141 and/or P0161^{*} is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0171: Rear Bank (Bank 1) Fuel System Too Lean

DTC P0172: Rear Bank (Bank 1) Fuel System Too Rich

DTC P0174: Front Bank (Bank 2) Fuel System Too Lean

DTC P0175: Front Bank (Bank 2) Fuel System Too Rich

NOTE: If some of the DTCs listed below are stored at the same time as DTC P0171, P0172, P0174, and/or P0175, troubleshoot those DTCs first, then recheck for P0171, P0172, P0174, and/or P0175.

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

P0133, P0153, P1172, P1173, P2195, P2197, P2237, P2238, P2240, P2241, P2243, P2245, P2247, P2249, P2251, P2252, P2254, P2255, P2627, P2628, P2630, P2631, P2A00, P2A03: Air fuel ratio (A/F) sensor (Sensor 1)

P0134, P0135, P0154, P0155: Air fuel ratio (A/F) sensor (Sensor 1) heater

P0137, P0138, P0139, P0157, P0158, P0159, P2270, P2271, P2272, P2273: Secondary HO₂S (Sensor 2)

P0141, P0161: Secondary HO₂S (Sensor 2) heater

P0522, P0523, P2646, P2647, P2648, P2649: Variable Cylinder Management (VCM) system

P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system

P2279: Intake air leakage

1. Check the fuel pressure (see page 11-356).

Is the fuel pressure OK?

YES—Check the valve clearances and adjust if necessary (DTC P0172 and P0175 only). If the valve clearances are OK, replace the injectors (see page 11-211), then go to step 2.

NO—Check these items:

- If the pressure is too high, replace the fuel pressure regulator (see page 11-365), then go to step 2. If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are all OK, replace the fuel pressure regulator (see page 11-365), then go to step 2.

2. Turn the ignition switch ON (II).

3. Reset the PCM with the HDS.

4. Do the PCM idle learn procedure (see page 11-340).

5. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

6. Test-drive under these conditions:

- Engine coolant temperature above 158 °F (70 °C)
- Transmission in D position
- Drive at a steady speed between 25—55 mph (40—88 km/h) for 5 minutes, then drive at a steady speed between 15—75 mph (24—120 km/h) for 15 minutes.

NOTE: DTC P0171, P0172, P0174, and/or P0175 may take up to 40 minutes of test driving to set. Use the HDS to monitor the LT FUEL TRIM for 15 minutes of driving. If the value stays within 10 % of 1.0 (0.0 %), there is no problem at this time.

7. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0171, P0172, P0174, or P0175 is indicated, go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0300: Random Misfire and Any Combination of the Following:

DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070300
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

NOTE:

- If the misfire is frequent enough to trigger detection of increased emissions during two consecutive driving cycles, the MIL will come on, and DTC P0300 (and some combination of P0301 through P0306) will be stored.
- If the misfire is frequent enough to damage the catalyst, the MIL will blink whenever the misfire occurs, and DTC P0300 (and some combination of P0301 through P0306) will be stored. When the misfire stops, the MIL will remain on.
- Troubleshoot the following DTCs first, if any of them were stored along with the random misfire DTC(s):

P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor

P0171, P0172: Fuel system

P0335, P0339, P0385, P0389: Crankshaft position (CKP) sensor A/B

P0506, P0507: Idle control system

P0340, P0344: Camshaft position (CMP) sensor

P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system

1. Note this freeze data:

- Engine speed
- Vehicle speed
- Throttle position
- CLV

2. Clear the DTC with the HDS.

3. Start the engine without load (in Park or neutral), then let it idle.

4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, then recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of the recorded freeze data.



7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Intermittent failure, system is OK at this time. ■

9. Turn the ignition switch OFF.

10. Check the fuel quality.

Is the quality good?

YES—Go to step 11.

NO—Drain the tank (see page 11-357), and fill it with a known-good fuel, then go to step 15.

11. Inspect the spark plugs (see page 4-25). If the spark plugs are fouled or worn, replace them.

12. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 14.

NO—Go to step 15.

14. Check the fuel pressure (see page 11-356).

Is the fuel pressure OK?

YES—Go to step 15.

NO—

- If the pressure is too high, replace the fuel pressure regulator (see page 11-365), then go to step 15.
- If the pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-365), then go to step 15.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Clear the CKP pattern with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).
19. Do the CKP pattern learn procedure (see page 11-4).
20. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0301, P0302, P0303, P0304, P0305, or P0306 are indicated, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to troubleshooting DTC P0301, P0302, P0303, P0304, P0305, or P0306 (see page 11-113). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20 and recheck.



DTC P0301: No. 1 Cylinder Misfire Detected

DTC P0302: No. 2 Cylinder Misfire Detected

DTC P0303: No. 3 Cylinder Misfire Detected

DTC P0304: No. 4 Cylinder Misfire Detected

DTC P0305: No. 5 Cylinder Misfire Detected

DTC P0306: No. 6 Cylinder Misfire Detected

1. Note this freeze data:

- Engine speed
- Vehicle speed
- Throttle position
- CLV

2. Do the DTC CLEAR in the CLEAR MENU with the HDS.

3. Start the engine without load (in Park or neutral), then let it idle.

4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 5. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, wait for several minutes, and recheck.

5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Go to step 6.

6. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 9.

NO—If the screen indicates PASSED, go to step 8. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6 and recheck.

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 9.

NO—Intermittent failure, system is OK at this time. Check the fuel and ignition system circuit connectors for loose wires or poor connections. ■

9. Turn the ignition switch OFF.

10. Exchange the ignition coil from the problem cylinder with one from another cylinder.

11. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 13.

NO—Intermittent misfire due to poor contact at the ignition coil connector (no misfire at this time). Make sure the coil connections are secure. ■

13. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the ignition coil was moved?

YES—Replace the faulty ignition coil (see page 4-22), then go to step 55.

NO—Go to step 14.

14. Turn the ignition switch OFF.

15. Exchange the spark plug from the problem cylinder with one from another cylinder.

16. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

17. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 18.

NO—Intermittent misfire due to spark plug fouling (no misfire at this time). ■

18. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the spark plug was moved?

YES—Replace the faulty spark plug, then go to step 55.

NO—Go to step 19.

19. Turn the ignition switch OFF.

20. Exchange the injector from the problem cylinder with one from another cylinder.

21. Start the engine, and let it idle 2 minutes.

22. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

23. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE in the DATA LIST for 10 minutes with the HDS.

Does CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, CYL4 MISFIRE, CYL5 MISFIRE, and/or CYL6 MISFIRE show misfire counts?

YES—Go to step 24.

NO—Intermittent misfire due to bad contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector. ■

24. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the injector was exchanged?

YES—Replace the faulty injector (see page 11-211), then go to step 55.

NO—Go to step 25.

25. Turn the ignition switch OFF.

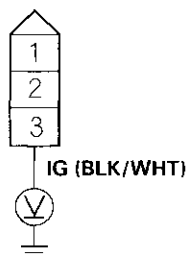
26. Disconnect the ignition coil 3P connector from the problem cylinder.

27. Turn the ignition switch ON (II).



28. Measure voltage between ignition coil 3P connector terminal No. 3 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

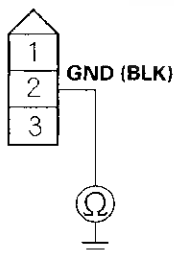
Is there battery voltage?

YES—Go to step 29.

NO—Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 55.

29. Turn the ignition switch OFF.
30. Check for continuity between ignition coil 3P connector terminal No. 2 and body ground.

IGNITION COIL 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the ignition coil and G101, then go to step 55.

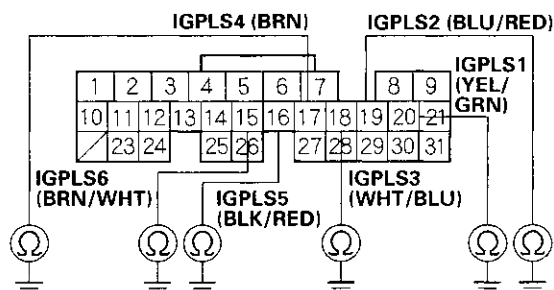
31. Turn the ignition switch OFF.

32. Jump the SCS line with the HDS.

33. Disconnect PCM connector A (31P).

34. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	A20	YEL/GRN
No. 2	P0302	A19	BLU/RED
No. 3	P0303	A18	WHT/BLU
No. 4	P0304	A17	BRN
No. 5	P0305	A16	BLK/RED
No. 6	P0306	A15	BRN/WHT

Is there continuity?

YES—Repair short in the wire between the PCM and the ignition coil, then go to step 55.

NO—Go to step 35.

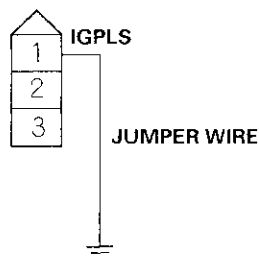
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

35. Connect appropriate ignition coil 3P connector terminal No. 1 to body ground with a jumper wire (see table).

IGNITION COIL 3P CONNECTOR

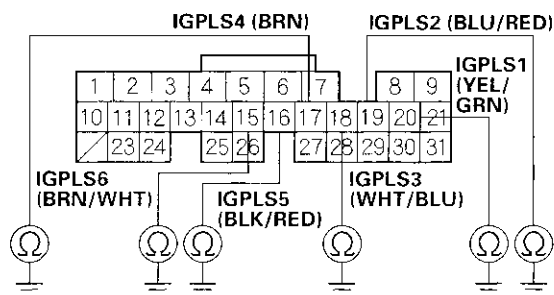


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	YEL/GRN
No. 2	P0302	BLU/RED
No. 3	P0303	WHT/BLU
No. 4	P0304	BRN
No. 5	P0305	BLK/RED
No. 6	P0306	BRN/WHT

36. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PCM CONNECTOR A (31P)



Wire side of female terminals

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	A20	YEL/GRN
No. 2	P0302	A19	BLU/RED
No. 3	P0303	A18	WHT/BLU
No. 4	P0304	A17	BRN
No. 5	P0305	A16	BLK/RED
No. 6	P0306	A15	BRN/WHT

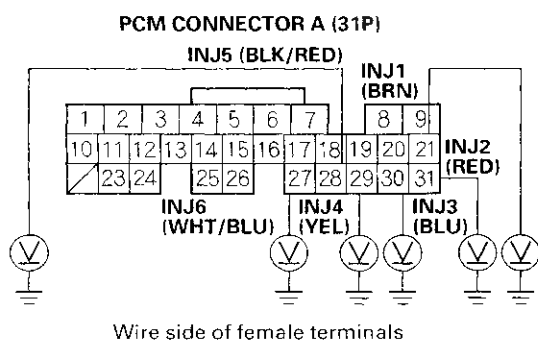
Is there continuity?

YES—Go to step 37.

NO—Repair open in the wire between the PCM and the ignition coil, then go to step 55.



37. Reconnect the ignition coil 3P connector and PCM connector A (31P).
38. Do an engine compression and a cylinder leakdown test.
Did the engine pass both tests?
YES—Go to step 39.
NO—Repair the engine, then go to step 55.
39. Do the VTEC rocker arm test (see page 6-8).
Did the engine pass the test?
YES—Go to step 40.
NO—Repair the VTEC rocker arm, then go to step 55.
40. Turn the ignition switch OFF.
41. Jump the SCS line with the HDS.
42. Disconnect PCM connector A (31P).
43. Turn the ignition switch ON (II).
44. Measure voltage between body ground and the appropriate PCM connector terminal (see table).



PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	A21	BRN
No. 2	P0302	A31	RED
No. 3	P0303	A30	BLU
No. 4	P0304	A29	YEL
No. 5	P0305	A28	BLK/RED
No. 6	P0306	A27	WHT/BLU

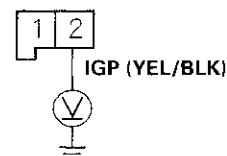
Is there battery voltage?

YES—Go to step 54.

NO—Go to step 45.

45. Turn the ignition switch OFF.
46. Remove the intake manifold (see page 9-3).
47. Disconnect the injector 2P connector from the problem cylinder.
48. Turn the ignition switch ON (II).
49. Measure voltage between injector 2P connector terminal No. 2 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 50.

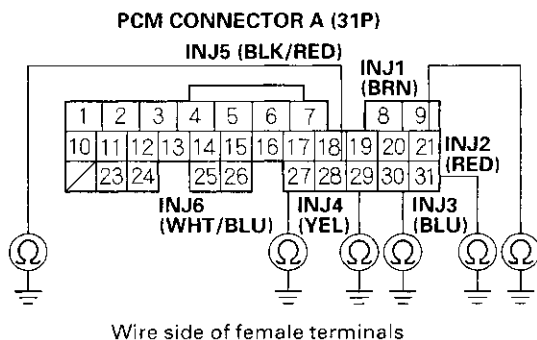
NO—Repair open in the wire between the injector and PGM-FI main relay 1 (FI MAIN), then go to step 55.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

50. Turn the ignition switch OFF.
51. Check for continuity between body ground and the appropriate PCM connector terminal (see table).



PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	A21	BRN
No. 2	P0302	A31	RED
No. 3	P0303	A30	BLU
No. 4	P0304	A29	YEL
No. 5	P0305	A28	BLK/RED
No. 6	P0306	A27	WHT/BLU

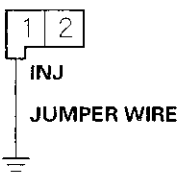
Is there continuity?

YES—Repair short in the wire between the PCM and the injector, then go to step 55.

NO—Go to step 52.

52. Connect appropriate injector 2P connector terminal No. 1 to body ground with a jumper wire (see table).

INJECTOR 2P CONNECTOR

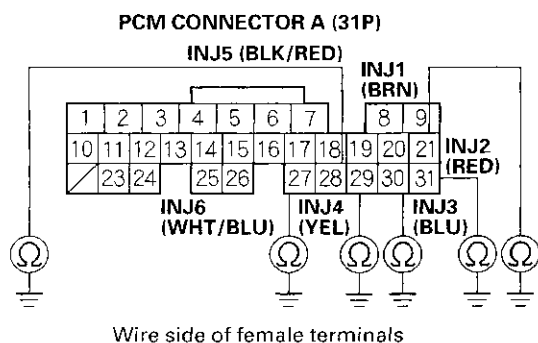


Wire side of female terminals

PROBLEM CYLINDER	DTC	WIRE COLOR
No. 1	P0301	BRN
No. 2	P0302	RED
No. 3	P0303	BLU
No. 4	P0304	YEL
No. 5	P0305	BLK/RED
No. 6	P0306	WHT/BLU



53. Check for continuity between body ground and the appropriate PCM connector terminal (see table).



PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	A21	BRN
No. 2	P0302	A31	RED
No. 3	P0303	A30	BLU
No. 4	P0304	A29	YEL
No. 5	P0305	A28	BLK/RED
No. 6	P0306	A27	WHT/BLU

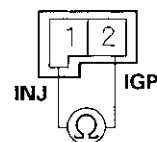
Is there continuity?

YES—Go to step 54.

NO—Repair open in the wire between the PCM and the injector, then go to step 55.

54. Measure resistance between injector 2P connector terminals No. 1 and No. 2.

INJECTOR 2P CONNECTOR



Terminal side of male terminals

Is there 10—13 Ω ?

YES—Go to step 64.

NO—Replace the injector (see page 11-211), then go to step 55.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

55. Reconnect all connectors.
56. Turn the ignition switch ON (II).
57. Reset the PCM with the HDS.
58. Clear the CKP pattern with the HDS.
59. Do the PCM idle learn procedure (see page 11-340).
60. Do the CKP pattern learn procedure (see page 11-4).
61. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
62. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0301, P0302, P0303, P0304, P0305, or P0306 are indicated, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to troubleshooting DTC P0301, P0302, P0303, P0304, P0305, or P0306 (see page 11-110). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 63.

63. Monitor the OBD STATUS for DTC P0301, P0302, P0303, P0304, P0305, or P0306 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 61 and recheck.

64. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
65. Test-drive the vehicle for several minutes in the range of the recorded freeze data.
66. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0301, P0302, P0303, P0304, P0305, or P0306 are indicated, check for poor connections or loose terminals at the injector, the ignition coil, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0325: Knock Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

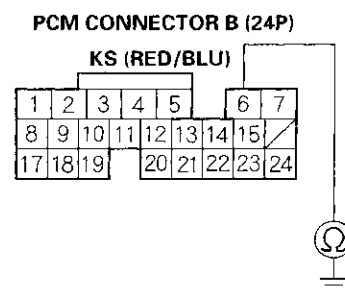
Is DTC P0325 indicated?

YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the knock sensor and the PCM. ■

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor subharness 1P connector.
9. Disconnect PCM connector B (24P).

10. Check for continuity between PCM connector terminal B6 and body ground.



Wire side of female terminals

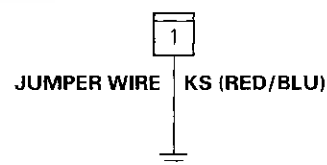
Is there continuity?

YES—Repair short in the wire between the PCM (B6) and the knock sensor, then go to step 17.

NO—Go to step 11.

11. Connect the knock sensor subharness 1P connector terminal to body ground with a jumper wire.

KNOCK SENSOR SUBHARNESS 1P CONNECTOR



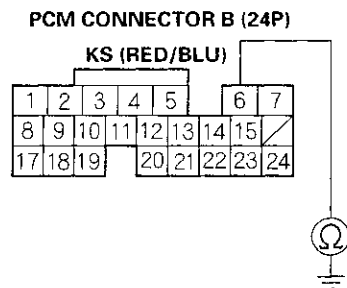
Wire side of female terminals

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal B6 and body ground.



Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the PCM (B6) and the knock sensor, then go to step 17.

13. Remove the intake manifold (see page 9-3).

14. Check the knock sensor subharness 1P connector and the knock sensor for an open or short.

Is the harness OK?

YES—Go to step 15.

NO—Repair the knock sensor subharness, then go to step 17.

15. Replace the knock sensor (see page 11-216).

16. Install the intake manifold (see page 9-5).

17. Reconnect all connectors.

18. Turn the ignition switch ON (II).

19. Reset the PCM with the HDS.

20. Do the PCM idle learn procedure (see page 11-340).

21. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to step 24.

NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1. If the screen indicates NOT COMPLETED, go to step 20 and recheck.

24. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

25. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0325 is indicated, check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0335: CKP Sensor A No Signal

DTC P0385: CKP Sensor B No Signal

NOTE: Information marked with an asterisk (*) applies to CKP sensor B.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

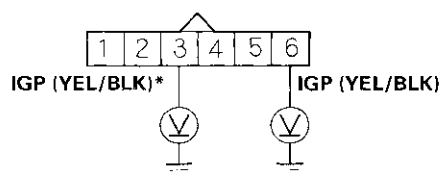
Is DTC P0335 and/or P0385 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect CKP sensor A/B 6P connector (see page 11-216).
7. Turn the ignition switch ON (II).
8. Measure voltage between CKP sensor A/B 6P connector terminal No. 6 (No. 3)* and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

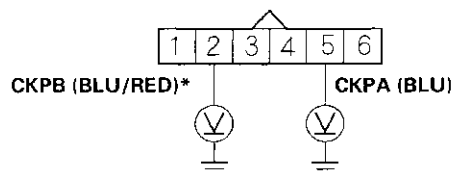
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CKP sensor A/B and PGM-FI main relay 1 (FI MAIN), then go to step 18.

9. Measure voltage between CKP sensor A/B 6P connector terminal No. 5 (No. 2)* and body ground.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

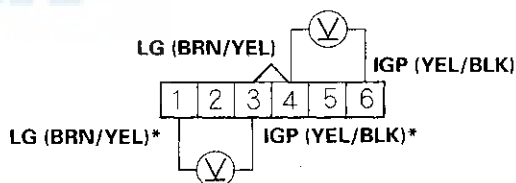
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure voltage between CKP sensor A/B 6P connector terminals No. 4 (No. 1)* and No. 6 (No. 3)*.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

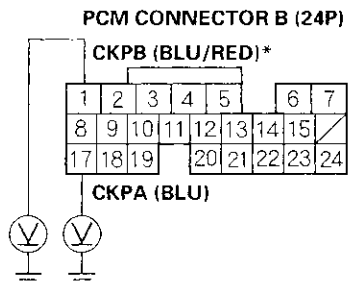
NO—Repair open in the wire between CKP sensor A/B and G101, then go to step 18.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

11. Measure voltage between PCM connector terminal B17 (B1)* and body ground.



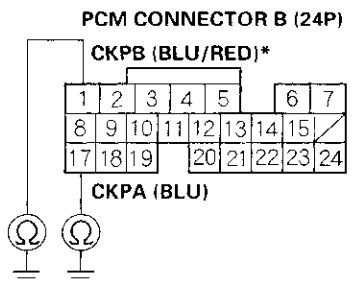
Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (B17 (B1)*) and CKP sensor A/B, then go to step 18.

NO—Go to step 12.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (24P).
15. Check for continuity between PCM connector terminal B17 (B1)* and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B17 (B1)*) and CKP sensor A/B, then go to step 18.

NO—Go to step 25.

16. Turn the ignition switch OFF.
17. Replace CKP sensor A/B (see page 11-216).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Clear the CKP pattern with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).
23. Do the CKP pattern learn procedure (see page 11-4).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0335 and/or P0385* is indicated, check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0335 and/or P0385* is indicated, check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0339: CKP Sensor A Intermittent Interruption

DTC P0389: CKP Sensor B Intermittent Interruption

NOTE: Information marked with an asterisk (*) applies to CKP sensor B.

1. Note this freeze data:

- Engine speed
- Vehicle speed

2. Clear the DTC with the HDS.

3. Start the engine, and let it idle 10 seconds.

4. Check the CKP A or B* NOISE count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

6. Check the CKP A or B* NOISE count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■

7. Check for poor or loose connections at these connectors and terminals:

- CKP sensor A/B
- PCM
- Engine ground
- Body ground

Are the connections OK?

YES—Go to step 8.

NO—Reconnect the connectors or terminals, then go to step 11.

8. Check for damage to the CKP sensor A/B pulse plate on the timing belt drive pulley (see page 6-31).

Is there damage?

YES—Replace the CKP sensor A/B pulse plate/timing belt drive pulley (see page 6-31), then go to step 11.

NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Replace CKP sensor A/B (see page 11-216).

11. Turn the ignition switch ON (II).

12. Reset the PCM with the HDS.

13. Clear the CKP pattern with the HDS.

14. Do the PCM idle learn procedure (see page 11-340).

15. Do the CKP pattern learn procedure (see page 11-4).

16. Start the engine, and let it idle 10 seconds.

17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0339 and/or P0389* is indicated, check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1. If any other Temporary DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0340: CMP Sensor No Signal

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

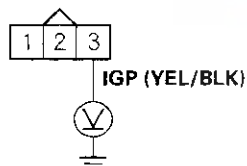
Is DTC P0340 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

5. Turn the ignition switch OFF.
6. Disconnect the CMP sensor 3P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between CMP sensor 3P connector terminal No. 3 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

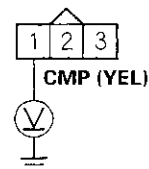
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CMP sensor and PGM-FI main relay 1 (FI MAIN), then go to step 18.

9. Measure voltage between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

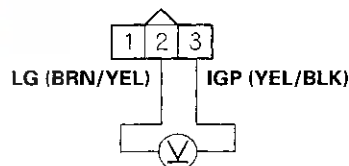
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

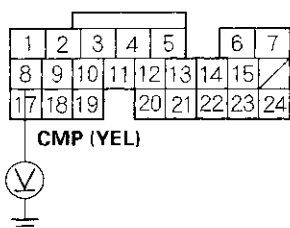
YES—Go to step 16.

NO—Repair open in the wire between the CMP sensor and G101, then go to step 18.



11. Measure voltage between PCM connector terminal B8 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

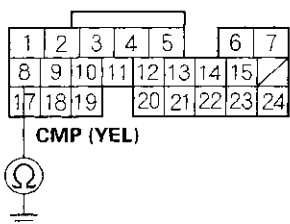
Is there about 5 V?

YES—Repair open in the wire between the PCM (B8) and the CMP sensor, then go to step 18.

NO—Go to step 12.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (24P).
15. Check for continuity between PCM connector terminal B8 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B8) and the CMP sensor, then go to step 18.

NO—Go to step 26.

16. Turn the ignition switch OFF.
17. Replace the CMP sensor (see page 11-217).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Clear the CKP pattern with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).
23. Do the CKP pattern learn procedure (see page 11-4).
24. Start the engine.
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0340 is indicated, check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

26. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0340 is indicated, check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0344: CMP Sensor Intermittent Interruption

1. Note this freeze data:

- Engine speed
- Vehicle speed

2. Clear the DTC with the HDS.

3. Start the engine, and let it idle 10 seconds.

4. Check the CMP NOISE 2 count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

6. Check the CMP NOISE 2 count in the DATA LIST with the HDS.

Are 0 counts indicated?

YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■

7. Check for poor or loose connections at these connectors and terminals:

- CMP sensor
- PCM
- Engine ground
- Body ground

Are the connections OK?

YES—Go to step 8.

NO—Reconnect or repair the connectors or terminals, then go to step 11.

8. Check for damage to the CMP sensor pulse projection on the front camshaft pulley (see page 11-217).

Is there damage?

YES—Replace the front camshaft pulley (see page 6-57), then go to step 11.

NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Replace the CMP sensor (see page 11-217).

11. Turn the ignition switch ON (II).

12. Reset the PCM with the HDS.

13. Clear the CKP pattern with the HDS.

14. Do the PCM idle learn procedure (see page 11-340).

15. Do the CKP pattern learn procedure (see page 11-4).

16. Start the engine, and let it idle 10 seconds.

17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0344 is indicated, check for poor connections or loose terminals at the CKP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P0557: Brake Booster Pressure Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the BBP SENSOR in the DATA LIST with the HDS.

Is there about 0.23 V or less?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the brake booster pressure sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the brake booster pressure sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the BBP SENSOR in the DATA LIST with the HDS.

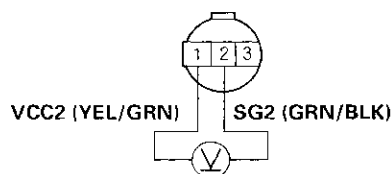
Is there about 0.23 V or less?

YES—Go to step 9.

NO—Go to step 7.

7. Measure voltage between brake booster pressure sensor 3P connector terminals No. 1 and No. 2.

BRAKE BOOSTER PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

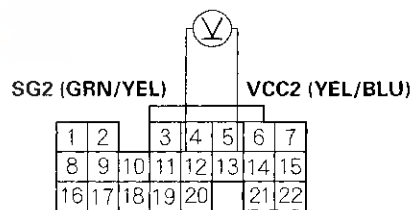
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 8.

8. Measure voltage between PCM connector terminals C12 and C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (C13) and the brake booster pressure sensor, then go to step 15.

NO—Go to step 20.

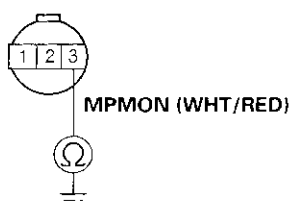
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector D (17P).
12. Check for continuity between brake booster pressure sensor 3P connector terminal No. 3 and body ground.

BRAKE BOOSTER PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D5) and the brake booster pressure sensor, then go to step 15.

NO—Go to step 20.

13. Turn the ignition switch OFF.
14. Replace the brake booster pressure sensor (see page 11-220).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0557 is indicated, check for poor connections or loose terminals at the brake booster pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0557 is indicated, check for poor connections or loose terminals at the brake booster pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0558: Brake Booster Pressure Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the BBP SENSOR in the DATA LIST with the HDS.

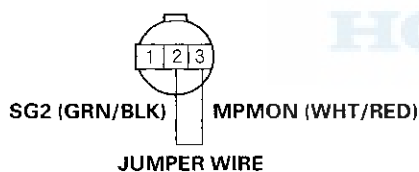
Is there about 4.9 V or more?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the brake booster pressure sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the brake booster pressure sensor 3P connector.
5. Connect brake booster pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

BRAKE BOOSTER PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check the BBP SENSOR in the DATA LIST with the HDS.

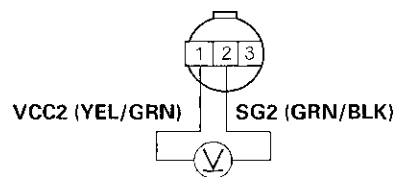
Is there about 4.9 V or more?

YES—Go to step 8.

NO—Go to step 19.

8. Remove the jumper wire from brake booster pressure sensor 3P connector.
9. Measure voltage between brake booster pressure sensor 3P connector terminals No. 1 and No. 2.

BRAKE BOOSTER PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

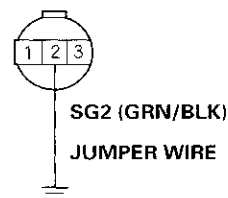
Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (22P).
13. Connect brake booster pressure sensor 3P connector terminal No. 2 to body ground with a jumper wire.

BRAKE BOOSTER PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

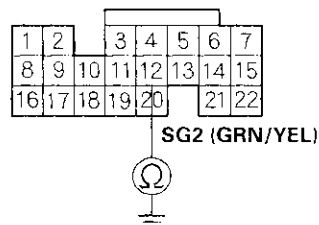
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

14. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (C12) and the brake booster pressure sensor, then go to step 21.

15. Turn the ignition switch OFF.

16. Connect PCM connector terminals C12 and D5 with a jumper wire.

PCM CONNECTORS

C (22P)



SG2 (GRN/YEL)

JUMPER WIRE

MPMON (WHT)

D (17P)



Wire side of female terminals

17. Turn the ignition switch ON (II).

18. Check the BBP SENSOR in the DATA LIST with the HDS.

Is there about 4.9 V or more?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (D5) and the brake booster pressure sensor, then go to step 21.



19. Turn the ignition switch OFF.
20. Replace the brake booster pressure sensor (see page 11-220).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-340).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0558 is indicated, check for poor connections or loose terminals at the brake booster pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

26. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0558 is indicated, check for poor connections or loose terminals at the brake booster pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0563: PCM Power Source Circuit Unexpected Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

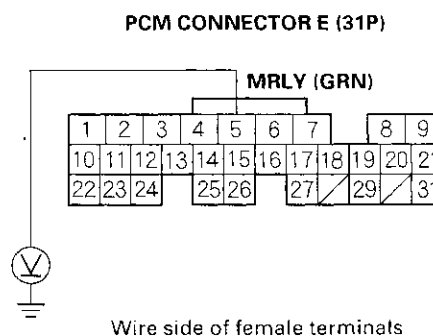
Is DTC P0563 indicated?

YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the No. 8 FI-ECU (PCM) (15 A) fuse in the under-hood fuse/relay box and at the PCM. ■

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector E (31P).

10. Measure voltage between PCM connector terminal E5 and body ground.

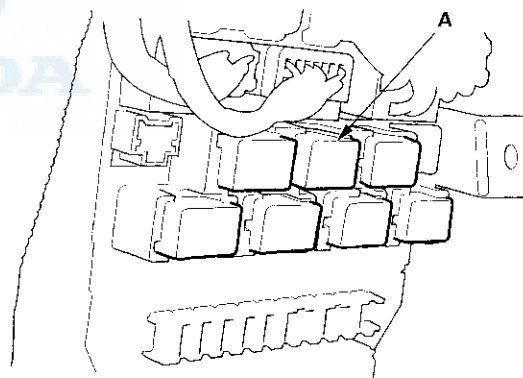


Is there battery voltage?

YES—Go to step 13.

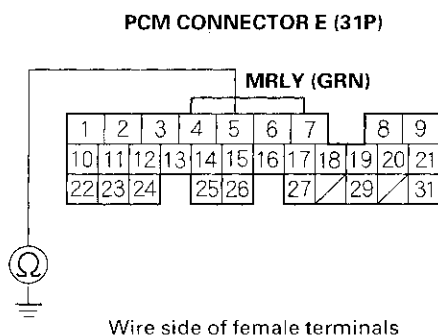
NO—Go to step 11.

11. Remove the left kick panel (see page 20-45). Then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.





12. Check for continuity between PCM connector terminal E5 and body ground.

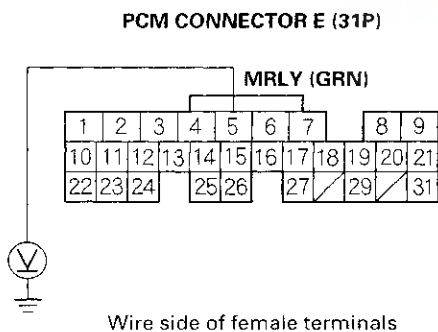


Is there continuity?

YES—Repair short in the wire between the PCM (E5) and PGM-FI main relay 1 (FI MAIN), then go to step 20.

NO—Go to step 19.

13. Reconnect PCM connector E (31P).
14. Measure voltage between PCM connector terminal E5 and body ground.



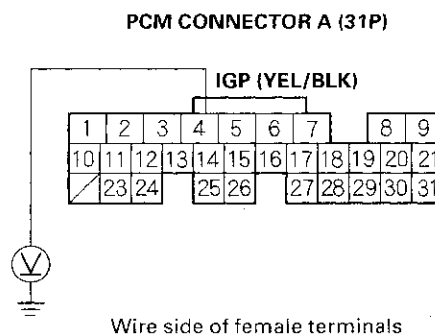
Is there battery voltage?

YES—Go to step 15.

NO—Go to step 27.

15. Disconnect PCM connector A (31P).

16. Measure voltage between PCM connector terminal A4 and body ground.

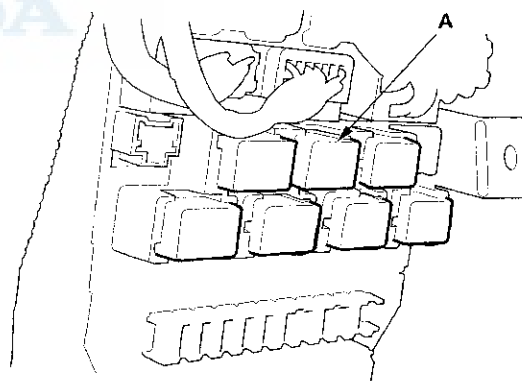


Is there battery voltage?

YES—Go to step 17.

NO—Go to step 27.

17. Remove the left kick panel (see page 20-45). Then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.

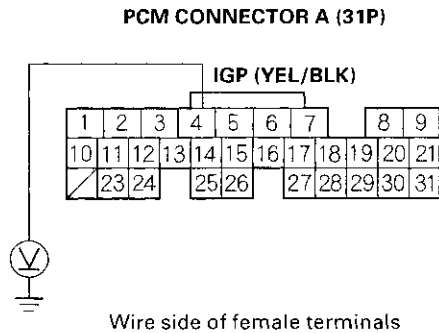


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PGM-FI System

DTC Troubleshooting (cont'd)

18. Measure voltage between PCM connector terminal A4 and body ground.

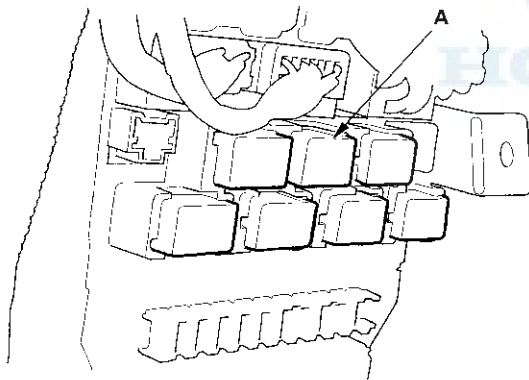


Is there battery voltage?

YES—Repair short to power in the wire between the PCM (A4) and PGM-FI main relay 1 (FI MAIN), then go to step 20.

NO—Go to step 19.

19. Replace PGM-FI main relay 1 (FI MAIN) (A).



20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.

23. Turn the ignition switch OFF.

24. Wait 10 seconds.

25. Do the PCM idle learn procedure (see page 11-340).

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0563 is indicated, check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

27. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0563 is indicated, check for poor connections or loose terminals at PGM-FI main relay 1 (FI MAIN) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0602: PCM (PGM-FI system) Programming Error

NOTE:

- This DTC is indicated when update is not completed.
- Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

1. Do the PCM update procedure (see page 11-6).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0602 indicated?

YES—Replace the original PCM (see page 11-219). ■

NO—The update is complete. ■

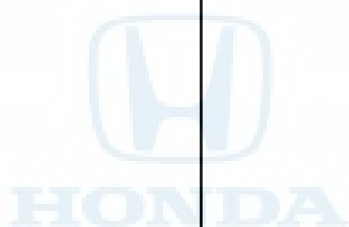
DTC P0603: PCM Internal Control Module Keep Alive Memory (KAM) Error

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Intermittent failure, system is OK at this time. ■



PGM-FI System

DTC Troubleshooting (cont'd)

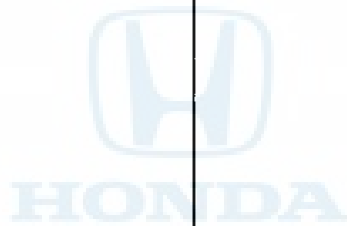
DTC P060A: PCM (A/T system) Internal Control Module Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P060A indicated?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Intermittent failure, system is OK at this time. ■





DTC P0630: VIN Not Programmed or Mismatch

NOTE: This DTC is stored only when the PCM does not have the VIN information of the vehicle. Use the HDS to fill the missing VIN information.

1. Turn the ignition switch ON (II).
2. Check the VIN with the HDS.

Does the HDS show the vehicle's VIN?

YES—Go to step 5.

NO—Go to step 3.

3. Input the VIN to the PCM with the HDS.

Does the screen show COMPLETE?

YES—Go to step 5.

NO—Go to step 4.

4. Check for DTCs with the HDS.

Is DTC P0603 indicated?

YES—Go to the DTC P0603 troubleshooting. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

5. Clear the DTC with the HDS.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait 5 seconds.

8. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0630 is indicated, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

NO—Intermittent failure, system is OK at this time. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P0685: PCM Power Control Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Intermittent failure, system is OK at this time. ■

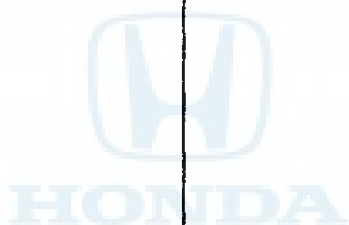
DTC P1109: BARO Sensor Circuit Out of Range High

1. Reset the PCM with the HDS.
2. Start the engine.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1109 indicated?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Intermittent failure, system is OK at this time. ■





DTC P1116: ECT Sensor 1 Performance Problem

NOTE: If DTC P0096 is stored at the same time as DTC P1116, troubleshoot DTC P0096 first, then recheck for DTC P1116.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).
3. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES—Go to step 15.

NO—Go to step 4.

4. Start the engine, and let it idle 10 minutes.
5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 129 °F (54 °C) or less, or 1.54 V or more indicated?

YES—Replace ECT sensor 1 (see page 11-215), then go to step 27.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Drain the coolant (see page 10-6).
8. Remove ECT sensor 1 (see page 11-215).
9. Allow ECT sensor 1 to cool to 77 °F (25 °C).
10. Note the outside temperature.
11. Connect ECT sensor 1 to its 2P connector, but do not install it into the engine.

12. Turn the ignition switch ON (II).

13. Note the value of ECT SENSOR 1 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 1 and the outside temperature.

Does the value of ECT SENSOR 1 differ 5.4 °F (3 °C) or more?

YES—Replace ECT sensor 1 (see page 11-215), then go to step 27.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

15. Start the engine, and let it idle 10 minutes.
16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 118 °F (48 °C) or less, or 1.75 V or more indicated?

YES—Replace ECT sensor 1 (see page 11-215), then go to step 27.

NO—Go to step 17.

17. Let the engine idle 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 131 °F (55 °C) or less, or 1.50 V or more indicated?

YES—Replace ECT sensor 2 (see page 11-218), then go to step 27.

NO—Go to step 19.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Turn the ignition switch OFF.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-215), and ECT sensor 2 (see page 11-218).
22. Allow the sensors to cool to 77 °F (25 °C).
23. Note the outside temperature.
24. Connect ECT sensor 1 to its 2P connector and ECT sensor 2 to its 2P connector, but do not install them into the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the outside temperature, and the value of ECT SENSOR 2 and the outside temperature individually.

Does either sensor differ above 5.4 °F (3 °C) from the outside temperature?

YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the outside temperature, then go to step 27.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-340).
30. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1116 is indicated, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P1128: MAP Sensor Signal Lower Than Expected

1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

Is there less than 54.1 kPa (16.0 in.Hg, 406 mmHg) or 1.61 V held for more than 5 seconds?

YES—Go to step 6.

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:
 - Engine coolant temperature above 158 °F (70 °C)
 - Engine speed between 1,400 and 6,500 rpm
 - Transmission in D position
 - Vehicle speed accelerated from 16 mph (25 km/h) to 31 mph (50 km/h) under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates **PASSED**, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. If the screen indicates **NOT COMPLETED**, go to step 4 and recheck.

7. Turn the ignition switch OFF.
8. Replace the MAP sensor (see page 11-218).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see page 11-340).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

13. Test-drive under these conditions:

- Engine coolant temperature above 158 °F (70 °C)
- Engine speed between 1,400 and 6,500 rpm
- Transmission in D position
- Vehicle speed accelerated from 16 mph (25 km/h) to 31 mph (50 km/h) under half throttle

14. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1128 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates **FAILED**, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If the screen indicates **NOT COMPLETED**, go to step 13 and recheck.

DTC Troubleshooting (cont'd)

DTC P1129: MAP Sensor Signal Higher than Expected

1. Check for vacuum leaks in these parts:

- PCV valve
- PCV hose
- EVAP canister purge valve
- Throttle body
- Intake manifold
- Brake booster hose

Are the parts OK?

YES—Go to step 2.

NO—Repair or replace parts with vacuum leaks, then go to step 9.

2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

3. Check the MAP SENSOR in the DATA LIST with the HDS.

Is there more than 36.9 kPa (11.0 in.Hg, 277 mmHg) or 1.14 V held for more than 5 seconds?

YES—Go to step 7.

NO—Go to step 4.

4. Clear the DTC with the HDS.

5. Test-drive under these conditions:

- Engine coolant temperature above 158 °F (70 °C)
- Engine speed between 1,400 and 6,500 rpm
- Transmission in D position
- Vehicle decelerated from more than 50 mph (80 km/h) with the throttle fully closed for at least 5 seconds

6. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch OFF.

8. Replace the MAP sensor (see page 11-218).

9. Turn the ignition switch ON (II).

10. Reset the PCM with the HDS.

11. Do the PCM idle learn procedure (see page 11-340).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

13. Test-drive under these conditions:

- Engine coolant temperature above 158 °F (70 °C)
- Engine speed between 1,400 and 6,500 rpm
- Transmission in D position
- Vehicle decelerated from more than 50 mph (80 km/h) with the throttle fully closed for at least 5 seconds

14. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1129 is indicated, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 15.

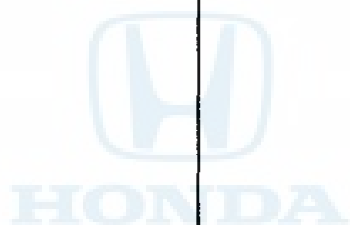


15. Monitor the OBD STATUS for DTC P1129 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12 and recheck.



DTC Troubleshooting (cont'd)

DTC P1172: Rear A/F Sensor (Bank 1, Sensor 1) Out of Range High

DTC P1174: Front A/F Sensor (Bank 2, Sensor 1) Out of Range High

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for P1172 and/or P1174* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the A/F sensor (Sensor 1) (see page 11-213).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-340).
10. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

11. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1172 and/or P1174* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P1172 and/or P1174* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10 and recheck.



DTC P1297: ELD Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

Is 7.2 A or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Check the ELD in the DATA LIST with the HDS.

Is 7.2 A or more indicated?

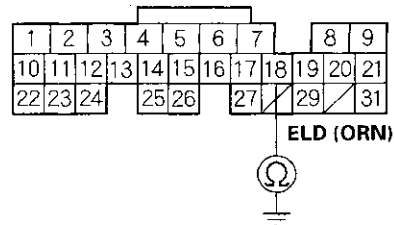
YES—Go to step 7.

NO—Go to step 11.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector E (31P).

10. Check for continuity between PCM connector terminal E18 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (E18) and the ELD, then go to step 13.

NO—Go to step 20.

11. Turn the ignition switch OFF.
12. Replace the under-hood fuse/relay box (see page 22-68).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Start the engine.
18. Turn on the headlights.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1297 is indicated, check for poor connections or loose terminals at the ELD and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

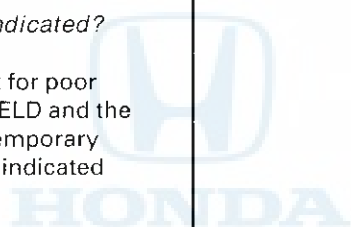
NO—Troubleshooting is complete. ■

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
21. Start the engine.
22. Turn on the headlights.
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1297 is indicated, check for poor connections or loose terminals at the ELD and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P1298: ELD Circuit High Voltage

1. Start the engine, and let it idle.
2. Check the ELD in the DATA LIST with the HDS.

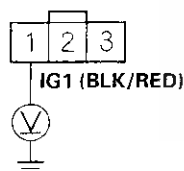
Is 0.2 A or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the ELD and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

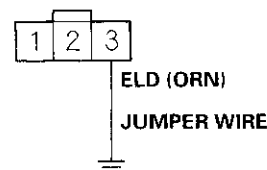
YES—Go to step 7.

NO—Repair open in the wire between the No. 18 ACG (15 A) fuse and the ELD, then go to step 14.

7. Turn the ignition switch OFF.

8. Connect ELD 3P connector terminal No. 3 to body ground with a jumper wire.

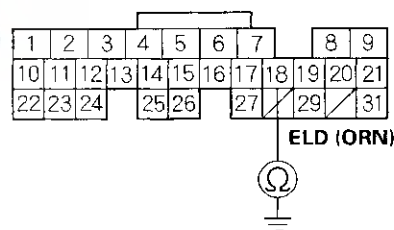
ELD 3P CONNECTOR



Wire side of female terminals

9. Jump the SCS line with the HDS.
10. Disconnect PCM connector E (31P).
11. Check for continuity between PCM connector terminal E18 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the PCM (E18) and the ELD, then go to step 14.

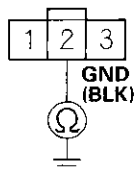
(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

12. Check for continuity between ELD 3P connector terminal No. 2 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ELD and G302, then go to step 14.

13. Replace the under-hood fuse/relay box (see page 22-68).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to step 19.

NO—Troubleshooting is complete. ■

19. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1298 is indicated, check for poor connections or loose terminals at the ELD and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P16C0: PCM (A/T system) Programming Error

NOTE:

- This DTC is indicated when A/T system program update is not completed.
- When DTC P16C0 is indicated, IMA system DTC U0100 is indicated simultaneously. In such a case, clear both DTC with the HDS after the troubleshooting.
- Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

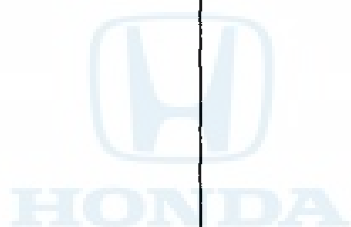
1. Do the PCM (A/T system) update procedure (see page 14-7).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C0 indicated?

YES—Replace the original PCM (see page 11-219).



NO—The update is complete. ■



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2183: ECT Sensor 2 Circuit Range/Performance Problem

NOTE: If DTC P0111 is stored at the same time as DTC P2183, troubleshoot DTC P0111 first, then recheck for DTC P2183.

1. Check for poor connections or loose terminals at ECT sensor 1 and ECT sensor 2.

Are the connections and terminals OK?

YES—Go to step 2.

NO—Repair the connectors or terminals, then go to step 27.

2. Turn the ignition switch ON (II).
3. Check for Temporary DTC s or DTCs with the HDS.

Are DTC P1116 and P2183 indicated at the same time?

YES—Go to step 15.

NO—Go to step 4.

4. Start the engine, and let it idle 10 minutes.
5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 131 °F (55 °C) or less, or 1.50 V or more indicated?

YES—Replace ECT sensor 2 (see page 11-218), then go to step 27.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Drain the coolant (see page 10-6).
8. Remove ECT sensor 2 (see page 11-218).
9. Allow ECT sensor 2 to cool to 77 °F (25 °C).
10. Note the outside temperature.

11. Connect ECT sensor 2 to its 2P connector, but do not install it onto the engine.

12. Turn the ignition switch ON (II).

13. Note the value of ECT SENSOR 2 quickly in the DATA LIST with the HDS.

14. Compare the value of ECT SENSOR 2 and the outside temperature.

Does ECT SENSOR 2 differ 5.4 °F (3 °C) or more?

YES—Replace ECT sensor 2 (see page 11-218), then go to step 27.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

15. Start the engine, and let it idle 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

Is about 118 °F (48 °C) or less, or 1.75 V or more indicated?

YES—Replace ECT sensor 1 (see page 11-215), then go to step 27.

NO—Go to step 17.

17. Let the engine idle 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 131 °F (55 °C) or less, or 1.50 V or more indicated?

YES—Replace ECT sensor 2 (see page 11-218), then go to step 27.

NO—Go to step 19.



19. Turn the ignition switch OFF.
20. Drain the coolant (see page 10-6).
21. Remove ECT sensor 1 (see page 11-215) and ECT sensor 2 (see page 11-218).
22. Allow both sensors to cool to 77 °F (25 °C).
23. Note the outside temperature.
24. Connect ECT sensor 1 to its 2P connector and ECT sensor 2 to its 2P connector, but do not install them onto the engine.
25. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.
26. Compare the value of ECT SENSOR 1 and the outside temperature, and the value of ECT SENSOR 2 and the outside temperature individually.

Does either sensor differ more than 5.4 °F (3 °C) from the outside temperature?

YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the outside temperature, then go to step 27.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. ■

27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-340).
30. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs Indicated?

YES—If DTC P2183 is indicated, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2184: ECT Sensor 2 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■

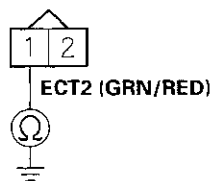
3. Turn the ignition switch OFF.
4. Disconnect ECT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

Is about 356 °F (180 °C) or higher, or 0.08 V or less indicated?

YES—Go to step 7.

NO—Go to step 11.
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (24P).
10. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between ECT sensor 2 and the PCM (B24), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 2 (see page 11-218).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2184 is indicated, check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

18. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2184 is indicated, check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P2185: ECT Sensor 2 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

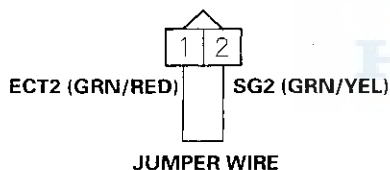
Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect ECT sensor 2 2P connector.
5. Connect ECT sensor 2 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

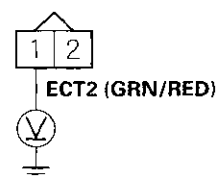
Is about -40°F (-40°C) or less, or 4.90 V or more indicated?

YES—Go to step 8.

NO—Go to step 18.

8. Turn the ignition switch OFF.
9. Remove the jumper wire from ECT sensor 2 2P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

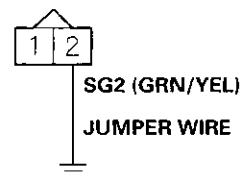
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 17.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (22P).
15. Connect ECT sensor 2 2P connector terminal No. 2 to body ground with a jumper wire.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

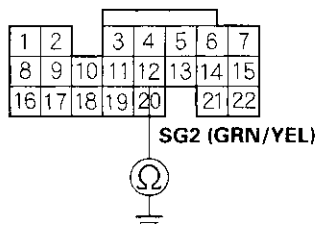
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PGM-FI System

DTC Troubleshooting (cont'd)

16. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

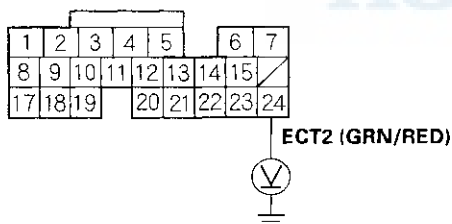
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (C12) and ECT sensor 2, then go to step 20.

17. Measure voltage between PCM connector terminal B24 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (B24) and ECT sensor 2, then go to step 20.

NO—Go to step 25.

18. Turn the ignition switch OFF.
19. Replace ECT sensor 2 (see page 11-218).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-340).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2185 is indicated, check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2185 is indicated, check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P2195: Rear A/F Sensor (Bank 1, Sensor 1) Signal Stuck Lean

DTC P2197: Front A/F Sensor (Bank 2, Sensor 1) Signal Stuck Lean

NOTE:

- Information marked with an asterisk (*) applies to the front bank (Bank 2).
- If the vehicle was out of fuel and the engine stalled before this DTC was stored, refuel and clear the DTC with the HDS.
- If DTC P2101, P2108, P2118, P2135, P2138, P2176, U0107 or a combination of P2122 and P2127, P2122 and P2138, or P2127 and P2138 is stored at the same time, troubleshoot them first then recheck for DTC P2195 and/or P2197 *.

1. Inspect the condition of the A/F sensor (Sensor 1).

Is it loose in the exhaust pipe?

YES—Go to step 2.

NO—Go to step 4.

2. Turn the ignition switch OFF.
3. Reinstall the A/F sensor (Sensor 1) (see page 11-213).
4. Turn the ignition switch ON (II).
5. Reset the PCM with the HDS.
6. Do the PCM idle learn procedure (see page 11-340).
7. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2195 and/or P2197 * is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 8. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Intermittent failure, system is OK at this time. Check poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

8. Monitor the OBD STATUS for DTC P2195 and/or P2197 * in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 2. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2227: BARO Sensor Range/Performance Problem

NOTE: If DTC P0107, P0108, P1128, and/or P1129 are stored at the same time as DTC P2227, troubleshoot those DTCs first, then recheck for DTC P2227.

1. Turn the ignition switch ON (II), and wait 2 seconds.
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 101 kPa (29.9 in.Hg, 760 mmHg), or about 2.9 V at sea level indicated?

YES—Go to step 3.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions, then connect the HDS:
 - Engine coolant temperature above 158 °F (70 °C)
 - Transmission in D position
 - Throttle position between 14 degrees and 45 degrees for 2 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-340).
10. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2227 is indicated, check for poor connections or loose terminals at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P2228: BARO Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 53 kPa (15.6 in.Hg, 397 mmHg), or 1.58 V, or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. ■

3. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
4. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2228 is indicated, check for poor connections or loose terminals at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

DTC P2229: BARO Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

Is about 160 kPa (47.2 in.Hg, 1,200 mmHg), or 4.5 V, or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. ■

3. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
4. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2229 is indicated, check for poor connections or loose terminals at the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2237: Rear A/F Sensor (Bank 1, Sensor 1) IP Line High Voltage

DTC P2240: Front A/F Sensor (Bank 2, Sensor 1) IP Line High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240 indicated?*

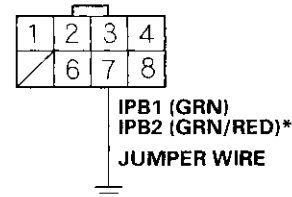
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 7 to body ground with a jumper wire.

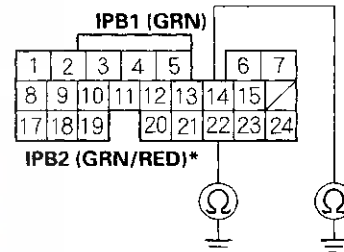
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B14 (B22)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

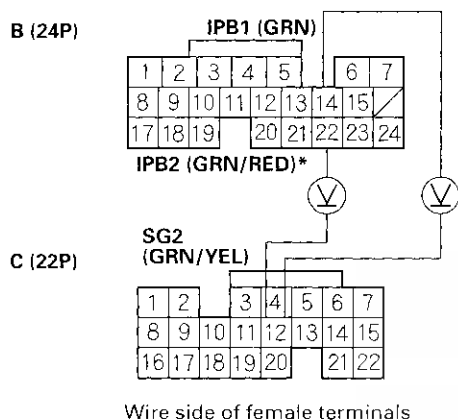
YES—Go to step 11.

NO—Repair open in the wire between the PCM (B14 (B22)*) and the A/F sensor (Sensor 1), then go to step 15.



11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (24P).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
13. Measure voltage between PCM connector terminals B14 (B22)* and C12.

PCM CONNECTORS



Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-213).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2237 and/or P2240* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2237 and/or P2240* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2237 and/or P2240* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2238: Rear A/F Sensor (Bank 1, Sensor 1) IP Line Low Voltage

DTC P2241: Front A/F Sensor (Bank 2, Sensor 1) IP Line Low Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

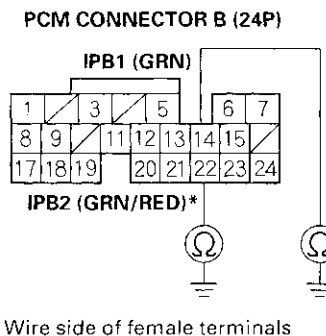
Is DTC P2238 and/or P2241 indicated?*

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Check for continuity between PCM connector terminals B14 (B22)* and body ground.



Is there continuity?

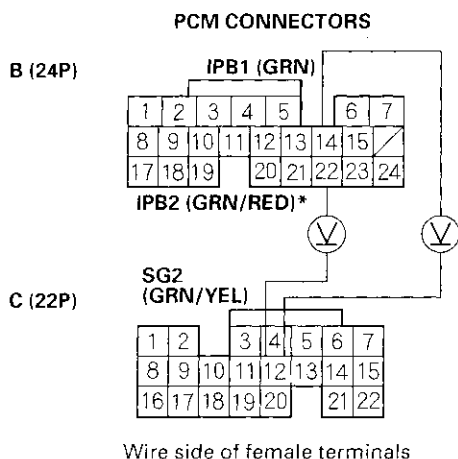
YES—Repair short in the wire between the PCM (B14 (B22)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (24P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.



12. Measure voltage between PCM connector terminals B14 (B22)* and C12.



Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-213).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).

18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2238 and/or P2241* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17 and recheck.

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2238 and/or P2241* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2243: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Line High Voltage

DTC P2247: Front A/F Sensor (Bank 2, Sensor 1) VCENT Line High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?*

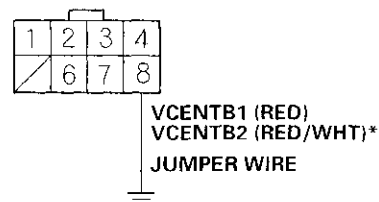
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 8 to body ground with a jumper wire.

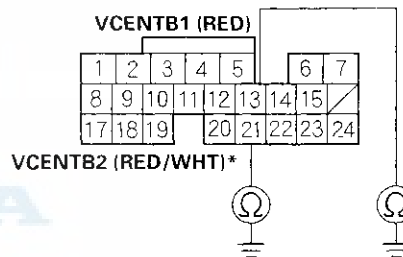
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B13 (B21)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

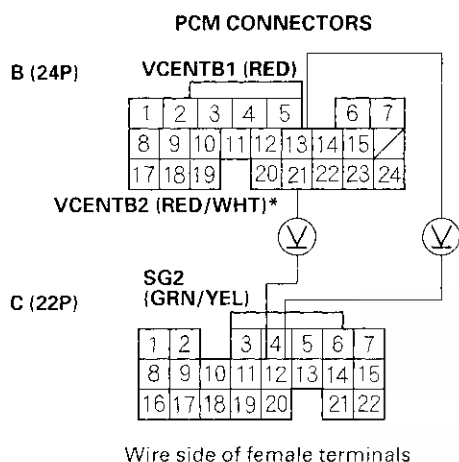
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (B13 (B21)*) and the A/F sensor (Sensor 1), then go to step 15.



11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (24P).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
13. Measure voltage between PCM connector terminals B13 (B21)* and C12.



Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-213).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2243 and/or P2247* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2243 and/or P2247* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2245: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Line Low Voltage

DTC P2249: Front A/F Sensor (Bank 2, Sensor 1) VCENT Line Low Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

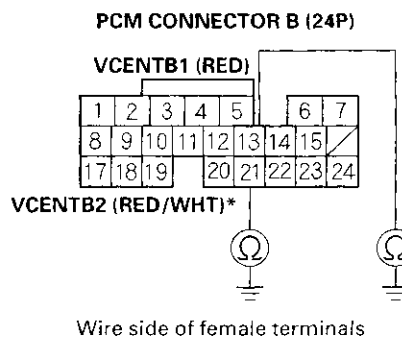
Is DTC P2245 and/or P2249 indicated?*

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Check for continuity between PCM connector terminal B13 (B21)* and body ground.



Is there continuity?

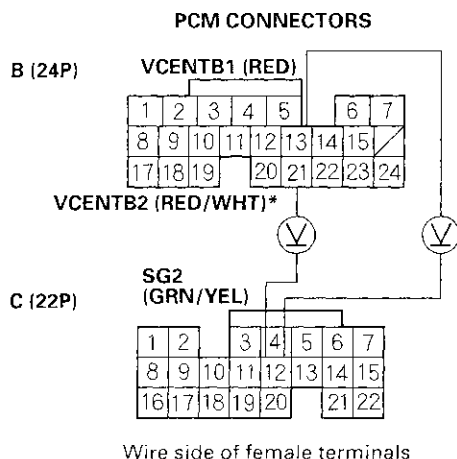
YES—Repair short in the wire between the PCM (B13 (B21)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (24P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.



12. Measure voltage between PCM connector terminals B13 (B21)* and C12.



Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-213).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).

18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2245 and/or P2249* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17 and recheck.

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2245 and/or P2249* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2251: Rear A/F Sensor (Bank 1, Sensor 1) VS Line High Voltage

DTC P2254: Front A/F Sensor (Bank 2, Sensor 1) VS Line High Voltage

NOTE:

- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 and/or P0154*.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

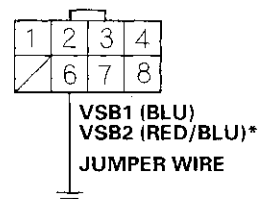
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 6 to body ground with a jumper wire.

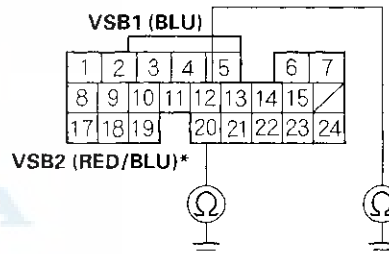
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B12 (B20)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

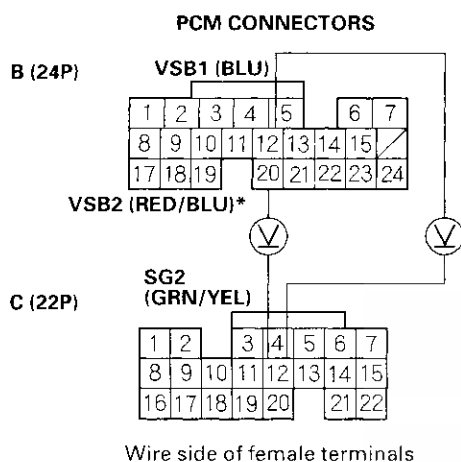
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (B12 (B20)*) and the A/F sensor (Sensor 1), then go to step 15.



11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connector B (24P).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
13. Measure voltage between PCM connector terminals B12 (B20)* and C12.



Is there about 0.2 V or less?

YES—Go to step 21.

NO—Go to step 14.

14. Replace the A/F sensor (Sensor 1) (see page 11-213).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2251 and/or P2254* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2251 and/or P2254* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2252: Rear A/F Sensor (Bank 1, Sensor 1) VS Line Low Voltage

DTC P2255: Front A/F Sensor (Bank 2, Sensor 1) VS Line Low Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

4. Check for Temporary DTCs or DTCs with the HDS.

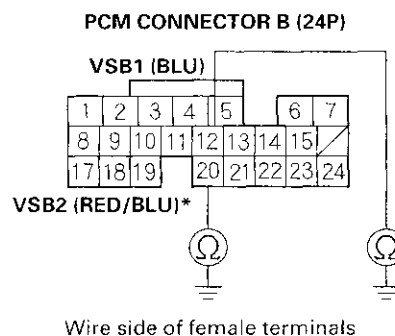
Is DTC P2252 and/or P2255 indicated?*

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Check for continuity between PCM connector terminal B12 (B20)* and body ground.



Is there continuity?

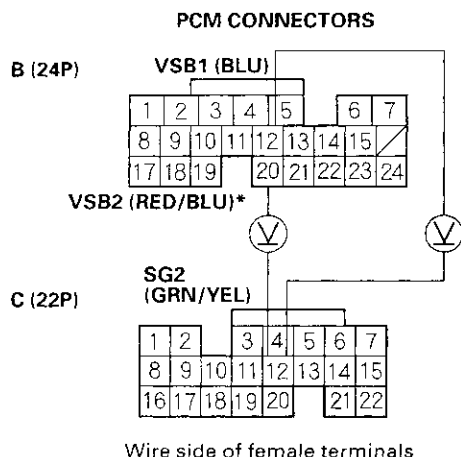
YES—Repair short in the wire between the PCM (B12 (B20)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

10. Reconnect PCM connector B (24P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.



12. Measure voltage between PCM connector terminals B12 (B20)* and C12.



Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor 1) (see page 11-213).
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2252 and/or P2255* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 17 and recheck.

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2252 and/or P2255* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2270: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Signal Stuck Lean

DTC P2271: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Signal Stuck Rich

DTC P2272: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Signal Stuck Lean

DTC P2273: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Signal Stuck Rich

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature above 176 °F (80 °C)
 - Vehicle speed between 35 mph (56 km/h) and 55 mph (88 km/h)
 - Drive 1 minute or more
5. Monitor the OBD STATUS for DTC P2270, P2271, P2272* and/or P2273* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the secondary HO2S (Sensor 2) (see page 11-214).

8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-340).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Test-drive under these conditions:
 - Engine coolant temperature above 176 °F (80 °C)
 - Vehicle speed between 35 mph (56 km/h) and 55 mph (88 km/h)
 - Drive 1 minute or more
13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2270, P2271, P2272* and/or P2273* is indicated, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P2270, P2271, P2272* and/or P2273* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11 and recheck.



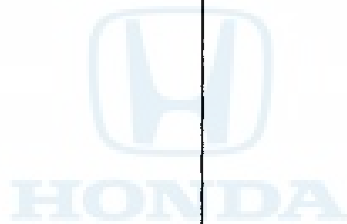
DTC P2610: PCM Internal Power Off Timer Performance Problem

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is P2610 indicated?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Intermittent failure, system is OK at this time. ■



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2627: Rear A/F Sensor (Bank 1, Sensor 1) LABEL Circuit Low Voltage

DTC P2630: Front A/F Sensor (Bank 2, Sensor 1) LABEL Circuit Low Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

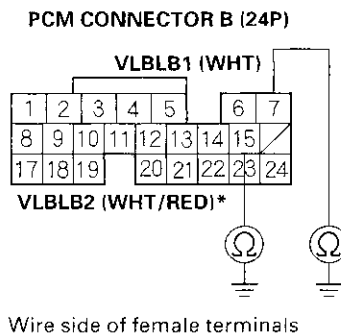
Is DTC P2627 and/or P2630 indicated?*

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector B (24P).

8. Check for continuity between PCM connector terminal B7 (B15)* and body ground.

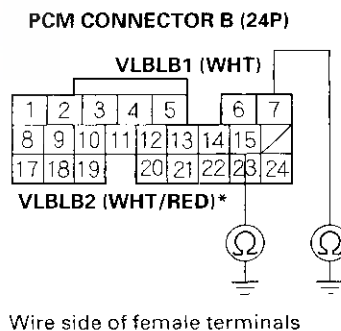


Is there continuity?

YES—Go to step 9.

NO—Go to step 17.

9. Disconnect the A/F sensor (Sensor 1) 8P connector.
10. Check for continuity between PCM connector terminal B7 (B15)* and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (B7 (B15)*) and the A/F sensor (Sensor 1), then go to step 12.

NO—Go to step 11.



11. Replace the A/F sensor (Sensor 1) (see page 11-213).
12. Reconnect all connectors.
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-340).
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2627 and/or P2630^{*} is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

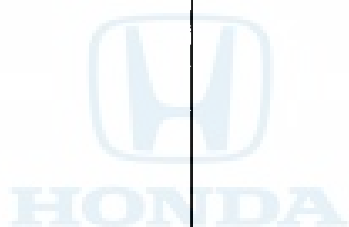
NO—Troubleshooting is complete. ■

17. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2627 and/or P2630^{*} is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



PGM-FI System

DTC Troubleshooting (cont'd)

DTC P2628: Rear A/F Sensor (Bank 1, Sensor 1) Label Circuit High Voltage

DTC P2631: Front A/F Sensor (Bank 2, Sensor 1) Label Circuit High Voltage

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2628 and/or P2631 indicated?*

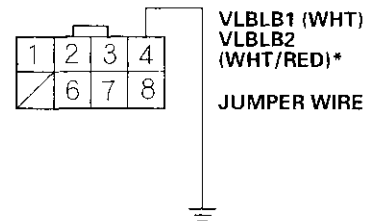
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and at the PCM. ■

5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 8P connector.
8. Disconnect PCM connector B (24P).

9. Connect A/F sensor (Sensor 1) 8P connector terminal No. 4 to body ground with a jumper wire.

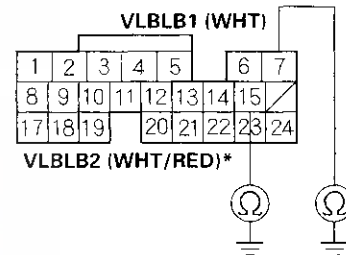
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

10. Check for continuity between PCM connector terminal B7 (B15)* and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

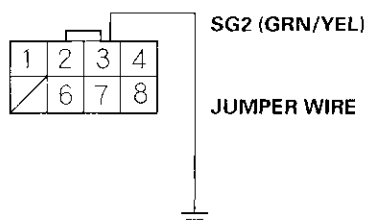
YES—Go to step 11.

NO—Repair open in the wire between the PCM (B7 (B15)*) and the A/F sensor (Sensor 1), then go to step 19.



11. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector.
12. Disconnect PCM connector C (22P).
13. Connect A/F sensor (Sensor 1) 8P connector terminal No. 3 to body ground with a jumper wire.

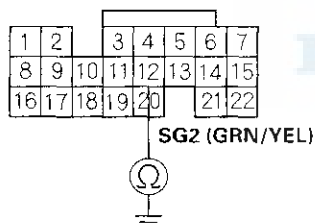
A/F SENSOR (SENSOR 1) 8P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

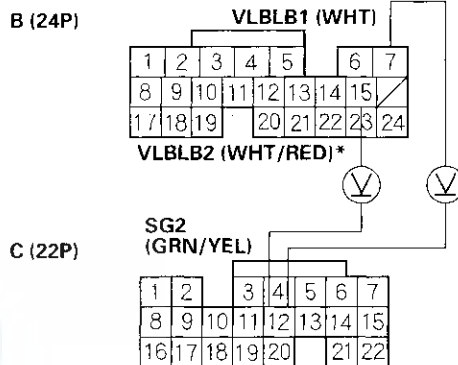
NO—Repair open in the wire between the PCM (C12) and the A/F sensor (Sensor 1), then go to step 19.

15. Remove the jumper wire from the A/F sensor (Sensor 1) 8P connector, then reconnect PCM connectors B (24P) and C (22P).

16. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

17. Measure voltage between PCM connector terminals B7 (B15)* and C12.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES—Go to step 18.

NO—Go to step 24.

18. Replace the A/F sensor (Sensor 1) (see page 11-213).
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2628 and/or P2631* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

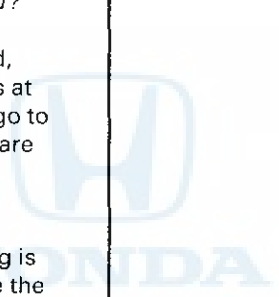
24. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2628 and/or P2631* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P2A00: Rear A/F Sensor (Bank 1, Sensor 1) Range/Performance Problem

DTC P2A03: Front A/F Sensor (Bank 2, Sensor 1) Range/Performance Problem

NOTE: Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed at 30 mph (48 km/h) or more, and engine speed at 2,600 rpm or less
 - Drive with the throttle fully opened for 5 seconds from an engine speed of 1,600 rpm, then slow down with the throttle completely closed.
5. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If it is EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

6. Turn the ignition switch OFF.
7. Replace the A/F sensor (Sensor 1) (see page 11-213).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-340).
11. Test-drive under these conditions:
 - Engine coolant temperature above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed at 30 mph (48 km/h) or more, and engine speed at 2,600 rpm or less
 - Drive with the throttle fully opened for 5 seconds from an engine speed of 1,600 rpm, then slow down with the throttle completely closed.

12. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2A00 and/or P2A03* is indicated, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 13.

13. Monitor the OBD STATUS for DTC P2A00 and/or P2A03* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10 and recheck.

PGM-FI System

DTC Troubleshooting (cont'd)

DTC U0037: IMA-CAN Malfunction (Bus-Off) (MCM-PCM)

NOTE: Information marked with an asterisk (*) applies to the IMACANL line.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

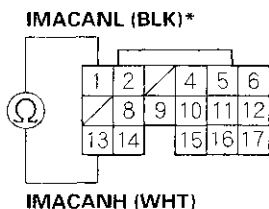
Is DTC U0037 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM. ■

4. Turn the ignition switch OFF.
5. Measure resistance between PCM connector terminals D1* and D13.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 54—66 Ω at room temperature?

YES—Go to step 21.

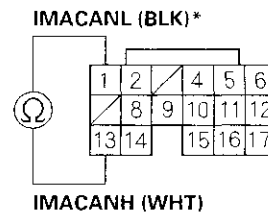
NO—Go to step 6.

6. Jump the SCS line with the HDS.
7. Disconnect PCM connector D (17P).
8. Remove the IPU lid (see page 12-140).
9. Disconnect MCM connector A (31P) (see page 12-140).

10. Disconnect the A/C compressor driver 4P connector (see page 21-99).

11. Check for continuity between PCM connector terminals D1* and D13.

PCM CONNECTOR D (17P)



Wire side of female terminals

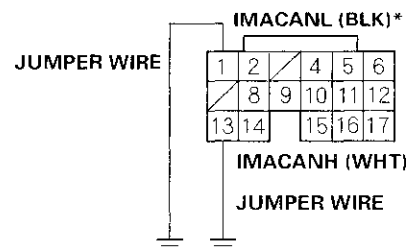
Is there continuity?

YES—Repair short in the wire between the PCM (D13 (IMACANH line)) and (D1 (IMACANL line)), then go to step 43.

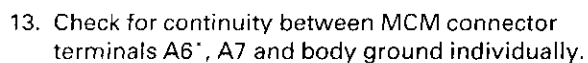
NO—Go to step 12.

12. Connect between PCM connector terminal D1*, D13 to body ground with a jumper wire individually.

PCM CONNECTOR D (17P)



Wire side of female terminals

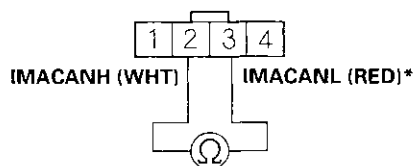


PGM-FI System

DTC Troubleshooting (cont'd)

20. Measure resistance between A/C compressor driver 4P connector terminals No. 2 and No. 3*.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Wire side of female terminals

Is there about 2.3–2.9 kΩ at room temperature?

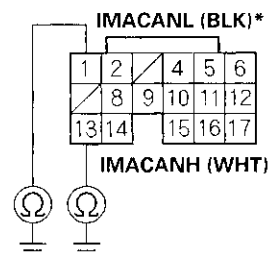
YES—Go to step 49.

NO—Substitute a known-good A/C compressor driver (see page 21-99), then go to step 43 and recheck. If DTC U0037 is not indicated, replace the original A/C compressor driver, then go to step 43.

21. Jump the SCS line with the HDS.
22. Disconnect PCM connector D (17P).
23. Remove the IPU lid (see page 12-140).
24. Disconnect MCM connector A (31P) (see page 12-140).
25. Disconnect the A/C compressor control unit 4P connector (see page 21-99).

26. Check for continuity between PCM connector terminal D1* and body ground, and between terminal D13 and body ground individually.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

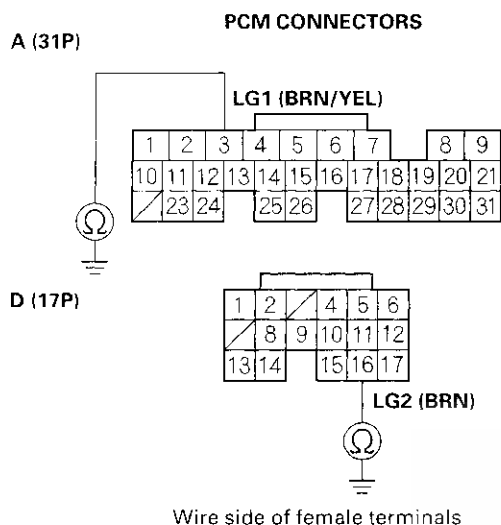
YES—Repair short in the wire between the MCM, the A/C compressor driver and the PCM (D13 (D1)*), then go to step 43.

NO—Go to step 27.



27. Disconnect PCM connector A (31P).

28. Check for continuity between PCM connector terminal A3 and body ground, and between terminal D16 and body ground individually.



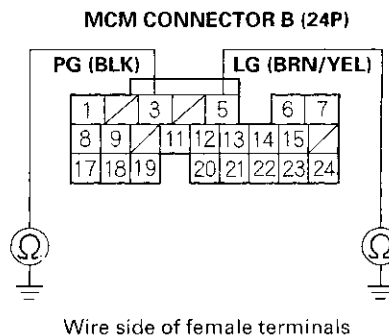
Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (A3, D16) and G101, then go to step 43.

29. Disconnect MCM connector B (24P) (see page 12-140).

30. Check for continuity between MCM connector terminal B3 and body ground, and between terminal B5 and body ground individually.



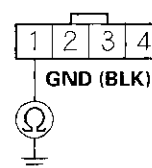
Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the MCM (B3, B5) and G651, then go to step 43.

31. Check for continuity between A/C compressor driver 4P connector terminal No. 1 and body ground.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the A/C compressor driver and G651, then go to step 43.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

32. Reconnect PCM connectors A (31P) and D (17P).
33. Reconnect MCM connectors A (31P) and B (24P)
34. Turn the ignition switch ON (II).
35. Clear the DTC with the HDS.
36. Check for Temporary DTCs or DTCs with the HDS.

Is only DTC U0164 indicated?

YES—Substitute a known-good A/C compressor driver (see page 21-99), then go to step 43 and recheck. If DTC U0037 is not indicated, replace the original A/C compressor driver, then go to step 43.

NO—Go to step 37.

37. Turn the ignition switch OFF.
38. Reconnect the A/C compressor driver 4P connector.
39. Disconnect MCM connector A (31P).
40. Turn the ignition switch ON (II).
41. Clear the DTC with the HDS.
42. Check for Temporary DTCs or DTCs with the HDS.

Is only DTC U0110 indicated?

YES—Substitute a known-good MCM (see page 12-8), then go to step 43 and recheck. If DTC U0037 is not indicated, replace the original MCM, then go to step 43.

NO—Go to step 49.

43. Turn the ignition switch OFF.
44. Reconnect all connectors.
45. Turn the ignition switch ON (II).
46. Reset the PCM with the HDS.
47. Do the PCM idle learn procedure (see page 11-340).

48. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0037 is indicated, check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

49. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

50. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0037 is indicated, check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC U0073: F-CAN Malfunction (Bus-Off)

DTC U0155: F-CAN Malfunction (Gauge Control Module-PCM)

1. Turn the ignition switch ON (II)
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 and/or U0155 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the ABS/TCS control unit, the engine mount control unit, the navigation unit, and the PCM. ■

4. Check for DTCs in the Body Electrical system DTCs menu with the HDS.

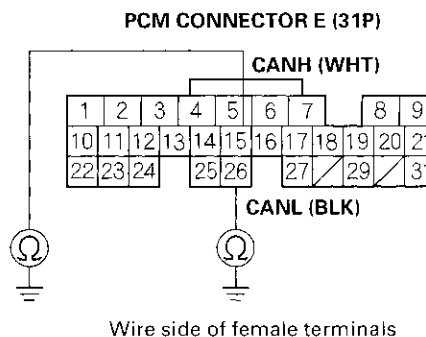
Is DTC B1168, B1169, and/or B1178 indicated?

YES—Go to step 5.

NO—Do the gauge control module input test (see page 22-119). ■

5. Turn the ignition switch OFF.
6. Remove the gauge control module (see page 22-235).
7. Disconnect the gauge control module 30P connector.
8. Disconnect the ABS/TCS control unit 47P connector.
9. Disconnect the engine mount control unit 20P connector.
10. Disconnect the navigation unit 20P connector.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector E (31P).

13. Check for continuity between body ground and PCM connector terminals E15 and E26 and body ground individually.

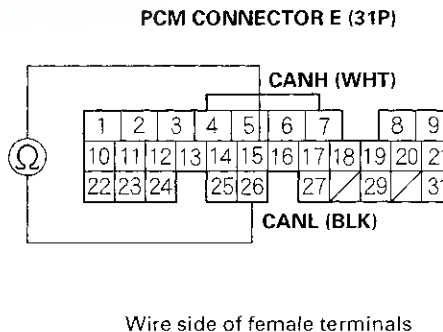


Is there continuity?

YES—Repair short in the wire between the gauge control module, ABS/TCS control unit, engine mount control unit, the navigation unit, and the PCM (E15 (E26)), then go to step 18.

NO—Go to step 14.

14. Check for continuity between PCM connector terminals E15 and E26.



Is there continuity?

YES—Repair short in the wires between the PCM E15 (CANH line) and E26 (CANL line), then go to step 18.

NO—Go to step 15.

(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

15. Check for continuity between PCM connector terminal E15 and these connector terminals:

Connector	Terminal
Gauge control module 30P	No. 24 (WHT)
ABS/TCS control unit 47P	No. 14 (WHT)
Engine mount control unit 20P	No. 5 (WHT)
Navigation unit 20P	No. 8 (WHT)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES—Go to step 16.

NO—Repair open in the wire between the PCM and the appropriate connector, then go to step 18.

16. Check for continuity between PCM connector terminal E26 and these connector terminals:

Connector	Terminal
Gauge control module 30P	No. 23 (BLK)
ABS/TCS control unit 47P	No. 30 (RED)
Engine mount control unit 26P	No. 17 (RED)
Navigation unit 20P	No. 18 (BLK)

Is there continuity between the PCM terminal and each of the terminals in the chart?

YES—Go to step 17.

NO—Repair open in the wire between the PCM and the appropriate connector, then go to step 18.

17. Refer to the following chart. Select the row that most closely represents the combination of DTCs retrieved from the PGM-FI, ABS/TCS and Body Electrical systems: Check connections at the control module indicated in the last column. If all the connections are OK, substitute another control module. After substituting the control module, go to step 18 and recheck.

PGM-FI	ABS/TCS	Body Electrical	Control module
U0155	86-1	B1168 B1169 B1178	Gauge control module
U0073 U0121 U0155 U1101	68-1 86-1	B1168 B1169 B1178	PCM
U0073 U0121 U0155 U1101	68-1 86-1 86-1	B1168 B1178	ABS/TCS control unit
	86-1	B1168 B1169 B1178	Engine mount control unit

Are the DTCs still indicated?

YES—Substitute the remaining control modules, one at a time, until the DTCs are no longer present, then replace the control module that made the DTCs go away. After replacing the faulty control module, go to step 18.

NO—Replace the faulty control module, then go to step 18.

18. Reconnect all connectors.

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-340).

22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0073 and/or U0155 is indicated, check for poor connections or loose terminals at the gauge assembly, the ABS/TCS control unit, the engine mount control unit, the navigation unit, and the PCM, then go to step 1. If any other DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC U0110: IMA-CAN Malfunction (MCM- (Battery Condition Monitor CPU)-PCM)

NOTE: Information marked with an asterisk (*) applies to the IMACANL line.

1. Turn the ignition switch ON (II) and read the HDS.

Does the HDS communicate with the IMA system?

YES—Go to step 2.

NO—Go to "IMA System Indicator Circuit Troubleshooting" (see page 12-133). ■

2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U0110 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM. ■

4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS again.

Are DTC U0037 and U0110 indicated at the same time?

YES—Go to troubleshooting DTC U0037 (see page 11-180).

NO—Go to step 5.

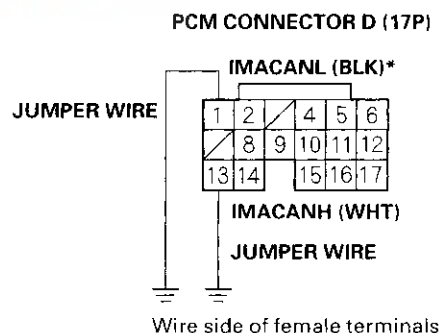
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS again.

Are DTC U0110, U0164 and U1201 indicated at the same time?

YES—Go to step 6.

NO—Substitute a known-good MCM (see page 12-8), then go to step 15 and recheck. If DTC U0037 is not indicated, replace the original MCM, then go to step 15.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector D (17P).
9. Remove the IPU lid (see page 12-140).
10. Disconnect MCM connector A (31P) (see page 12-140).
11. Disconnect the A/C compressor driver 4P connector (see page 21-99).
12. Connect between PCM connector terminal D1*, D13 to body ground with a jumper wire individually.

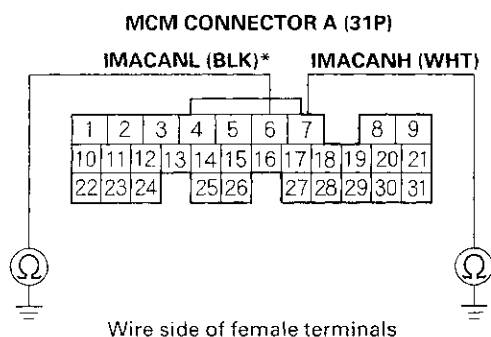


(cont'd)

PGM-FI System

DTC Troubleshooting (cont'd)

13. Check for continuity between MCM connector terminals A6*, A7 and body ground individually.



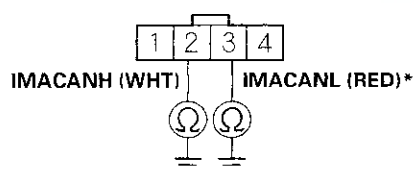
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the MCM (A7 (A6)*) and the PCM (D13 (D1)*), then go to step 15.

14. Check for continuity between the A/C compressor driver 4P connector terminals No. 2, No. 3* and body ground individually.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good MCM (see page 12-8), then go to step 15 and recheck. If DTC U0037 is not indicated, replace the original MCM, then go to step 15.

NO—Repair open in the wire between the A/C compressor driver (No. 2 (No. 3)*) and the PCM (D13 (D1)*), then go to step 15.

15. Turn the ignition switch OFF.

16. Reconnect all connectors.

17. Turn the ignition switch ON (II).

18. Reset the PCM with the HDS.

19. Do the PCM idle learn procedure (see page 11-340).

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0110 is indicated, check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC U0121: F-CAN Malfunction (ABS/TCS-PCM)

NOTE: If DTC U0073 is stored at the same time as DTC U0121, troubleshoot DTC U0073 first, then recheck for DTC U0121.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0121 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge assembly, the ABS/TCS control unit, and the PCM. ■

4. Check for a DTC in the DTCs MENU with the HDS.

Is TCS DTC 86 indicated?

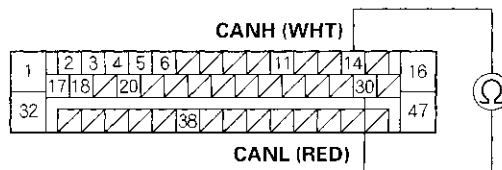
YES—Go to step 5.

NO—Go to step 8.

5. Turn the ignition switch OFF.
6. Disconnect the ABS/TCS control unit 47P connector.

7. Check for continuity between ABS/TCS control unit 47P connector terminals No. 14 and No. 30.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good ABS/TCS control unit, then go to step 15 and recheck. If no DTCs are indicated, replace the original ABS/TCS control unit, then go to step 15.

NO—Repair open in the wire between the ABS/TCS control unit (No. 14 (No. 30)*) and the PCM (E15 (E26)*), then go to step 15.

* : CANL line

8. Check for a poor connection at ABS/TCS control unit 47P connector.

Is the connection OK?

YES—Go to step 9.

NO—Repair the poor connection at the ABS/TCS control unit 47P connector, then go to step 15.

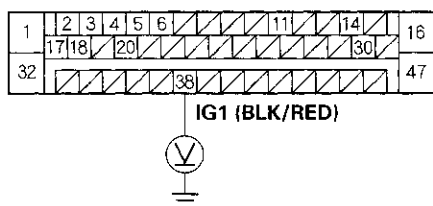
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PGM-FI System

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Disconnect the ABS/TCS control unit 47P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between ABS/TCS control unit 47P connector terminal No. 38 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

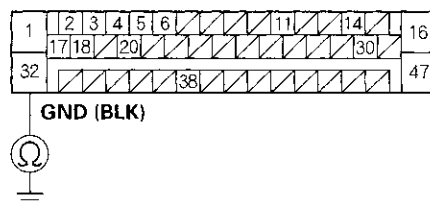
Is there battery voltage?

YES—Go to step 13.

NO—Check the No. 18 ACG (15 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 18 ACG (15 A) fuse and the ABS/TCS control unit, then go to step 15.

13. Turn the ignition switch OFF.
14. Check for continuity between ABS/TCS control unit 47P connector terminal No. 32 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good ABS/TCS control unit, then go to step 15 and recheck. If no DTCs are indicated, replace the original ABS/TCS control unit, then go to step 15.

NO—Repair open in the wire between the ABS/TCS control unit and G203, then go to step 15.

15. Reconnect the ABS/TCS control unit 47P connector.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0121 is indicated, check for poor connections or loose terminals at the gauge assembly, the ABS/TCS control unit, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC U0164: IMA-CAN Malfunction (A/C compressor driver-PCM)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U0164 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM.

4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS again.

Are DTC U0037 and U0164 indicated at the same time?

YES—Go to troubleshooting DTC U0037 (see page 11-180).

NO—Go to step 5.

5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS again.

Are DTC U0110, U0164 and U1201 indicated at the same time?

YES—Go to troubleshooting DTC U0110 (see page 11-187), or DTC U1201 (see page 11-197).

NO—Go to step 6.

6. Check the No. 29 (7.5 A) fuse in under-dash fuse/relay box.

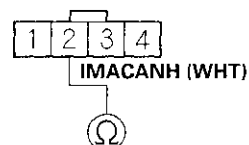
Is the fuse blown?

YES—Repair short in the wire the A/C compressor driver and the No. 29 (7.5 A) fuse. Also replace the No. 29 (7.5 A) fuse, then go to step 17.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Remove the IPU lid (see page 12-140).
9. Disconnect MCM connector A (31P) (see page 12-140).
10. Disconnect the A/C compressor driver 4P connector (see page 12-140).
11. Check for continuity between MCM connector terminal A7 and A/C compressor driver 4P connector terminal No. 2.

A/C COMPRESSOR DRIVER 4P CONNECTOR



MCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the MCM (A7) and the A/C compressor driver, then go to step 18.

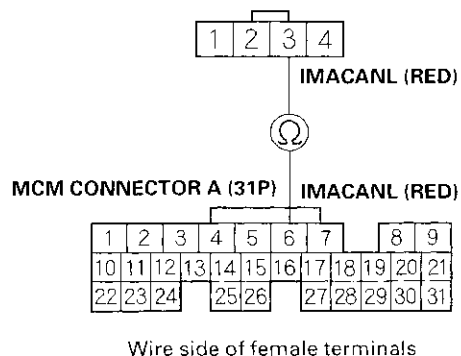
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PGM-FI System

DTC Troubleshooting (cont'd)

12. Check for continuity between MCM connector terminal A6 and A/C compressor driver 4P connector terminal No. 3.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Is there continuity?

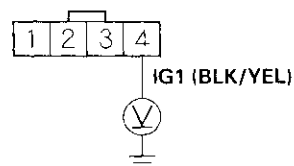
YES—Go to step 13.

NO—Repair open in the wire between the MCM (A6) and the A/C compressor driver, then go to step 18.

13. Turn the ignition switch ON (II).

14. Measure voltage between A/C compressor driver 4P connector terminal No. 4 and body ground.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Is there battery voltage?

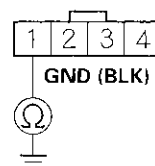
YES—Go to step 15.

NO—Repair open in the wire between the A/C compressor driver and the No. 29 (7.5 A) fuse, then go to step 18.

15. Turn the ignition switch OFF.

16. Check for continuity between A/C compressor driver 4P connector terminal No. 1 and body ground.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the A/C compressor driver and G651, then go to step 18.

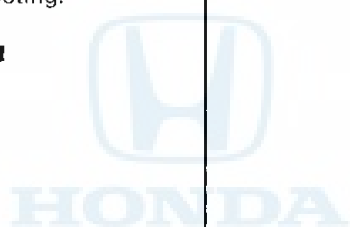


17. Replace the A/C compressor driver (see page 21-99).
18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0164 is indicated, check for poor connections or loose terminals at the MCM, the A/C compressor driver, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



PGM-FI System

DTC Troubleshooting (cont'd)

DTC U0300: Program Version Mismatch (PGM-FI system and A/T system)

NOTE: Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM can be damaged.

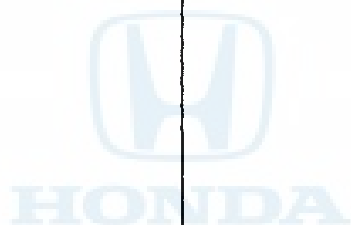
1. Do the PCM update procedure (PGM-FI system) (see page 11-6).
2. Do the PCM update procedure (A/T system) (see page 14-7).
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0300 indicated?

YES—Replace the original PCM (see page 11-219).



NO—The update is complete. ■





DTC U1101: F-CAN Malfunction (Engine Mount Control Unit-PCM)

NOTE: If DTC U0073 is stored at the same time as DTC U1101, troubleshoot DTC U0073 first, then recheck for DTC U1101.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1101 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the engine mount control unit, and the PCM. ■

4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AB indicated?

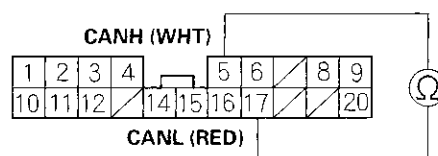
YES—Go to step 5.

NO—Go to step 8.

5. Turn the ignition switch OFF.
6. Disconnect the engine mount control unit 20P connector.

7. Check for continuity between engine mount control unit 20P connector terminals No. 5 and No. 17.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good engine mount control unit, then go to step 14 and recheck. If no DTCs are indicated, replace the original engine mount control unit, then go to step 14.

NO—Repair open in the wire between the engine mount control unit (No. 5 (No. 17) *) and the PCM (E15 (E26) *), then go to step 14.

* : CANL line

8. Check for a poor connection at engine mount control unit 20P connector.

Is the connection OK?

YES—Go to step 9.

NO—Repair the poor connection at the engine mount control unit 20P connector, then go to step 14.

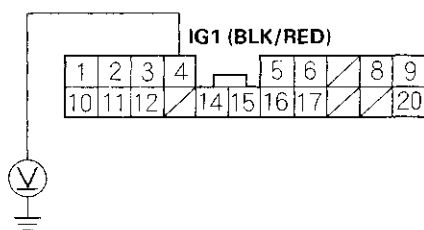
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PGM-FI System

DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Disconnect the engine mount control unit 20P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between engine mount control unit 20P connector terminal No. 4 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

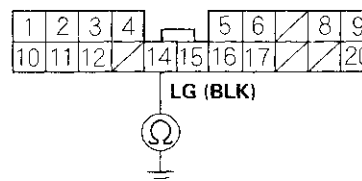
Is there battery voltage?

YES—Go to step 13.

NO—Check the No. 18 ACG (15 A) fuse in the driver's under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 18 ACG (15 A) fuse and the engine mount control unit, then go to step 14.

13. Check for continuity between engine mount control unit 20P connector terminal No. 14 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good engine mount control unit, then go to step 14 and recheck. If no DTCs are indicated, replace the original engine mount control unit, then go to step 14.

NO—Repair open in the wire between the engine mount control unit and G202, then go to step 14.

14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1101 is indicated, check for poor connections or loose terminals at the gauge control module, the engine mount control unit, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC U1201: IMA-CAN Malfunction (MCM-(Motor Control CPU)-PCM)

NOTE: Information marked with an asterisk (*) applies to the IMACANL line.

1. Turn the ignition switch ON (II) and read the HDS.

Does the HDS communicate with the IMA system?

YES—Go to step 2.

NO—Go to "IMA System Indicator Circuit Troubleshooting" (see page 12-133). ■

2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U1201 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MCM, the A/C compressor driver, and the PCM. ■

4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS again.

Are DTC U0037 and U1201 indicated at the same time?

YES—Go to troubleshooting DTC U0037 (see page 11-180).

NO—Go to step 5.

5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS again.

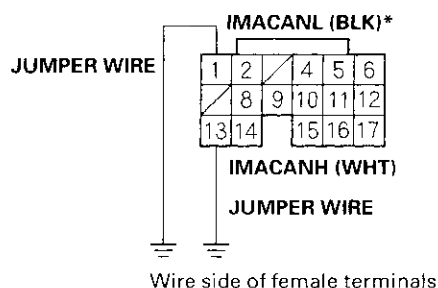
Are DTC U0110, U0164 and U1201 indicated at the same time?

YES—Go to step 6.

NO—Substitute a known-good MCM (see page 12-8), then go to step 15 and recheck. If DTC U0037 is not indicated, replace the original MCM, then go to step 15.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector D (17P).
9. Remove the IPU lid (see page 12-140).
10. Disconnect MCM connector A (31P) (see page 12-140).
11. Disconnect the A/C compressor driver 4P connector (see page 21-99).
12. Connect between PCM connector terminal D1*, D13 to body ground with a jumper wire individually.

PCM CONNECTOR D (17P)

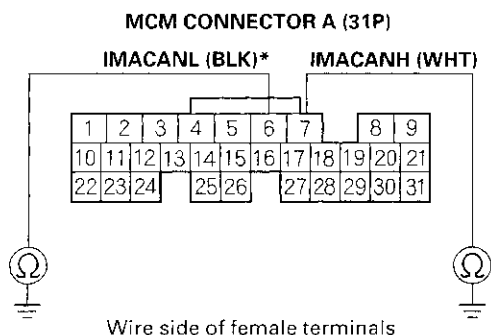


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PGM-FI System

DTC Troubleshooting (cont'd)

13. Check for continuity between MCM connector terminals A6*, A7 and body ground individually.



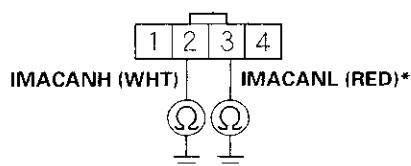
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the MCM (A7 (A6)*) and the PCM (D13 (D1)*), then go to step 15.

14. Check for continuity between A/C compressor driver 4P connector terminals No. 2, No. 3* and body ground individually.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good MCM (see page 12-8), then go to step 15 and recheck. If DTC U0037 is not indicated, replace the original MCM, then go to step 15.

NO—Repair open in the wire between the A/C compressor driver (No. 2 (No. 3)*) and the PCM (D13 (D1)*), then go to step 15.

15. Turn the ignition switch OFF.

16. Reconnect all connectors.

17. Turn the ignition switch ON (II).

18. Reset the PCM with the HDS.

19. Do the PCM idle learn procedure (see page 11-340).

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1201 is indicated, check for poor connections or loose terminals at the MCM, the A/C compressor driver and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



MIL Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Do the gauge self-diagnostic procedure (see page 22-226).
Does the MIL indicator flash?
YES—Go to step 3.
NO—Substitute a known-good gauge assembly, and recheck. If the MIL circuit is OK, replace the original gauge assembly. ■
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and watch the MIL.
Does the MIL stay off?
YES—Go to step 17.
NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), wait 20 seconds, and watch the MIL.
Does the MIL stay on or flash more than 5 times?
YES—Go to step 7.
NO—The MIL circuit is OK. ■
7. Turn the ignition switch OFF.
8. Connect the HDS (see page 11-3).
9. Turn the ignition switch ON (II), and read the HDS.
Does the HDS communicate with the PCM?
YES—Go to step 10.
NO—Go to “DLC Circuit Troubleshooting” (see page 11-209). If no problem is found in the DLC troubleshooting, go to step 21.

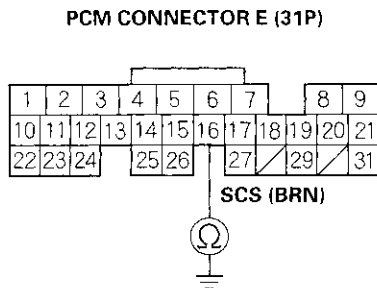
10. Check for Temporary DTCs or DTCs with the HDS.
Are any Temporary DTCs or DTCs indicated?
YES—Go to the indicated DTC's troubleshooting. ■
NO—Go to step 11.
11. Check the MIL in the DATA LIST with the HDS.
Does it indicate ON?
YES—Go to step 12.
NO—Substitute a known-good gauge assembly, and recheck. If the MIL circuit is OK, replace the original gauge assembly. ■
12. Check the SCS in the DATA LIST with the HDS.
Is a short indicated?
YES—Go to step 13.
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■
13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect ECM connector E (31P).

(cont'd)

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

16. Check for continuity between PCM connector terminal E16 and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (E16) and the DLC. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

17. Try to start the engine.

Does the engine start and idle smoothly?

YES—Go to step 18.

NO—Go to step 22.

18. Turn the ignition switch OFF.

19. Connect the HDS (see page 11-3).

20. Turn the ignition switch ON (II), and read the HDS.

Does the HDS communicate with the PCM?

YES—Go to step 21.

NO—Go to “DLC Circuit Troubleshooting” (see page 11-209). ■

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 and/or U0155 indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

22. Turn the ignition switch OFF.

23. Inspect the No. 23 +B IG MAIN (50 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 23 +B IG MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 24.

NO—Repair short in the wire between the No. 23 +B IG MAIN (50 A) fuse and the under-dash fuse/relay box. Also replace the No. 23 +B IG MAIN (50 A) fuse. ■



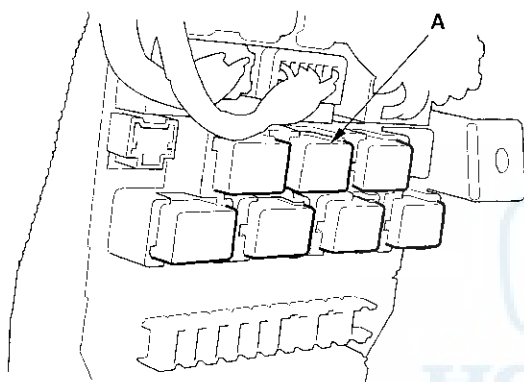
24. Inspect the No. 8 FI ECU (PCM) (15 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 31.

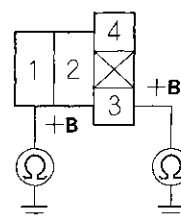
NO—Go to step 25.

25. Remove the blown No. 8 FI ECU (PCM) (15 A) fuse from the under-dash fuse/relay box.
26. Remove the left kick panel (see page 20-45), then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



27. Check for continuity between body ground and PGM-FI main relay 1 (FI MAIN) 4P connector terminals No. 1 and No. 3 individually.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 8 FI ECU (PCM) (15 A) and PGM-FI main relay 1 (FI MAIN). Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

NO—Go to step 28.

(cont'd)

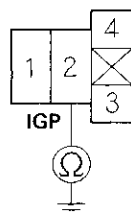
PGM-FI System

MIL Circuit Troubleshooting (cont'd)

28. Disconnect each of the components or connectors below, one at a time, and check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 and body ground.

- PGM-FI main relay 2 (FUEL PUMP)
- PCM connector A (31P)
- Each injector 2P connector
- Camshaft position (CMP) sensor 3P connector
- Crankshaft position (CKP) sensor A/B 6P connector
- A/F sensor relay 4P connector

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Does continuity go away when one of the above components is disconnected?

YES—Replace the component that made the short to body ground go away when disconnected. If the item is the PCM, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

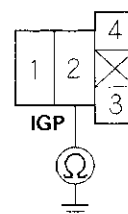
NO—Go to step 29.

29. Disconnect the connectors of these components:

- PGM-FI main relay 2 (FUEL PUMP)
- PCM connector A (31P)
- Injectors
- Camshaft position (CMP) sensor
- Crankshaft position (CKP) sensor A/B
- A/F sensor relay

30. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PGM-FI main relay 1 (FI MAIN) and each item. Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

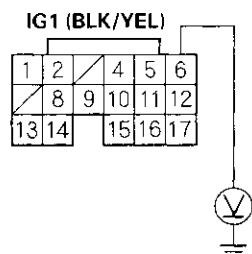
NO—Replace PGM-FI main relay 1 (FI MAIN). Also replace the No. 8 FI ECU (PCM) (15 A) fuse. ■

31. Turn the ignition switch ON (II).



32. Measure voltage between PCM connector terminal D6 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

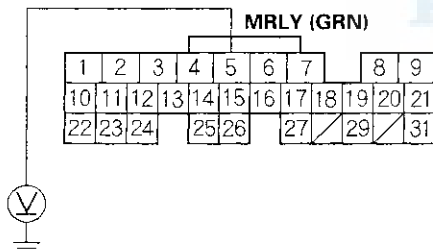
Is there battery voltage?

YES—Go to step 33.

NO—Repair open in the wire between the No. 19 FUEL PUMP (15 A) fuse and the PCM (D6). ■

33. Measure voltage between PCM connector terminal E5 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

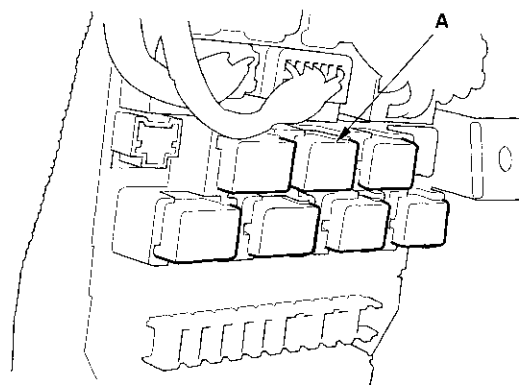
Is there battery voltage?

YES—Go to step 40.

NO—Go to step 34.

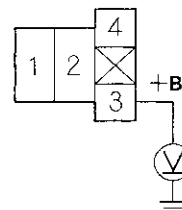
34. Turn the ignition switch OFF.

35. Remove the left kick panel (see page 20-45). Then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



36. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 37.

NO—Repair open in the wire between the No. 8 FI ECU (PCM) (15 A) fuse and PGM-FI main relay 1 (FI MAIN). ■

37. Jump the SCS line with the HDS.

38. Disconnect PCM connector E (31P).

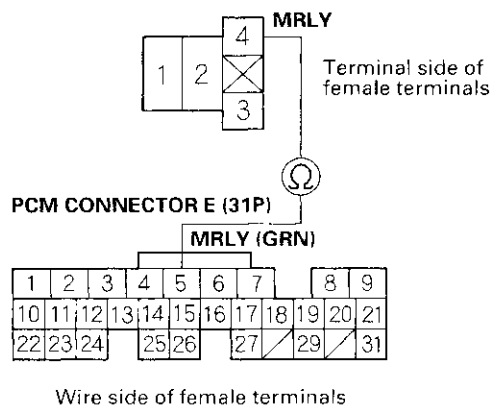
(cont'd)

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

39. Check for continuity between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 4 and PCM connector terminal E5.

PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



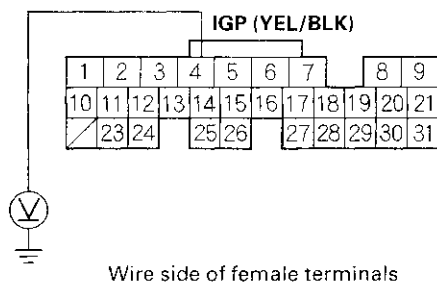
Is there continuity?

YES—Test PGM-FI main relay 1 (FI MAIN) (see page 22-72). If the relay is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Repair open in the wire between PGM-FI main relay 1 (FI MAIN) and the PCM (E5). ■

40. Turn the ignition switch ON (II).
41. Measure voltage between body ground and PCM connector terminal A4.

PCM CONNECTOR A (31P)

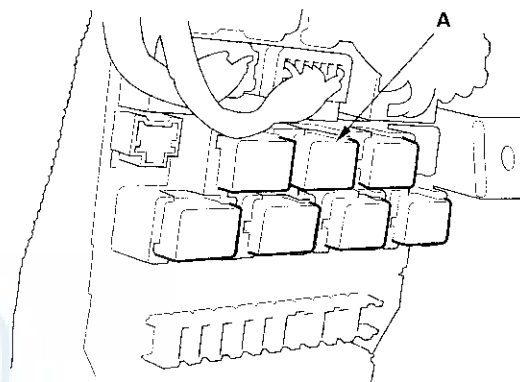


Is there battery voltage?

YES—Go to step 50.

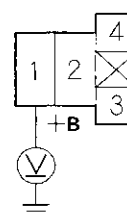
NO—Go to step 42.

42. Turn the ignition switch OFF.
43. Remove the left kick panel (see page 20-45). Then remove PGM-FI main relay 1 (FI MAIN) (A) from the under-dash fuse/relay box.



44. Turn the ignition switch ON (II).
45. Measure voltage between PGM-FI main relay 1 (FI MAIN) 4P connector terminal No. 1 and body ground.

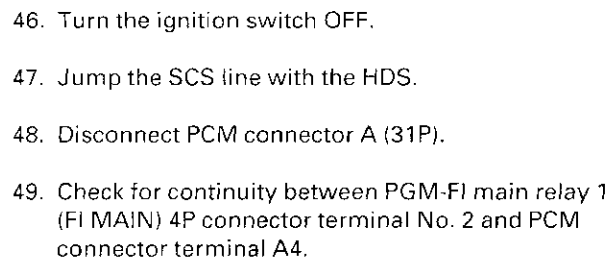
PGM-FI MAIN RELAY 1 (FI MAIN) 4P CONNECTOR



Is there battery voltage?

YES—Go to step 46.

NO—Repair open in the wire between the No. 8 FI ECU (PCM) (15 A) fuse and PGM-FI main relay 1 (FI MAIN). ■



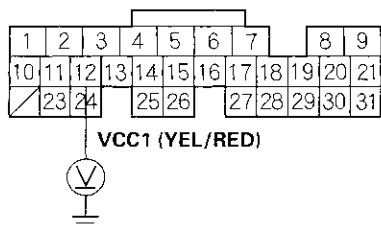
PGM-FI System

MIL Circuit Troubleshooting (cont'd)

52. Turn the ignition switch OFF.
53. Disconnect the connector from each of the following sensors, one at a time, and measure voltage between body ground and PCM connector terminal A12 with the ignition switch ON (II).

- Manifold absolute pressure (MAP) sensor
- Output shaft (countershaft) speed sensor

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there about 5 V?

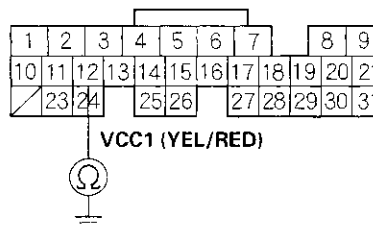
YES—Replace the sensor that restored 5 V when disconnected. ■

NO—Go to step 54.

54. Turn the ignition switch OFF.
55. Jump the SCS line with the HDS.
56. Disconnect the connectors from these sensors:
- Manifold absolute pressure (MAP) sensor
 - Output shaft (countershaft) speed sensor
57. Disconnect PCM connector A (31P).

58. Check for continuity between PCM connector terminal A12 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

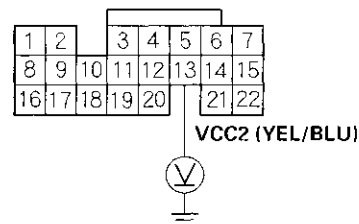
Is there continuity?

YES—Repair short in the wire between the PCM (A12) and the MAP sensor or the output shaft (countershaft) speed sensor. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

59. Measure voltage between body ground and PCM connector terminal C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Go to step 67.

NO—Go to step 60.

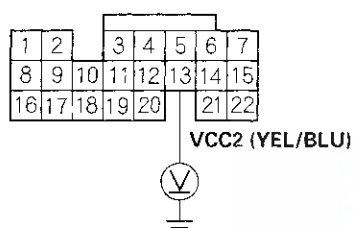


60. Turn the ignition switch OFF.

61. Disconnect the connector from each of the following sensors, one at a time, and measure voltage between body ground and PCM connector terminal C13 with the ignition switch ON (II).

- Accelerator pedal position (APP) sensor
- Intake manifold tuning (IMT) actuator
- Exhaust gas recirculation (EGR) valve
- Engine oil pressure (EOP) sensor
- Fuel tank pressure (FTP) sensor
- Input shaft (mainshaft) speed sensor

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Replace the part that restored 5 V when disconnected. ■

NO—Go to step 62.

62. Turn the ignition switch OFF.

63. Jump the SCS line with the HDS.

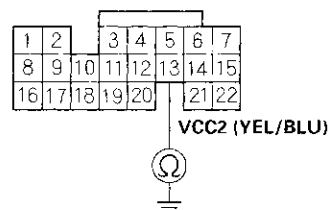
64. Disconnect the connectors from these sensors:

- Accelerator pedal position (APP) sensor
- Intake manifold tuning (IMT) actuator
- Exhaust gas recirculation (EGR) valve
- Engine oil pressure (EOP) sensor
- Fuel tank pressure (FTP) sensor
- Input shaft (mainshaft) speed sensor

65. Disconnect PCM connector C (22P).

66. Check for continuity between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

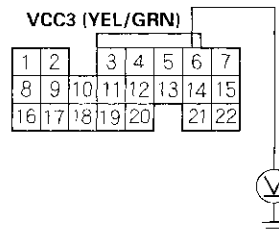
Is there continuity?

YES—Repair short in the wire between the PCM (C13) and the APP sensor, the EOP sensor, the IMT actuator, the EGR valve, the FTP sensor, or the input shaft (mainshaft) speed sensor. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

67. Measure voltage between body ground and PCM connector terminal C6.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Go to step 68.

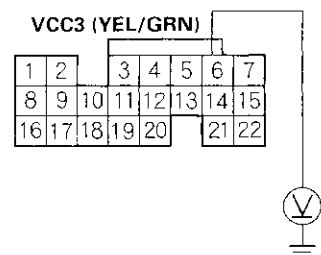
(cont'd)

PGM-FI System

MIL Circuit Troubleshooting (cont'd)

68. Turn the ignition switch OFF.
69. Disconnect the APP sensor 6P connector, and measure voltage between body ground and PCM connector terminal C6 with the ignition switch ON (II).

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

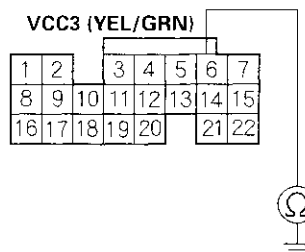
YES—Replace the APP sensor (see page 11-265). ■

NO—Go to step 70.

70. Turn the ignition switch OFF.
71. Jump the SCS line with the HDS.
72. Disconnect the APP sensor 6P connector.
73. Disconnect PCM connector C (22P).

74. Check for continuity between PCM connector terminal C6 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C6) and the APP sensor. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■



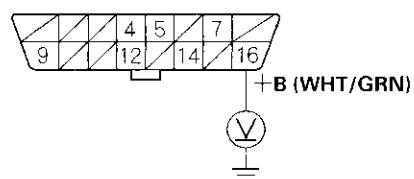
DLC Circuit Troubleshooting

NOTE:

- If the PCM does not communicate with the HDS, do this troubleshooting procedure.
- Check that MIL circuit is normal, then do this troubleshooting.

1. Measure voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

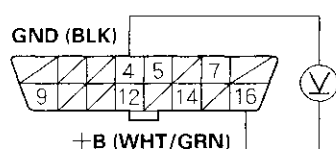
Is there battery voltage?

YES—Go to step 2.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 8 FI ECU (PCM) (15 A) fuse in the under-hood fuse/relay box. ■

2. Measure voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

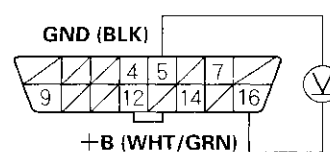
Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between DLC terminal No. 4 and body ground (G501). ■

3. Measure voltage between DLC terminals No. 5 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

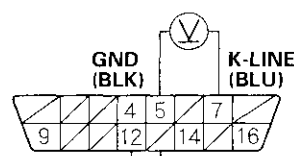
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between DLC terminal No. 5 and body ground (G501). ■

4. Turn the ignition switch ON (II).
5. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 8.5 V or more?

YES—Go to step 11.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.

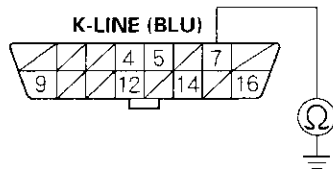
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PGM-FI System

DLC Circuit Troubleshooting (cont'd)

8. Disconnect PCM connector E (31P).
9. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

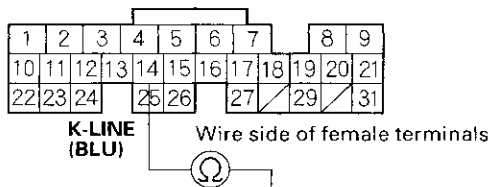
Is there continuity?

YES—Repair short to ground in the wire between DLC terminal No. 7 and the PCM (E14). After repairing the wire, check for a DTC with the HDS and go to the indicated DTC's troubleshooting. ■

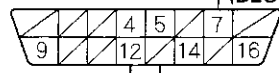
NO—Go to step 10.

10. Check for continuity between DLC terminal No. 7 and PCM connector terminal E14.

PCM CONNECTOR E (31P)



DATA LINK CONNECTOR (DLC) K-LINE (BLU)



Terminal side of female terminals

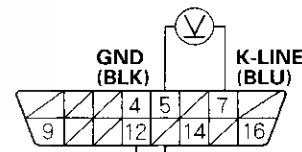
Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Repair open in the wire between DLC terminal No. 7 and the PCM (E14). After repairing the wire, check for Temporary DTCs or DTCs with the HDS and go to the indicated DTC's troubleshooting. ■

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector E (31P).
14. Turn the ignition switch ON (II).
15. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 0 V?

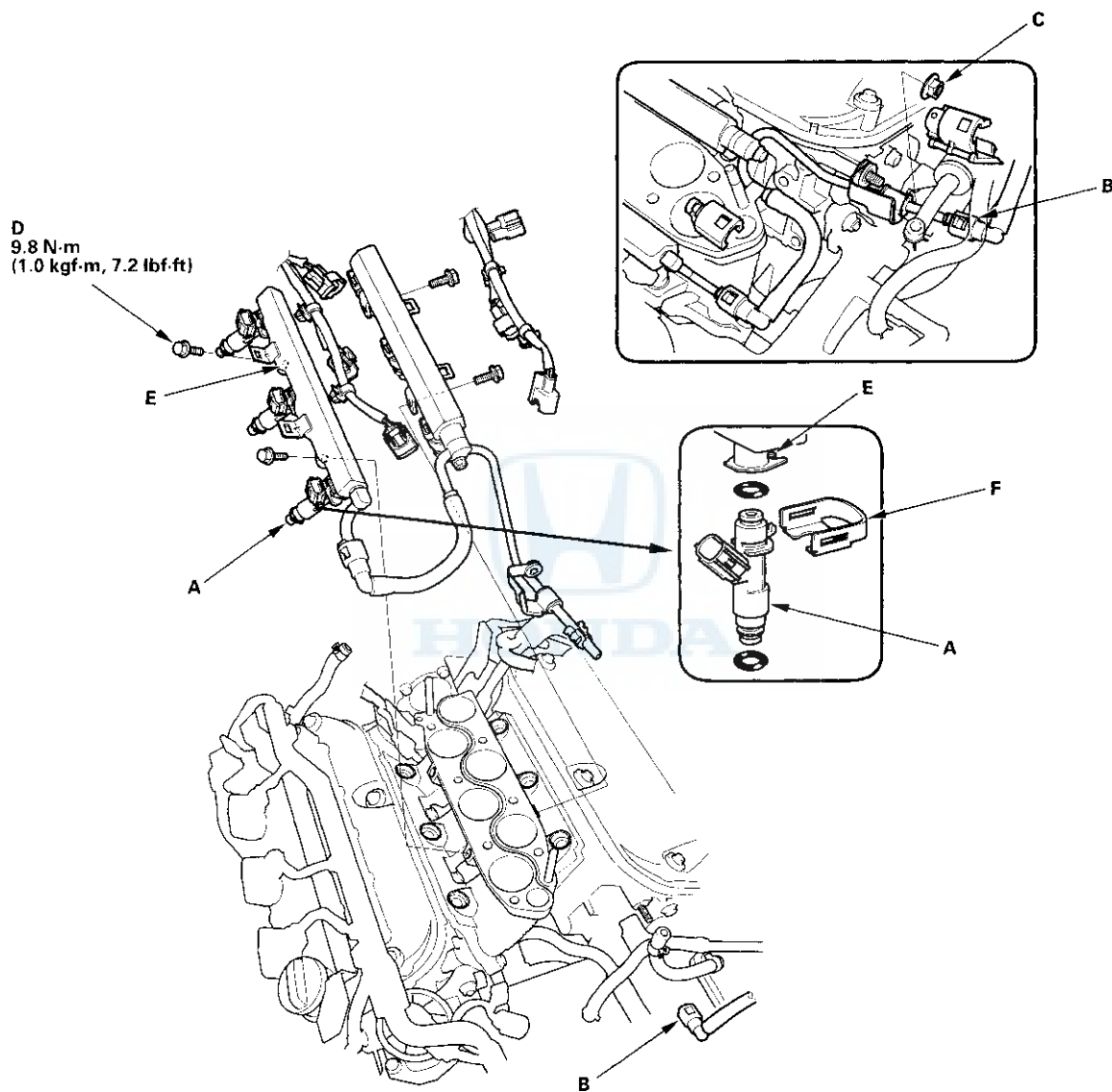
YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Repair short to power in the wire between DLC terminal No. 7 and the PCM (E14). After repairing the wire, check for Temporary DTCs or DTCs with the HDS, and go to the indicated DTC's troubleshooting. ■



Injector Replacement

1. Relieve the fuel pressure (see page 11-354).
2. Remove the intake manifold (see page 9-3).
3. Disconnect the connectors from the injectors (A).



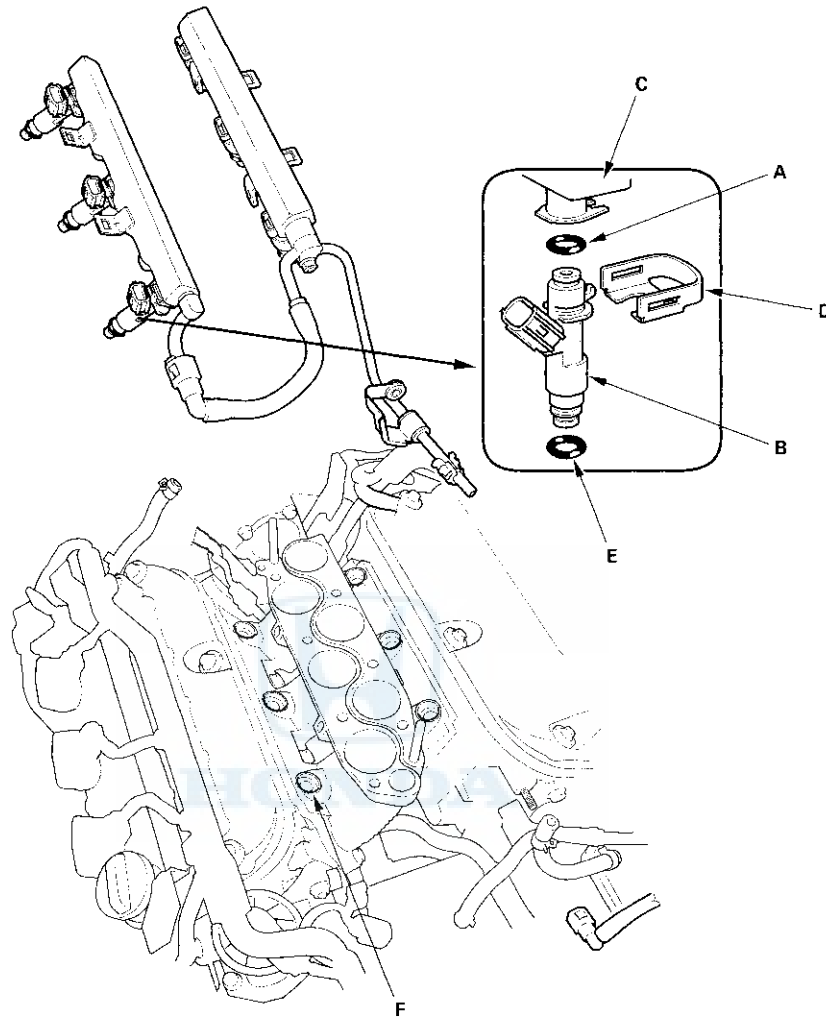
4. Disconnect the quick-connect fittings (B), and remove the nut (C).
5. Remove the fuel rail mounting bolts (D) from the fuel rail (E).
6. Remove the injector clip (F) from the injector.
7. Remove the injector from the fuel rail.

(cont'd)

PGM-FI System

Injector Replacement (cont'd)

8. Coat the new O-ring (A) with clean engine oil, and insert the injector (B) into the fuel rail (C).



9. Install the injector clip (D).
10. Coat the injector O-ring (E) with clean engine oil.
11. Install the injectors in the injector base (F).
12. Install the fuel rail mounting nuts.
13. Connect the connectors on the injectors.
14. Connect the quick-connect fittings.
15. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail will be pressurized. Repeat this two or three times, then check for fuel leakage.
16. Install the intake manifold (see page 9-5).



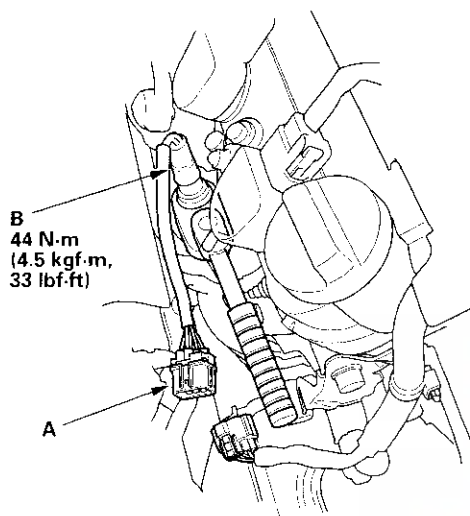
A/F Sensor Replacement

Special Tools Required

O2 sensor socket wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

Front Bank (Bank 2)

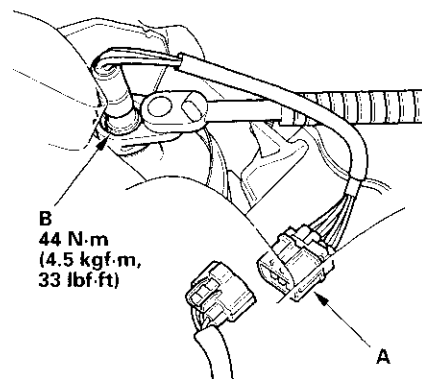
1. Disconnect the front A/F sensor 8P connector (A), then remove the A/F sensor (B) with a O2 sensor socket wrench.



2. Install the front A/F sensor in the reverse order of removal.

Rear Bank (Bank 1)

1. Disconnect the rear A/F sensor 8P connector (A), then remove the rear A/F sensor (B) with a O2 sensor socket wrench.



2. Install the rear A/F sensor in the reverse order of removal.

PGM-FI System

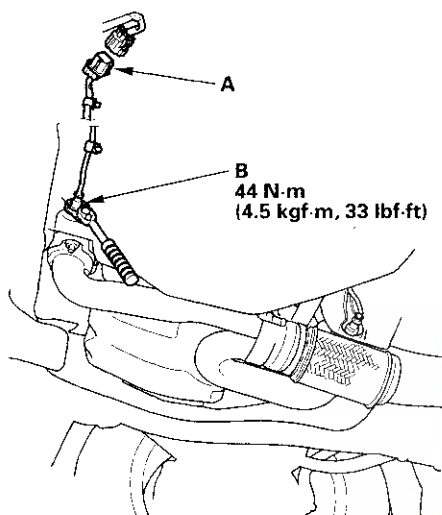
Secondary HO2S Replacement

Special Tools Required

O2 sensor socket wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

Front Bank (Bank 2)

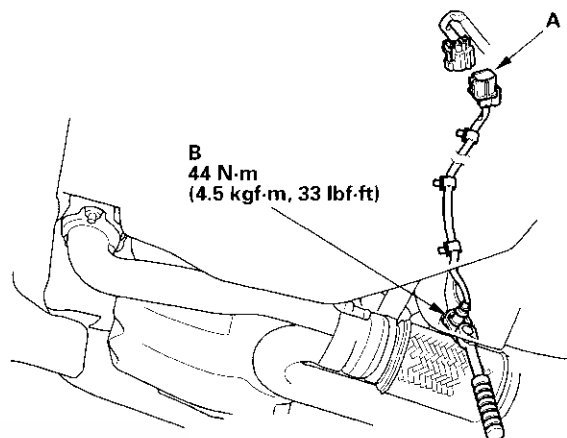
1. Disconnect the front secondary HO2S 4P connector (A), then remove the front secondary HO2S (B) with a O2 sensor socket wrench.



2. Install the front secondary HO2S in the reverse order of removal.

Rear Bank (Bank 1)

1. Disconnect the rear secondary HO2S 4P connector (A), then remove the rear secondary HO2S (B) with a O2 sensor socket wrench.



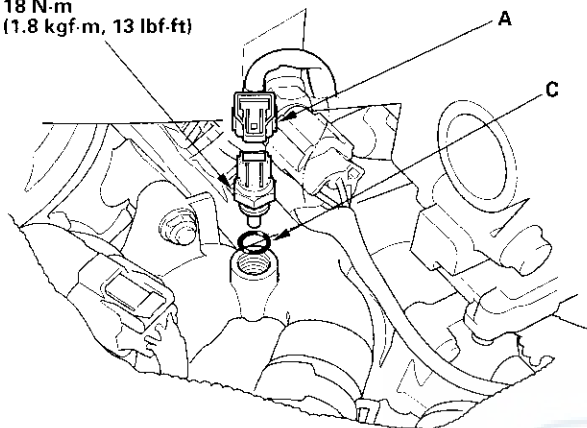
2. Install the rear secondary HO2S in the reverse order of removal.



ECT Sensor 1 Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Remove the air cleaner (see page 11-382).
3. Disconnect the ECT sensor 1 connector (A).

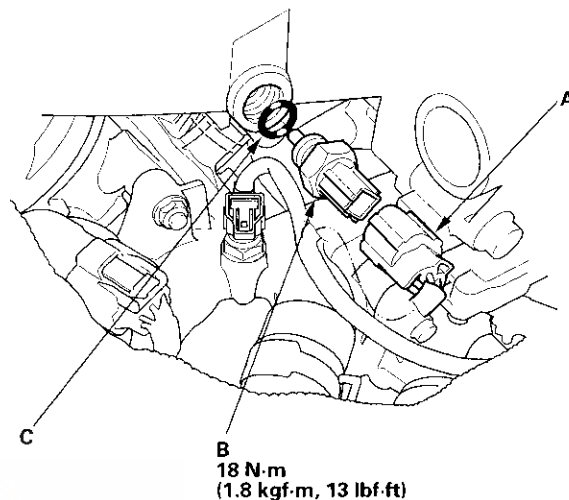
B
18 N·m
(1.8 kgf·m, 13 lbf·ft)



4. Remove ECT sensor 1 (B).
5. Install the sensor in the reverse order of removal with a new O-ring (C). Then refill the radiator with engine coolant (see page 10-6).

IAT Sensor 2 Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the IAT sensor 2 connector (A).

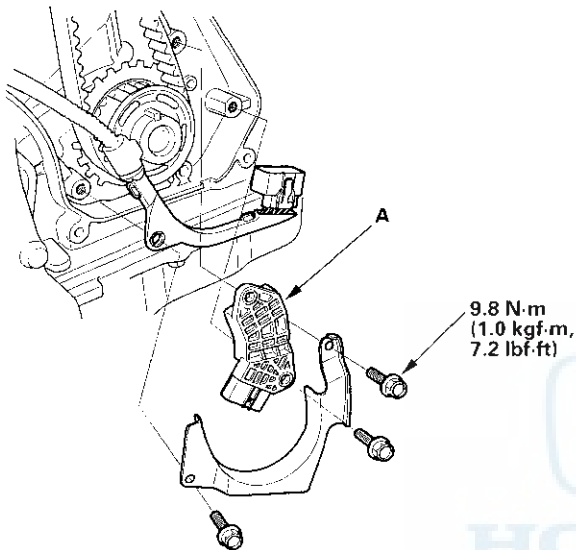


3. Remove IAT sensor 2 (B).
4. Install the sensor in the reverse order of removal with a new O-ring (C).

PGM-FI System

CKP Sensor Replacement

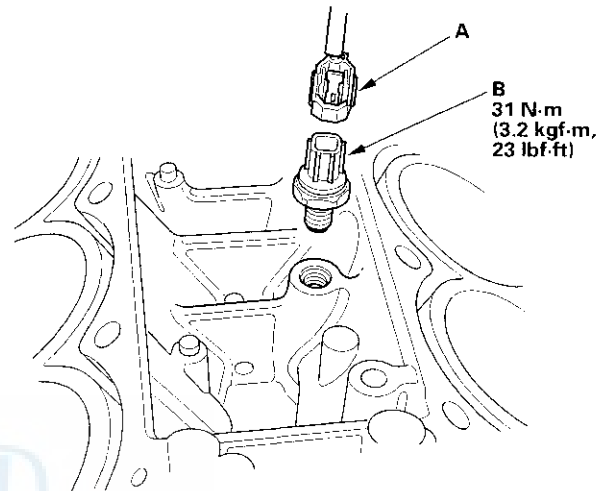
1. Move the auto-tensioner to remove tension from the drive belt, then remove the belt (see page 6-16).
2. Remove the crankshaft pulley (see page 6-14).
3. Remove the upper and lower timing belt covers from the engine (see page 6-16).
4. Remove CKP sensor A/B (A) from the oil pump.



5. Install the sensor in the reverse order of removal.
6. Clear the CKP pattern with the HDS.
7. Do the CKP pattern learn procedure (see page 11-4).

Knock Sensor Replacement

1. Remove the intake manifold (see page 9-3).
2. Remove the fuel rails and the intake runner base.
3. Disconnect the knock sensor connector (A), then remove the knock sensor (B).

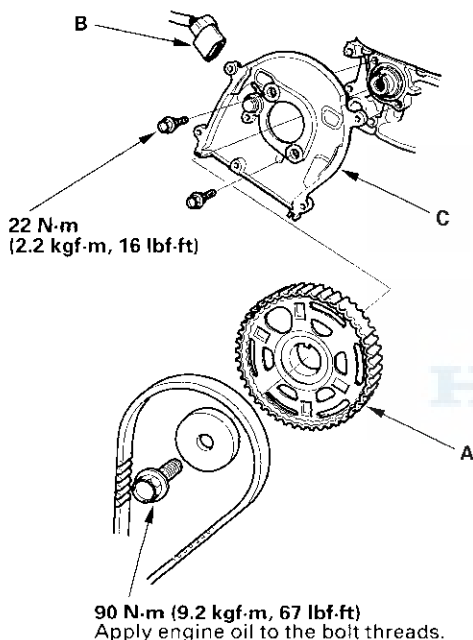


4. Install the sensor in the reverse order of removal.

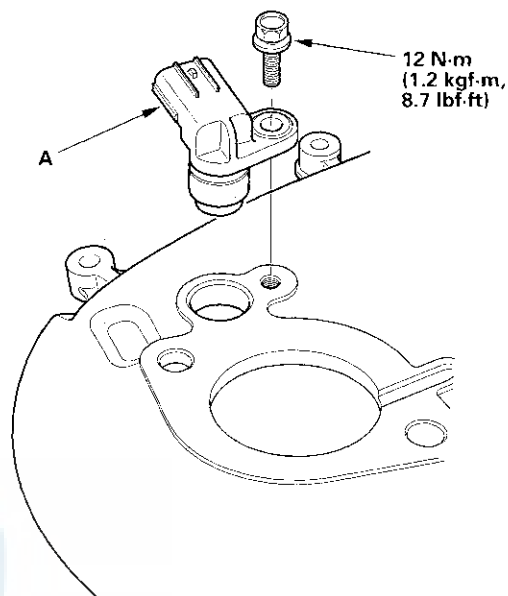


CMP Sensor Replacement

1. Set the No. 1 piston at top dead center (see step 4 on page 6-16).
2. Remove the upper covers from the engine (see step 17 on page 6-18).
3. To hold the timing belt adjuster in its current position, thread in the battery clamp bolt hand-tight (see step 19 on page 6-18).
4. Loosen the idler pulley bolt about five or six turns, then remove the timing belt from the front camshaft pulley (see step 22 on page 6-19).
5. Remove the front camshaft pulley (A).



6. Disconnect the CMP sensor connector (B), then remove the back cover (C).
7. Remove the CMP sensor (A) from the back cover.

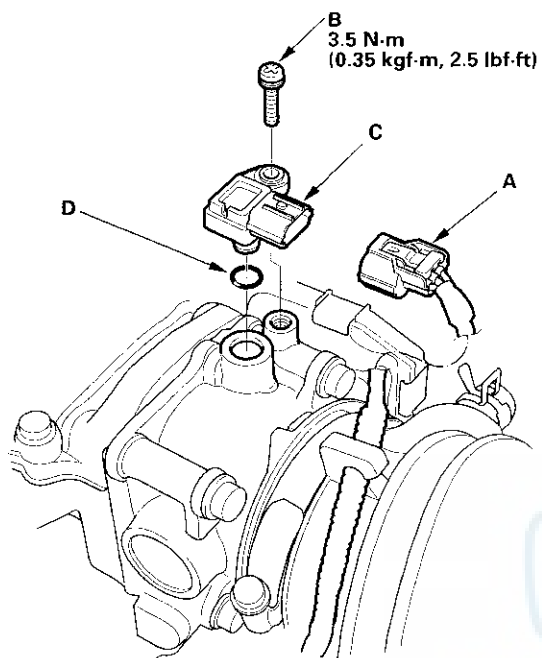


8. Install the sensor in the reverse order of removal. Reinstall the timing belt (see page 6-16) and other removed parts.

PGM-FI System

MAP Sensor Replacement

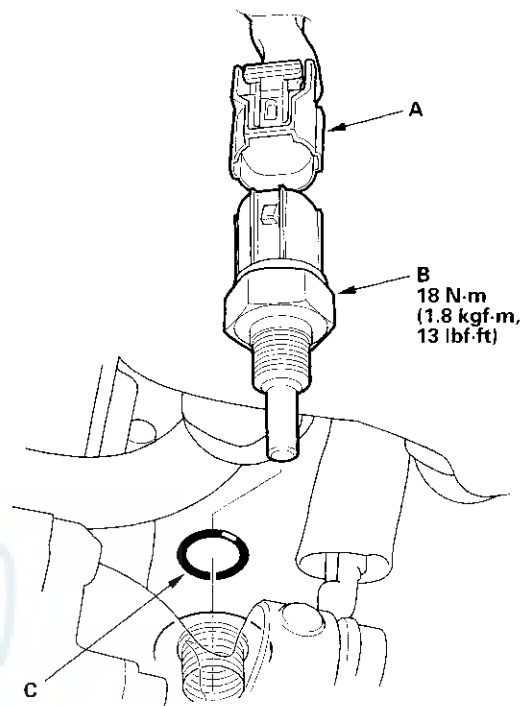
1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the MAP sensor connector (A).



3. Remove the screw (B).
4. Remove the MAP sensor (C).
5. Install the sensor in the reverse order of removal with a new O-ring (D).

ECT Sensor 2 Replacement

1. Remove the throttle body (see page 11-386).
2. Disconnect the ECT sensor 2 connector (A).

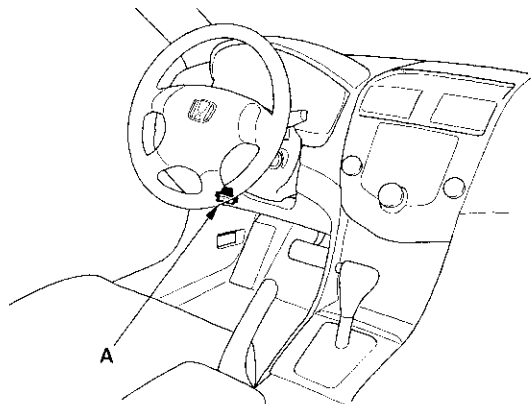


3. Remove ECT sensor 2 (B).
4. Install the sensor in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).

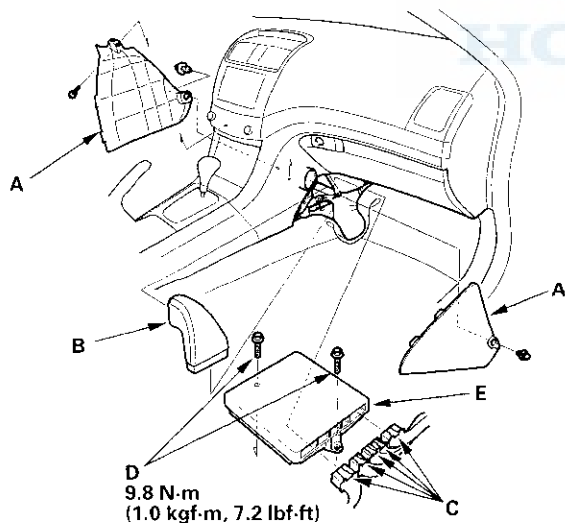


PCM Replacement

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Select READ DATA in REPLACE PCM with the HDS.
4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Remove the center lower covers (A).



7. Remove the duct (B).
8. Disconnect PCM connectors (C).
9. Remove the bolts (D), then remove the PCM (E).

10. Install the PCM in the reverse order of removal.

11. Open the SCS with the HDS.

12. Turn the ignition switch ON (II).

NOTE: DTC P0630 "VIN Not Programmed or Mismatch" will be stored because VIN has not been programmed into the PCM, but ignore it and continue this procedure.

13. Input the VIN to the PCM with the HDS.

14. Select WRITE DATA in REPLACE PCM with the HDS.

15. Rewrite the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.

16. Reset the PCM with the HDS.

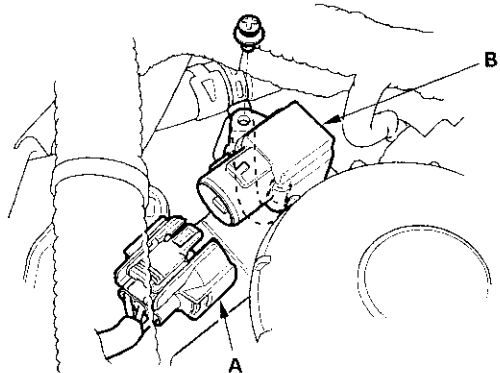
17. Do the PCM idle learn procedure (see page 11-340).

18. Do the CKP pattern learn procedure (see page 11-4).

PGM-FI System

Brake Booster Pressure Sensor Replacement

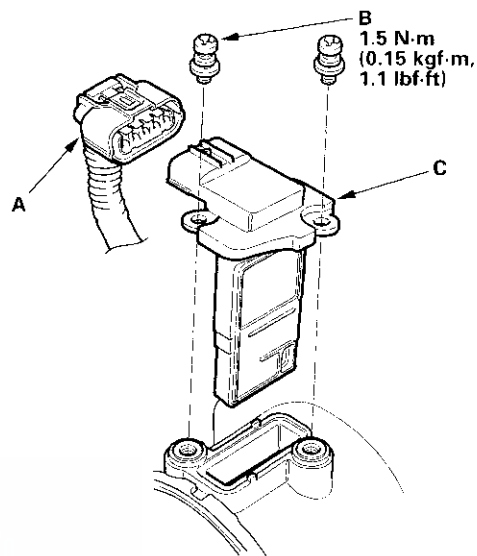
1. Disconnect the brake booster pressure sensor 3P connector (A).



2. Remove the brake booster pressure sensor (B).
3. Install the sensor in the reverse order of removal.

MAF Sensor/IAT Sensor 1 Replacement

1. Disconnect the MAF sensor/IAT sensor 1 connector (A).

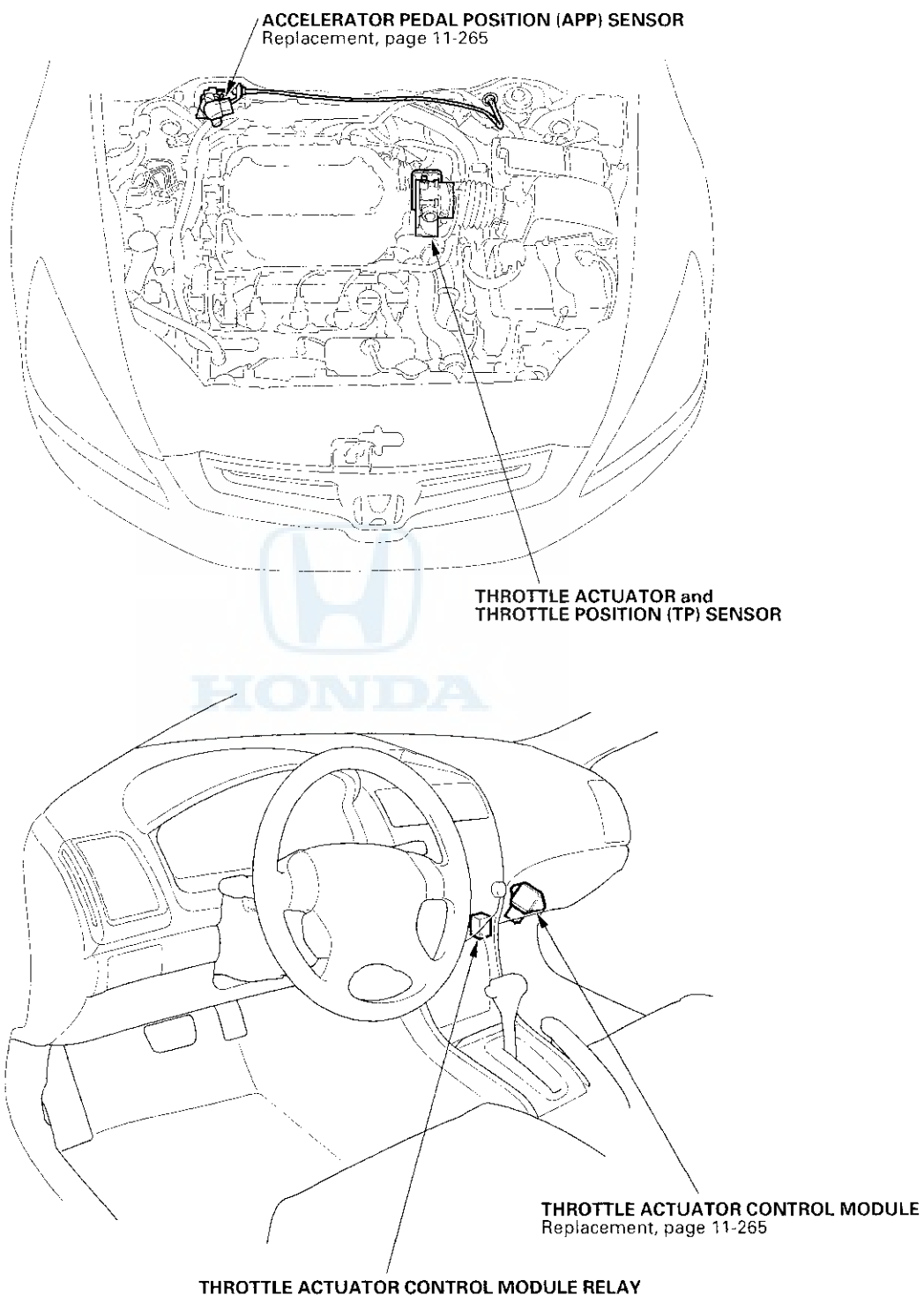


2. Remove the screws (B).
3. Remove the MAF sensor/IAT sensor 1 (C).
4. Install the sensor in the reverse order of removal.



Electronic Throttle Control System

Component Location Index



Electronic Throttle Control System

DTC Troubleshooting

DTC P0122: TP Sensor A Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

Is there about 0.3 V or less?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

4. Check for Temporary DTCs or DTCs with the HDS.

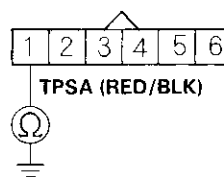
Are DTC P0122 and P0222 indicated at the same time?

YES—Check for, and repair any poor connections or loose terminals at the throttle body, the throttle actuator control module, and the PCM, then go to step 17. If the connections and terminals are OK, go to step 9.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Disconnect the throttle actuator control module 16P connector.
8. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there continuity?

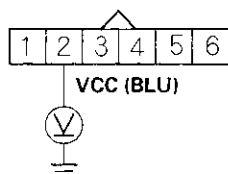
YES—Repair short in the wire between the throttle body and the throttle actuator control module (TPSA line), then go to step 17.

NO—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 17 and recheck. If DTC P0122 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 17. If DTC P0122 is indicated, go to step 15.



9. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

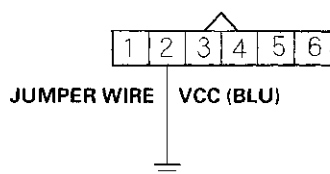
Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector (see page 11-265).
12. Disconnect the throttle body 6P connector.
13. Connect throttle body 6P connector terminal No. 2 to body ground with a jumper wire.

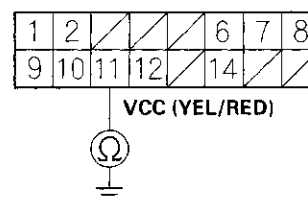
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

14. Check for continuity between throttle actuator control module 16P connector terminal No. 11 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 17 and recheck. If DTC P0122 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 17. If DTC P0122 is indicated, go to step 15.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (VCC line), then go to step 17.

(cont'd)

Electronic Throttle Control System

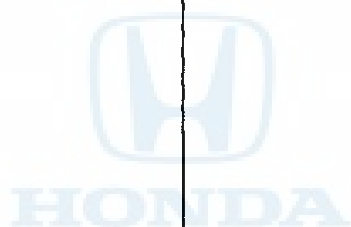
DTC Troubleshooting (cont'd)

15. Turn the ignition switch OFF.
16. Replace the throttle body (see page 11-386).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the PCM with the HDS.
20. Do the PCM idle learn procedure (see page 11-340).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0122 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■





DTC P0123: TP Sensor A Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR A in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

4. Check for Temporary DTCs or DTCs with the HDS.

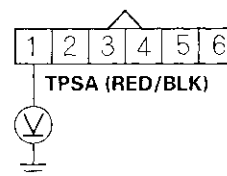
Are DTC P0123 and P0223 indicated at the same time?

YES—Go to step 11.

NO—Go to step 5.

5. Measure voltage between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

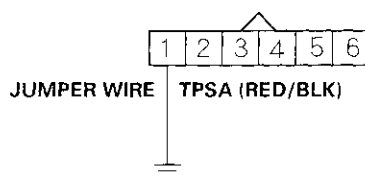
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector (see page 11-265).
8. Disconnect the throttle body 6P connector.
9. Connect throttle body 6P connector terminal No. 1 to body ground with a jumper wire.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

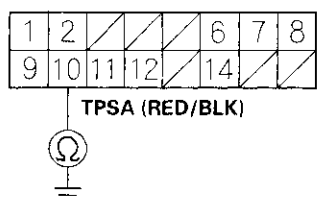
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

10. Check for continuity between throttle actuator control module 16P connector terminal No. 10 and body ground.

THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

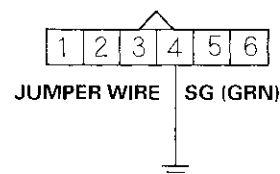
YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 18 and recheck. If DTC P0123 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 18. If DTC P0123 is indicated, go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (TPSA line), then go to step 18.

11. Turn the ignition switch OFF.
12. Disconnect the throttle body 6P connector.
13. Disconnect the throttle actuator control module 16P connector (see page 11-265).

14. Connect throttle body 6P connector terminal No. 4 to body ground with a jumper wire.

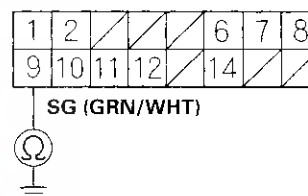
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

15. Check for continuity between throttle actuator control module 16P connector terminal No. 9 and body ground.

THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 18 and recheck. If DTC P0123 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 18. If DTC P0123 is indicated, go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (SG line), then go to step 18.

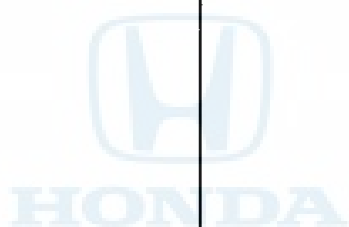


16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-386).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-340).
22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0123 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P0222: TP Sensor B Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 0.3 V or less?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

4. Check for Temporary DTCs or DTCs with the HDS.

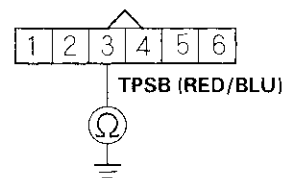
Are DTC P0122 and P0222 indicated at the same time?

YES—Check for, and repair any poor connections or loose terminals at the throttle body, the throttle actuator control module, and the PCM, then go to step 17. If the connections and terminals are OK, go to step 9.

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Disconnect the throttle actuator control module 16P connector (see page 11-265).
8. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

Is there continuity?

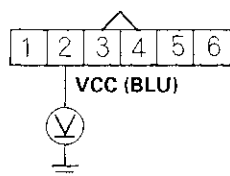
YES—Repair short in the wire between the throttle body and the throttle actuator control module (TPSB line), then go to step 17.

NO—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 17 and recheck. If DTC P0222 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 17. If DTC P0222 is indicated, go to step 15.



9. Measure voltage between throttle body 6P connector terminal No. 2 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

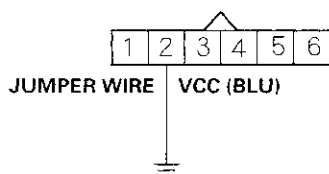
Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector (see page 11-265).
12. Disconnect the throttle body 6P connector.
13. Connect throttle body 6P connector terminal No. 2 to body ground with a jumper wire.

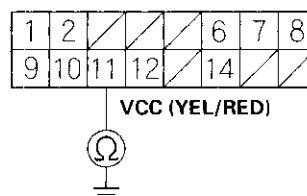
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

14. Check for continuity between throttle actuator control module 16P connector terminal No. 11 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 17 and recheck. If DTC P0222 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 17. If DTC P0222 is indicated, go to step 15.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (VCC line), then go to step 17.

(cont'd)

Electronic Throttle Control System

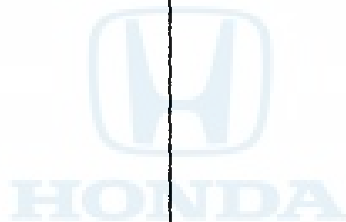
DTC Troubleshooting (cont'd)

15. Turn the ignition switch OFF.
16. Replace the throttle body (see page 11-386).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the PCM with the HDS.
20. Do the PCM idle learn procedure (see page 11-340).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0222 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■





DTC P0223: TP Sensor B Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check TP SENSOR B in the DATA LIST with the HDS.

Is there about 4.8 V or more?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

4. Check for Temporary DTCs or DTCs with the HDS.

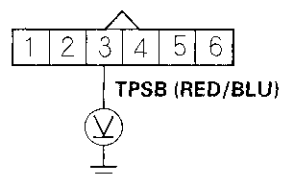
Are DTC P0123 and P0223 indicated at the same time?

YES—Go to step 11.

NO—Go to step 5.

5. Measure voltage between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

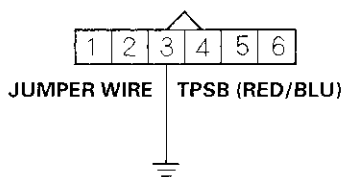
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect the throttle actuator control module 16P connector (see page 11-265).
8. Disconnect the throttle body 6P connector.
9. Connect throttle body 6P connector terminal No. 3 to body ground with a jumper wire.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

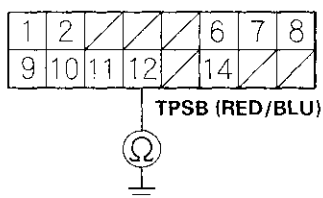
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

10. Check for continuity between throttle actuator control module 16P connector terminal No. 12 and body ground.

THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

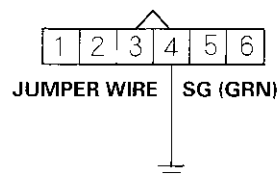
YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 18 and recheck. If DTC P0223 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 18. If DTC P0223 is indicated, go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (TPSB line), then go to step 18.

11. Turn the ignition switch OFF.
12. Disconnect the throttle body 6P connector.
13. Disconnect the throttle actuator control module 16P connector (see page 11-265).

14. Connect throttle body 6P connector terminal No. 4 to body ground with a jumper wire.

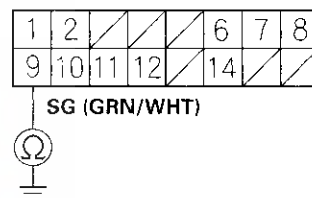
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

15. Check for continuity between throttle actuator control module 16P connector terminal No. 9 and body ground.

THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 18 and recheck. If DTC P0223 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 18. If DTC P0223 is indicated, go to step 16.

NO—Repair open in the wire between the throttle body and the throttle actuator control module (SG line), then go to step 18.

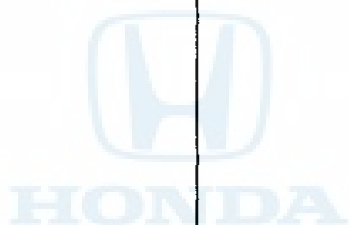


16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-386).
18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-340).
22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0223 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P1683: Throttle Valve Default Position Spring Performance Problem

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your finger if the throttle valve is activated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1683 indicated?

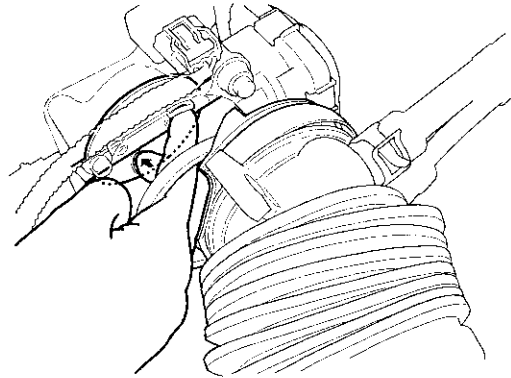
YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve closed as shown.

NOTE:

- Do not operate the ignition switch during the check.
- Be careful not to pinch your fingers during the check.



10. Release the throttle valve.

Does the throttle valve return?

YES—Clean the throttle body (see page 11-381), then go to step 13.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Replace the throttle body (see page 11-386).
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-340).
16. Turn the ignition switch OFF, and wait 10 seconds.
17. Turn the ignition switch ON (II).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1683 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P1684: Throttle Valve Return Spring Performance Problem

CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your finger if the throttle valve is activated.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Turn the ignition switch OFF, and wait 10 seconds.
5. Turn the ignition switch ON (II).
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1684 indicated?

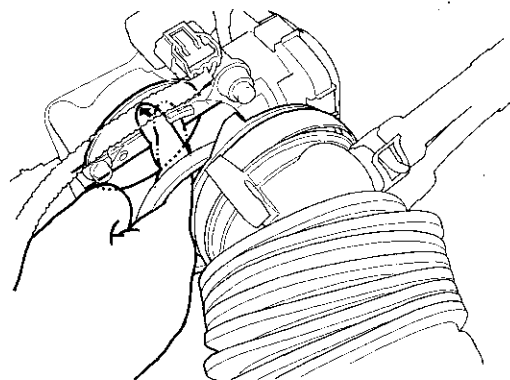
YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve open as shown.

NOTE:

- Do not operate the ignition switch during the check.
- Be careful not to pinch your fingers during the check.



10. Release the throttle valve.

Does the throttle valve return?

YES—Clean the throttle body (see page 11-381), then go to step 13.

NO—Go to step 11.

11. Turn the ignition switch OFF.
12. Replace the throttle body (see page 11-386).
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-340).
16. Turn the ignition switch OFF, and wait 10 seconds.
17. Turn the ignition switch ON (II).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1684 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2101: Throttle Actuator System Malfunction

1. Record this freeze data:

- Engine speed
- Vehicle speed
- Accelerator position

2. Clear the DTC with the HDS.

3. Do the ETCS TEST in the INSPECTION MENU with the HDS.

4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see page 11-381). ■

7. Turn the ignition switch OFF.

8. Disconnect the intake air duct from the throttle body.

9. Turn the ignition switch ON (II).

10. Clear the DTC with the HDS.

11. Do the ETCS TEST in the INSPECTION MENU with the HDS.

12. Visually check the throttle valve operation.

NOTE: Be careful not to pinch your fingers during the check.

Does the throttle valve operate smoothly?

YES—Clean the throttle body (see page 11-381), then go to step 20 and recheck. If DTC P2101 is indicated, go to step 18.

NO—Go to step 13.

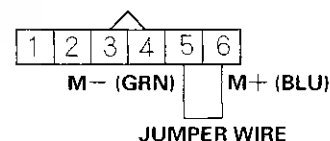
13. Turn the ignition switch OFF.

14. Disconnect the throttle body 6P connector.

15. Disconnect the throttle actuator control module 16P connector (see page 11-265).

16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

THROTTLE BODY 6P CONNECTOR

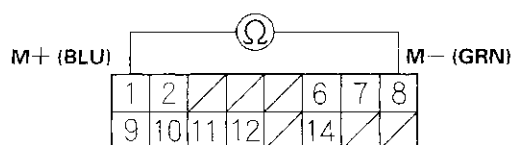


Wire side of female terminals



17. Check for continuity between throttle actuator control module 16P connector terminals No. 1 and No. 8.

**THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 20 and recheck. If DTC P2101 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 20. If DTC P2101 is indicated, go to step 18.

NO—Repair open in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-386).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-340).

24. Test-drive the vehicle for several minutes in the range of the recorded freeze data.

25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2101 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see page 11-381), and go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2108: Throttle Actuator Control Module Problem

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2108 indicated?

YES—Substitute a known-good throttle actuator control module (see page 11-265), and recheck. If DTC P2108 is not indicated, replace the original throttle actuator control module (see page 11-265). ■

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body, the throttle actuator control module, and the PCM. ■

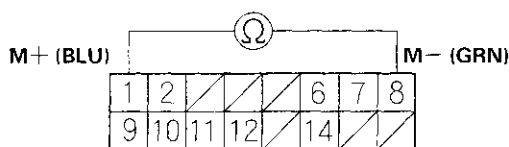




DTC P2118: Throttle Actuator Current Range/Performance Problem

1. Disconnect the throttle actuator control module 16P connector (see page 11-265).
2. Measure resistance between throttle actuator control module 16P connector terminals No. 1 and No. 8.

THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR



Wire side of female terminals

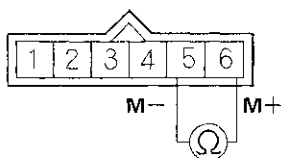
Is there about 1.0 Ω or less?

YES—Go to step 3.

NO—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 7 and recheck. If DTC P2118 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 7.

3. Disconnect the throttle body 6P connector.
4. At the throttle body side, measure resistance between throttle body 6P connector terminals No. 5 and No. 6 with the throttle fully closed.

THROTTLE BODY 6P CONNECTOR



Terminal side of male terminals

Is there about 1.0 Ω or less?

YES—Go to step 5.

NO—Repair short in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 6.

5. Replace the throttle body (see page 11-386).
6. Reconnect the throttle body 6P connector.
7. Reconnect the throttle actuator control module 16P connector (see page 11-265).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-340).
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II).
13. Slowly press the accelerator pedal to the floor.
14. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2118 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2122: APP Sensor A (Throttle Position Sensor D) Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-A in the DATA LIST with the HDS.

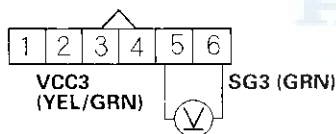
Is there about 0.1 V or less?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

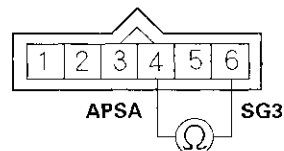
YES—Go to step 7.

NO—Go to step 15.

7. Turn the ignition switch OFF.

8. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 4 and No. 6 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

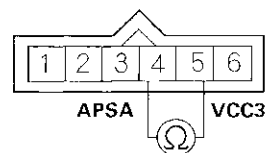
Is there about 0.35—0.45 k Ω at room temperature?

YES—Go to step 9.

NO—Go to step 16.

9. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 4 and No. 5 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there about 2.7—3.3 k Ω at room temperature?

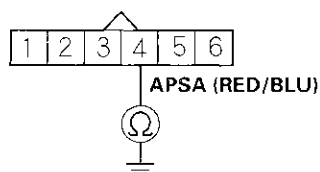
YES—Go to step 10.

NO—Go to step 16.



10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

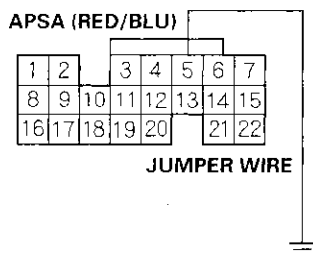
Is there continuity?

YES—Repair short in the wire between APP sensor A and the PCM (C5), then go to step 17.

NO—Go to step 13.

13. Connect PCM connector terminal C5 to body ground with a jumper wire.

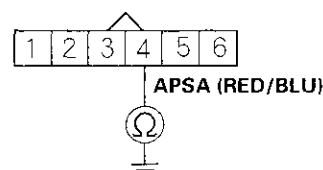
PCM CONNECTOR C (22P)



Wire side of female terminals

14. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

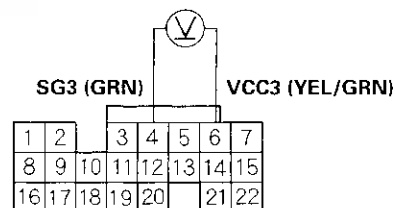
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between APP sensor A and the PCM (C5), then go to step 17.

15. Measure voltage between PCM connector terminals C4 and C6.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (C6) and APP sensor A, then go to step 17.

NO—Go to step 22.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

16. Replace the APP sensor (see page 11-265).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the PCM with the HDS.
20. Do the PCM idle learn procedure (see page 11-340).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2122 is indicated, check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

22. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2122 is indicated, check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P2123: APP Sensor A (Throttle Position Sensor D) Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the APP SENSOR-A in the DATA LIST with the HDS.

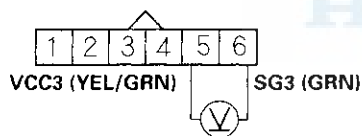
Is there about 4.9 V or more?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor A and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

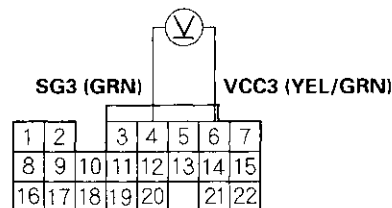
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 7.

7. Measure voltage between PCM connector terminals C4 and C6.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (C4) and APP sensor A, then go to step 10.

NO—Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the APP sensor (see page 11-265).
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-340).
13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2123 is indicated, check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

(cont'd)

Electronic Throttle Control System

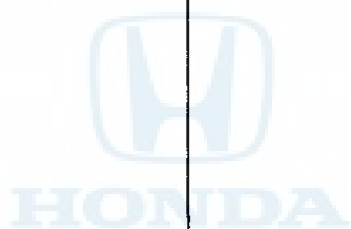
DTC Troubleshooting (cont'd)

14. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2123 is indicated, check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P2127: APP Sensor B (Throttle Position Sensor E) Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-B in the DATA LIST with the HDS.

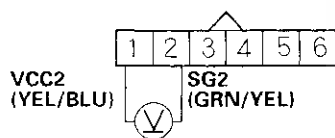
Is there about 0.1 V or less?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor B and at the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 1 and No. 2.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

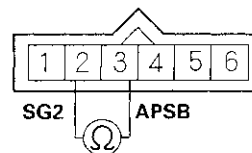
YES—Go to step 7.

NO—Go to step 15.

7. Turn the ignition switch OFF.

8. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 2 and No. 3 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

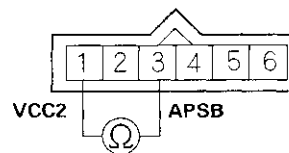
Is there about 0.35–0.45 k Ω at room temperature?

YES—Go to step 9.

NO—Go to step 16.

9. At the sensor side, measure resistance between APP sensor 6P connector terminals No. 1 and No. 3 with the throttle fully closed.

APP SENSOR 6P CONNECTOR



Terminal side of male terminals

Is there about 5.9–7.3 k Ω at room temperature?

YES—Go to step 10.

NO—Go to step 16.

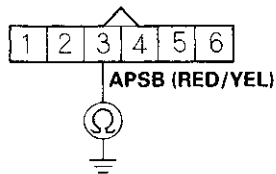
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

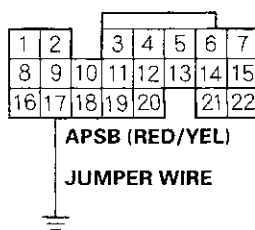
Is there continuity?

YES—Repair short in the wire between APP sensor B and the PCM (C17), then go to step 17.

NO—Go to step 13.

13. Connect PCM connector terminal C17 to body ground with a jumper wire.

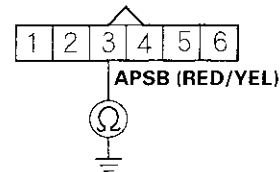
PCM CONNECTOR C (22P)



Wire side of female terminals

14. At the wire harness side, check for continuity between APP sensor 6P connector terminal No. 3 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

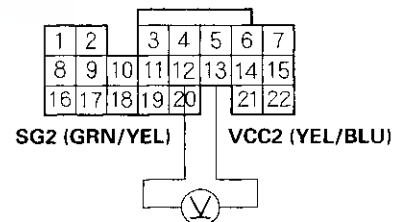
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between APP sensor B and the PCM (C17), then go to step 17.

15. Measure voltage between PCM connector terminals C12 and C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (C13) and APP sensor B, then go to step 17.

NO—Go to step 22.



16. Replace the APP sensor (see page 11-265).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the PCM with the HDS.
20. Do the PCM idle learn procedure (see page 11-340).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2127 is indicated, check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

22. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2127 is indicated, check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2128: APP Sensor B (Throttle Position Sensor E) Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check APP SENSOR-B in the DATA LIST with the HDS.

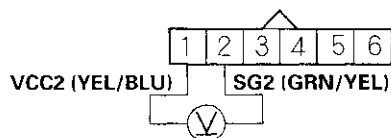
Is there about 4.9 V or more?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at APP sensor B and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch ON (II).
6. At the wire harness side, measure voltage between APP sensor 6P connector terminals No. 1 and No. 2.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

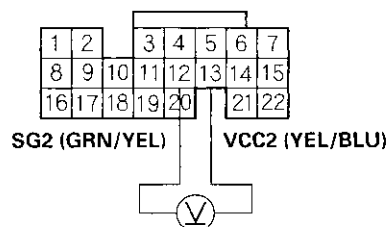
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 7.

7. Measure voltage between PCM connector terminals C12 and C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the PCM (C12) and APP sensor B, then go to step 10.

NO—Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the APP sensor (see page 11-265).
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-340).
13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2128 is indicated, check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

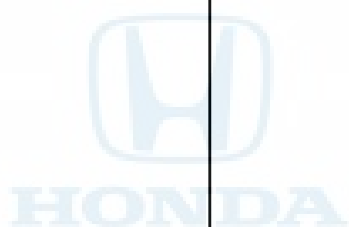


14. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2128 is indicated, check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2135: TP Sensor A/B Voltage Incorrect Correlation

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module. ■

5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Clear the DTC with the HDS.
9. Visually check the throttle valve operation.

Does the valve move to the fully closed position temporarily?

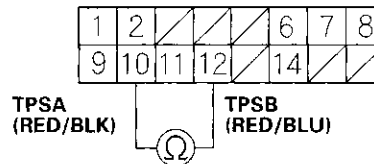
YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Disconnect the throttle actuator control module 16P connector (see page 11-265).

12. Check for continuity between throttle actuator control module 16P connector terminals No. 10 and No. 12.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

Is there continuity?

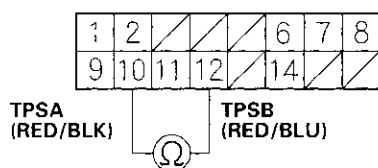
YES—Go to step 13.

NO—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 17 and recheck. If DTC P2135 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 17.



13. Disconnect the throttle body 6P connector.
14. Check for continuity between throttle actuator control module 16P connector terminals No. 10 and No. 12.

**THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the TPSA line and the TPSB line, then go to step 17.

NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Replace the throttle body (see page 11-386).
17. Reconnect all connectors.
18. Turn the ignition switch ON (II).
19. Reset the PCM with the HDS.
20. Do the PCM idle learn procedure (see page 11-340).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2135 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2138: APP Sensor A/B Incorrect Voltage Correlation

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Press the accelerator pedal to the floor.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2138 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the PCM. ■

5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

Are they the same voltage?

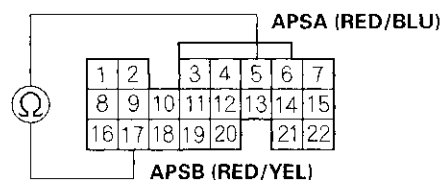
YES—Go to step 6.

NO—Go to step 11.

6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect the APP sensor 6P connector.
9. Disconnect PCM connector C (22P).

10. Check for continuity between PCM connector terminals C5 and C17.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the PCM terminals (C5, C17), then go to step 13.

NO—Go to step 21.

11. Turn the ignition switch OFF.
12. Replace the APP sensor (see page 11-265).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Press the accelerator pedal to the floor.



20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2138 is indicated, check for poor connections or loose terminals at the APP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
22. Turn the ignition switch OFF.
23. Turn the ignition switch ON (II).
24. Press the accelerator pedal to the floor.
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2138 is indicated, check for poor connections or loose terminals at the APP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

NOTE: If DTC P2135 or P2552 is stored at the same time as DTC P2176, troubleshoot DTC P2135 or P2552 first, then recheck for DTC P2176.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Turn the ignition switch ON (II), and wait 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see page 11-381). ■

6. Turn the ignition switch OFF.
7. Disconnect the intake air duct from the throttle body.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS.
10. Do the ETCS TEST in the INSPECTION MENU with the HDS.
11. Visually check the throttle valve operation.

NOTE: Be careful not to pinch your fingers. Keep your hands away from the throttle valve.

Does the throttle valve move to its fully closed position?

YES—Go to step 12.

NO—Go to step 13.

12. Check for sludge or carbon on the throttle valve.

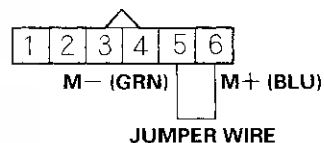
Is there sludge or carbon on the throttle valve?

YES—Clean the throttle body (see page 11-381), then go to step 21 and recheck.

NO—Go to step 18.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Disconnect the throttle actuator control module 16P connector (see page 11-265).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

THROTTLE BODY 6P CONNECTOR

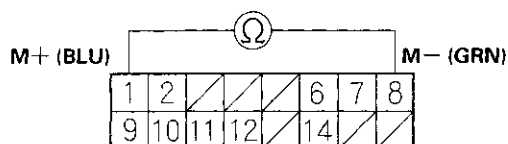


Wire side of female terminals



17. Check for continuity between throttle actuator control module 16P connector terminals No. 1 and No. 8.

**THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 20 and recheck. If DTC P2176 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 20.

NO—Repair open in the wires between the throttle body and the throttle actuator control module (motor drive lines), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-386).
20. Reconnect all connectors.
21. Turn the ignition switch ON (II).
22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-340).
24. Turn the ignition switch OFF.
25. Turn the ignition switch ON (II), and wait 10 seconds.

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2176 is indicated, check for poor connections or loose terminals at the throttle body and the throttle actuator control module, then clean the throttle body (see page 11-381), and go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC P2552: Throttle Actuator Control Module Relay Malfunction

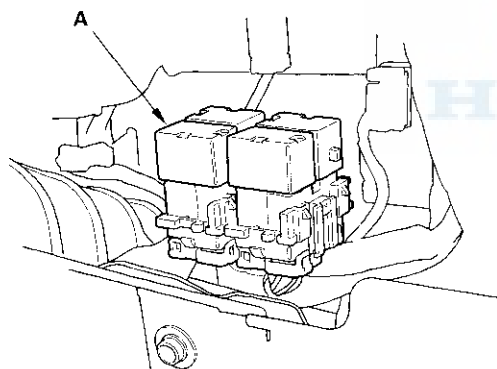
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ETCS TEST in the INSPECTION MENU with the HDS.

Is the RELAY Circuit OK?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module, and the PCM. ■

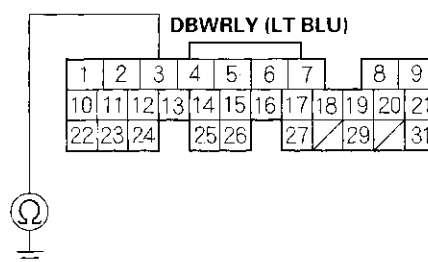
NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Remove the throttle actuator control module relay (A).



7. Disconnect PCM connector E (31P).
8. Check for continuity between PCM connector terminal E3 and body ground.

PCM CONNECTOR E (31P)



Is there continuity?

YES—Repair short in the wire between the throttle actuator control module relay and the PCM (E3), then go to step 10.

NO—Go to step 9.

9. Test the throttle actuator control module relay (see page 22-72).

Is the relay OK?

YES—Go to step 17.

NO—Replace the throttle actuator control module relay, then go to step 10.



10. Reconnect PCM connector E (31P).
11. Turn the ignition switch ON (II).
12. Reset the PCM with the HDS.
13. Do the PCM idle learn procedure (see page 11-340).
14. Turn the ignition switch OFF.
15. Turn the ignition switch ON (II), and wait 10 seconds.
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2552 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

17. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2552 is indicated, check for poor connections or loose terminals at the throttle actuator control module relay, the throttle actuator control module, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

DTC U0107: Lost Communication With Throttle Actuator Control Module

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0107 indicated?

YES—Check for, and repair any poor connections or loose terminals at the throttle body, the throttle actuator control module, and the PCM, then go to step 50. If the connections and terminals are OK, go to step 6.

NO—Go to step 4.

4. Start the engine.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0107 indicated?

YES—Go to step 46.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the throttle body, the throttle actuator control module relay, the throttle actuator control module, and the PCM. ■

6. Clear the DTC with the HDS.
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Press the accelerator pedal to the floor.
10. Turn the ignition switch ON (II).
11. Check the throttle valve operation.

Does the throttle valve open after it closes?

YES—Go to step 12.

NO—Go to step 13.

12. Check the throttle valve again.

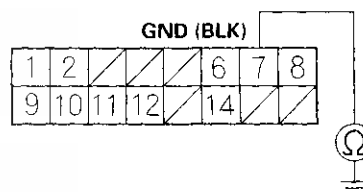
Does the throttle valve open fully?

YES—Go to step 40.

NO—Go to step 34.

13. Turn the ignition switch OFF.
14. Disconnect the throttle actuator control module 16P connector (see page 11-265).
15. Check for continuity between throttle actuator control module 16P connector terminal No. 7 and body ground.

THROTTLE ACTUATOR CONTROL MODULE 16P CONNECTOR



Wire side of female terminals

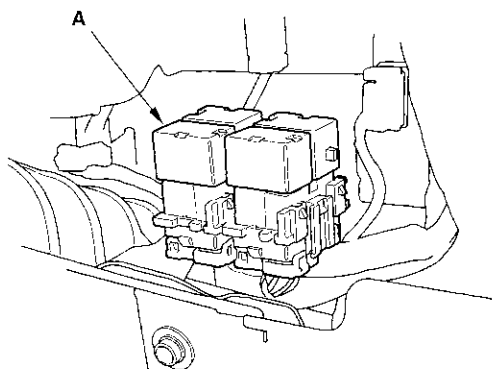
Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the throttle body, the throttle actuator control module, and G101, then go to step 50.

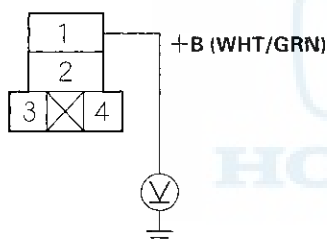


16. Remove the throttle actuator control module relay (A).



17. Measure voltage between throttle actuator control module relay 4P connector terminal No. 1 and body ground.

THROTTLE ACTUATOR CONTROL
MODULE RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 19.

NO—Go to step 18.

18. Check the No. 1 THROTTLE ACTUATOR CONTROL (DBW) (15 A) fuse in under-dash fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the throttle actuator control module relay (+B line) and the No. 1 THROTTLE ACTUATOR CONTROL (DBW) (15 A) fuse, then go to step 50.

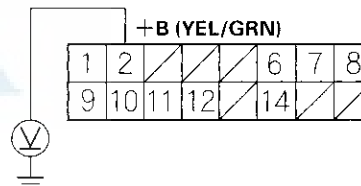
NO—Repair short in the wire between the throttle actuator control module relay (+B line) and the No. 1 THROTTLE ACTUATOR CONTROL (DBW) (15 A) fuse, then go to step 50.

19. Install the throttle actuator control module relay.

20. Turn the ignition switch ON (II).

21. Measure voltage between throttle actuator control module 16P connector terminal No. 2 and body ground.

THROTTLE ACTUATOR CONTROL
MODULE 16P CONNECTOR



Wire side of female terminals

Is there battery voltage for about 2 seconds?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 50 and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 50.

NO—Go to step 22.

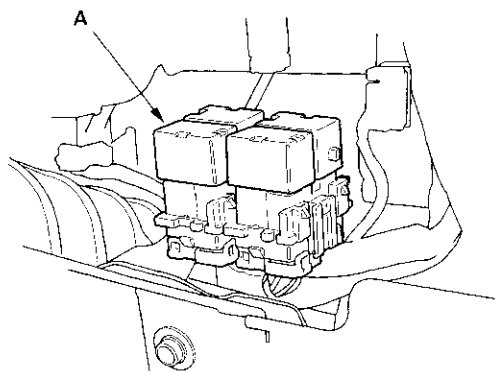
(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

22. Turn the ignition switch OFF.

23. Remove the throttle actuator control module relay (A).



24. Check the throttle actuator control module relay (see page 22-72).

Is the throttle actuator control module relay OK?

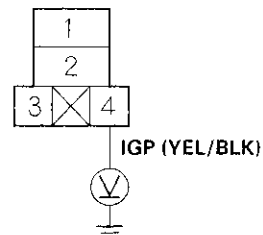
YES—Go to step 25.

NO—Replace the throttle actuator control module relay, then go to step 50.

25. Turn the ignition switch ON (II).

26. Measure voltage between throttle actuator control module relay 4P connector terminal No. 4 and body ground.

**THROTTLE ACTUATOR CONTROL
MODULE RELAY 4P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 27.

NO—Repair open in the wire between the throttle actuator control module relay and PGM-FI main relay 1 (FI MAIN), then go to step 50.

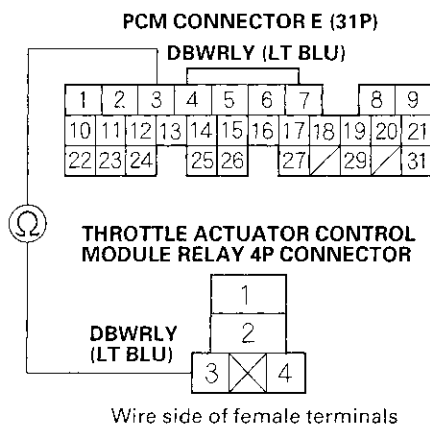
27. Turn the ignition switch OFF.

28. Jump the SCS line with the HDS.

29. Disconnect PCM connector E (31P).



30. Check for continuity between PCM connector terminal E3 and throttle actuator control module relay 4P connector terminal No. 3.

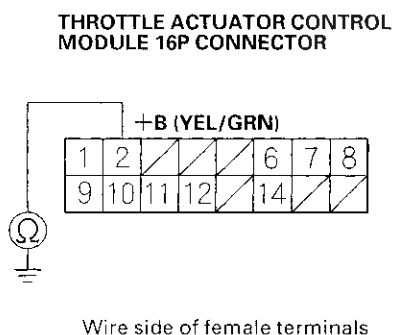


Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the PCM (E3) and the throttle actuator control module relay, then go to step 50.

31. Check for continuity between throttle actuator control module 16P connector terminal No. 2 and body ground.

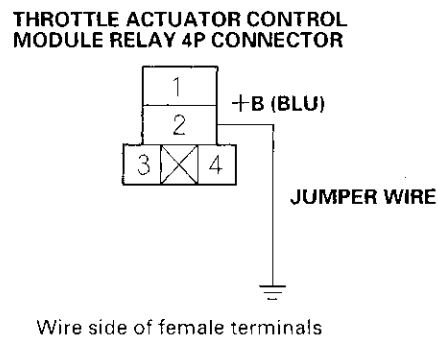


Is there continuity?

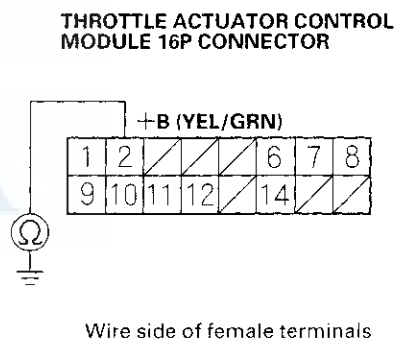
YES—Repair short in the wire between the throttle actuator control module and the throttle actuator control module relay (+B line), then go to step 50.

NO—Go to step 32.

32. Connect throttle actuator control module relay 4P connector terminal No. 2 to body ground with a jumper wire.



33. Check for continuity between throttle actuator control module 16P connector terminal No. 2 and body ground.



Is there continuity?

YES—Go to step 56.

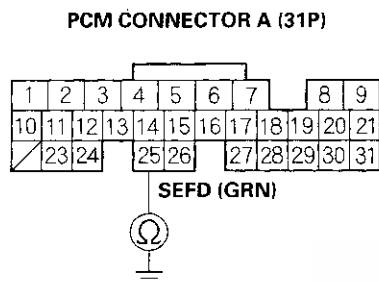
NO—Repair open in the wire between the throttle actuator control module and the throttle actuator control module relay (+B line), then go to step 50.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

34. Turn the ignition switch OFF.
35. Jump the SCS line with the HDS.
36. Disconnect the throttle actuator control module 16P connector (see page 11-265).
37. Disconnect PCM connector A (31P).
38. Check for continuity between PCM connector terminal A25 and body ground.



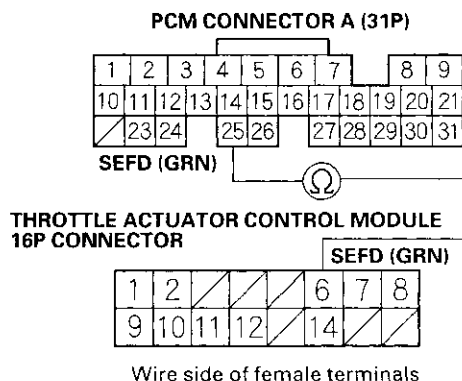
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A25) and the throttle actuator control module, then go to step 50.

NO—Go to step 39.

39. Check for continuity between PCM connector terminal A25 and throttle actuator control module 16P connector terminal No. 6.



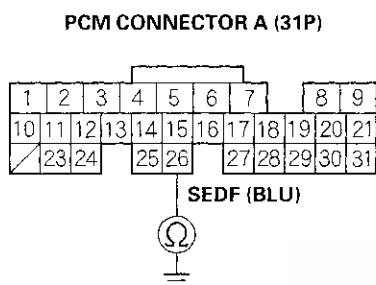
Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 50 and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 50. If DTC U0107 is indicated, go to step 56.

NO—Repair open in the wire between the PCM (A25) and the throttle actuator control module, then go to step 50.



40. Turn the ignition switch OFF.
41. Jump the SCS line with the HDS.
42. Disconnect the throttle actuator control module 16P connector (see page 11-265).
43. Disconnect PCM connector A (31P).
44. Check for continuity between PCM connector terminal A26 and body ground.



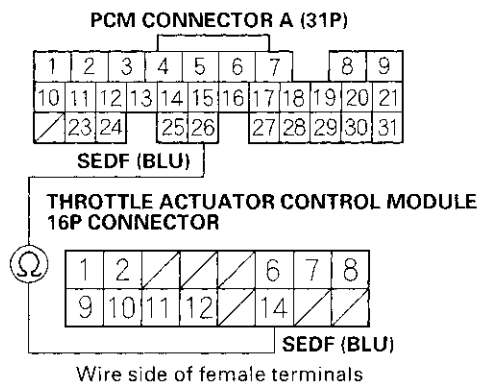
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A26) and the throttle actuator control module, then go to step 50.

NO—Go to step 45.

45. Check for continuity between PCM connector terminal A26 and throttle actuator control module 16P connector terminal No. 14.



Is there continuity?

YES—Substitute a known-good throttle actuator control module (see page 11-265), then go to step 50 and recheck. If DTC U0107 is not indicated, replace the original throttle actuator control module (see page 11-265), then go to step 50. If DTC U0107 is indicated, go to step 56.

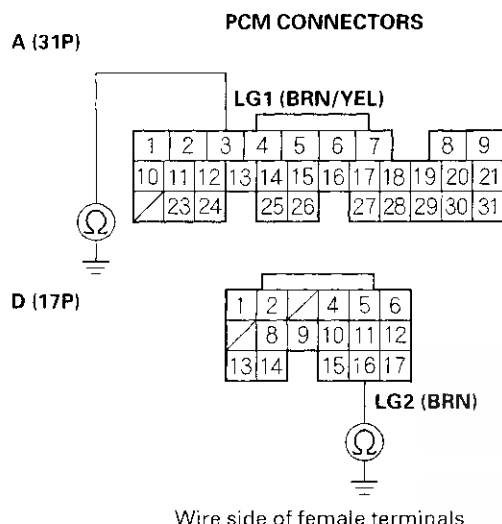
NO—Repair open in the wire between the PCM (A26) and the throttle actuator control module, then go to step 50.

(cont'd)

Electronic Throttle Control System

DTC Troubleshooting (cont'd)

46. Turn the ignition switch OFF.
47. Jump the SCS line with the HDS.
48. Disconnect PCM connector A (31P) and D (17P).
49. Check for continuity between body ground and PCM connector terminals A3 and D16 individually.



Is there continuity?

YES—Check for poor connections or loose terminals at the throttle body, the throttle actuator control module relay, the throttle actuator control module, and the PCM, then go to step 1.

NO—Repair open in the wire between the PCM (A3, D16) and G101, then go to step 50.

50. Turn the ignition switch OFF.
51. Reconnect all connectors.
52. Turn the ignition switch ON (II).
53. Reset the PCM with the HDS.
54. Do the PCM idle learn procedure (see page 11-340).
55. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0107 is indicated, check for poor connections or loose terminals at the throttle body, the throttle actuator control module relay, the throttle actuator control module, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

56. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

57. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

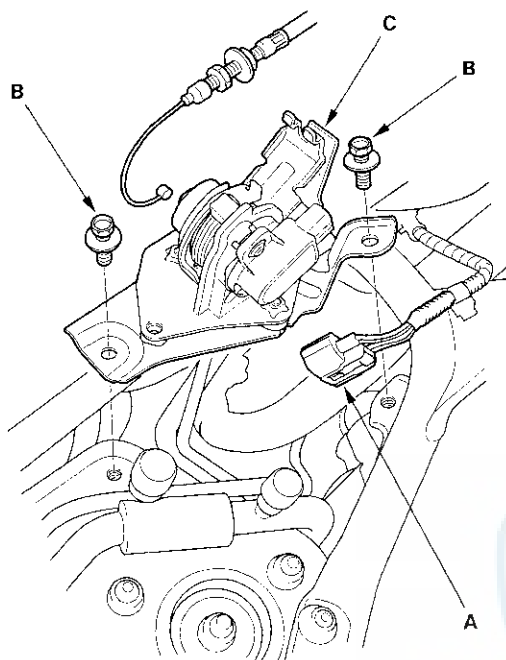
YES—If DTC U0107 is indicated, check for poor connections or loose terminals at the throttle body, the throttle actuator control module relay, the throttle actuator control module, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



APP Sensor Replacement

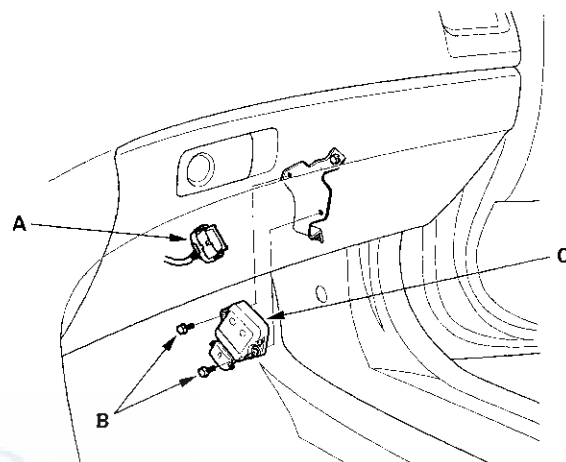
1. Remove the throttle cable (see page 11-385).
2. Disconnect the accelerator pedal position (APP) sensor 6P connector (A).



3. Remove the bolts (B) and the APP sensor (C).
4. Install the sensor in the reverse order of removal.

Throttle Actuator Control Module Replacement

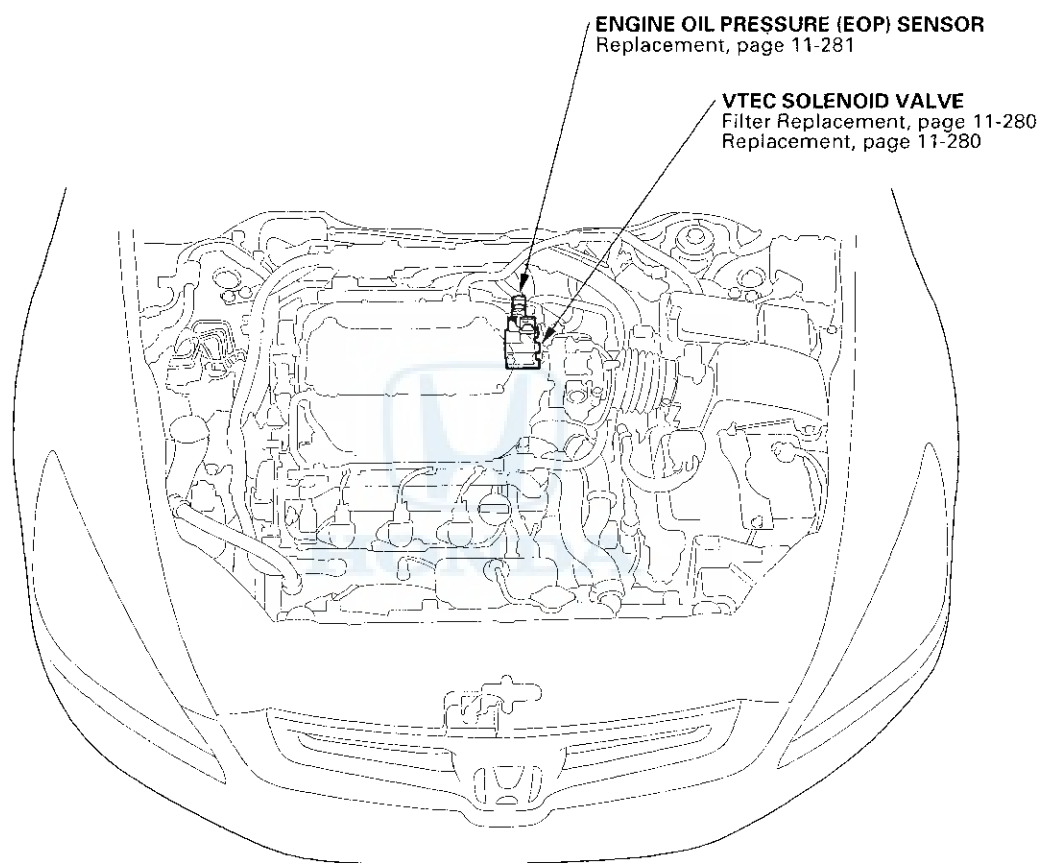
1. Remove the right kick panel (see page 20-45).
2. Disconnect the throttle actuator control module 16P connector (A).



3. Remove the bolts (B) and the throttle actuator control module (C).
4. Install the control module in the reverse order of removal.

Variable Cylinder Management (VCM) System

Component Location Index





DTC Troubleshooting

DTC P0522: EOP Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

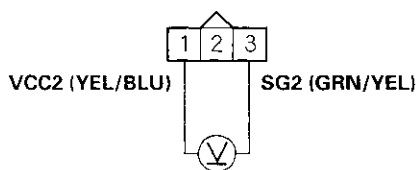
Is there about 0.18 V or less?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EOP sensor and the PCM. ■

3. Turn the ignition switch OFF.
 4. Disconnect the EOP sensor 3P connector.
 5. Turn the ignition switch ON (II).
 6. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.
- Is there about 0.18 V or less?*
- YES**—Go to step 8.
- NO**—Go to step 7.
7. Measure voltage between EOP sensor 3P connector terminals No. 1 and No. 3.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

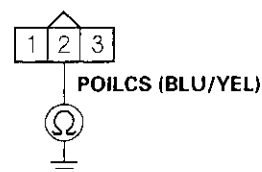
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 12.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector A (31P).
11. Check for continuity between EOP sensor 3P connector terminal No. 2 and body ground.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

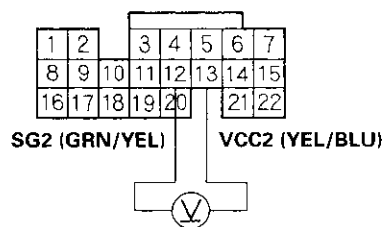
Is there continuity?

YES—Repair short in the wire between the PCM (A13) and the MAP sensor, then go to step 15.

NO—Go to step 21.

12. Measure voltage between PCM connector terminals C12 and C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5V?

YES—Repair open in the wire between the PCM (C13) and the EOP sensor, then go to step 15.

NO—Go to step 21.

(cont'd)

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.
14. Replace the EOP sensor (see page 11-281).
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0522 is indicated, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0522 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18 and recheck.

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0522 is indicated, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P0523: EOP Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

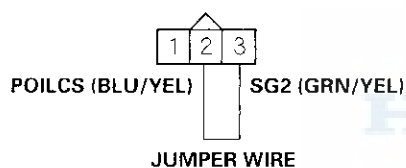
Is there about 4.79 V or more?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EOP sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the EOP sensor 3P connector.
5. Connect EOP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).

7. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

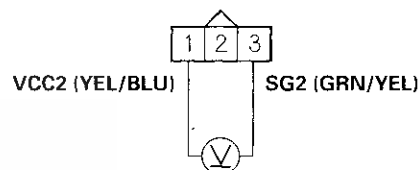
Is there about 4.79 V or more?

YES—Go to step 8.

NO—Go to step 19.

8. Remove the jumper wire.
9. Measure voltage between EOP sensor 3P connector terminals No. 1 and No. 3.

EOP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

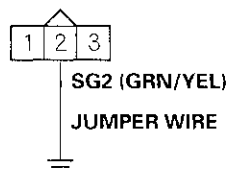
(cont'd)

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (22P).
13. Connect EOP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

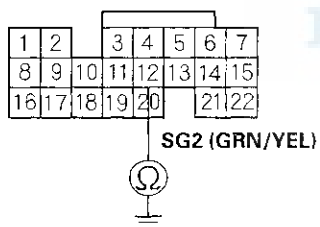
EOP SENSOR 3P CONNECTOR



Wire side of female terminals

14. Check for continuity between PCM connector terminals C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

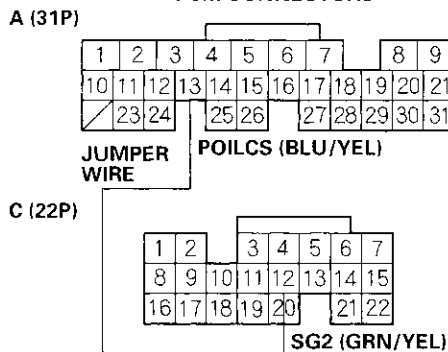
Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C12) and EOP sensor, then go to step 21.

15. Turn the ignition switch OFF.
16. Connect PCM connector terminals A13 and C12 with a jumper wire.

PCM CONNECTORS



Wire side of female terminals

17. Turn the ignition switch ON (II).
18. Check the OIL PRESSURE SENSOR in the DATA LIST with the HDS.

Is there about 4.79 V or more?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (A13) and the EOP sensor, then go to step 21.



19. Turn the ignition switch OFF.
20. Replace the EOP sensor (see page 11-281).
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-340).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0523 is indicated, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P0523 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 24 and recheck.

27. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0523 is indicated, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC P2646: VTEC System Stuck OFF

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070300
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 12.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

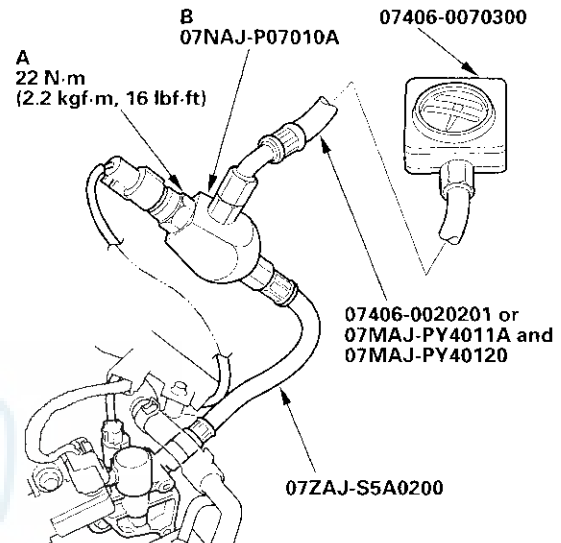
YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EOP sensor, the VTEC solenoid valve, and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the EOP sensor (A), install the special tools as shown, then install the EOP sensor in the oil pressure gauge adapter (B).

NOTE: Install the sensor in the reverse order of removal with new O-ring.



7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.

8. Do the VTEC TEST in the INSPECTION MENU with the HDS.



9. Check the oil pressure.

Does the oil pressure increase to at least 30 kPa (0.3 kgf/cm², 4.3 psi)?

YES—Replace the EOP sensor (see page 11-281), then go to step 10.

NO—Replace the VTEC solenoid valve (see page 11-280), then go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-340).
15. Test-drive under these conditions:
- Engine coolant temperature above 167 °F (75 °C)
 - A/T in D position
 - Engine speed at 1,500—3,000 rpm
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2646 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve, the EOP sensor, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 15 and recheck.

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC P2647: VTEC System Stuck ON

Special Tools Required

- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070300
- A/T pressure hose 07406-0020201
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure adapter 07MAJ-PY40120
- Oil pressure hose 07ZAJ-S5A0200

1. Check the engine oil level.

Is the engine oil level OK?

YES—Go to step 2.

NO—Adjust the engine oil to the proper level, then go to step 12.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the VTEC TEST in the INSPECTION MENU with the HDS.

Is the result OK?

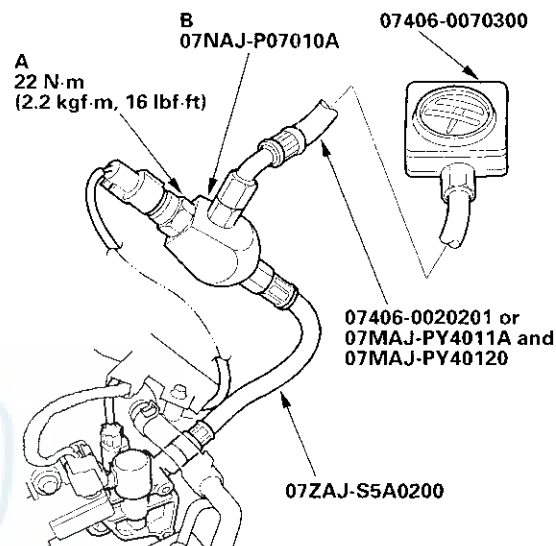
YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EOP sensor, the VTEC solenoid valve, and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the EOP sensor (A), install the special tools as shown, then install the EOP sensor in the oil pressure gauge adapter (B).

NOTE: Install the sensor in the reverse order of removal with new O-ring.



7. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
8. Do the VTEC TEST in the INSPECTION MENU with the HDS.



9. Check the oil pressure.

Does the oil pressure increase to 392 kPa (4.0 kgf/cm², 56.9 psi)?

YES—Replace the EOP sensor (see page 11-281), then go to step 10.

NO—Replace the VTEC solenoid valve (see page 11-280), then go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-340).
15. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle for 2 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2647 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve, the EOP sensor, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 17.

17. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EOP sensor and the PCM, then go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 15 and recheck.

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC P2648: VTEC Solenoid Valve Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for DTCs in the DTCs MENU with the HDS.

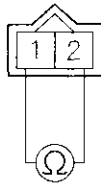
Is DTC P2648 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC solenoid valve and the PCM. ■

4. Turn the ignition switch OFF.
5. Disconnect the VTEC solenoid valve 2P connector.
6. Measure resistance between VTEC solenoid valve 2P connector terminals No. 1 and No. 2.

VTEC SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

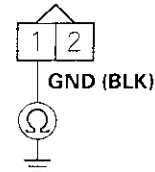
Is there 14–30 Ω?

YES—Go to step 7.

NO—Go to step 12.

7. Check for continuity between VTEC solenoid valve 2P connector terminal No. 1 and body ground.

VTEC SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

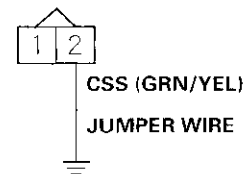
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the VTEC solenoid valve and G101, then go to step 13.

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector E (31P).
10. Connect VTEC solenoid valve 2P connector terminal No. 2 to body ground with a jumper wire.

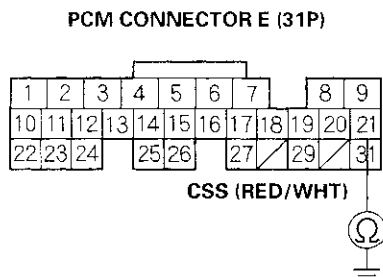
VTEC SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals



11. Check for continuity between PCM connector terminal E21 and body ground.



Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (E21) and the VTEC solenoid valve, then go to step 13.

12. Replace the VTEC solenoid valve (see page 11-280).
13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2648 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 16 and recheck.

19. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2648 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Variable Cylinder Management (VCM) System

DTC Troubleshooting (cont'd)

DTC 2649: VTEC Solenoid Valve Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

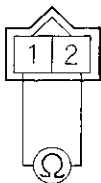
Is DTC P2649 indicated?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the VTEC solenoid valve and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the VTEC solenoid valve 2P connector.
7. Measure resistance between VTEC solenoid valve 2P connector terminals No. 1 and No. 2.

VTEC SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

Is there 14–30 Ω?

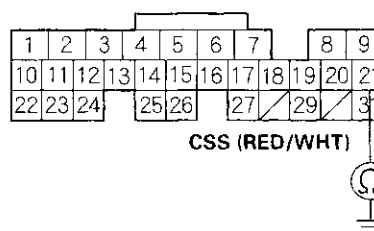
YES—Go to step 8.

NO—Go to step 25.

8. Jump the SCS line with the HDS.
9. Disconnect the engine mount control unit 20P connector.

10. Disconnect the active noise control (ANC) unit 16P connector.
11. Disconnect PCM connector E (31P).
12. Check for continuity between PCM connector terminal E21 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the VTEC solenoid valve, the engine mount control unit, the active noise control (ANC) unit and the PCM (E21), then go to step 26.

NO—Go to step 13.

13. Reconnect the VTEC solenoid valve 2P connector.
14. Reconnect the active noise control (ANC) unit 16P connector.
15. Reconnect PCM connector E (31P).
16. Turn the ignition switch ON (II).
17. Do the VTEC TEST in the INSPECTION MENU with the HDS.
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Go to step 19.

NO—Replace the engine mount control unit (see page 11-323), then go to step 26.



19. Turn the ignition switch OFF.
20. Reconnect the engine mount control unit 20P connector.
21. Disconnect the active noise control (ANC) unit 16P connector.
22. Turn the ignition switch ON (II).
23. Do the VTEC TEST in the INSPECTION MENU with the HDS.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2649 indicated?

YES—Go to step 33.

NO—Replace the active noise control (ANC) unit (see page 23-76), then go to step 26.

25. Replace the VTEC solenoid valve (see page 11-280).
26. Reconnect all connectors.
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-340).
30. Do the VTEC TEST in the INSPECTION MENU with the HDS.
31. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2649 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 32.

32. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 30 and recheck.

33. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
34. Do the VTEC TEST in the INSPECTION MENU with the HDS.
35. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

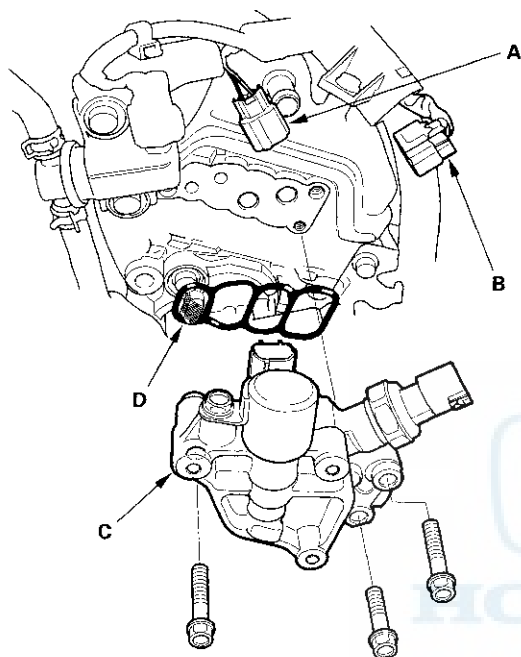
YES—If DTC P2649 is indicated, check for poor connections or loose terminals at the VTEC solenoid valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Variable Cylinder Management (VCM) System

VTEC Solenoid Valve Filter Replacement

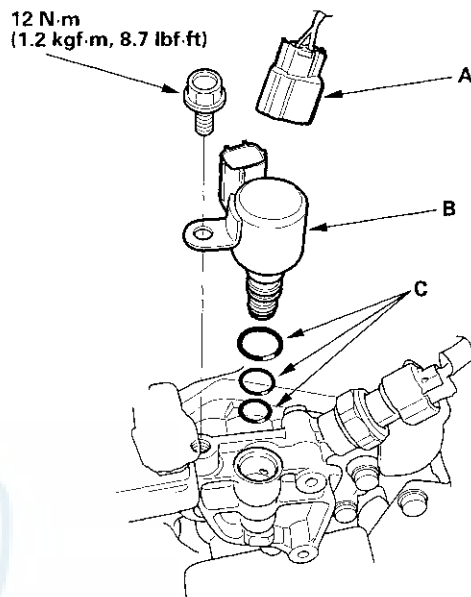
1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the VTEC solenoid valve 2P connector (A) and the EOP sensor 3P connector (B).



3. Remove the VTEC solenoid valve assembly (C) from the rear bank cylinder head, and check the VTEC solenoid valve filter (D) for clogging. If it is clogged, replace the solenoid valve filter, the engine oil filter, and the engine oil.
4. Install the VTEC solenoid valve assembly in the reverse order of removal.

VTEC Solenoid Valve Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the VTEC solenoid valve 2P connector (A).

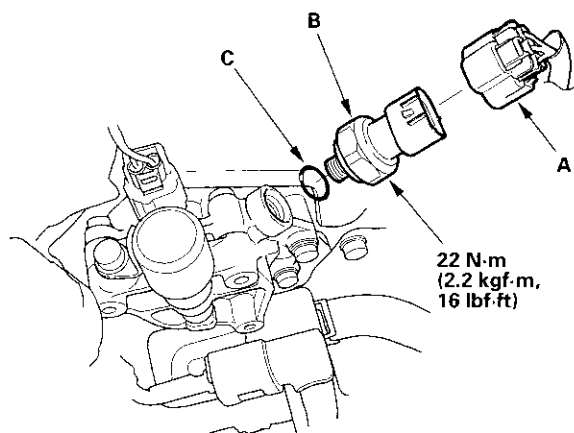


3. Remove the VTEC solenoid valve (B).
4. Install the VTEC solenoid valve in the reverse order of removal with new O-rings (C).



EOP Sensor Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Remove the EOP sensor 3P connector (A).

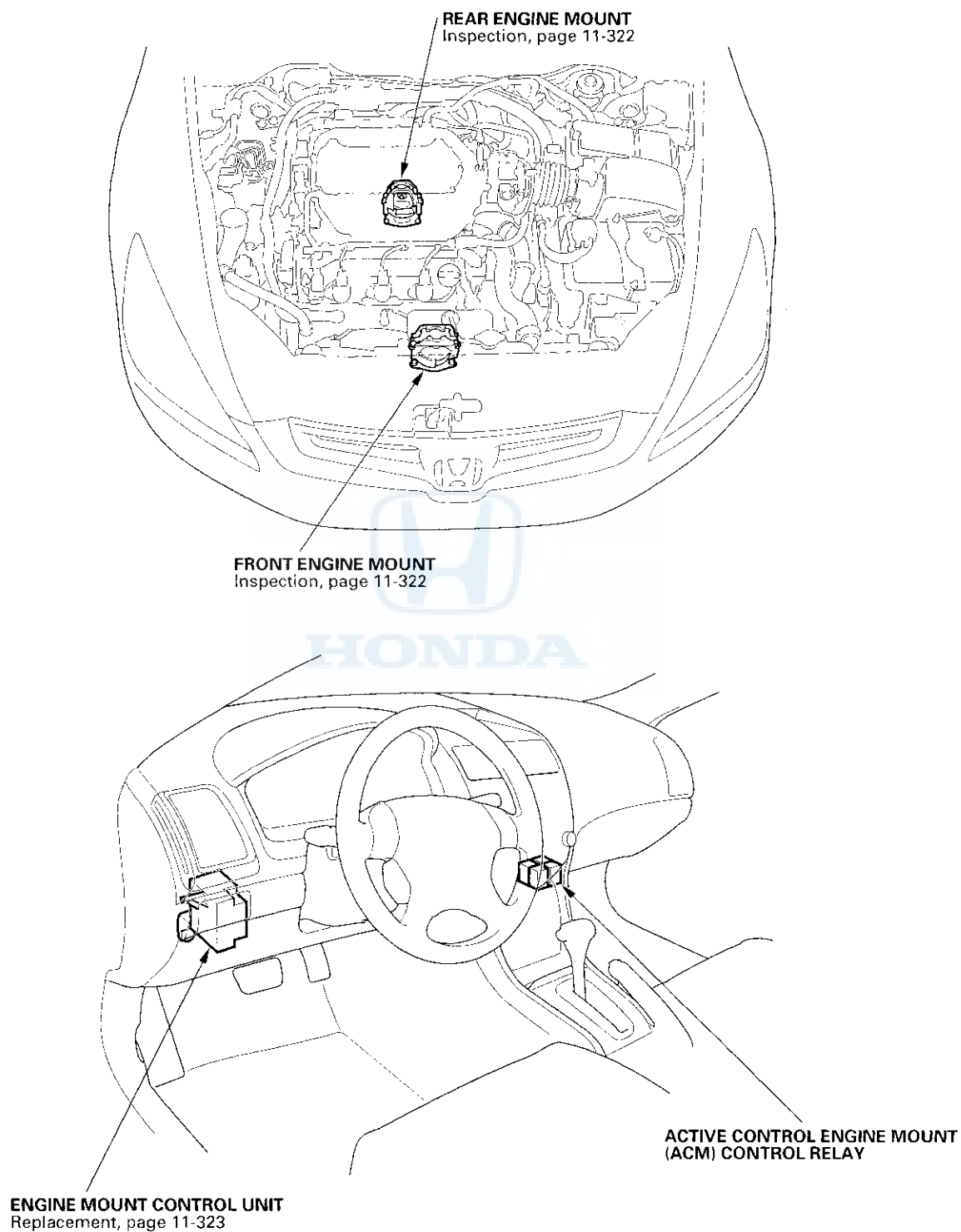


3. Remove the EOP sensor (B).
4. Install the EOP sensor in the reverse order of removal with a new O-ring (C).



Active Control Engine Mount (ACM) System

Component Location Index





DTC Troubleshooting

DTC P0A14: Front Engine Mount Actuator Circuit Malfunction

DTC P0AB6: Rear Engine Mount Actuator Circuit Malfunction

NOTE: Information marked with an asterisk (*) applies to rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A14 and/or P0AB6 indicated?*

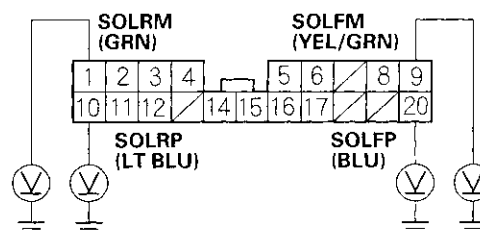
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Disconnect the front active control engine mount (ACM) actuator (rear active control engine mount (ACM) actuator)* 2P connector.
7. Disconnect the engine mount control unit 20P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate engine mount control unit 20P connector terminal (see table).

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
P0AB6	Rear side No. 1	No. 1	GRN
P0AB6	Rear side No. 2	No. 10	LT BLU
P0A14	Front side No. 1	No. 9	YEL/GRN
P0A14	Front side No. 2	No. 20	BLU

Is there battery voltage?

YES—Repair short to power in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

NO—Go to step 10.

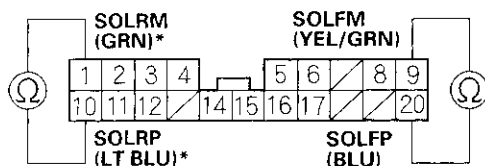
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Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

10. Turn the ignition switch OFF.
11. Check for continuity between engine mount control unit 20P connector terminals No. 9 (No. 1)* and No. 20 (No. 10)*.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

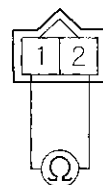
Is there continuity?

YES—Repair short in the wire between the engine mount control unit No. 9 and No. 20 terminals (No. 1 and No. 10 terminals)*, then go to step 14.

NO—Go to step 12.

12. Check the resistance between active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75—1.15 Ω?

YES—Replace the engine mount control unit (see page 11-323), then go to step 14.

NO—Replace the front engine mount (see page 5-22) or rear engine mount (see page 5-24), then go to step 14.

13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).

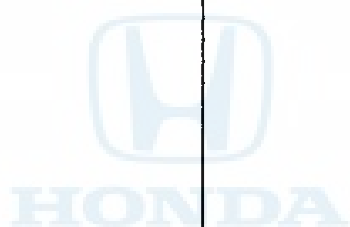


16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).
18. Do the VTEC TEST in the INSPECTION MENU with the HDS.
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A14 and/or P0AB6* is indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P0A15: Front Engine Mount Actuator Control Circuit Low Current

DTC P0AB7: Rear Engine Mount Actuator Control Circuit Low Current

NOTE: Information marked with an asterisk (*) applies to rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A15 and/or P0AB7 indicated?*

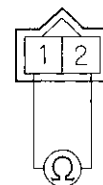
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator or the engine mount control unit and G302. ■

5. Turn the ignition switch OFF.
6. Disconnect the front (rear)* active control engine mount (ACM) actuator 2P connector.

7. Check the resistance between front (rear)* active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75– 1.15 Ω ?

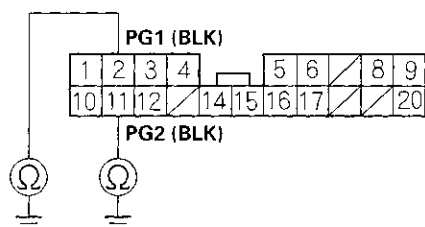
YES—Go to step 8.

NO—Replace the front engine mount (see page 5-22) or rear engine mount (see page 5-24)*, then go to step 13.



8. Disconnect the engine mount control unit 20P connector.
9. Check for continuity between engine mount control unit 20P connector terminals No. 2 and No. 11 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

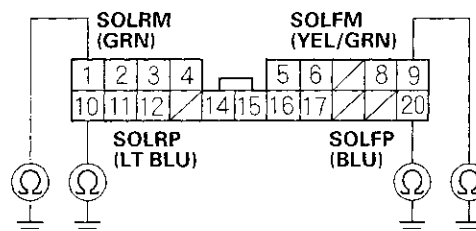
Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the engine mount control unit (No. 2, No. 11) and the G302, then go to step 13.

10. Check for continuity between body ground and the appropriate engine mount control unit (see table).

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
P0AB7	Rear side No. 1	No. 1	GRN
P0AB7	Rear side No. 2	No. 10	LT BLU
P0A15	Front side No. 1	No. 9	YEL/GRN
P0A15	Front side No. 2	No. 20	BLU

Is there continuity?

YES—Repair short in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

NO—Go to step 11.

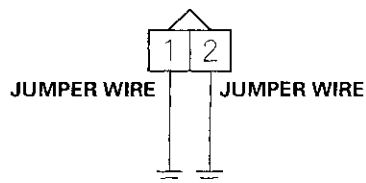
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

11. Connect the appropriate active control engine mount (ACM) actuator 2P connector terminal to body ground with a jumper wire (see table).

**ACTIVE CONTROL ENGINE MOUNT (ACM)
ACTUATOR 2P CONNECTOR**

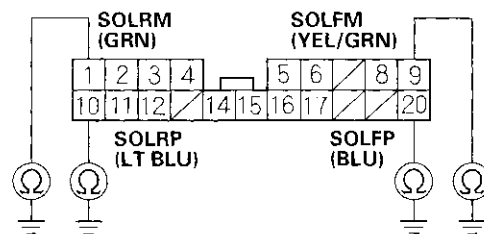


Wire side of female terminals

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	WIRE COLOR
P0AB7	Rear side No. 1	GRN
P0AB7	Rear side No. 2	GRY
P0A15	Front side No. 1	YEL/GRN
P0A15	Front side No. 2	BLU

12. Check for continuity between body ground and the appropriate engine mount control unit 20P connector terminal (see table).

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
P0AB7	Rear side No. 1	No. 1	GRN
P0AB7	Rear side No. 2	No. 10	LT BLU
P0A15	Front side No. 1	No. 9	YEL/GRN
P0A15	Front side No. 2	No. 20	BLU

Is there continuity?

YES—Replace the engine mount control unit (see page 11-323), then go to step 13.

NO—Repair open in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

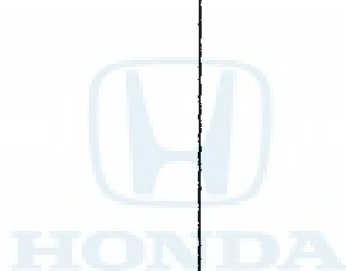


13. Reconnect all connectors.
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Let the engine idle 10 seconds.
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A15 and/or P0AB7* are indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1. If any other temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P0A16: Front Engine Mount Actuator Control Circuit High Current

DTC P0AB8: Rear Engine Mount Actuator Control Circuit High Current

NOTE: Information marked with an asterisk (*) applies to rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Wait 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A16 and/or P0AB8 indicated?*

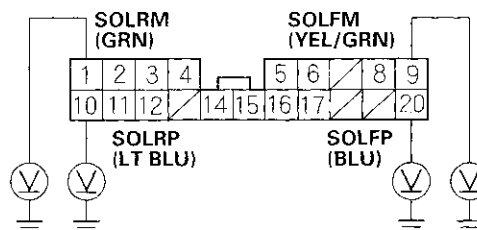
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Disconnect the appropriate active control engine mount (ACM) actuator 2P connector.
7. Disconnect the engine mount control unit 20P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate engine mount control unit 20P connector terminal (see table).

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

DTC	ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
P0AB8	Rear side No. 1	No. 1	GRN
P0AB8	Rear side No. 2	No. 10	LT BLU
P0A16	Front side No. 1	No. 9	YEL/GRN
P0A16	Front side No. 2	No. 20	BLU

Is there battery voltage?

YES—Repair short to power in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

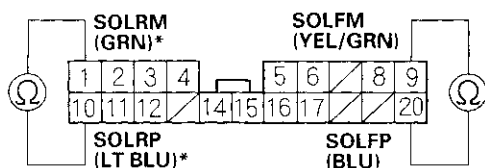
NO—Go to step 10.

10. Turn the ignition switch OFF.



11. Check for continuity between engine mount control unit 20P connector terminals No. 9 (No. 1)* and No. 20 (No. 10)*.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

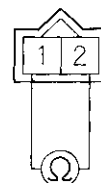
Is there continuity?

YES—Repair short in the wire between the engine mount control unit No. 9 and No. 20 terminals (No. 1 and No. 10 terminals)*, then go to step 14.

NO—Go to step 12.

12. Measure resistance between front (rear)* active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75 – 1.15 Ω?

YES—Replace the engine mount control unit (see page 11-323), then go to step 14.

NO—Replace the front engine mount (see page 5-22), or rear engine mount (see page 5-24), then go to step 14.

(cont'd)

Active Control Engine Mount (ACM) System

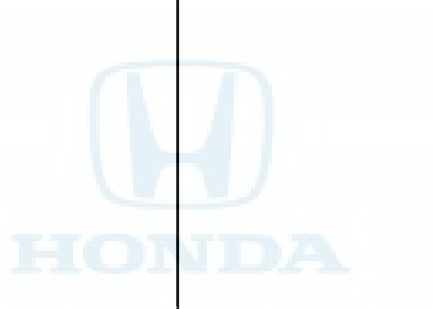
DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs with the HDS?

YES—If DTC P0A16 and/or P0AB8^{*} are indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■





DTC P15AB: Engine Mount Control Unit Power Source Circuit Low Voltage

NOTE: If DTC P15AB is stored at the same time as DTC P16C5, troubleshoot DTC P16C5 first, then recheck for P15AB.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0073 indicated?

YES—Do the troubleshooting for the DTC U0073 (see page 11-185), then go to step 19.

NO—Go to step 3.

3. Clear the DTC with the HDS.
4. Turn the ignition switch OFF.
5. Turn the ignition switch ON (II).
6. Check for DTCs with the HDS.

Is DTC U1101 indicated?

YES—Go to step 8.

NO—Go to step 7.

7. Check for DTCs with the HDS.

Is DTC P15AB indicated?

YES—Go to step 8.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the PCM, or the engine mount control unit and G202. ■

8. Turn the ignition switch ON (II).

9. Check for poor connections at PCM connector E (31P) and the engine mount control unit 20P connector.

Are the connections OK?

YES—Go to step 10.

NO—Repair the poor connections, then go to step 19.

10. Turn the ignition switch OFF.
11. Disconnect the engine mount control unit 20P connector.
12. Turn the ignition switch ON (II).

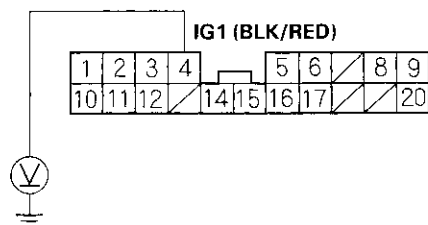
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

13. Measure voltage between engine mount control unit 20P connector terminal No. 4 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Go to step 14.

14. Turn the ignition switch OFF.

15. Inspect the No. 18 ACG (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

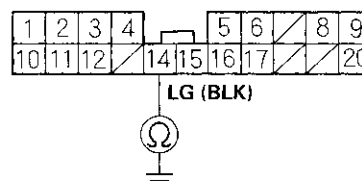
YES—Repair open in the wire between the No. 18 ACG (15 A) fuse and the engine mount control unit (No. 4), then go to step 19.

NO—Repair short in the wire between the No. 18 ACG (15 A) fuse and the engine mount control unit (No. 4). Also replace the No. 18 ACG (15 A) fuse, then go to step 19.

16. Turn the ignition switch OFF.

17. Check for continuity between engine mount control unit 20P connector terminal No. 14 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

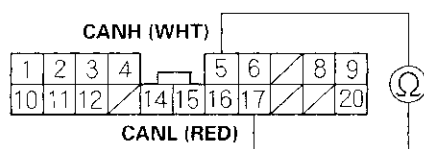
YES—Go to step 18.

NO—Repair open in the wire between the engine mount control unit (No. 14) and G202, then go to step 19.



18. Check for continuity between engine mount control unit 20P connector terminals No. 5 and No. 17.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the engine mount control unit (see page 11-323), then go to step 19.

NO—Repair open in the wire between the PCM (E15 (E26)*) and the engine mount control unit (No. 5 (No. 17)*), then go to step 19.

* : CANL line

19. Reconnect all connectors.
20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AB is indicated, check for poor connections or loose terminals at the engine mount control unit and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15AC: Engine Mount Control Unit Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AC indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

4. Turn the ignition switch OFF.
5. Replace the engine mount control unit (see page 11-323).
6. Turn the ignition switch ON (II).

7. Reset the PCM with the HDS.

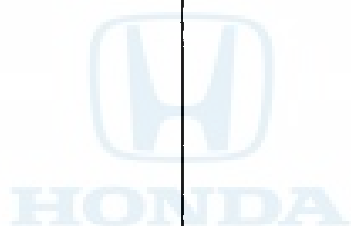
8. Do the PCM idle learn procedure (see page 11-340).

9. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AC is indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■





DTC P15AD: Engine Mount Control Unit Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AD indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

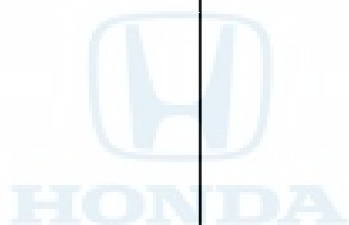
4. Turn the ignition switch OFF.
5. Replace the engine mount control unit (see page 11-323).

6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-340).
9. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AD is indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 7. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15AE: Cylinder Pause Signal Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the ACM ACTIVATION with VTEC in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AE indicated?

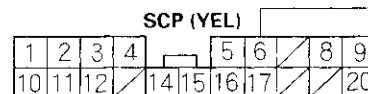
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the VTEC solenoid valve. ■

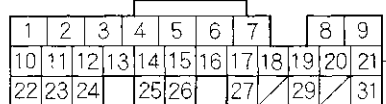
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Disconnect PCM connector E (31P).
8. Disconnect the engine mount control unit 20P connector.

9. Check for continuity between PCM connector terminal E21 and engine mount control unit 20P connector terminal No. 6.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Replace the engine mount control unit (see page 11-323), then go to step 10.

NO—Repair open in the wire between the PCM (E21) and the engine mount control unit (No. 6), then go to step 10.

10. Reconnect all connectors.
11. Turn the ignition switch ON (II).

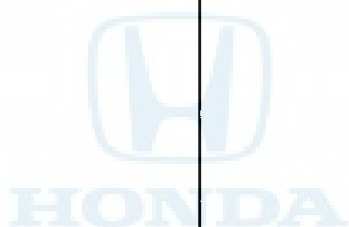


12. Reset the PCM with the HDS.
13. Do the PCM idle learn procedure (see page 11-340).
14. Do the ACM ACTIVATION with VTEC in the INSPECTION MENU with the HDS.
15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AE is indicated, check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15AF: CMP Signal Malfunction

NOTE: If DTC P0340 and/or P0344 is stored at the same time as DTC P15AF, troubleshoot DTC P0340 and/or P0344 first, then recheck for DTC P15AF.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15AF indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the PCM and the engine mount control unit. ■

5. Turn the ignition switch OFF.
6. Check for poor connections at the PCM connector E (31P) and the engine mount control unit 20P connector.

Are the connections OK?

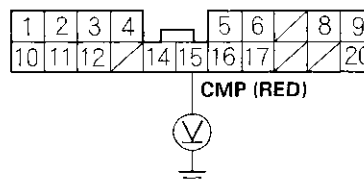
YES—Go to step 7.

NO—Repair the poor connections, then go to step 23.

7. Disconnect the CMP sensor 3P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between engine mount control unit 20P connector terminal No. 15 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 10.

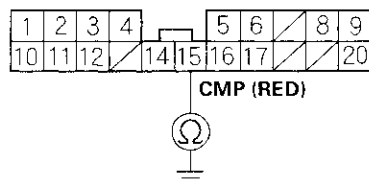
NO—Go to step 13.

10. Turn the ignition switch OFF.
11. Disconnect the engine mount control unit 20P connector.



12. Check for continuity between engine mount control unit 20P connector terminal No. 15 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

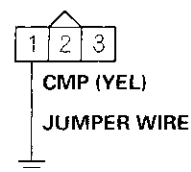
YES—Repair short in the wire between the engine mount control unit (No. 15) and the PCM (E20), then go to step 22.

NO—Go to step 27.

13. Turn the ignition switch OFF.

14. Connect CMP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch ON (II).

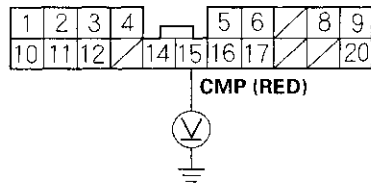
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

16. Measure voltage between engine mount control unit 20P connector terminal No. 15 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Is there about 0 V?

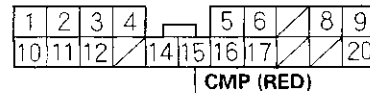
YES—Replace the engine mount control unit (see page 11-323), then go to step 22.

NO—Go to step 17.

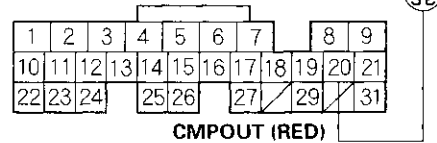
17. Turn the ignition switch OFF.
18. Disconnect the engine mount control unit 20P connector.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector E (31P).

21. Check for continuity between PCM connector terminal E20 and engine mount control unit 20P connector terminal No. 15.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



PCM CONNECTOR E (31P)



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (E20) and the engine mount control unit (No. 15), then go to step 22.

22. Reconnect all connectors.
23. Turn the ignition switch ON (II).



24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-340).
26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AF is indicated, check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

27. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AF is indicated, check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15B0: CKP Signal Malfunction

NOTE: If DTC P0335 and/or P0339 is stored at the same time as DTC P0335, troubleshoot DTC P0335 and/or P0339 first, then recheck for DTC P15B0.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B0 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the PCM and the engine mount control unit. ■

5. Turn the ignition switch OFF.
6. Check for poor connections at PCM connector E (31P) and the engine mount control unit 20P connector.

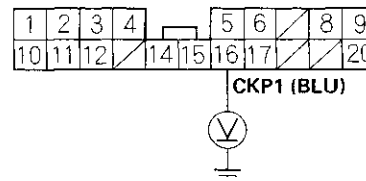
Are the connections OK?

YES—Go to step 7.

NO—Repair the poor connections, then go to step 23.
7. Disconnect CKP sensor A/B 6P connector (see page 11-216).
8. Turn the ignition switch ON (II).

9. Measure voltage between engine mount control unit 20P connector terminal No. 16 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 10.

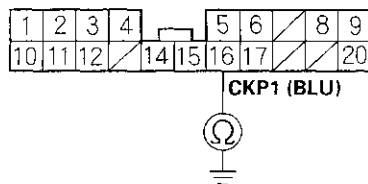
NO—Go to step 13.

10. Turn the ignition switch OFF.



11. Disconnect the engine mount control unit 20P connector.
12. Check for continuity between engine mount control unit 20P connector terminal No. 16 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

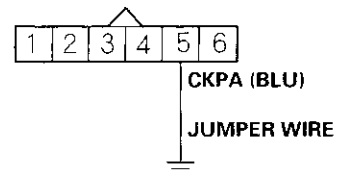
YES—Repair short in the wire between the PCM (E7) and the engine mount control unit (No. 16), then go to step 22.

NO—Go to step 27.

13. Turn the ignition switch OFF.

14. Connect CKP sensor A/B 6P connector terminal No. 5 to body ground with a jumper wire.

CKP SENSOR A/B 6P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch ON (II).

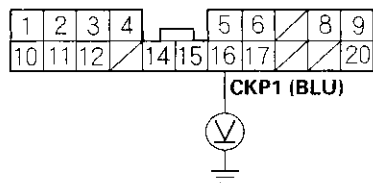
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

16. Measure voltage between engine mount control unit 20P connector terminal No. 16 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Is there about 0 V?

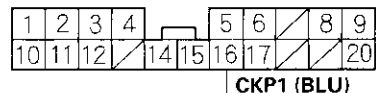
YES—Replace the engine mount control unit (see page 11-323), then go to step 22.

NO—Go to step 17.

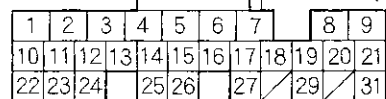
17. Turn the ignition switch OFF.
18. Disconnect the engine mount control unit 20P connector.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector E (31P).

21. Check for continuity between PCM connector terminal E7 and engine mount control unit 20P connector terminal No. 16.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



PCM CONNECTOR E (31P)



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (E7) and the engine mount control unit (No. 16), then go to step 22.



22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-340).
26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15B0 is indicated, check for poor connections or loose terminals at the engine mount control unit and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

27. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15B0 is indicated, check for poor connections or loose terminals at the engine mount control unit and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P15B1: CMP/CKP Signal Incorrect Correlation

NOTE:

- If DTC P0335, P0339, P0340 and/or P0344 is stored at the same time as DTC P15B1, troubleshoot DTC P0335, P0339, P0340 and/or P0344 first, then recheck for DTC P15B1.
- Information marked with an asterisk (*) applies to CKP1OUT-CKP1 line.

1. Note this freeze data:

- Engine speed
- Vehicle speed

2. Clear the DTC with the HDS.

3. Test-drive the vehicle for 20 minutes in the range of the recorded freeze data.

4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15B1 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the PCM and the engine mount control unit. ■

5. Turn the ignition switch OFF.

6. Check for poor connections at PCM connector E (31P) and the engine mount control unit 20P connector.

Is the connection OK?

YES—Go to step 7.

NO—Repair the poor connection at PCM connector E (31P) of the engine mount control unit 20P connector, then go to step 18.

7. Turn the ignition switch OFF.

8. Disconnect the CMP sensor 3P connector.

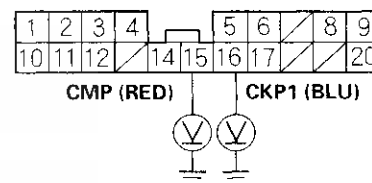
9. Disconnect CKP sensor A/B 6P connector (see page 11-216).

10. Disconnect the engine mount control unit 20P connector.

11. Turn the ignition switch ON (II).

12. Measure voltage between engine mount control unit 20P connector terminal No. 15 (No. 16)* and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there about 5 V?

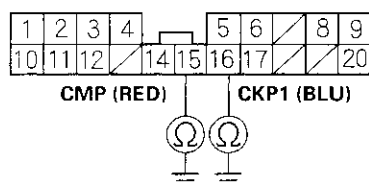
YES—Replace the engine mount control unit (see page 11-323), then go to step 18.

NO—Go to step 13.



13. Turn the ignition switch OFF.
14. Check for continuity between engine mount control unit 20P connector terminal No. 15 (No. 16)* and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

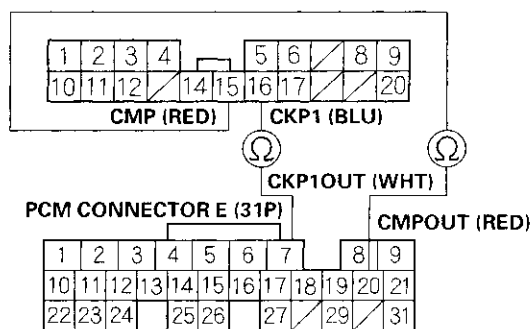
YES—Repair short in the wire between the PCM (E20 (E7)*) and engine mount control unit (No. 15 (No. 16)*), then go to step 18.

NO—Go to step 15.

15. Jump the SCS line with the HDS.
16. Disconnect PCM connector E (31P).

17. Check for continuity between PCM connector terminal E20 and engine mount control unit 20P connector terminal No. 15, and between PCM connector terminal E7* and engine mount control unit 20P connector terminal No. 16* individually.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the PCM (E20 (E7)*) and engine mount control unit (No. 15 (No. 16)*), then go to step 18.

(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

18. Reconnect all connectors.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-340).
22. Test-drive the vehicle for 20 minutes in the range of the recorded freeze data.
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs with the HDS?

YES—If DTC P15B1 is indicated, check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

24. Update the PCM if it does not have latest software, or substitute a known-good PCM (see page 11-6).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15B1 is indicated, check for poor connections or loose terminals at the PCM and the engine mount control unit, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P16C4: Engine Mount Actuator Control Power Circuit Stuck OFF

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C4 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay. ■

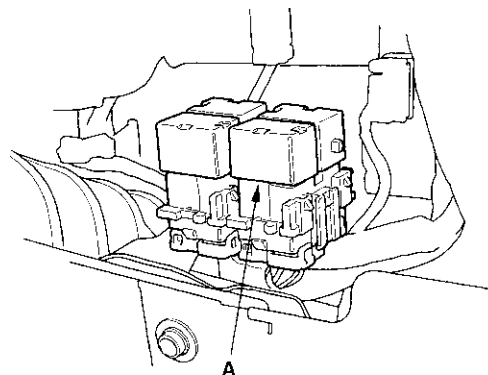
4. Turn the ignition switch OFF.
5. Inspect the ACM (15 A) fuse in auxiliary fuse holder B.

Is the fuse OK?

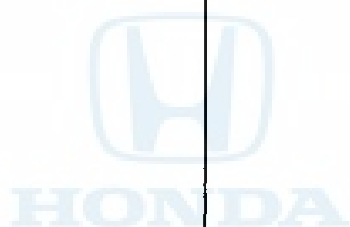
YES—Go to step 9.

NO—Go to step 6.

6. Remove the active control engine mount (ACM) control relay (A) from the relay holder.



7. Remove the engine mount control unit 20P connector.



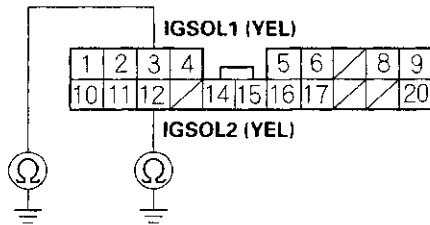
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

8. Check for continuity between body ground and engine mount control unit 20P connector terminals No. 3 and No. 12 individually.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



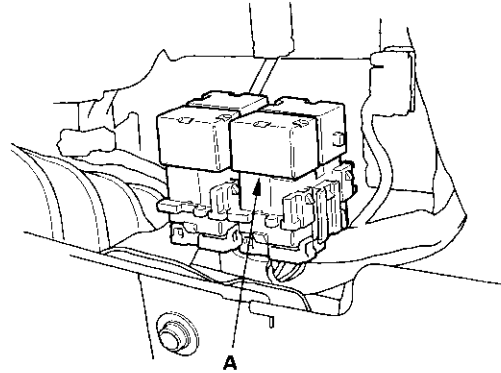
Wire side of female terminals

Is the continuity?

YES—Repair short in the wire between the engine mount control unit (No. 3, No. 12) and the active control engine mount (ACM) control relay. Also replace the ACM (15 A) fuse, then go to step 20.

NO—Repair short in the wire between the active control engine mount (ACM) control relay and the ACM (15 A) fuse. Also replace the ACM (15 A) fuse, then go to step 20.

9. Remove the active control engine mount (ACM) control relay (A) from the relay holder.



10. Check the active control engine mount (ACM) control relay (see page 22-72).

Is the active control engine mount (ACM) control relay OK?

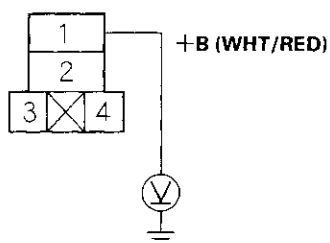
YES—Go to step 11.

NO—Replace the active control engine mount (ACM) control relay, then go to step 20.



11. Measure voltage between active control engine mount (ACM) control relay 4P connector terminal No. 1 and body ground.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

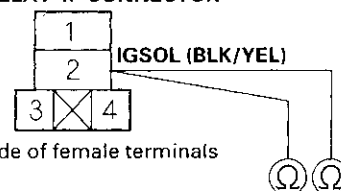
YES—Go to step 12.

NO—Repair open in the wire between the active control engine mount (ACM) control relay and the ACM (15 A) fuse, then go to step 20.

12. Disconnect the engine mount control unit 20P connector.

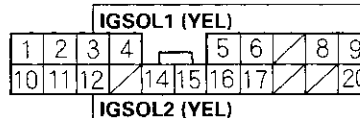
13. Check for continuity between active control engine mount (ACM) control relay 4P connector terminal No. 2 and engine mount control unit 20P connector terminals No. 3 and No. 12 individually.

**ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR**



Wire side of female terminals

**ENGINE MOUNT CONTROL UNIT
20P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the engine mount control unit (No. 3, No. 12) and the active control engine mount (ACM) control relay, then go to step 20.

14. Turn the ignition switch ON (II).

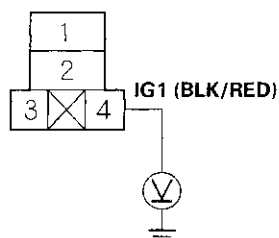
(cont'd)

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

15. Measure voltage between active control engine mount (ACM) control relay 4P connector terminal No. 4 and body ground.

ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

NO—Go to step 16.

16. Turn the ignition switch OFF.

17. Inspect the No. 18 ACG (15 A) fuse in the driver's under-dash fuse/relay box.

Is the fuse OK?

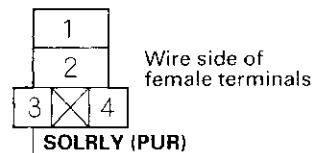
YES—Repair open in the wire between the active control engine mount (ACM) control relay and the No. 18 ACG (15 A) fuse, then go to step 20.

NO—Repair short in the wire between the active control engine mount (ACM) control relay and the No. 18 ACG (15 A) fuse. Also replace the No. 18 ACG (15 A) fuse, then go to step 20.

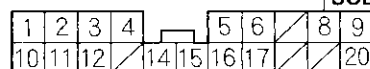
18. Turn the ignition switch OFF.

19. Check for continuity between engine mount control unit 20P connector terminal No. 8 and active control engine mount (ACM) control relay 4P connector terminal No. 3.

ACTIVE CONTROL ENGINE MOUNT (ACM)
CONTROL RELAY 4P CONNECTOR



ENGINE MOUNT CONTROL UNIT
20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the engine mount control unit (see page 11-323), then go to step 20.

NO—Repair open in the wire between the engine mount control unit (No. 8) and the active control engine mount (ACM) control relay, then go to step 20.

20. Reconnect all connectors.

21. Turn the ignition switch ON (II).

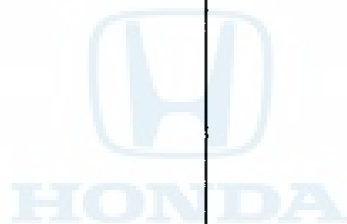


22. Reset the PCM with the HDS.
23. Do the PCM idle learn procedure (see page 11-340).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C4 is indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P16C5: Engine Mount Actuator Control Power Circuit Stuck ON

1. Turn the ignition switch ON (II).
2. Check the VBACM and ACMRLY in the DATA LIST with the HDS.

Is there battery voltage?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay. ■

3. Check the active control engine mount (ACM) control relay (see page 22-72).

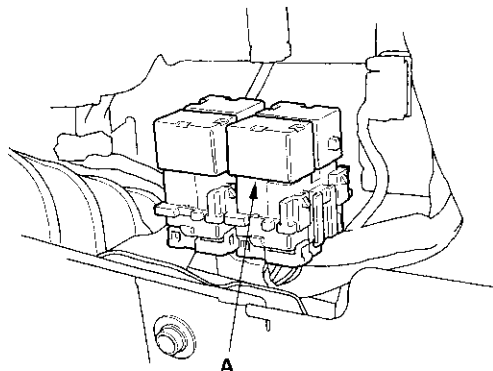
Is the active control engine mount (ACM) control relay OK?

YES—Go to step 4.

NO—Replace the active control engine mount (ACM) control relay, then go to step 9.

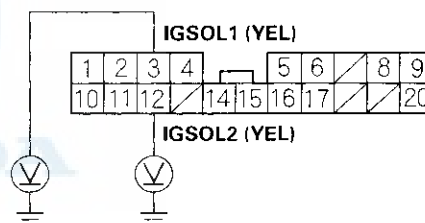
4. Turn the ignition switch OFF.
5. Disconnect the engine mount control unit 20P connector.

6. Remove the active control engine mount (ACM) control relay (A) from the relay holder.



7. Measure voltage between body ground and engine mount control unit 20P connector terminals No. 3 and No. 12 individually.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there battery voltage?

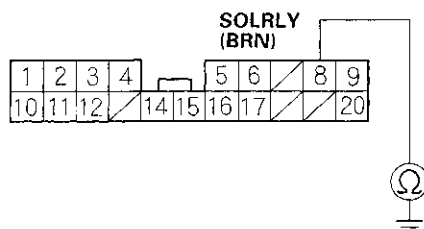
YES—Repair short to power in the wire between the engine mount control unit (No. 3, No. 12) and the active control engine mount (ACM) control relay, then go to step 9.

NO—Go to step 8.



8. Check for continuity between engine mount control unit 20P connector terminal No. 8 and body ground.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the engine mount control unit (No. 8) and the active control engine mount (ACM) control relay, then go to step 9.

NO—Replace the engine mount control unit (see page 11-323), then go to step 9.

9. Reconnect all connectors.

10. Turn the ignition switch ON (II).

11. Reset the PCM with the HDS.

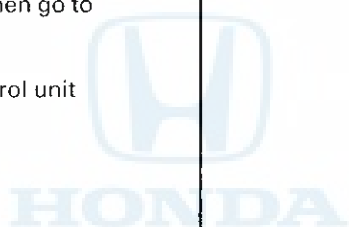
12. Do the PCM idle learn procedure (see page 11-340).

13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C5 is indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) control relay, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P16C6: Engine Mount Actuator High Voltage During Function Test

NOTE:

- If DTC P0A14, P0A16, P0AB6, P0AB8, P16C7, or P16C8 are stored at the same time as DTC P16C6, troubleshoot those DTCs first, then recheck for P16C6.
- Information marked with an asterisk (*) applies to the rear active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTCs with the HDS.
3. Do the ACM ACTIVATION with VTEC in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C6 indicated?

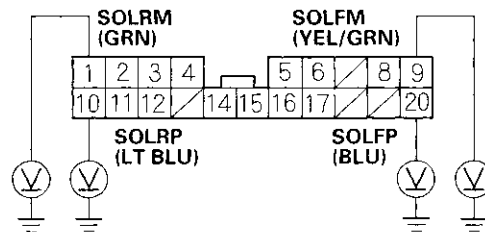
YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Disconnect the active control engine mount (ACM) actuator 2P connector.
7. Disconnect the engine mount control unit 20P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between body ground and the appropriate PCM connector terminal (see table).

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR TERMINAL	ENGINE MOUNT CONTROL UNIT TERMINAL	WIRE COLOR
Rear side No. 1	No. 1	GRN
Rear side No. 2	No. 10	LT BLU
Front side No. 1	No. 9	YEL/GRN
Front side No. 2	No. 20	BLU

Is there battery voltage?

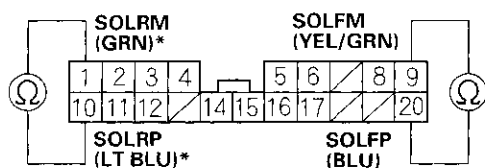
YES—Repair short to power in the wire between the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 13.

NO—Go to step 10.



10. Turn the ignition switch OFF.
11. Check for continuity between engine mount control unit 20P connector terminals No. 9 (No. 1)* and No. 20 (No. 10)*.

ENGINE MOUNT CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

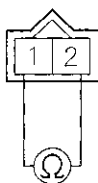
Is there continuity?

YES—Repair short in the wire between the engine mount control unit No. 9 and No. 20 terminals (No. 1 and No. 10 terminals)*, then go to step 14.

NO—Go to step 12.

12. Check the resistance between active control engine mount (ACM) actuator 2P connector terminals No. 1 and No. 2.

ACTIVE CONTROL ENGINE MOUNT (ACM) ACTUATOR 2P CONNECTOR



Terminal side of male terminals

Is there about 0.75–1.15 Ω?

YES—Replace the engine mount control unit (see page 11-323), then go to step 14.

NO—Replace the front engine mount (see page 5-22) and rear engine mount (see page 5-24), then go to step 14.

13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Turn the ignition switch ON (II).
16. Reset the PCM with the HDS.
17. Do the PCM idle learn procedure (see page 11-340).
18. Do the ACM ACTIVATION with VTEC in the INSPECTION MENU with the HDS.
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C6 indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Active Control Engine Mount (ACM) System

DTC Troubleshooting (cont'd)

DTC P16C7: Rear Engine Mount Actuator Control Circuit High Current

DTC P16C8: Front Engine Mount Actuator Control Circuit High Current

NOTE: Information marked with an asterisk (*) applies to the front active control engine mount (ACM) actuator.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Wait 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C7 and/or P16C8 indicated?*

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator. ■

5. Turn the ignition switch OFF.
6. Replace the engine mount control unit (see page 11-323).
7. Turn the ignition switch ON (II).

8. Reset the PCM with the HDS.

9. Do the PCM idle learn procedure (see page 11-340).

10. Wait 10 seconds.

11. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C7 and/or P16C8* is indicated, check for poor connections or loose terminals at the engine mount control unit and the active control engine mount (ACM) actuator, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P16C9: Engine Mount Control Unit Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Wait 10 seconds.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C9 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. ■

5. Turn the ignition switch OFF.
6. Replace the engine mount control unit (see page 11-323).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-340).
10. Wait 10 seconds.
11. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

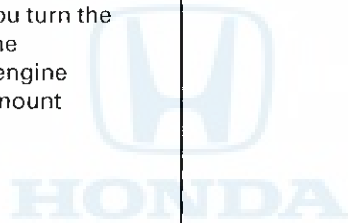
YES—If DTC P16C9 is indicated, check for poor connections or loose terminals at the engine mount control unit, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Active Control Engine Mount (ACM) System

Engine Mount Vibration and Noise Inspection

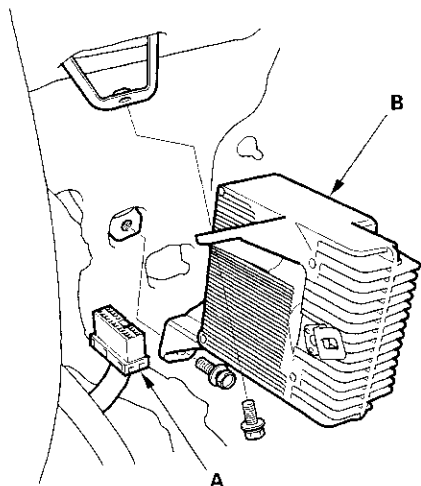
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.
 - If there are any Temporary DTCs or DTCs indicated, go to the indicated DTC's troubleshooting.
 - If there are no Temporary DTCs or DTCs indicated, go to step 4.
4. Open the engine hood.
5. Select the ACM in the INSPECTION MENU with the HDS.
6. Feel the engine for vibration while you turn the engine mounts on and off with the HDS.
 - If the engine moves when you turn the engine mounts on and off, go to step 7.
 - If the engine does not move when you turn the engine mounts on and off, replace the corresponding engine mount, front engine mount (see page 5-22), rear engine mount (see page 5-24).
7. Check for any of these conditions that may cause increased vibration and noise:
 - Engine misfire
 - Deformed radiator mounting parts (brackets upper cushions, or lower cushions)
 - Loose bumper beam
 - Looseness, deformation, or tears in the rubber portion of the engine or transmission mounts
 - Loose, damaged, or interference from exhaust system parts
 - Collision damage to the frame or undercarriage
 - Abnormal wear of tires
 - Loose or damaged suspension parts
 - Wheel alignment out of specification





Engine Mount Control Unit Replacement

1. Disconnect the engine mount control unit 20P connector (A).

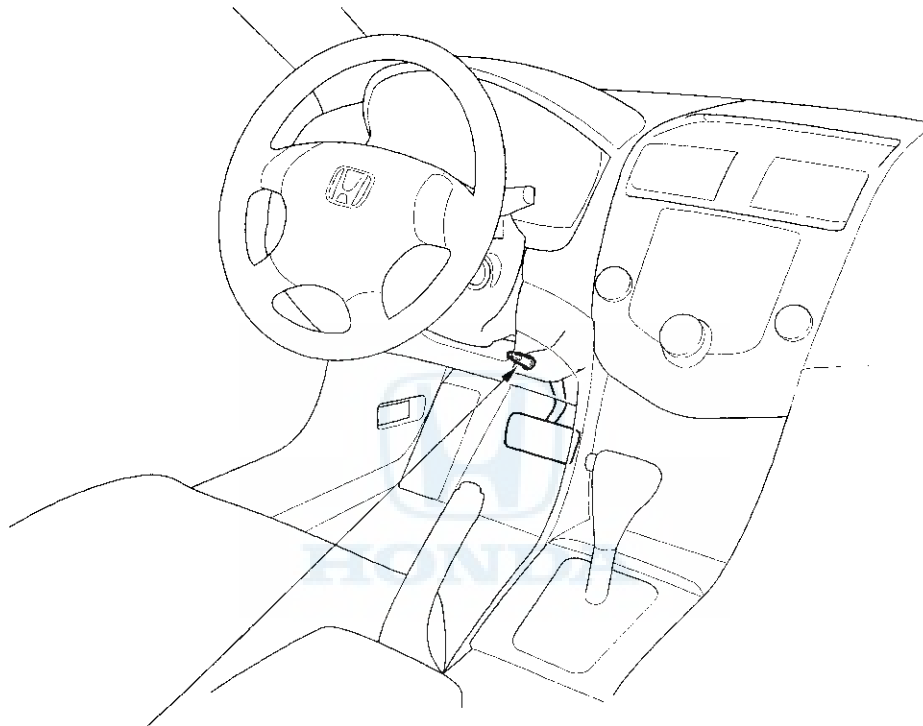


2. Remove the engine mount control unit (B).
3. Install the engine mount control unit in the reverse order of removal.



Idle Control System

Component Location Index



BRAKE PEDAL POSITION SWITCH
Troubleshooting, page 11-338
IDLE STOP SWITCH
Troubleshooting, page 11-334



DTC Troubleshooting

DTC P0506: Idle Control System RPM Lower Than Expected

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check this data in the DATA LIST with the HDS:
 - Engine coolant temperature above 158 °F (70 °C)
 - Intake air temperature above 32 °F (0 °C)
 - Vehicle speed is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED
5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 6.

NO—If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.
6. Remove the intake air duct from the throttle body.

7. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES—If there is dirt or carbon, clean the throttle body (see page 11-381), and also check for a restricted air cleaner element (see page 11-382), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Check the A/C system or power steering system, then go to step 17.

8. Replace the throttle body (see page 11-386).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-340).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
12. Check this data in the DATA LIST with the HDS:
 - Engine coolant temperature above 158 °F (70 °C)
 - Intake air temperature above 32 °F (0 °C)
 - Vehicle speed is 0 mph (0 km/h)
 - ST FUEL TRIM between 0.73 and 1.47
 - FSS is CLOSED

(cont'd)

Idle Control System

DTC Troubleshooting (cont'd)

13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0506 is indicated, go to step 1 and recheck. If any other temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12 and recheck.

15. Remove the intake air duct from the throttle body.

16. Check for dirt, carbon, or damage in the throttle bore.

Is there dirt, carbon, or damage in the throttle bore?

YES—If there is dirt or carbon, clean the throttle body (see page 11-381), and also check for a restricted air cleaner element (see page 11-382), then go to step 9. If there is damage in the throttle bore, go to step 8.

NO—Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, rear window defogger and/or A/C, changing the gear position, etc.)

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Intermittent failure, system is OK at this time. ■

NO—If the screen indicates FAILED, check the A/C system and/or power steering system, then go to step 1 and recheck. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, go to step 17 and recheck.



DTC P0507: Idle Control System RPM Higher Than Expected

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate FAILED ?

YES—Check for vacuum leaks at these parts, then go to step 5.

- PCV valve
- PCV hose
- EVAP canister purge valve
- Throttle body
- Intake manifold
- Brake booster hose

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 3.

5. Turn the ignition switch ON (II).
6. Reset the PCM with the HDS.
7. Do the PCM idle learn procedure (see page 11-340).
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

9. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0507 is indicated, check for poor connections or loose terminals at the throttle body, the throttle actuator control module, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 10.

10. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, the throttle actuator control module, and the PCM, then go to step 1. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (electrical, A/C, gear position, etc.), then go to step 8.

Idle Control System

DTC Troubleshooting (cont'd)

DTC P0532: A/C Pressure Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

Is there about 0.24 V or less?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the A/C pressure sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

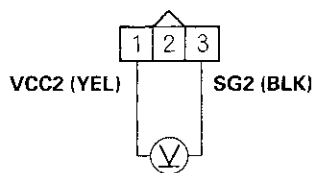
Is there about 0.24 V or less?

YES—Go to step 9.

NO—Go to step 7.

7. Measure voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

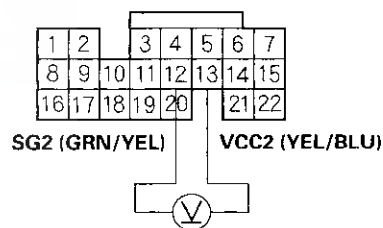
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 8.

8. Measure voltage between PCM connector terminals C12 and C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

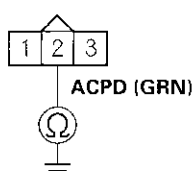
YES—Repair open in the wire between the PCM (C13) and the A/C pressure sensor, then go to step 15.

NO—Go to step 20.



9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector D (17P).
12. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and body ground.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (D17) and the A/C pressure sensor, then go to step 15.

NO—Go to step 20.

13. Turn the ignition switch OFF.
14. Replace the A/C pressure sensor.
15. Reconnect all connectors.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-340).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0532 is indicated, check for poor connections or loose terminals at the A/C pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

20. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0532 is indicated, check for poor connections or loose terminals at the A/C pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Idle Control System

DTC Troubleshooting (cont'd)

DTC P0533: A/C Pressure Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

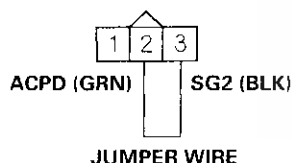
Is there about 4.75 V or more?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the A/C pressure sensor 3P connector.
5. Connect A/C pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch ON (II).
7. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

Is there about 4.75 V or more?

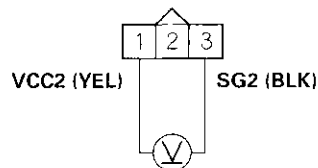
YES—Go to step 8.

NO—Go to step 19.

8. Remove the jumper wire from the A/C pressure sensor 3P connector.

9. Measure voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

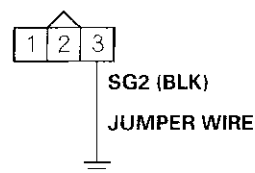
Is there about 5 V?

YES—Go to step 15.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (22P).
13. Connect A/C pressure sensor 3P connector terminal No. 3 to body ground with a jumper wire.

A/C PRESSURE SENSOR 3P CONNECTOR

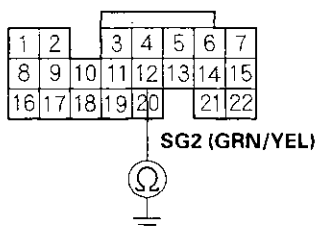


Wire side of female terminals



14. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Go to step 26.

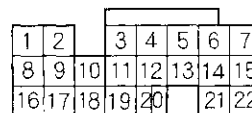
NO—Repair open in the wire between the PCM (C12) and the A/C pressure sensor, then go to step 21.

15. Turn the ignition switch OFF.

16. Connect PCM connector terminals C12 and D17 with a jumper wire.

PCM CONNECTORS

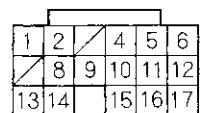
C (22P)



SG2 (GRN/YEL)

JUMPER WIRE

D (17P)



ACPD (LT GRN)

Wire side of female terminals

17. Turn the ignition switch ON (II).

18. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

Is there about 4.9 V or more?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (D17) and the A/C pressure sensor, then go to step 21.

(cont'd)

Idle Control System

DTC Troubleshooting (cont'd)

19. Turn the ignition switch OFF.
20. Replace the A/C pressure sensor.
21. Reconnect all connectors.
22. Turn the ignition switch ON (II).
23. Reset the PCM with the HDS.
24. Do the PCM idle learn procedure (see page 11-340).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0533 is indicated, check for poor connections or loose terminals at the A/C pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

26. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0533 is indicated, check for poor connections or loose terminals at the A/C pressure sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



A/C Signal Circuit Troubleshooting

1. Start the engine.
2. Turn the blower switch on.
3. Turn the A/C switch on.
4. Check the A/C CLUTCH in the DATA LIST with the HDS.

Is it ON?

YES—Go to step 5.

NO—Go to the A/C system test (see page 21-107). ■

5. Check the A/C system.

Does the A/C system operate?

YES—The air conditioning system circuit is OK. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).

8. Activate the A/C CLUTCH in the INSPECTION MENU with the HDS.

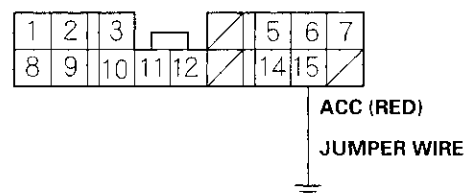
Is there a clicking noise from the A/C compressor clutch?

YES—Do the A/C system test (see page 21-107). ■

NO—Go to step 9.

9. Momentarily connect under-hood fuse/relay box 16P connector terminal No. 15 to body ground with a jumper wire several times.

UNDER-HOOD FUSE/RELAY BOX 16P CONNECTOR



Wire side of female terminals

Is there clicking noise from the A/C compressor clutch?

YES—Repair open in the wire between the PCM (E27) and the A/C clutch relay. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

Idle Control System

Idle Stop Switch Signal Circuit Troubleshooting

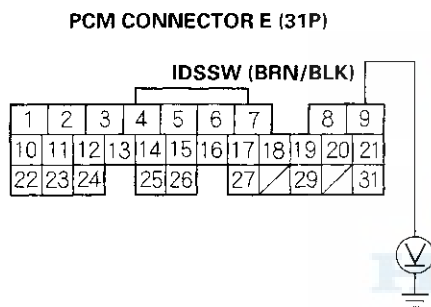
1. Check idle stop switch adjustment (see page 19-5).

Is the adjustment OK?

YES—Go to step 2.

NO—Adjust the idle stop switch (see page 19-5). ■

2. Turn the ignition switch OFF.
3. Jump the SCS line with the HDS.
4. Disconnect PCM connector E (31P).
5. Turn the ignition switch ON (II).
6. Measure voltage between PCM connector terminal E9 and body ground.



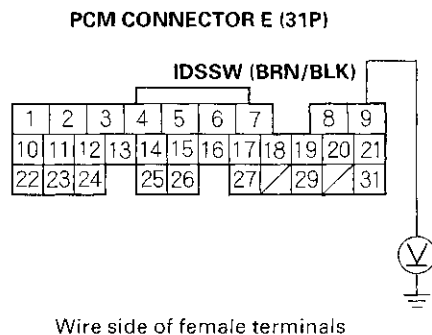
Is there battery voltage?

YES—Go to step 7.

NO—Go to step 9.

7. Press the brake pedal.

8. Measure voltage between PCM connector terminal E9 and body ground.



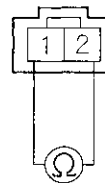
Is voltage less than 1.0 V?

YES—The idle stop switch signal circuit is OK. ■

NO—Replace the idle stop switch. ■

9. Turn the ignition switch OFF.
10. Disconnect the idle stop switch 2P connector.
11. At idle stop switch side, check for continuity between idle stop switch 2P connectors No. 1 and No. 2.

IDLE STOP SWITCH 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 12.

NO—Replace the idle stop switch. ■



12. Check the No. 18 ACG (15 A) fuse in under-dash fuse/relay box.

Is the fuse blown?

YES—

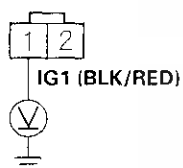
- Repair short in the wire between the idle stop switch and the No. 18 ACG (15 A) fuse. Also replace the No. 18 ACG (15 A) fuse.
- Repair short in the wire between the PCM (E9) and the idle brake switch. Also replace the No. 18 ACG (15 A) fuse. ■

NO—Go to step 13.

13. Turn the ignition switch ON (II).

14. Measure voltage between idle stop switch 2P connector terminal No. 1 and body ground.

IDLE STOP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

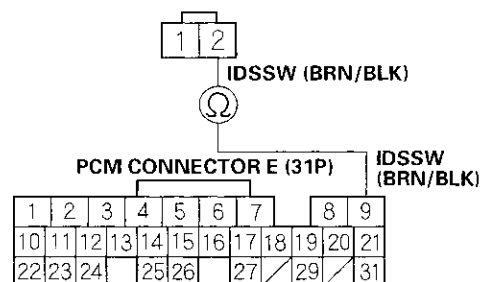
YES—Go to step 15.

NO—Repair open in the wire between the idle stop switch and the No. 18 ACG (15 A) fuse. ■

15. Turn the ignition switch OFF.

16. Check for continuity between PCM connector terminal E9 and idle stop switch 2P connector terminal No. 2.

IDLE STOP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Repair open in the wire between the PCM (E9) and the idle stop switch. ■

Idle Control System

Electrical Power Steering (EPS) Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the EPS SIGNAL in the DATA LIST with the HDS.

Does it indicate LOW?

YES—Go to step 4.

NO—Go to step 6.

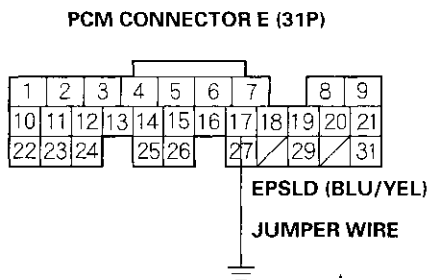
4. Turn the steering wheel quickly to the full lock position.
5. Check the EPS SIGNAL in the DATA LIST with the HDS.

Does it change to HIGH?

YES—The EPS signal circuit is OK. ■

NO—Go to step 12.

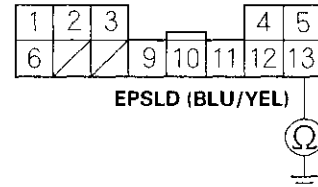
6. Turn the ignition switch OFF.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector E (31P).
9. Disconnect EPS control unit 13P connector.
10. Connect PCM connector terminal E17 to body ground with a jumper wire.



Wire side of female terminals

11. Check for continuity between EPS control unit 13P connector terminal No. 13 and body ground.

EPS CONTROL UNIT 13P CONNECTOR



Wire side of female terminals

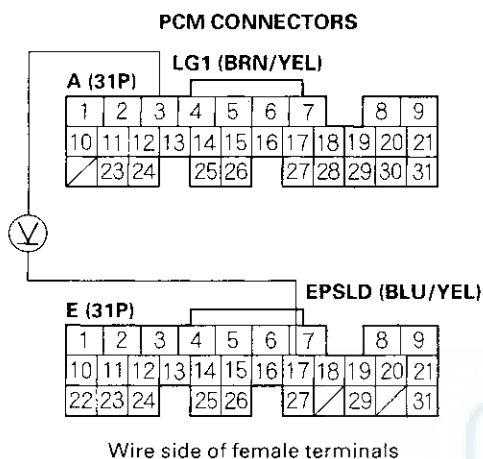
Is there continuity?

YES—Substitute a known-good EPS control unit (see page 17-66), and recheck. ■

NO—Repair open in the wire between the PCM (E17) and the EPS control unit. ■



12. Turn the ignition switch OFF.
13. Disconnect EPS control unit 13P connector.
14. Turn the ignition switch ON (II).
15. Measure voltage between PCM connector terminals A3 and E17.

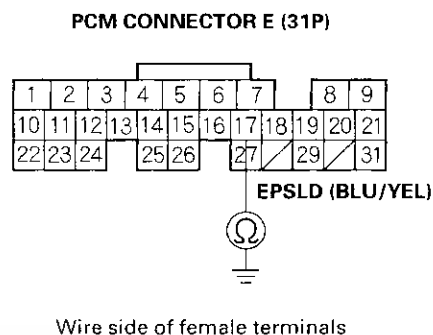


Is there battery voltage?

YES—Substitute a known-good EPS control unit (see page 17-66), and recheck. ■

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector E (31P).
19. Check for continuity between PCM connector terminal E17 and body ground.



Is there continuity?

YES—Repair short in the wire between the PCM (E17) and the EPS control unit. ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

Idle Control System

Brake Pedal Position Switch Signal Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it indicate OFF?

YES—Go to step 3.

NO—Inspect the brake pedal position (see page 19-5). ■

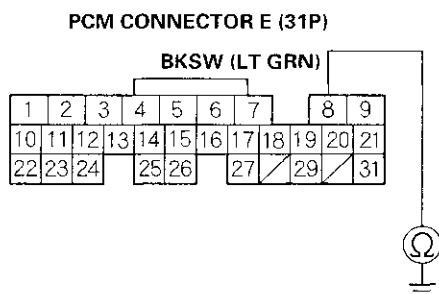
3. Press the brake pedal, and check the BRAKE SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES—The brake pedal position switch signal circuit (BKS_W line) is OK. ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect PCM connector E (31P).
8. Check for continuity between PCM connector terminal E8 and body ground.

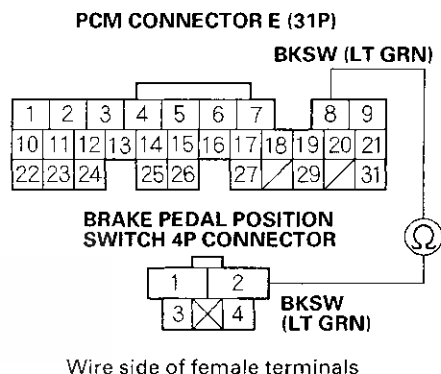


Is there continuity?

YES—Repair short in the wire between the PCM (E8) and the No. 13 HORN, STOP (20 A) fuse. Replace the No. 13 HORN, STOP (20 A) fuse. ■

NO—Go to step 9.

9. Check for continuity between PCM connector terminal E8 and brake pedal position switch 4P connector terminal No. 2.



Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 13 HORN, STOP (20 A) fuse. Inspect the brake pedal position switch (see page 19-5). ■

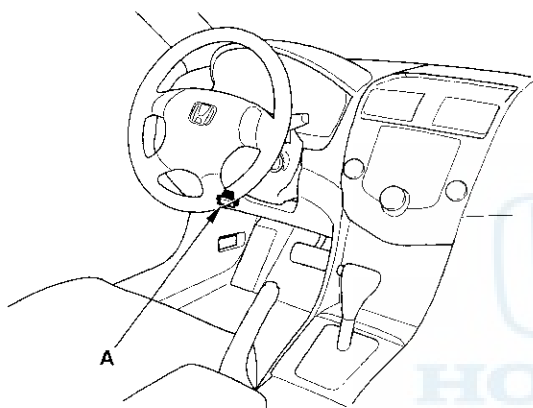
NO—Repair open in the wire between the PCM (E8) and the brake pedal position switch. ■



Idle Speed Inspection

NOTE:

- Before checking the idle speed, check these items:
 - The malfunction indicator lamp (MIL) has not been reported on.
 - Ignition timing
 - Spark plugs
 - Air cleaner
 - PCV system
 - Apply the parking brake.
1. Disconnect the evaporative emission (EVAP) canister purge valve connector.
 2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

4. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

Idle speed should be:

680±50 rpm (in Park or neutral)

5. Let the engine idle 1 minute with high electric load (A/C switch ON, temperature set to Max Cool, blower fan on High, rear window defogger ON, and headlights on high beam).

Idle speed should be:

680±50 rpm (in Park or neutral)

NOTE: If the idle speed is not within specification, do the symptom troubleshooting.

6. Reconnect the EVAP canister purge valve connector.

Idle Control System

PCM Idle Learn Procedure

The PCM actively learns the idle characteristics whenever the engine is idling. The idle learn procedure must be done to ensure the PCM learns the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- The PCM is replaced (especially before testing).
 - The PCM is reset.
 - The PCM is updated.
- NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.
- The throttle body is replaced or cleaned.

Procedure

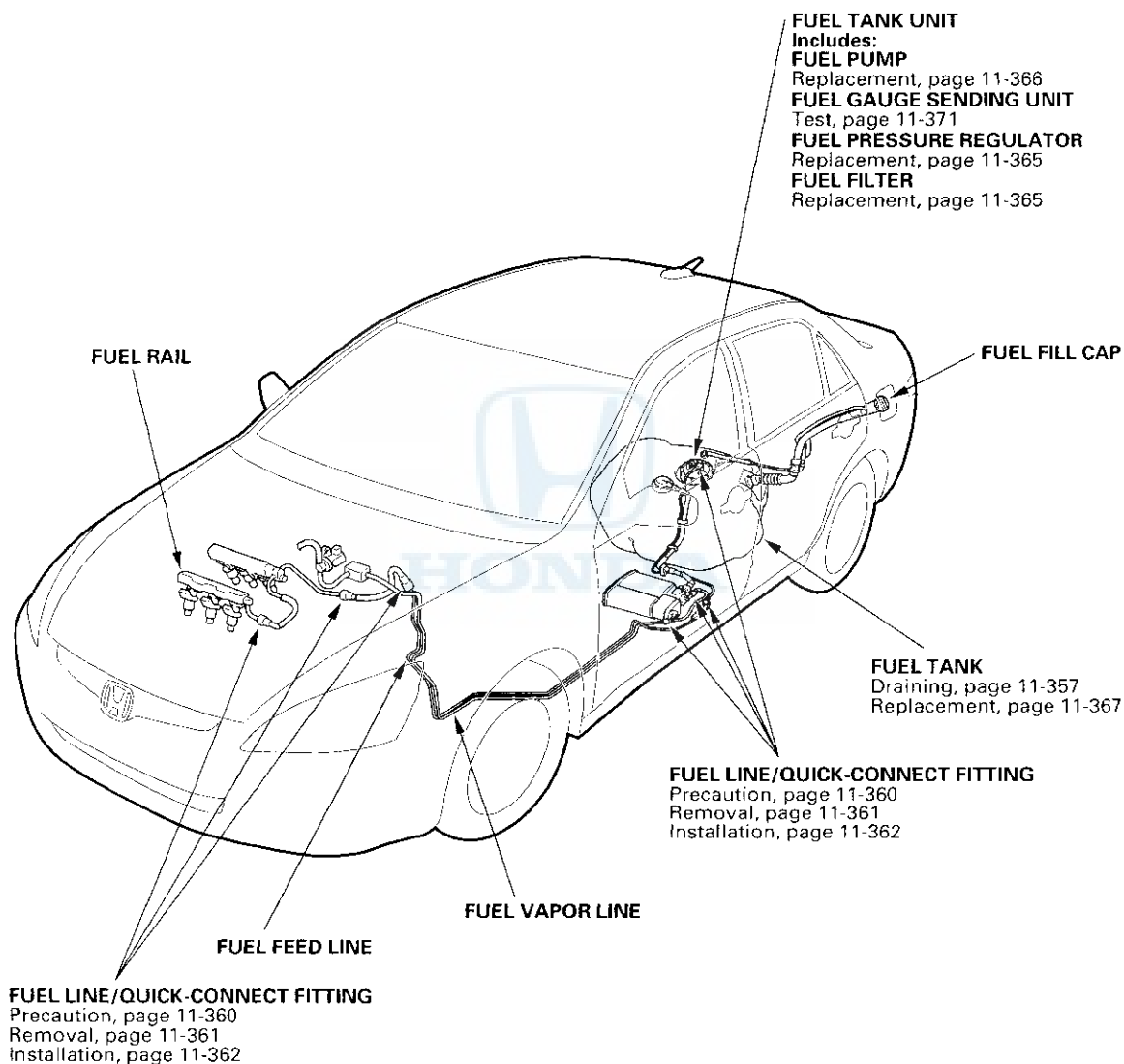
1. Make sure all electrical items (A/C, audio, rear window defogger, lights, etc.) are off.
2. Reset the PCM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194 °F (90 °C).
5. Let the engine idle about 5 minutes with the throttle fully closed.

NOTE: If the radiator fan comes on, do not include its running time in the 5 minutes.



Fuel Supply System

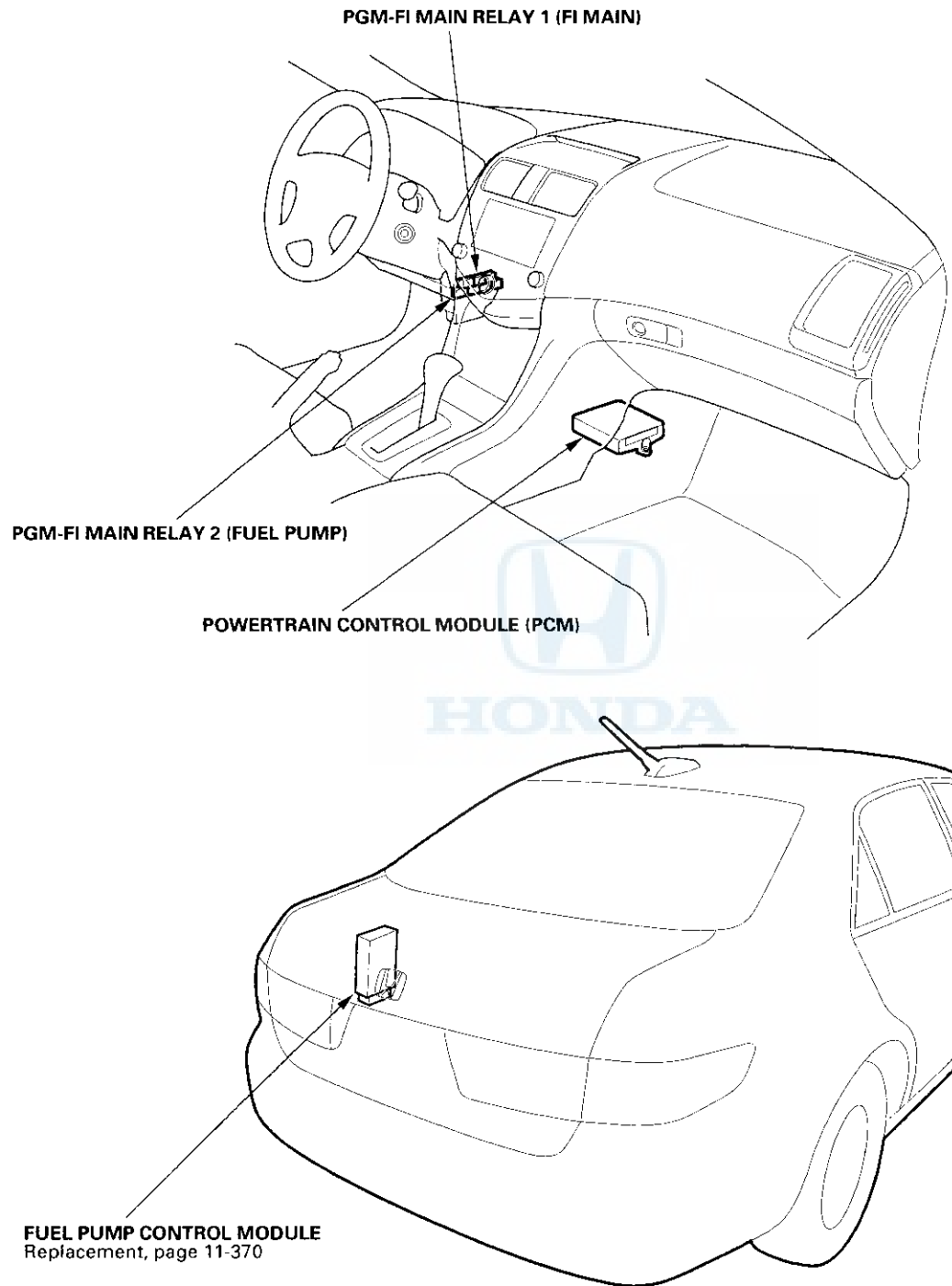
Component Location Index



(cont'd)

Fuel Supply System

Component Location Index (cont'd)





DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Range/Performance Problem

NOTE: Because it requires driving 162 miles (260 km) without refueling to complete this diagnosis, this DTC cannot be duplicated during troubleshooting.

1. Test the fuel gauge sending unit (see page 11-371).

Is the fuel gauge sending unit OK?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly. ■

NO—Replace the fuel gauge sending unit (see page 11-366), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-340).
5. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0461 is indicated, check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage

1. Test the fuel gauge sending unit (see page 11-371).

Is the fuel gauge sending unit OK?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly. ■

NO—Replace the fuel gauge sending unit (see page 11-366), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-340).
5. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0462 is indicated, check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

Fuel Supply System

DTC Troubleshooting (cont'd)

DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage

1. Test the fuel gauge sending unit (see page 11-371).

Is the fuel gauge sending unit OK?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly. ■

NO—Replace the fuel gauge sending unit (see page 11-366), then go to step 2.

2. Turn the ignition switch ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-340).
5. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0463 is indicated, check for poor connections or loose terminals at the fuel gauge sending unit and the gauge assembly, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P0627: FPC System Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to the start (III) position.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0627 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2 (FUEL PUMP), the fuel pump, and the PCM. ■

5. Turn the ignition switch OFF.
6. Check the No. 19 FUEL PUMP (15 A) fuse in under-dash fuse/relay box.

Is the fuse blown?

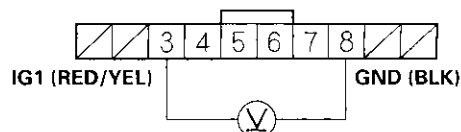
YES—Repair short in the wire between PGM-FI main relay 2 (FUEL PUMP) and the No. 19 FUEL PUMP (15 A) fuse. Also replace the No. 19 FUEL PUMP (15 A) fuse, then go to step 67.

NO—Go to step 7.

7. Disconnect the fuel pump control module 10P connector (see page 11-370).

8. Turn the ignition switch ON (II), and measure voltage between fuel pump control module 10P connector terminals No. 3 and No. 8 within 2 seconds.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



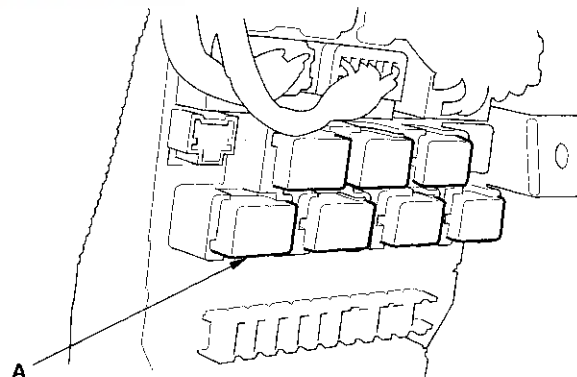
Wire side of female terminals

Is there battery voltage?

YES—Go to step 23.

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Remove the left kick panel (see page 20-45), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

11. Test PGM-FI main relay 2 (FUEL PUMP) (see page 22-72).

Is PGM-FI main relay 2 (FUEL PUMP) OK?

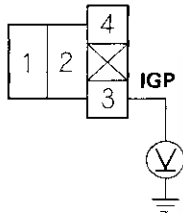
YES—Go to step 12.

NO—Replace PGM-FI main relay 2 (FUEL PUMP), then go to step 67.

12. Turn the ignition switch ON (II).

13. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

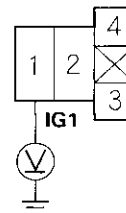
YES—Go to step 14.

NO—

- Replace PGM-FI main relay 1 (FI MAIN), then go to step 67.
- If needed, replace the under-dash fuse/relay box (see page 22-70), then go to step 67.

14. Measure voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

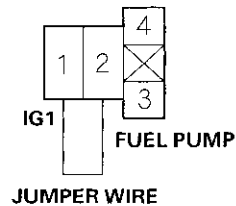
YES—Go to step 15.

NO—Replace the under-dash fuse/relay box (see page 22-70), then go to step 67.

15. Turn the ignition switch OFF.

16. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR

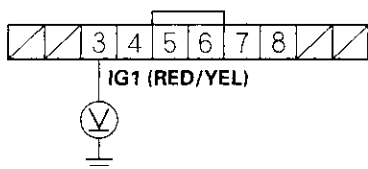


Terminal side of female terminals



17. Turn the ignition switch ON (II), and measure voltage between fuel pump control module 10P connector terminal No. 3 and body ground within 2 seconds.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

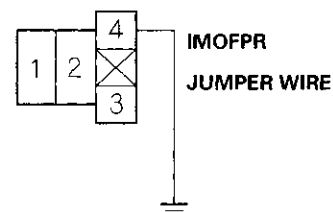
NO—

- Repair open in the wire between the under-dash fuse/relay box and the fuel pump control module, then go to step 67.
- If needed, replace the under-dash fuse/relay box (see page 22-70), then go to step 67.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector E (31P).

21. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 to body ground with a jumper wire.

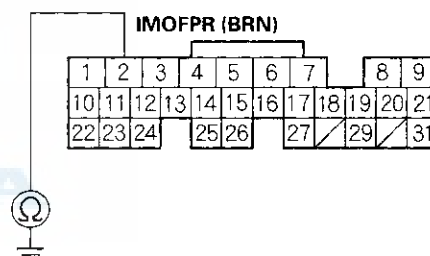
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

22. Check for continuity between PCM connector terminal E2 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 73.

NO—Repair open in the wire between the PCM (E2) and PGM-FI main relay 2 (FUEL PUMP), then go to step 67.

(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

23. Turn the ignition switch OFF.
24. Reconnect the fuel pump control module 10P connector (see page 11-370).
25. Turn the ignition switch ON (II).
26. Clear the DTC with the HDS.
27. Turn the ignition switch OFF.
28. Turn the ignition switch ON (II), and check for sound from the fuel pump within 2 seconds.

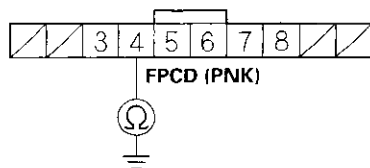
Does the fuel pump operate?

YES—Go to step 29.

NO—Go to step 47.

29. Turn the ignition switch OFF.
30. Disconnect the fuel pump control module 10P connector.
31. Check for continuity between fuel pump control module 10P connector terminal No. 4 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

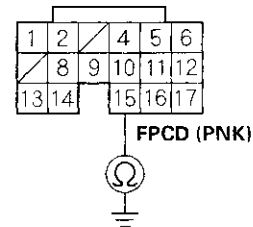
Is there continuity?

YES—Go to step 32.

NO—Go to step 35.

32. Jump the SCS line with the HDS.
33. Disconnect PCM connector D (17P).
34. Check for continuity between PCM connector terminal D15 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

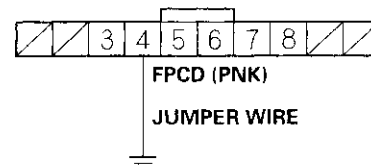
Is there continuity?

YES—Repair short in the wire between the PCM (D15) and the fuel pump control module, then go to step 67.

NO—Go to step 73.

35. Jump the SCS line with the HDS.
36. Disconnect PCM connector E (31P).
37. Connect fuel pump control module 10P connector terminal No. 4 to body ground with a jumper wire.

FUEL PUMP CONTROL MODULE 10P CONNECTOR

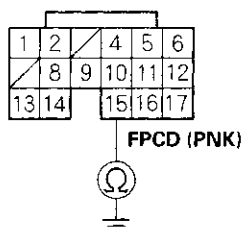


Wire side of female terminals



38. Check for continuity between PCM connector terminal D15 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

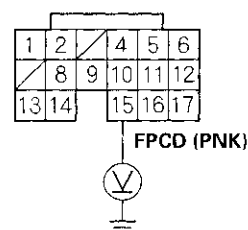
YES—Go to step 39.

NO—Repair open in the wire between the PCM (D15) and the fuel pump control module, then go to step 67.

39. Remove the jumper wire from the fuel pump control module 10P connector.
40. Reconnect the fuel pump control module 10P connector and PCM connector D (17P).

41. Turn the ignition switch ON (II), and measure voltage between PCM connector terminal D15 and body ground within 2 seconds.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there about 8 V or more?

YES—Go to step 42.

NO—Replace the fuel pump control module (see page 11-370), then go to step 67.

42. Turn the ignition switch OFF.
43. Remove the trunk floor trim panel.
44. Remove the access panel from the floor.
45. Disconnect the fuel pump 5P connector.

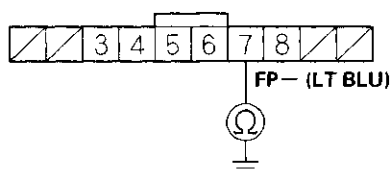
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

46. Check for continuity between fuel pump control module 10P connector terminal No. 7 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

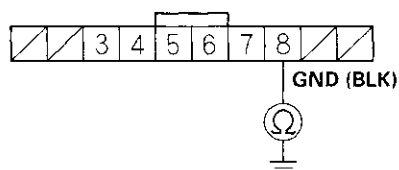
YES—Repair short in the wire between the fuel pump control module (FP— line) and the fuel pump, then go to step 67.

NO—Substitute a known-good fuel pump control module (see page 11-370), then go to step 67 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-370), then go to step 67. If DTC P0627 is indicated, go to step 73.

47. Turn the ignition switch OFF.
48. Disconnect the fuel pump control module 10P connector (see page 11-370).

49. Check for continuity between fuel pump control module 10P connector terminal No. 8 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

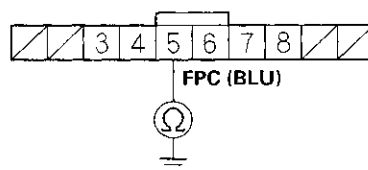
Is there continuity?

YES—Go to step 50.

NO—Repair open in the wire between the fuel pump control module (GND line) and G602, then go to step 67.

50. Check for continuity between fuel pump control module 10P connector terminal No. 5 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

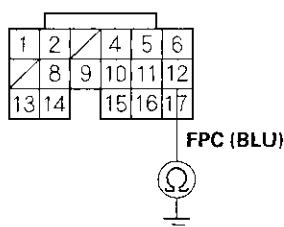
YES—Go to step 51.

NO—Go to step 54.



51. Jump the SCS line with the HDS.
52. Disconnect PCM connector E (31P).
53. Check for continuity between PCM connector terminal D12 and body ground.

PCM CONNECTOR D (17P)



Wire side of female terminals

Is there continuity?

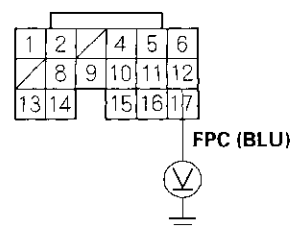
YES—Repair short in the wire between the PCM (D12) and the fuel pump control module, then go to step 67.

NO—Go to step 73.

54. Reconnect the fuel pump control module 10P connector.

55. Turn the ignition switch ON (II), and measure voltage between PCM connector terminal D12 and body ground within 2 seconds.

PCM CONNECTOR D (17P)



Wire side of female terminals

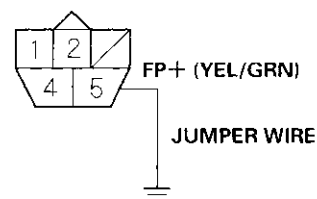
Is there battery voltage?

YES—Go to step 56.

NO—Replace the fuel pump control module (see page 11-370), then go to step 67.

56. Turn the ignition switch OFF.
57. Remove the trunk floor trim panel.
58. Remove the access panel from the floor.
59. Disconnect the fuel pump 5P connector.
60. Disconnect the fuel pump control module 10P connector (see page 11-370).
61. Connect between fuel pump 5P connector terminal No. 5 to body ground with a jumper wire.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

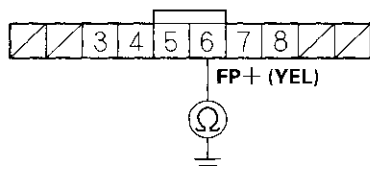
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

62. Check for continuity between fuel pump control module 10P connector terminal No. 6 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

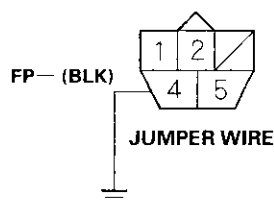
Is there continuity?

YES—Go to step 63.

NO—Repair open in the wire between the fuel pump control module (FP+ line) and the fuel pump, then go to step 67.

63. Connect between fuel pump 5P connector terminal No. 4 to body ground with a jumper wire.

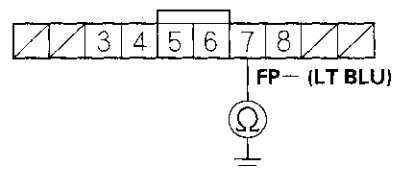
FUEL PUMP 5P CONNECTOR



Wire side of female terminals

64. Check for continuity between fuel pump control module 10P connector terminal No. 7 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 65.

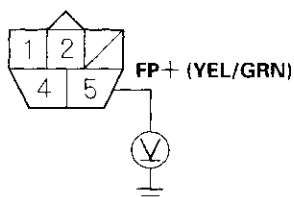
NO—Repair open in the wire between the fuel pump control module (FP- line) and the fuel pump, then go to step 67.

65. Reconnect the fuel pump control module 10P connector.



66. Turn the ignition switch ON (II), and measure voltage between fuel pump 5P connector terminal No. 5 and body ground within 2 seconds.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the fuel pump (see page 11-366), then go to step 67.

NO—Substitute a known-good fuel pump control module (see page 11-370), then go to step 67 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-370), then go to step 67. If DTC P0627 is indicated, go to step 73.

67. Turn the ignition switch OFF.
68. Reconnect all connectors.
69. Turn the ignition switch ON (II).
70. Reset the PCM with the HDS.
71. Do the PCM idle learn procedure (see page 11-340).

72. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0627 is indicated, check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2 (FUEL PUMP), the fuel pump, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

73. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

74. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0627 is indicated, check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2 (FUEL PUMP), the fuel pump, and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

Fuel Supply System

Fuel Pressure Relieving

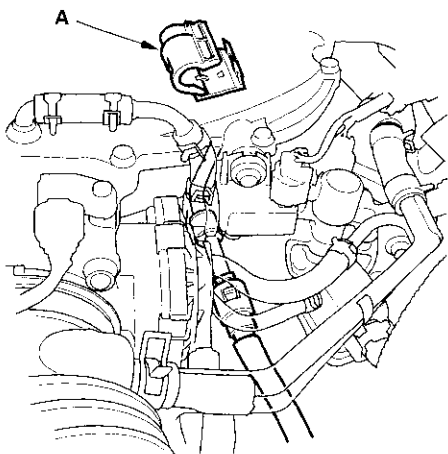
Before disconnecting fuel lines or hoses, relieve pressure from the system by stopping the fuel pump and disconnecting the fuel tube/quick connect fitting in the engine compartment.

With the HDS

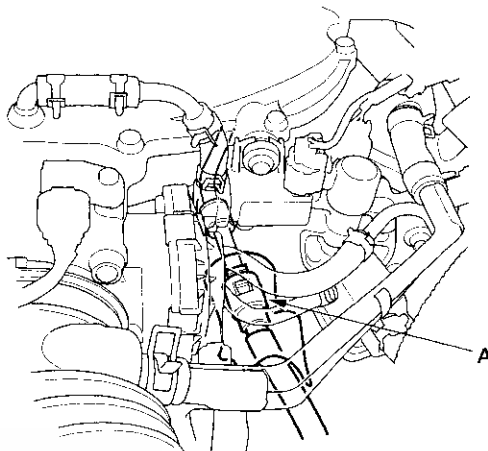
1. Remove the fuel fill cap.
2. Turn the ignition switch ON (II).
3. From the INSPECTION MENU of the HDS, select fuel pump OFF, then start the engine, and let it idle until it stalls.
4. Turn the ignition switch OFF.

NOTE:

- Do not allow the engine to idle above 1,000 rpm or the PCM will continue to operate the fuel pump.
 - A DTC or a Temporary DTC may be set during this procedure. Check for DTCs, and clear them as needed (see page 11-3).
5. Make sure you have the anti-theft code for the radio and the navigation system, then write down the customer's audio presets.
 6. Disconnect the negative cable from the battery.
 7. Remove the quick-connect fitting cover (A).



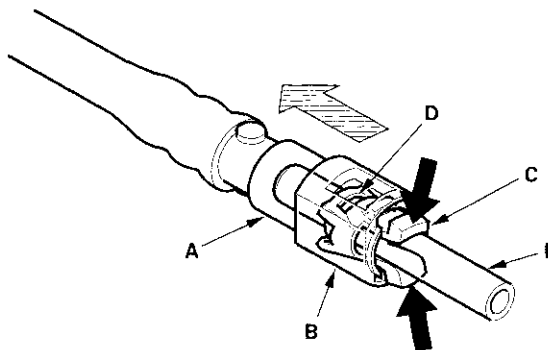
8. Check the fuel quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or shop towel over the quick-connect fitting (A).



10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- Be careful not to damage the line (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.

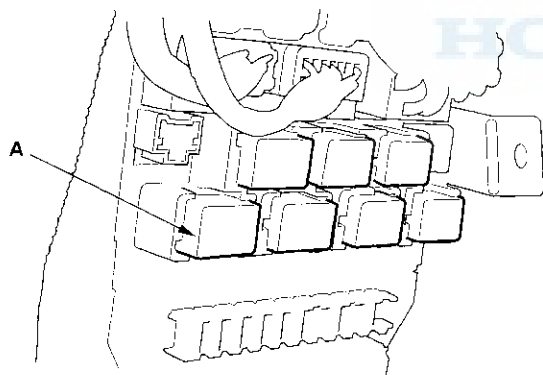




11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-361).
12. Reconnect the negative cable to the battery, and do these items:
 - Power window control unit reset procedure (see page 22-200).
 - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
 - Reset the clock.
 - If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

Without the HDS

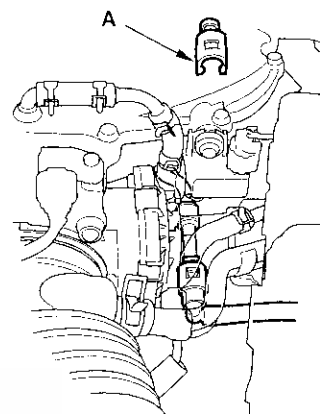
1. Make sure you have the anti-theft code for the radio, and the navigation system, then write down the customer's audio presets.
2. Remove the left kick panel (see page 20-45), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



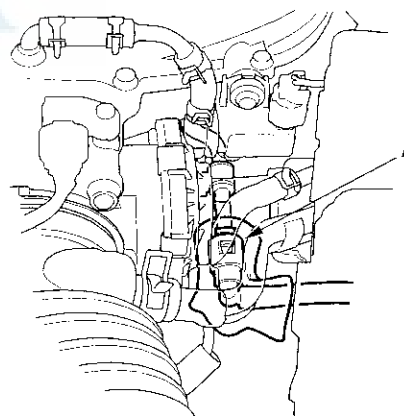
3. Start the engine, and let it idle until it stalls.

NOTE: If any DTCs are stored, clear and ignore them.

4. Turn the ignition switch OFF.
5. Remove the fuel fill cap.
6. Disconnect the negative cable from the battery.
7. Remove the quick-connect fitting cover (A).



8. Check the fuel quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or shop towel over the quick-connect fitting (A).



(cont'd)

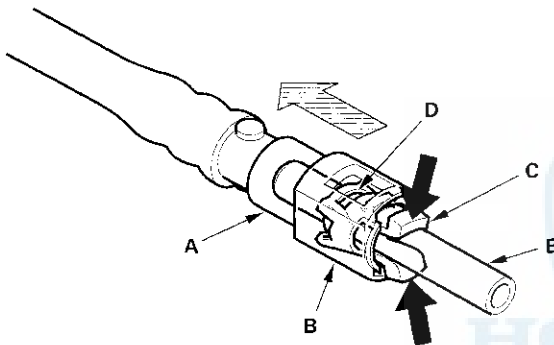
Fuel Supply System

Fuel Pressure Relieving (cont'd)

10. Disconnect the quick-connect fitting (A): Hold the connector (B) with one hand, and squeeze the retainer tabs (C) with the other hand to release them from the locking tabs (D). Pull the connector off.

NOTE:

- Be careful not to damage the line (E) or other parts.
- Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



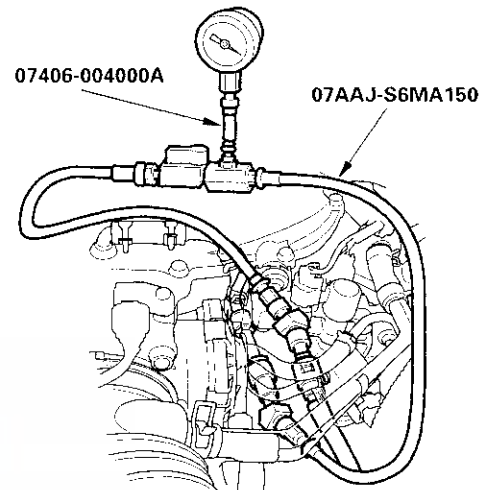
11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-361).
12. Reconnect the negative cable to the battery, and do these items:
 - Power window control unit reset procedure (see page 22-200).
 - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
 - Reset the clock.
 - PCM reset procedure (see page 11-4).
 - If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

Fuel Pressure Test

Special Tools Required

- Fuel pressure gauge 07406-004000A
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-354).
2. Disconnect the quick-connect fitting. Attach the fuel pressure gauge set and the fuel pressure gauge.

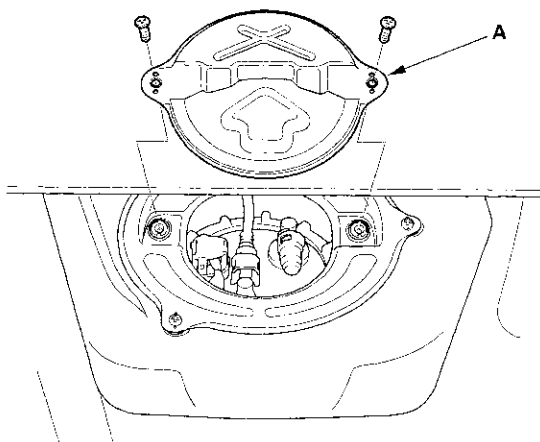


3. Start the engine, and let it idle.
 - If the engine starts, go to step 5.
 - If the engine does not start, go to step 4.
4. Check to see if the fuel pump is running: listen to the fuel filler port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on.
 - If the pump runs, go to step 5.
 - If the pump does not run, refer to the DTC troubleshooting.
5. Read the fuel pressure gauge. The pressure should be 380—430 kPa (3.9—4.4 kgf/cm², 55—63 psi).
 - If the pressure is OK, the test is complete.
 - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-365) and the fuel filter (see page 11-365), then recheck the fuel pressure.

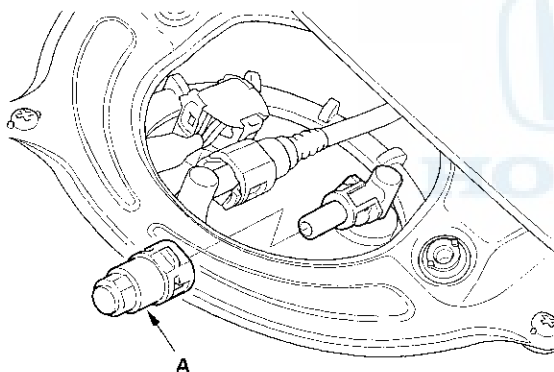


Fuel Tank Draining

1. Remove the trunk floor/seat back panel.
2. Remove the access panel (A) from the floor.



3. Disconnect the cap (A) from the fuel tank unit.

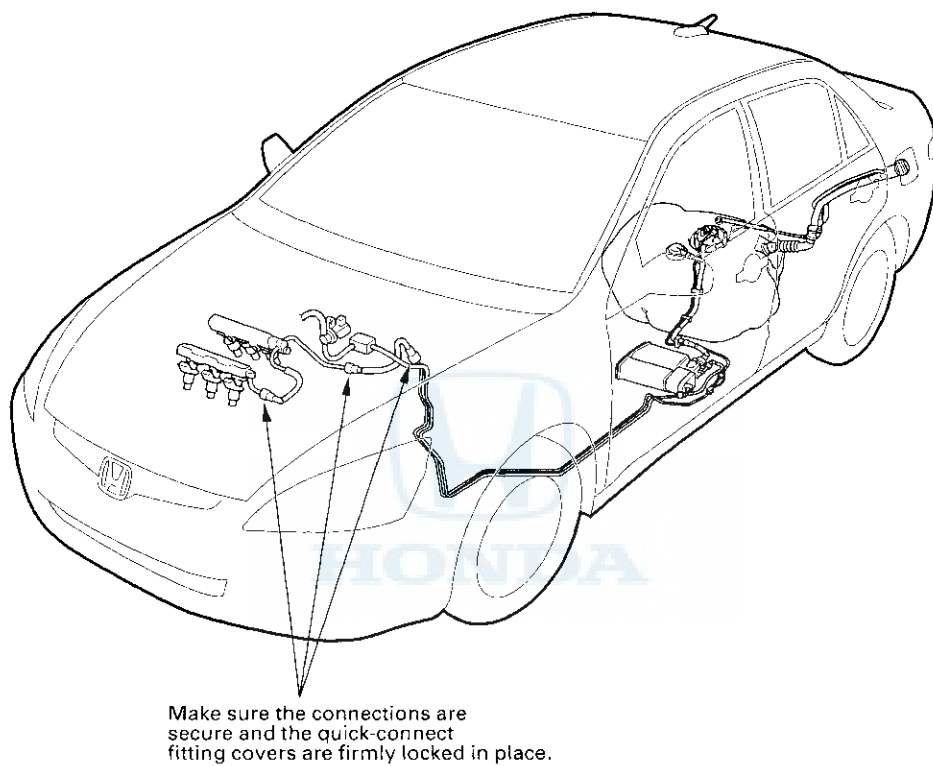


4. Connect a hose to the fuel tank unit.
5. Using a hand pump, and a container suitable for fuel, drain the fuel from the tank.

Fuel Supply System

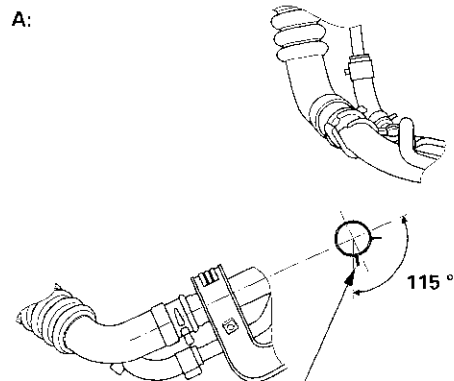
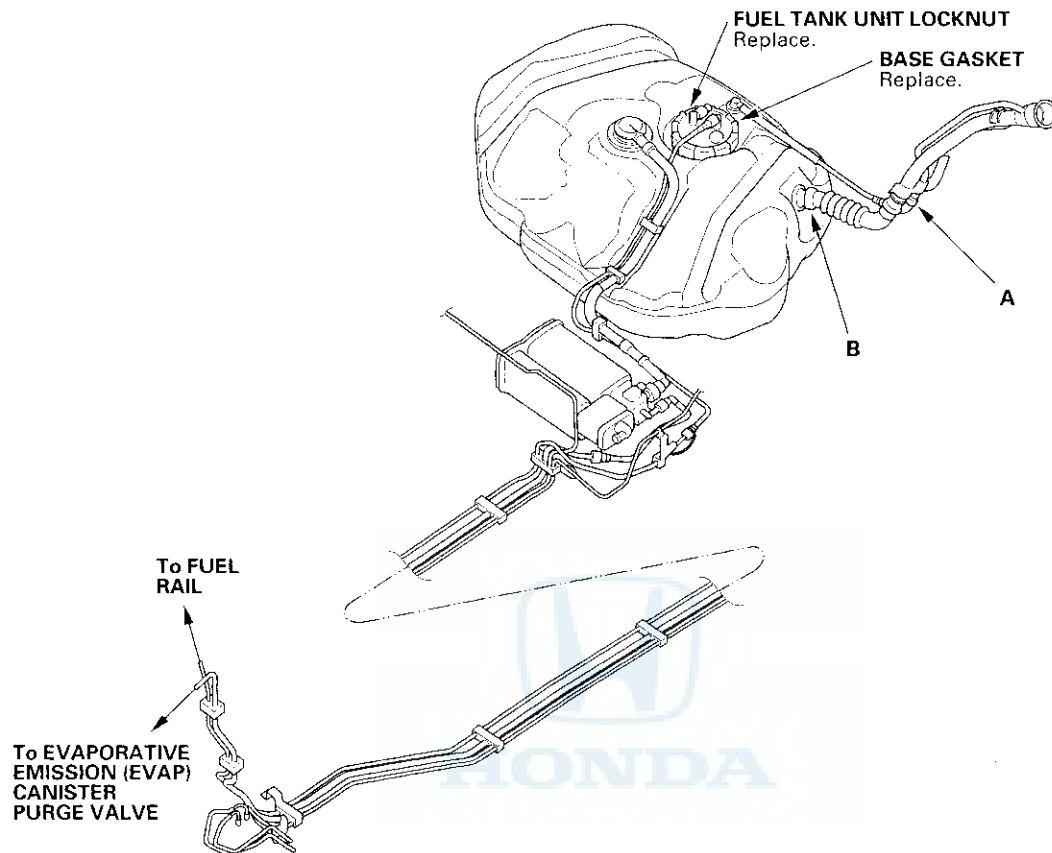
Fuel Line Inspection

Check the fuel system lines, hoses, and fuel filter for damage, leaks, or deterioration. Replace any damaged parts.

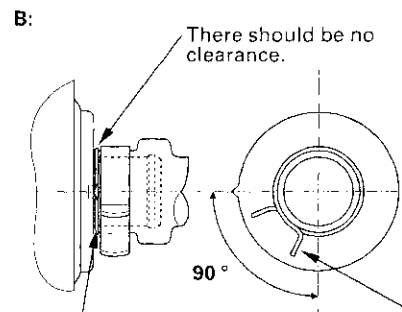




Check all clamps and retighten any if necessary.



Make sure that the clamp is in position within the lever end of it the range shown.



When installing the fuel fill tube, align the marks on the tube and the line.

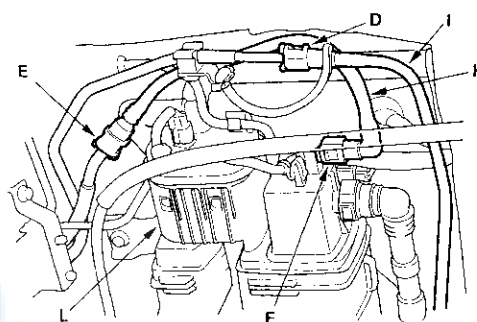
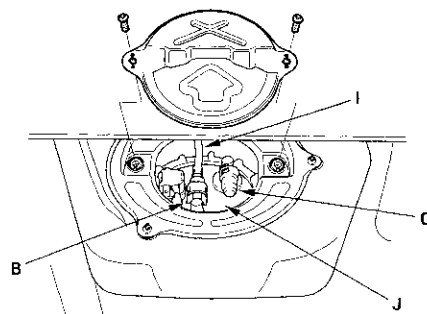
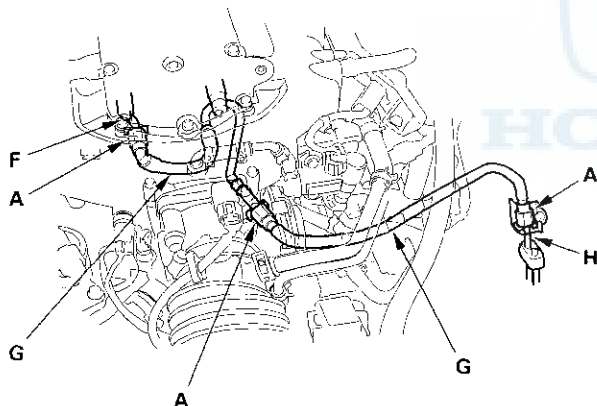
Make sure that the clamp is in position within the lever end of it the range shown.

Fuel Supply System

Fuel Line/Quick-Connect Fitting Precaution

The fuel line/quick-connect fittings (A), (B), (C), (D), (E) connect the fuel rail (F) to the fuel feed hose (G), the fuel feed hose to the fuel line (H), and the fuel line (I) to the fuel tank unit (J) and the fuel vapor line (K) to the EVAP canister (L). When removing or installing the fuel feed hose, fuel tank unit or fuel tank, it is necessary to disconnect or connect the quick-connect fittings. Pay attention to the following:

- The fuel feed hoses, fuel line, and quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, fuel line, and quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they came into contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, fuel line, and quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.



A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

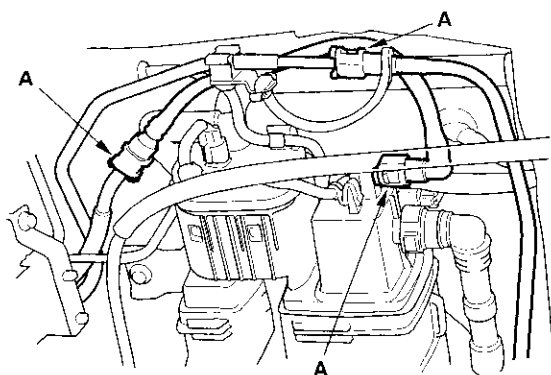
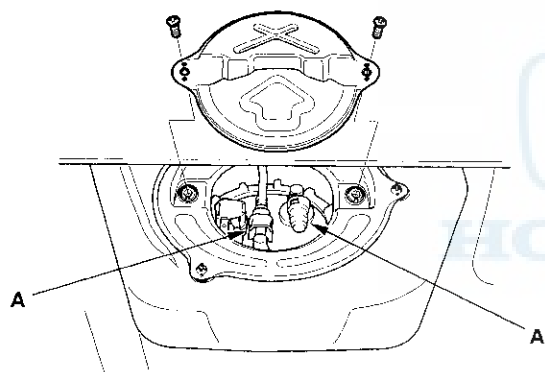
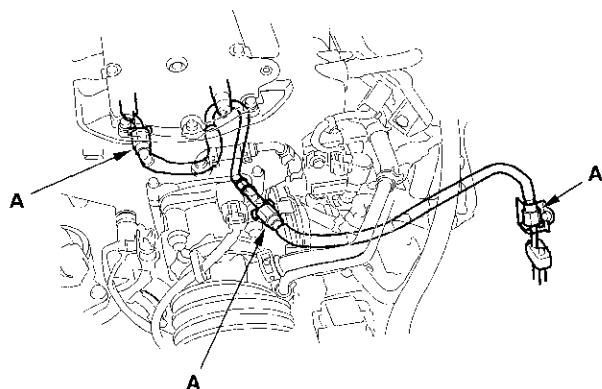
- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- it has been removed from the line.
- it is damaged.

No.	Manufacturer	Retainer color	Piping diameter
A	Tokai	Blue green	0.3 in. (8 mm)
B	Tokai	Orange	0.4 in. (9.5 mm)
C	Sanoh	White	0.4 in. (9.5 mm)
D	Tokai	Green	0.2 in. (6.3 mm)
E	Tokai	Orange	0.4 in. (9.5 mm)



Fuel Line/Quick-Connect Fitting Removal

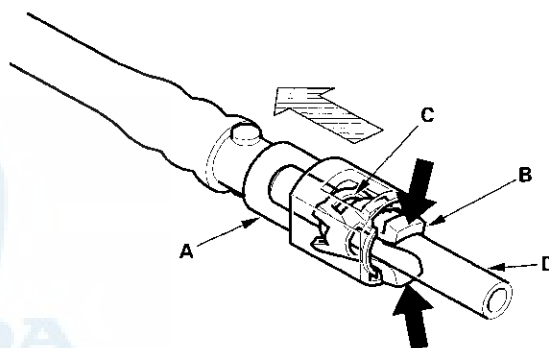
1. Relieve the fuel pressure (see page 11-354).
2. Check the fuel quick-connect fitting (A) for dirt, and clean it if needed.



3. Place a rag or shop towel over the quick-connect fitting.
Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

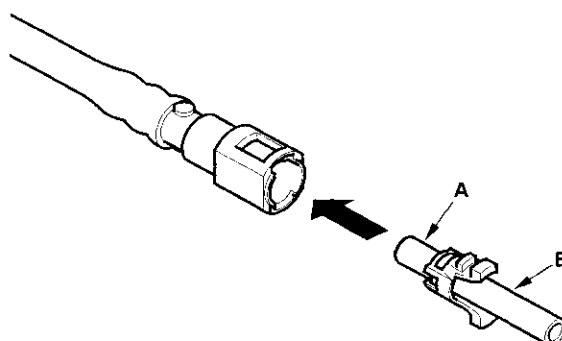
NOTE:

- Be careful not to damage the line (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.



4. Check the contact area (A) of the line (B) for dirt or damage.

- If it is dirty, clean it.
- If it is rusty or damaged, replace the fuel pump, fuel filter, or fuel feed line.



(cont'd)

Fuel Supply System

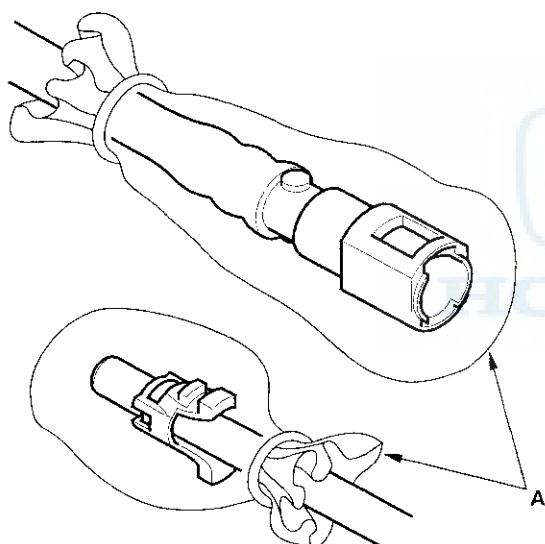
Fuel Line/Quick-Connect Fitting Removal (cont'd)

5. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

NOTE: The retainer cannot be reused once it has been removed from the line.

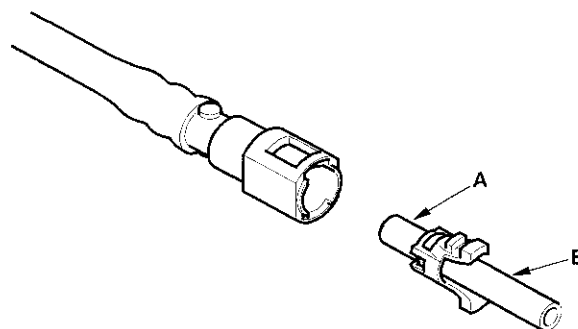
Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- It is damaged.



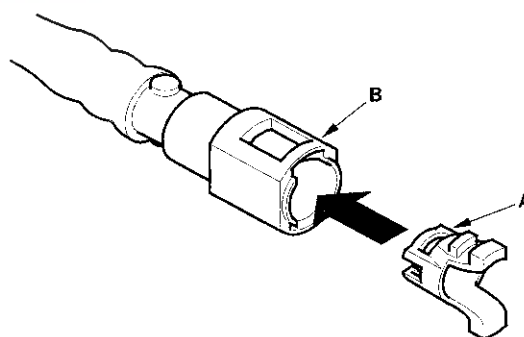
Fuel Line/Quick-Connect Fitting Installation

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.



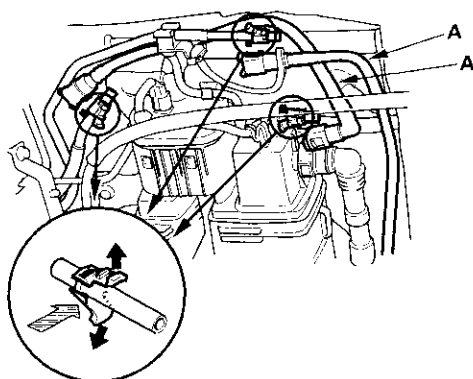
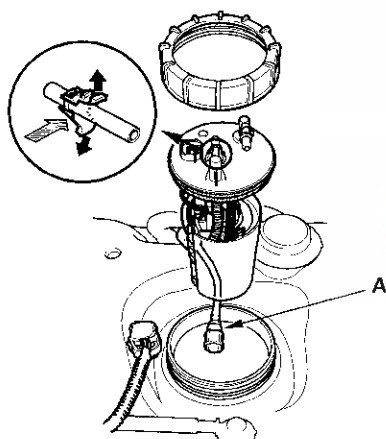
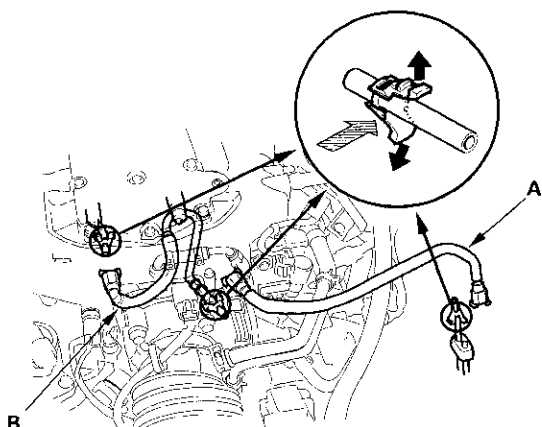
2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

- replacing the fuel rail.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- removing the retainer from the line.





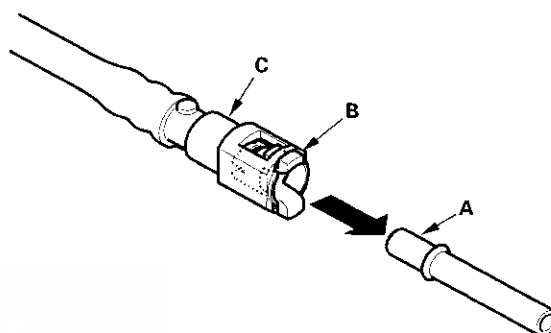
3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.



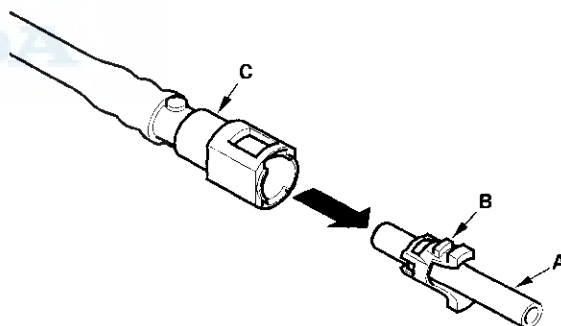
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector tabs (C). Then press the quick-connect fittings onto the line until both retainer pawls lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

Connection with new retainer:



Reconnection to existing retainer:

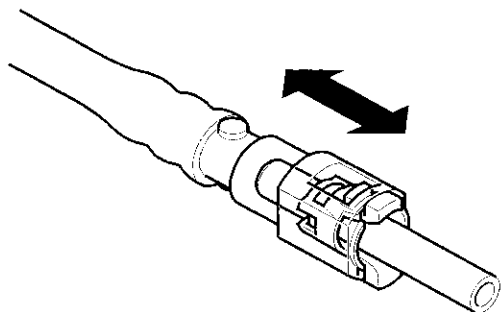


(cont'd)

Fuel Supply System

Fuel Line/Quick-Connect Fitting Installation (cont'd)

5. Make sure the connection is secure and that the tabs are firmly locked into place; check visually and by pulling the connector.



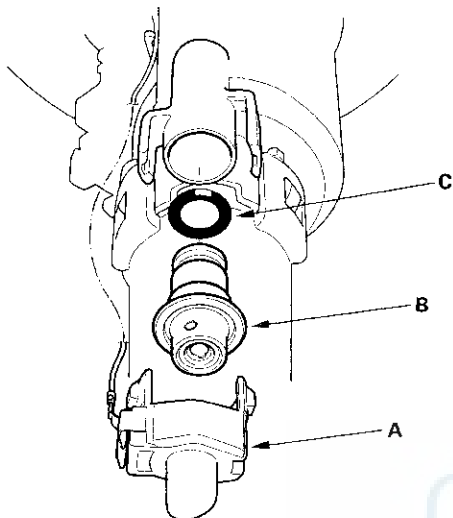
6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, and check that there is no leakage in the fuel supply system.





Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-366).
2. Remove the holder (A).



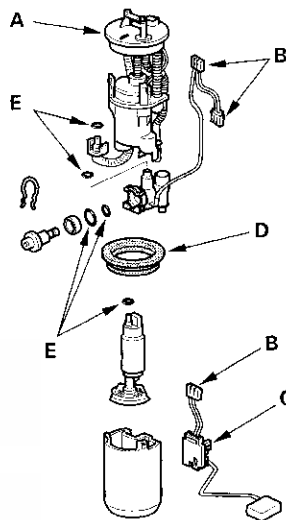
3. Remove the fuel pressure regulator (B).
4. Install the regulator in the reverse order of removal with a new O-ring (C).

NOTE: Coat the O-ring with clean engine oil.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-356), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-366).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:
 - When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
 - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal with a new base gasket (D) and new O-rings (E). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-366).

NOTE: Replace the fuel tank unit locknut (A), and base gasket as a set.

Fuel Supply System

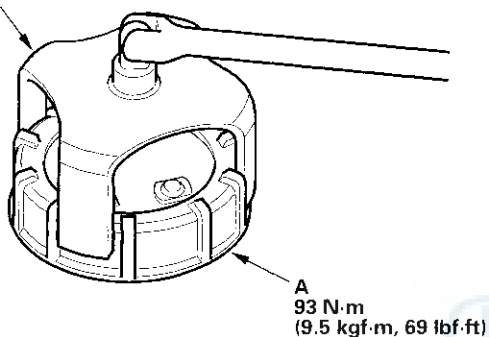
Fuel Pump/Fuel Gauge Sending Unit Replacement

Special Tools Required

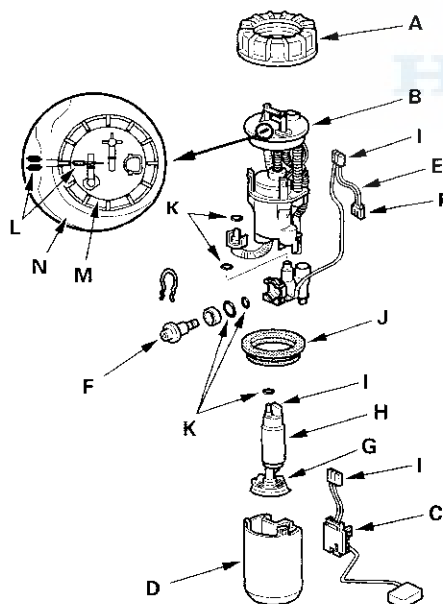
Fuel sender wrench 07AAA-S0XA100

1. Remove the fuel tank (see page 11-367).
2. Disconnect the fuel pump subharness from the fuel tank unit.
3. Using the special tool, loosen the fuel tank unit locknut (A).

07AAA-S0XA100



4. Remove the locknut (A) and the fuel tank unit.



5. Remove the fuel filter (B), the fuel gauge sending unit (C), the case (D), the wire harness (E), and the fuel pressure regulator (F).

6. Check these items before installing the fuel tank unit:

- Make sure the connection is secure and the suction filter (G) is firmly connected to the fuel pump (H).
- When connecting the wire harness, make sure the connection is secure and the connectors (I) are firmly locked into place.
- When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

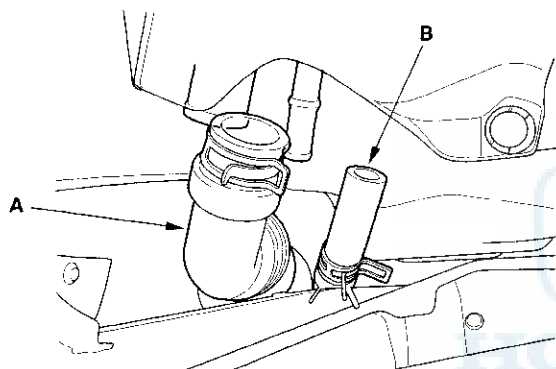
7. Install the parts in the reverse order of removal with a new base gasket (J), new locknut, and new O-rings (K). When installing the fuel tank unit, align the marks (L) on the unit (M) and the fuel tank (N).



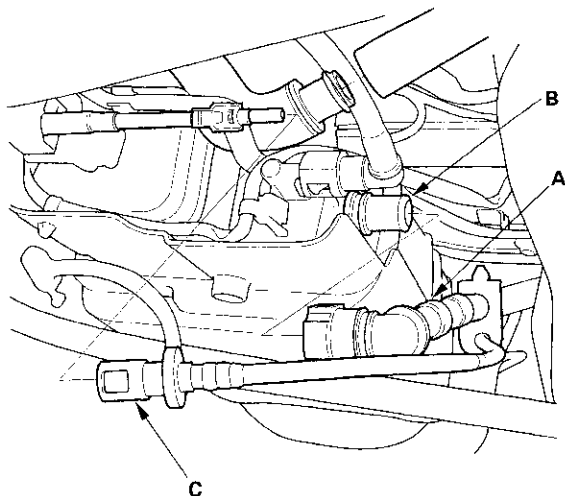
Fuel Tank Replacement

Removal

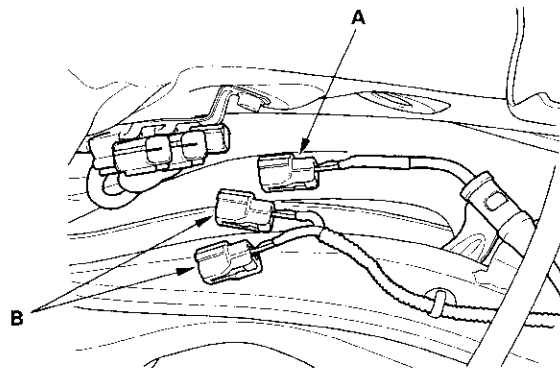
1. Relieve the fuel pressure (see page 11-354).
2. Drain the fuel tank (see page 11-357).
3. Raise the vehicle, and make sure it is securely supported. Remove the rear wheels.
4. Release the parking brake.
5. Remove the mufflers and exhaust pipe B (see page 9-7).
6. Disconnect the fuel fill neck tube (A) and breather hose (B).



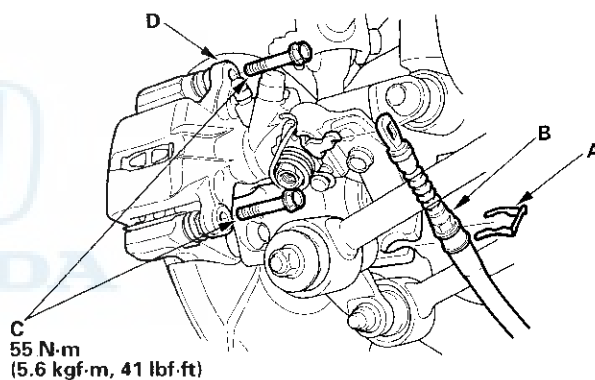
7. Disconnect the vapor line (A) from the EVAP canister (B), then disconnect the fuel line (C).



8. Disconnect the wheel sensor 2P connector (A), and the fuel pump subharness connectors (B).



9. Remove the clip (A), parking brake cable (B), two caliper bolts (C), and caliper body (D).

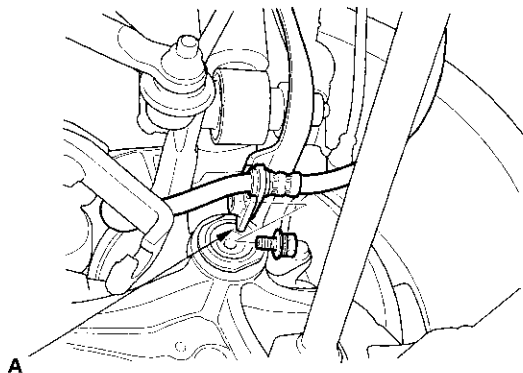


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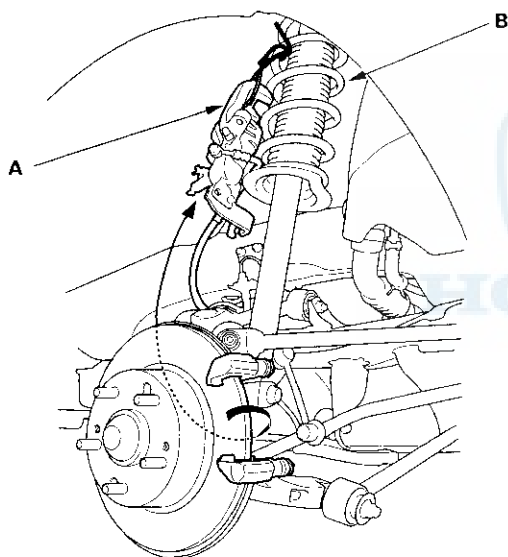
Fuel Supply System

Fuel Tank Replacement (cont'd)

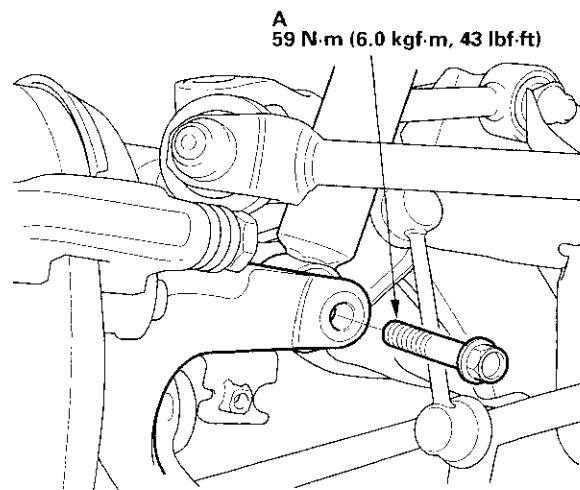
10. Remove the brake hose bracket (A).



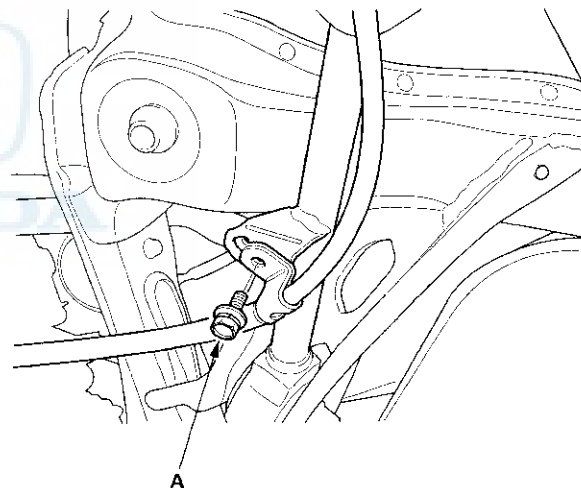
11. Hook the caliper body (A) onto the damper spring (B).



12. Remove the flange bolt (A).

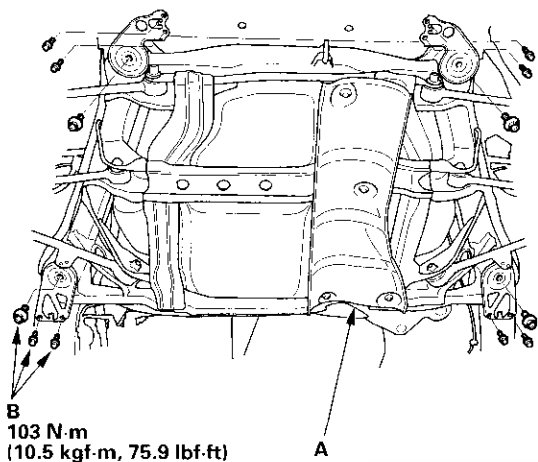


13. Remove the parking brake cable bracket bolt (A).

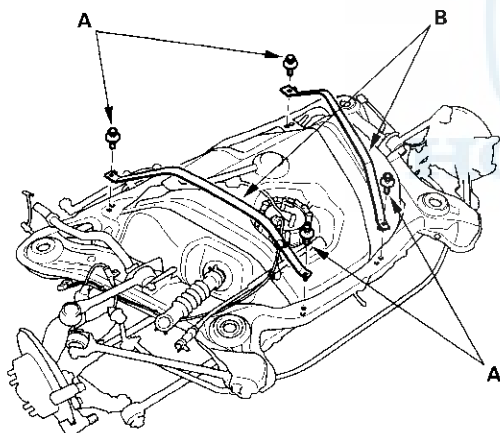




14. Remove the heat shield (A). Place a jack or support under the rear suspension subframe. Remove the mounting bolts (B). Remove the rear suspension subframe.



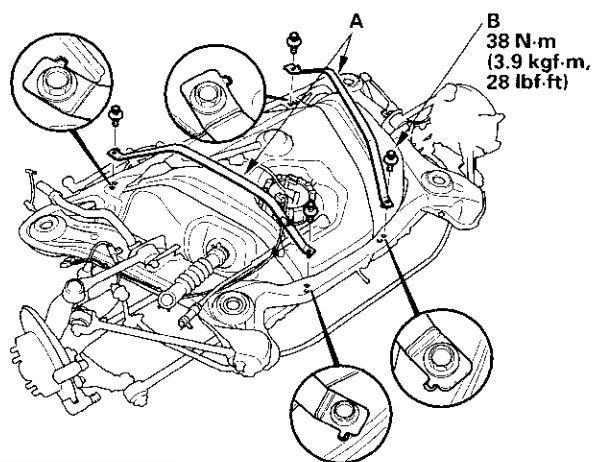
15. Remove the bolts (A) and the fuel tank straps (B).



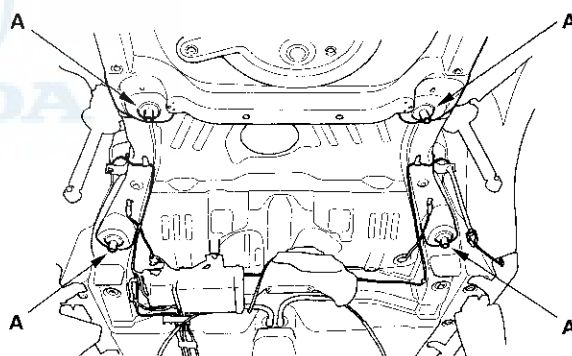
16. Lift the fuel tank out of the subframe.

Installation

1. Install the fuel tank straps (A), and tighten the bolts (B).



2. Place a jack or support under the rear suspension subframe. Install the subframe, aligning the pins (A) with the holes in the subframe.

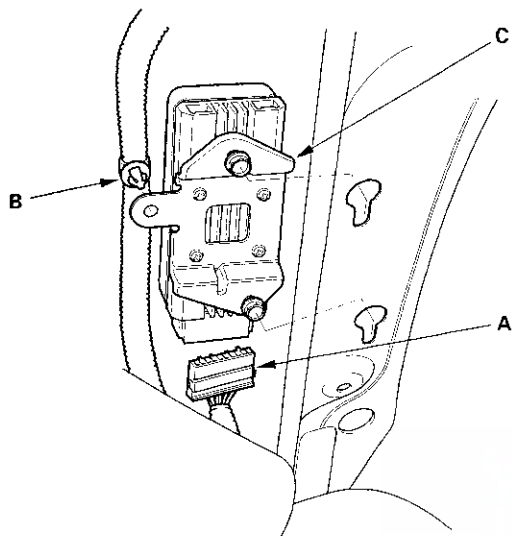


3. Install the remaining parts in the reverse order of removal.
4. After installation, do a wheel alignment (see page 18-7).

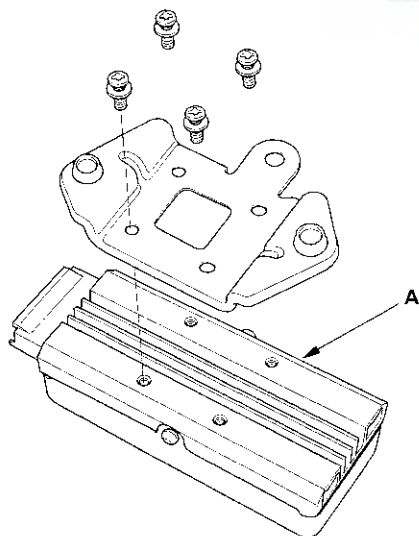
Fuel Supply System

Fuel Pump Control Module Replacement

1. Remove the left trunk side trim panel (see page 20-53).
2. Disconnect the fuel pump control module connector (A) and clip (B).



3. Remove the fuel pump control module bracket (C).
4. Remove the fuel pump control module (A).



5. Install the module in the reverse order of removal.



Fuel Gauge Sending Unit Test

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-228).

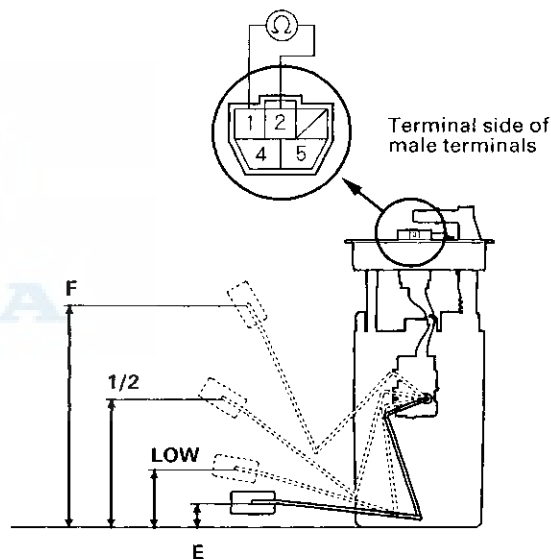
1. Do multiplex integrated control system troubleshooting test mode A (see page 22-84).
 - If no problem is found, go to step 2.
 - If DTC B1175 is indicated, go to the DTC B1175 troubleshooting (see page 22-242).
2. Check the No. 21 METER (7.5 A) fuse in the under-dash fuse/relay box.
3. Do the gauge drive circuit check (see page 22-227).
 - If the fuel gauge needle sweeps from the minimum to maximum position and then returns to minimum, the gauge is OK. Go to step 4.
 - If the fuel gauge needle does not sweep correctly, replace the gauge assembly and retest.
4. Turn the ignition switch OFF.
5. Remove the fuel tank (see page 11-367).
6. Remove the fuel tank unit from the fuel tank (see page 11-366).

7. Measure resistance between the No. 1 and No. 2 terminals of the fuel pump 5P connector with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.

If you do not get the following readings, replace the fuel gauge sending unit (see page 11-366).

Float Position	F 7.6 in. (191.4 mm)	1/2 4.4 in. (113.1 mm)	LOW 2.0 in. (52.4 mm)	E 0.8 in. (25.6 mm)
Resistance (Ω)	19 to 21	205.5 to 215.5	487.9 to 644	770 to 790

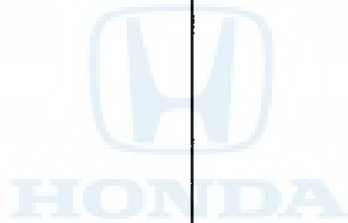
NOTE: Remove the No. 15 BACK UP (40 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.



Fuel Supply System

Low Fuel Indicator Test

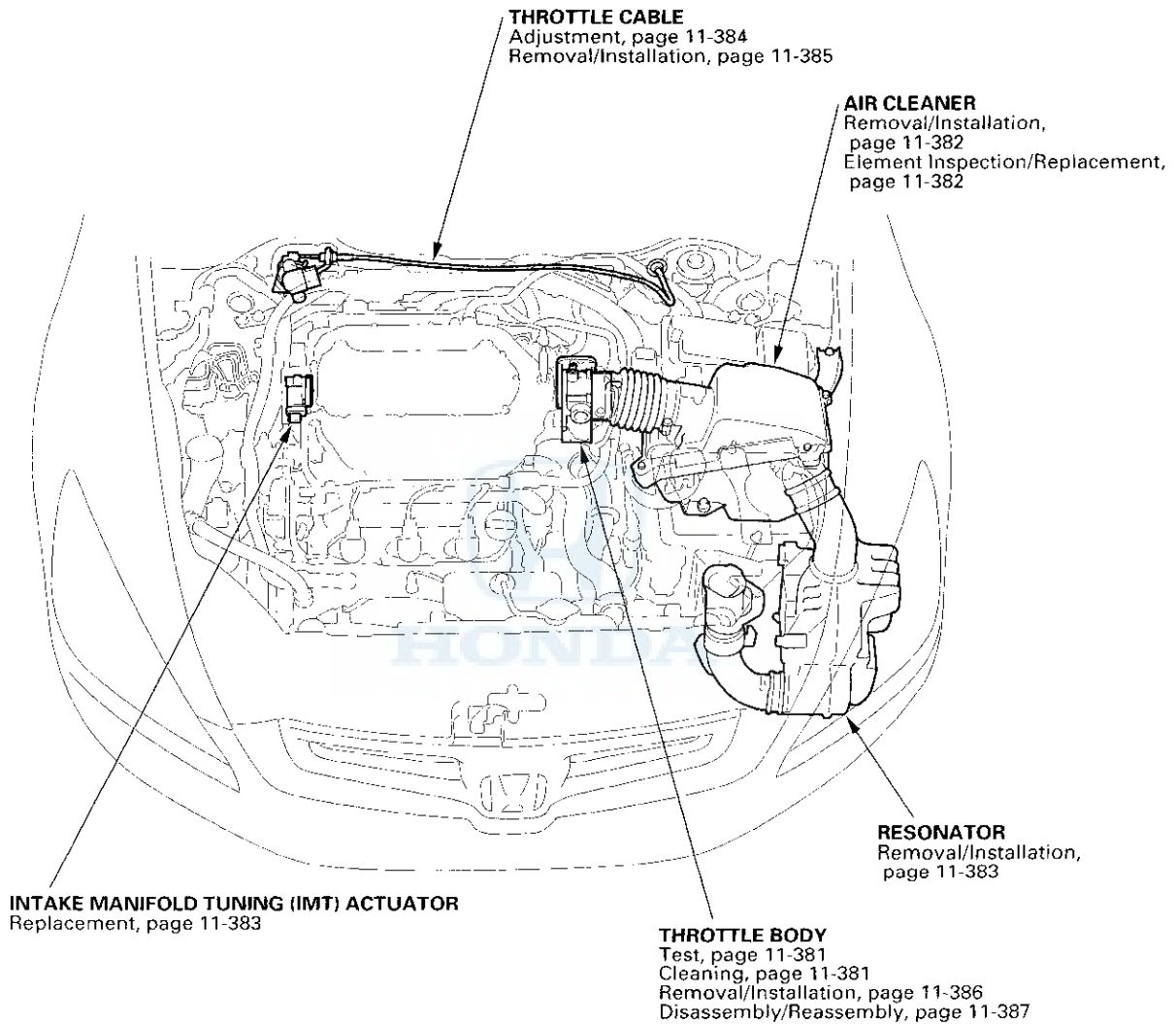
1. Do the gauge drive circuit check (see page 22-227).
 - If the low fuel indicator flashes, go to step 2.
 - If the low fuel indicator does not flash, replace the gauge control module assembly.
2. Do multiplex integrated control system troubleshooting test mode A (see page 22-84).
 - If any DTCs are indicated, go to the indicated DTC's troubleshooting.
 - If no DTCs are indicated, go to step 3.
3. Do the fuel gauge sending unit test (see page 11-371).



Intake Air System



Component Location Index



Intake Air System

DTC Troubleshooting

DTC P1077: IMT Valve Stuck in Short Position

1. Start the engine, and let it idle.
2. Make sure the IMT VALVE CMD is CLOSED in the DATA LIST with the HDS.
3. Check the IMT VALVE SW in the DATA LIST with the HDS.

Is OPEN indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■

4. Turn the ignition switch OFF.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch ON (II).
7. Check the IMT VALVE SW in the DATA LIST with the HDS.

Is CLOSED indicated?

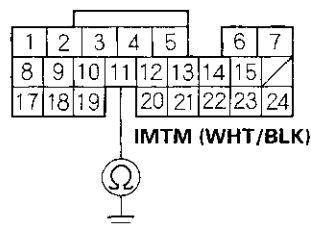
YES—Go to step 12.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (24P).

11. Check for continuity between PCM connector terminal B11 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

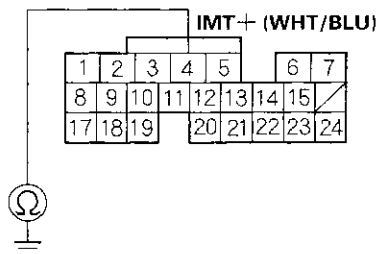
Is there continuity?

YES—Repair short in the wire between the PCM (B11) and the IMT actuator, then go to step 23.

NO—Go to step 29.

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (24P).
15. Check for continuity between PCM connector terminal B4 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

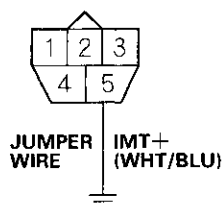
YES—Repair short in the wire between the PCM (B4) and the IMT actuator, then go to step 23.

NO—Go to step 16.



16. Connect IMT actuator 5P connector terminal No. 5 to body ground with a jumper wire.

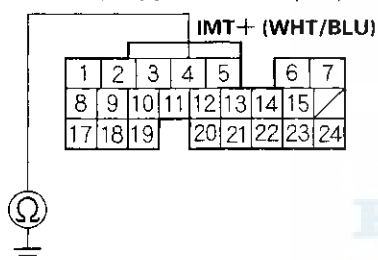
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

17. Check for continuity between PCM connector terminal B4 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

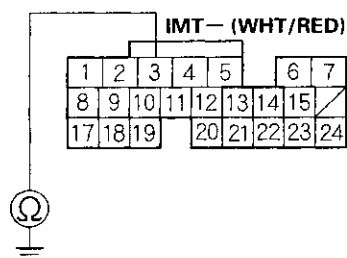
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the PCM (B4) and the IMT actuator, then go to step 23.

18. Check for continuity between PCM connector terminal B3 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

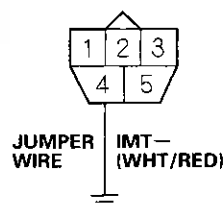
Is there continuity?

YES—Repair short in the wire between the PCM (B3) and the IMT actuator, then go to step 23.

NO—Go to step 19.

19. Connect IMT actuator 5P connector terminal No. 4 to body ground with a jumper wire.

IMT ACTUATOR 5P CONNECTOR



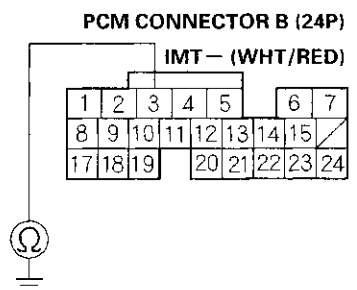
Wire side of female terminals

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

20. Check for continuity between PCM connector terminal B3 and body ground.



Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (B3) and the IMT actuator, then go to step 23.

21. Remove the IMT actuator (see page 11-383).

22. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-383), then go to step 23 and recheck. If DTC P1077 is not indicated, replace the IMT actuator (see page 11-383), then go to step 23. If DTC P1077 is indicated, go to step 29.

NO—Remove the intake manifold cover (see step 1 on page 9-3), and repair the stuck valve. If necessary, replace the intake manifold (see page 9-2), then go to step 23.

23. Reconnect all connectors.
24. Turn the ignition switch ON (II).
25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-340).

27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1077 is indicated, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26 and recheck.

29. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

30. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1077 is indicated, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P1078: IMT Valve Stuck in Long Position

1. Start the engine, and hold the engine speed above 4,000 rpm.
2. Make sure the IMT VALVE CMD is OPEN in the DATA LIST with the HDS.
3. Check the IMT VALVE SW in the DATA LIST with the HDS.

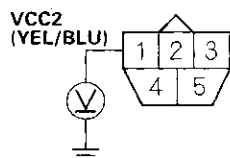
Is CLOSED indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■

4. Let the engine idle, then turn the ignition switch OFF.
5. Disconnect the IMT actuator 5P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between IMT actuator 5P connector terminal No. 1 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

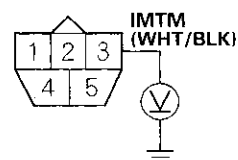
Is there about 5 V?

YES—Go to step 8.

NO—Repair open in the wire between the PCM (C14) and the IMT actuator, then go to step 25.

8. Measure voltage between IMT actuator 5P connector terminal No. 3 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

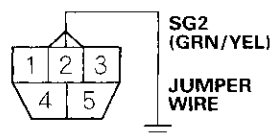
Is there about 5 V?

YES—Go to step 9.

NO—Go to step 14.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector C (22P).
12. Connect IMT actuator 5P connector terminal No. 2 to body ground with a jumper wire.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

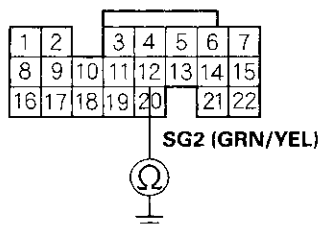
(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

13. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

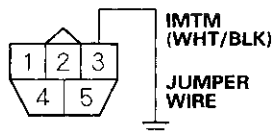
Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the PCM (C12) and the IMT actuator, then go to step 25.

14. Disconnect PCM connector B (24P).
15. Connect IMT actuator 5P connector terminal No. 3 to body ground with a jumper wire.

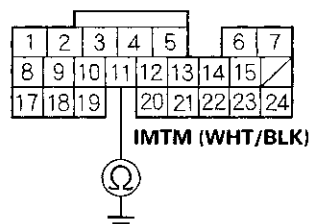
IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

16. Check for continuity between PCM connector terminal B11 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

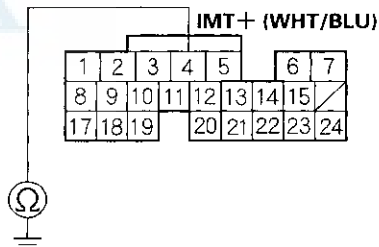
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the PCM (B11) and the IMT actuator, then go to step 25.

17. Check for continuity between PCM connector terminal B4 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

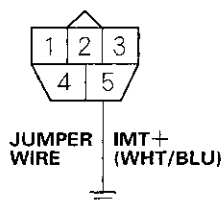
YES—Repair short in the wire between the PCM (B4) and the IMT actuator, then go to step 25.

NO—Go to step 18.



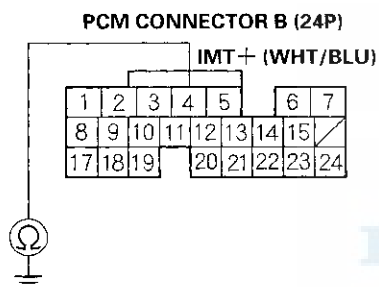
18. Connect IMT actuator 5P connector terminal No. 5 to body ground with a jumper wire.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal B4 and body ground.



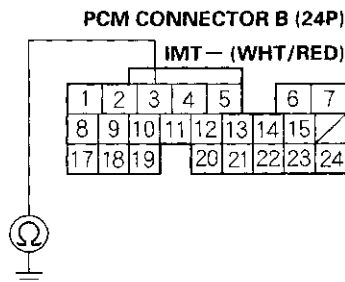
Wire side of female terminals

Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the PCM (B4) and the IMT actuator, then go to step 25.

20. Check for continuity between PCM connector terminal B3 and body ground.



Wire side of female terminals

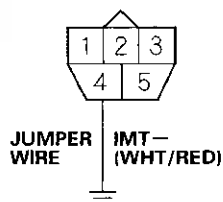
Is there continuity?

YES—Repair short in the wire between the PCM (B3) and the IMT actuator, then go to step 25.

NO—Go to step 21.

21. Connect IMT actuator 5P connector terminal No. 4 to body ground with a jumper wire.

IMT ACTUATOR 5P CONNECTOR



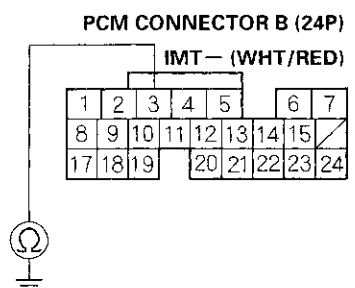
Wire side of female terminals

(cont'd)

Intake Air System

DTC Troubleshooting (cont'd)

22. Check for continuity between PCM connector terminal B3 and body ground.



Wire side of female terminals

Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the PCM (B3) and the IMT actuator, go to step 25.

23. Remove the IMT actuator (see page 11-383).

24. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-383), then go to step 25 and recheck. If DTC P1078 is not indicated, replace the IMT actuator (see page 11-383), then go to step 25. If DTC P1078 is indicated, then go to step 32.

NO—Remove the intake manifold cover (see step 1 on page 9-3), and repair the stuck valve. If necessary, replace the intake manifold (see page 9-2), then go to step 25.

25. Reconnect all connectors.
26. Turn the ignition switch ON (II).
27. Reset the PCM with the HDS.

28. Do the PCM idle learn procedure (see page 11-340).

29. Start the engine, and hold the engine speed at 4,000 rpm for 10 seconds, then let it idle.

30. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1078 is indicated, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 28 and recheck.

32. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

33. Start the engine, and hold the engine speed at 4,000 rpm for 10 seconds, then let it idle.

34. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1078 is indicated, check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

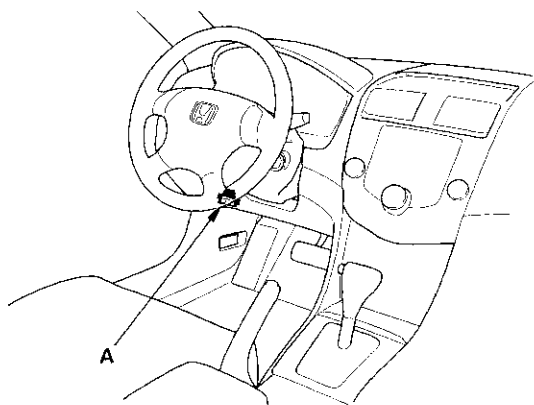
NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



Throttle Body Test

Carbon Accumulation Check

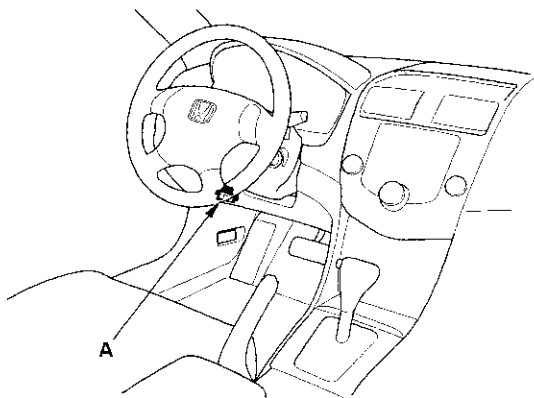
1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
3. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.73 %. If it is not, clean the throttle body (see page 11-381).

Throttle Position Learning Check

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Select the INSPECTION MENU with the HDS.
3. Do the TP LEARNING CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-381).

Throttle Body Cleaning

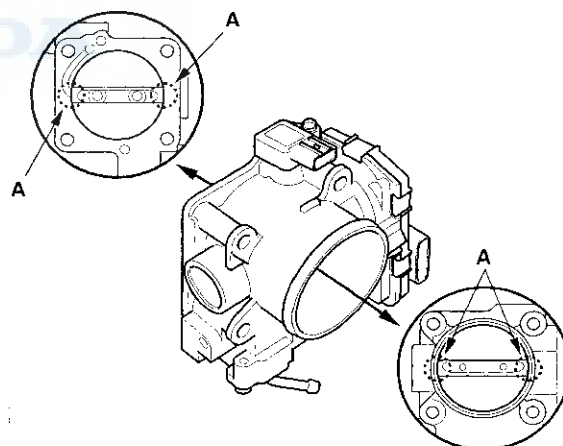
CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your finger if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see page 11-382).
2. Remove the throttle body (see page 11-386).
3. Wipe off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

NOTE:

- Remove the throttle body to clean it.
- Be careful not to pinch your fingers.
- To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
- Do not spray throttle plate and induction cleaner directly on the throttle body.
- Use Honda genuine throttle plate and induction cleaner.

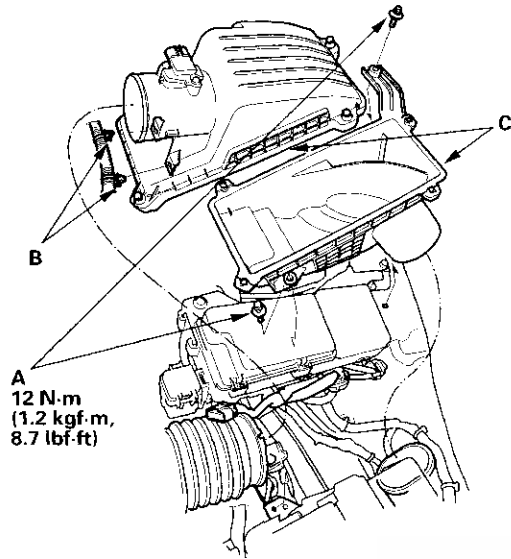


4. Install the throttle body (see page 11-386).
5. Reset the PCM with the HDS.
6. Turn the ignition switch ON (II), and wait 2 seconds.
7. Do the PCM idle learn procedure (see page 11-340).

Intake Air System

Air Cleaner Removal/Installation

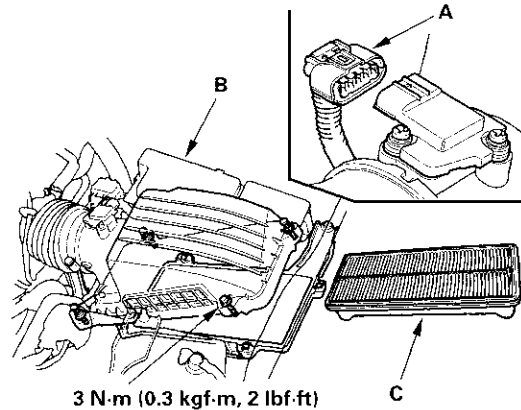
1. Remove the bolts (A) and clamps (B).



2. Remove the air cleaner (C).
3. Install the air cleaner in the reverse order of removal.

Air Cleaner Element Inspection/Replacement

1. Disconnect the MAF sensor/IAT sensor 1 connector (A).



2. Open the air cleaner housing cover (B) with air cleaner element (C).
3. Remove the air cleaner element from the air cleaner housing cover.
4. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

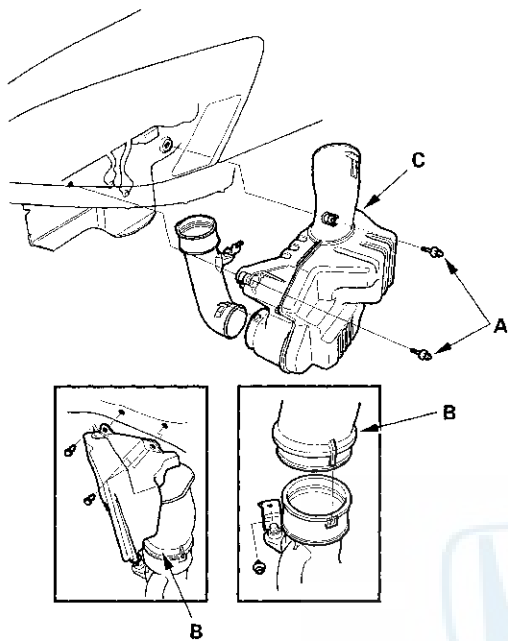
NOTE: Do not use compressed air to clean the air cleaner element.

5. Install the air cleaner element in the reverse order of removal.



Resonator Removal/Installation

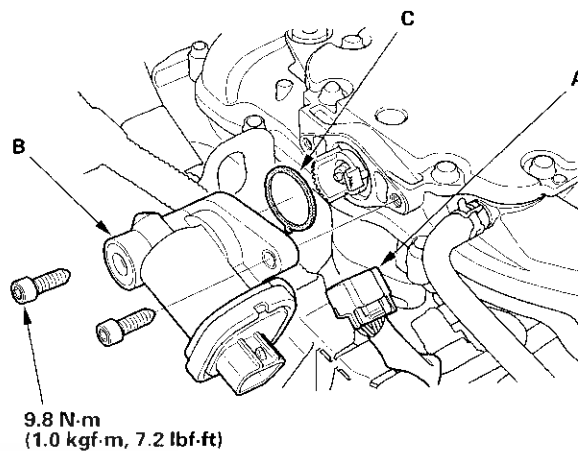
1. Remove the front bumper (see page 20-101).
2. Remove the bolts (A) and the intake air duct (B).



3. Remove the resonator (C).
4. Install the parts in the reverse order of removal.

IMT Actuator Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the IMT actuator 5P connector (A).

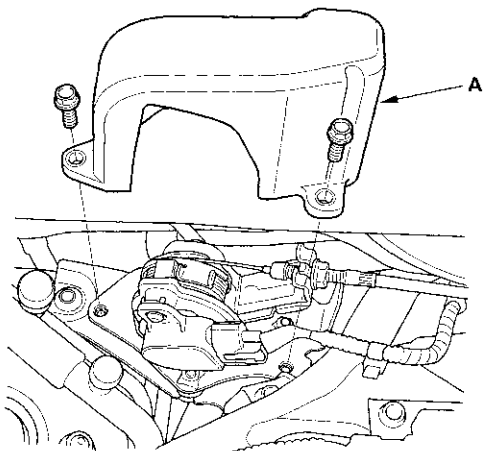


3. Remove the bolts and the IMT actuator (B).
4. Install the actuator in the reverse order of removal with a new O-ring (C).

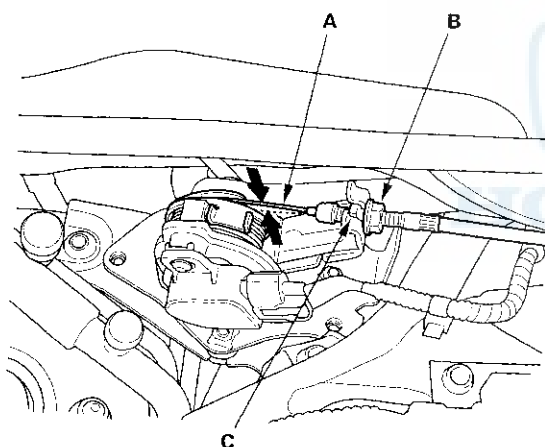
Intake Air System

Throttle Cable Adjustment

1. Remove the throttle cable cover (A).



2. Check cable free play at the throttle linkage. Cable free play (A) should be 10–12 mm (3/8–1/2 in.).

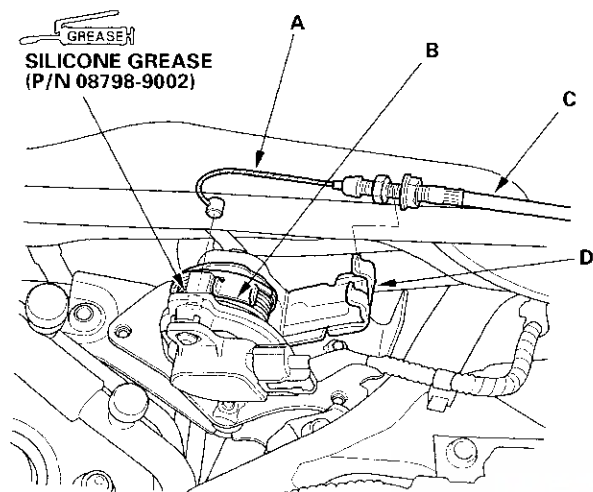


3. If the free play is not within spec (10–12 mm, 3/8–1/2 in.), loosen the locknut (B), turn the adjusting nut (C) until the free play is as specified, then retighten the locknut.
4. With the cable properly adjusted, check the throttle link to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns to the idle position whenever you release the accelerator pedal.

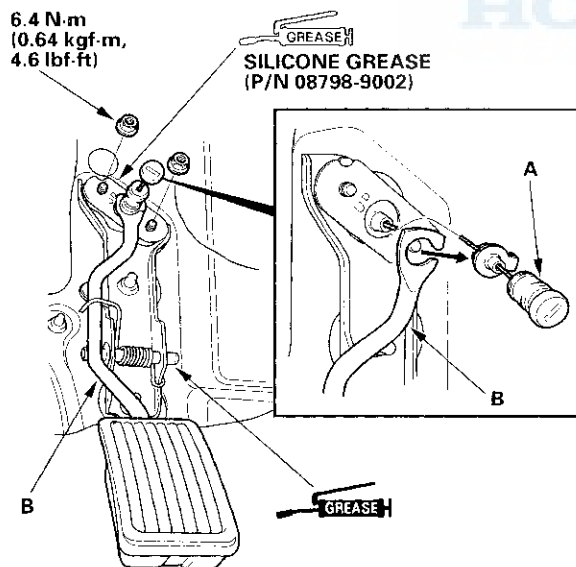


Throttle Cable Removal/Installation

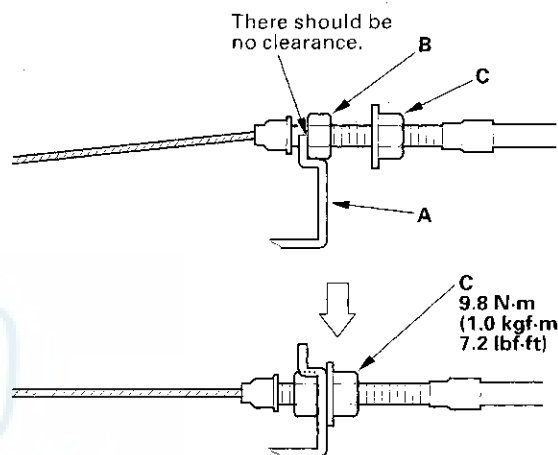
1. Remove the throttle cable cover (see page 11-384).
2. Fully open the throttle valve, then remove the throttle cable (A) from the throttle link (B).



3. Remove the cable housing (C) from the cable bracket (D).
4. Remove the throttle cable (A) from the accelerator pedal (B).



5. Install the cable in the reverse order of removal.
6. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
7. Hold the cable, removing all slack from it.
8. Set the cable on the bracket (A). Adjust the adjusting nut (B) so that its free play is 0 mm.



9. Position the adjusting nut on the other side of the bracket, then tighten the locknut (C).
10. Check the throttle cable free play (see step 2 on page 11-384).
11. With the cable properly adjusted, check the throttle link to be sure it opens fully when you push the accelerator pedal to the floor. Also check the throttle valve to be sure it returns whenever you release the accelerator pedal.

Intake Air System

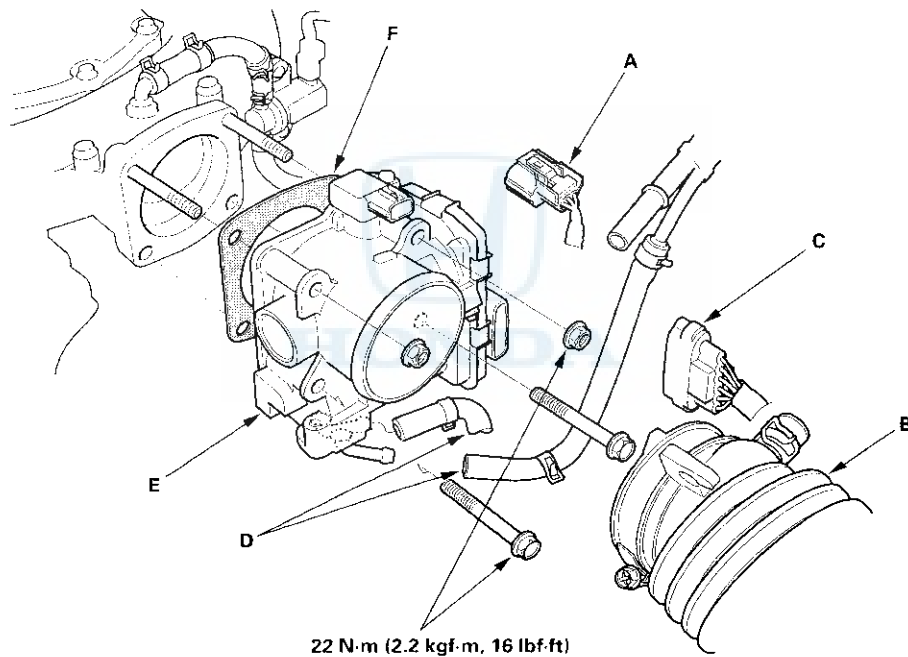
Throttle Body Removal/Installation

⚠ CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch ON (II) or while the ignition switch is ON (II). If you do, you will seriously injure your finger if the throttle valve is activated.

NOTE: If you are replacing the throttle body, begin at step 1. If you are removing the throttle body temporarily, skip steps 1 to 3, and begin at step 4.

1. Connect the HDS while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP LEARNING CHECK in the ETCS TEST.
4. Disconnect the MAP sensor connector (A).



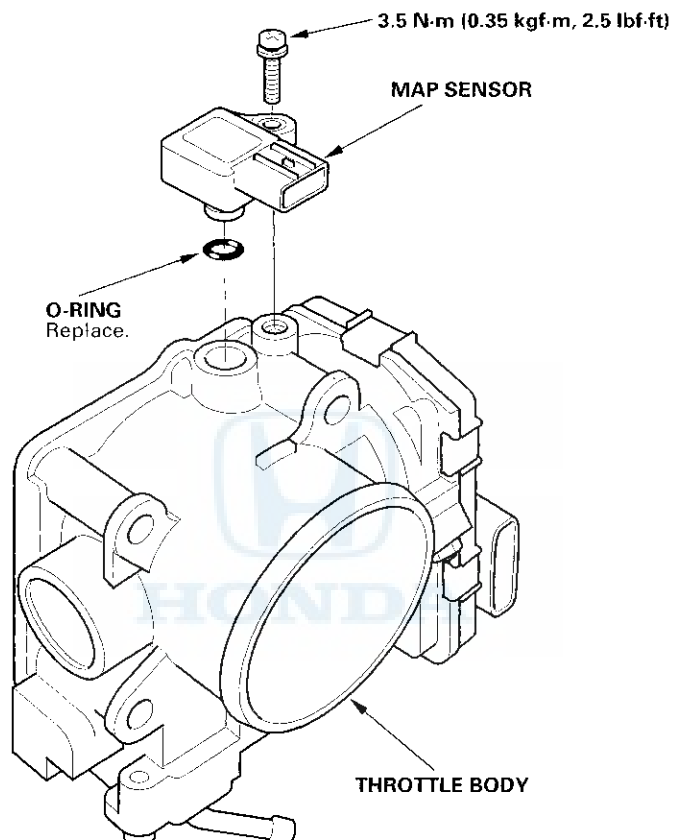
5. Remove the intake air duct (B).
6. Disconnect the throttle body connector (C).
7. Disconnect and plug the water bypass hoses (D).
8. Remove the throttle body (E).
9. Install the throttle body in the reverse order of removal with a new gasket (F).

NOTE:

- Do the PCM idle learn procedure after the throttle body is replaced (see page 11-340).
- Refill the radiator with engine coolant (see page 10-6).



Throttle Body Disassembly/Reassembly



Catalytic Converter System

DTC Troubleshooting

DTC P0420: Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)

DTC P0430: Front Bank Catalyst System Efficiency Below Threshold (Bank 2)

NOTE:

- These catalysts are mounted to the cylinder head.
- If some of the DTCs listed below are stored at the same time as DTC P0420 and/or P0430*, troubleshoot those DTCs first, then recheck for DTC P0420 and/or P0430*.
P0137, P0138, P0157, P0158, P2270, P2271, P2272*, P2273*: Secondary HO2S (Sensor 2)
P0141, P0161*: Secondary HO2S (Sensor 2) heater
- Poor quality fuel can cause these DTCs.
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
 - Engine coolant temperature above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed between 45 mph (72 km/h) and 75 mph (120 km/h) for 5 minutes or more with cruise control set
 - Maintain the vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

5. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate EXECUTING?

YES—Go to step 6.

NO—Go to step 4 and recheck.

6. Continue test-driving until a result comes on.
7. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 8.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

8. Turn the ignition switch OFF.
9. Replace the WU-TWC (see page 11-390).
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-340).



13. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

14. Test-drive for about 10 minutes, continually changing the vehicle speed.

15. Check the CATA MON TEMP in the DATA LIST with the HDS.

Is the temperature OK?

YES—Go to step 16.

NO—Go to step 13 and recheck.

16. Test-drive under these conditions:

- Engine coolant temperature above 158 °F (70 °C)
- Transmission in D position
- Vehicle speed at 55 mph (88 km/h) for 5 minutes or more with cruise control set

17. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate EXECUTING?

YES—Go to step 18.

NO—Go to step 16 and recheck.

18. Continue test-driving until a result comes on.

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 and/or P0430* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check the fuel quality. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13 and recheck.



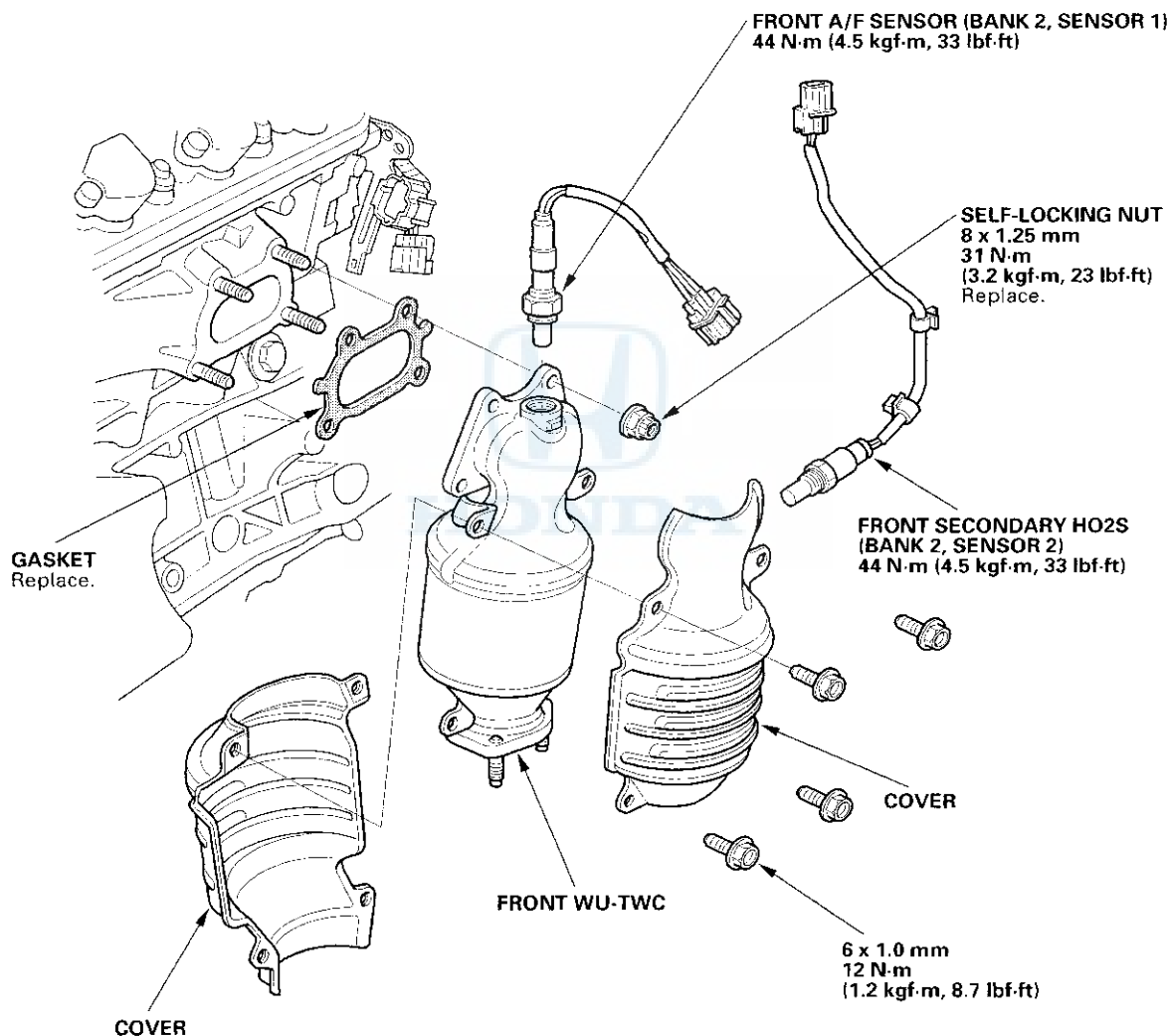
Catalytic Converter System

Warm Up TWC Removal/Installation

FRONT

NOTE: There is a third catalyst mounted under the floor.

1. Remove the condenser fan shroud (see step 6 on page 21-97).
2. Disconnect the front air fuel ratio (A/F) sensor connector and front secondary heated oxygen sensor (secondary HO2S) connector.
3. Remove the front WU-TWC.

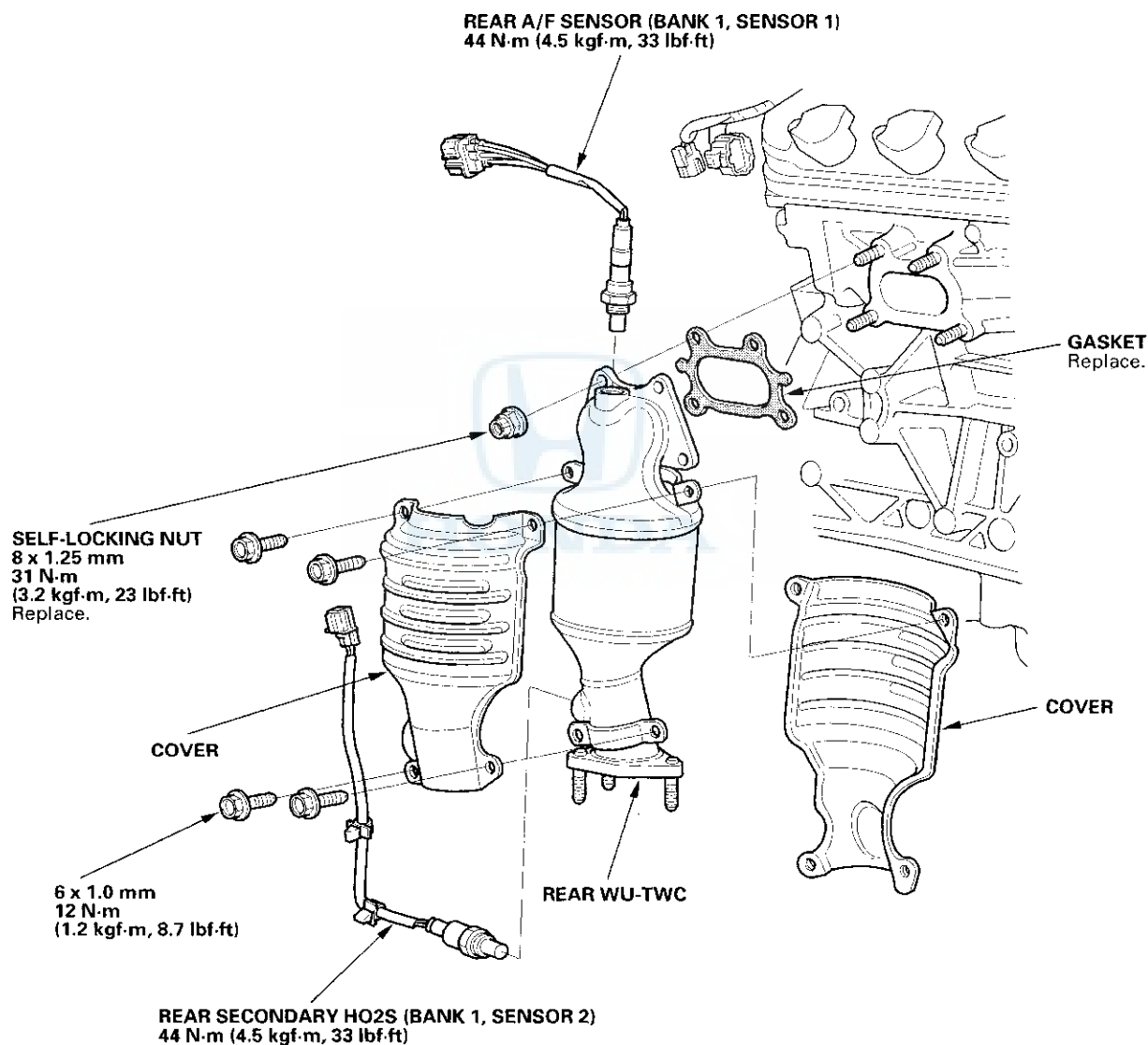


4. Install the front WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the remaining parts in the reverse order of removal.



REAR

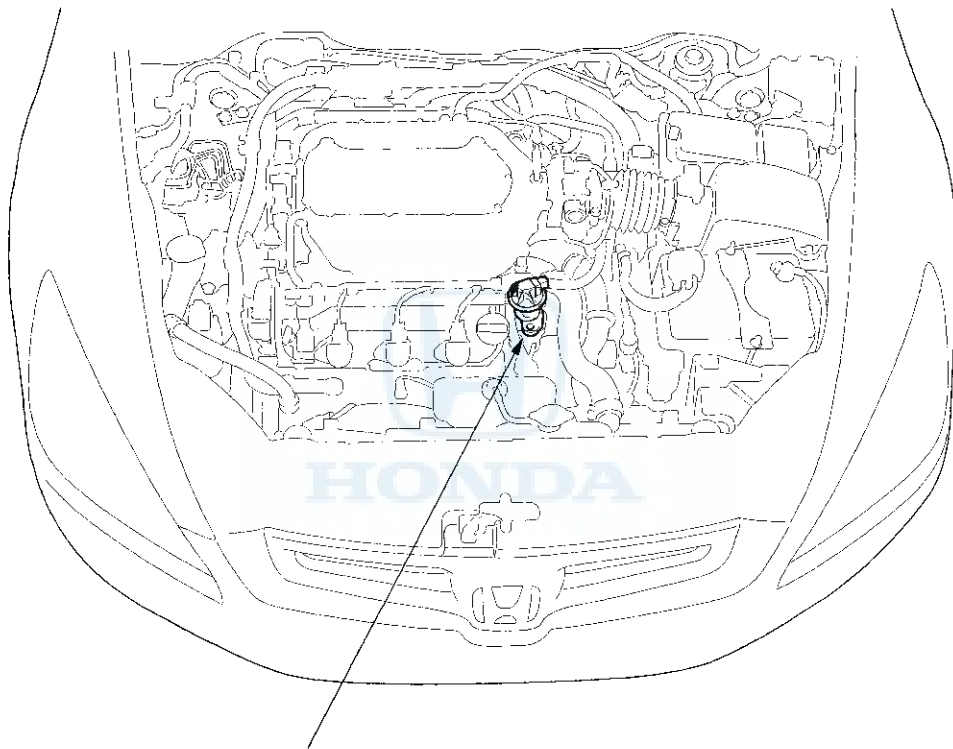
1. Remove the intermediate shaft (see page 16-20).
2. Disconnect the rear air fuel ratio (A/F) sensor connector and rear secondary heated oxygen sensor (secondary HO2S) connector.
3. Remove the rear WU-TWC bracket, then remove the rear WU-TWC.



4. Install the rear WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the remaining parts in the reverse order of removal.

EGR System

Component Location Index



EXHAUST GAS RECIRCULATION (EGR) VALVE
Replacement, page 11-404



DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 5.

NO—Go to step 7.

5. Test-drive under these conditions:
 - Engine coolant temperature above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed at 25 mph (40 km/h) or more, and engine speed between 1,100 rpm and 3,000 rpm
 - During the drive, decelerate (with the throttle fully closed) for 5 seconds

6. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Remove the intake manifold cover (see step 1 on page 9-3), and clean the intake manifold EGR port with throttle plate and induction cleaner, then go to step 9.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 5 and recheck.

7. Turn the ignition switch OFF.
8. Replace the EGR valve (see page 11-404).
9. Turn the ignition switch ON (II).

10. Reset the PCM with the HDS.

11. Do the PCM idle learn procedure (see page 11-340).

12. Test-drive under these conditions:

- Engine coolant temperature above 158 °F (70 °C)
- Transmission in D position
- Vehicle speed at 25 mph (40 km/h) or more, and engine speed between 1,100 rpm and 3,000 rpm
- During the drive, decelerate (with the throttle fully closed) for 5 seconds

13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0401 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM. If the connections are OK, go to step 15. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 12 and recheck.

(cont'd)

EGR System

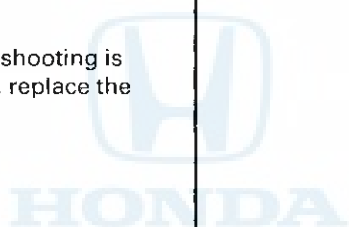
DTC Troubleshooting (cont'd)

15. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
16. Test-drive under these conditions:
 - Engine coolant temperature above 158 °F (70 °C)
 - Transmission in D position
 - Vehicle speed at 25 mph (40 km/h) or more, and engine speed between 1,100 rpm and 3,000 rpm
 - During the drive, decelerate (with the throttle fully closed) for 5 seconds
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0401 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P0404: EGR Control Circuit Range/Performance Problem

1. Turn the ignition switch ON (II).
2. Clean the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

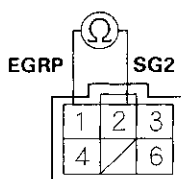
Is the result OK?

YES—Intermittent failure, system is OK at this time. Clean any carbon build-up on the EGR valve with throttle plate and induction cleaner. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Disconnect the EGR valve 6P connector.
7. At the sensor side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

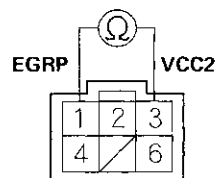
Is there 100 k Ω or more?

YES—Go to step 26.

NO—Go to step 8.

8. Measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

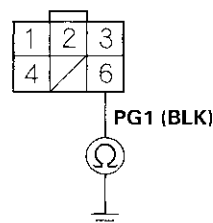
Is there 100 k Ω or more?

YES—Go to step 26.

NO—Go to step 9.

9. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

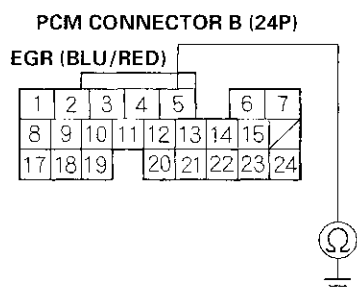
NO—Repair open in the wire between the EGR valve and G101, then go to step 27.

(cont'd)

EGR System

DTC Troubleshooting (cont'd)

10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (24P).
12. Check for continuity between PCM connector terminal B5 and body ground.

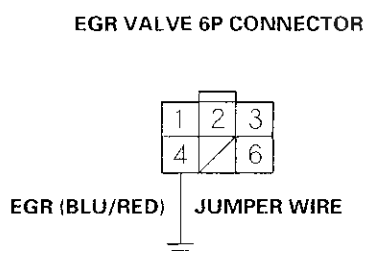


Is there continuity?

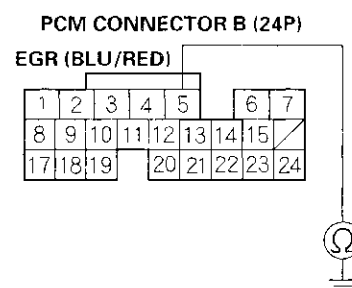
YES—Repair short in the wire between the PCM (B5) and the EGR valve, then go to step 27.

NO—Go to step 13.

13. Connect EGR valve 6P connector terminal No. 4 to body ground with a jumper wire.



14. Check for continuity between PCM connector terminal B5 and body ground.



Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (B5) and the EGR valve, then go to step 27.

15. Remove the EGR valve (see page 11-404).
16. Clean the intake manifold EGR port with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.
17. Install the EGR valve (see page 11-404).
18. Reconnect the EGR valve 6P connector.
19. Reconnect PCM connector B (24P).



20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).
23. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
24. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 33.

NO—Go to step 25.

25. Turn the ignition switch OFF.
26. Replace the EGR valve (see page 11-404).
27. Reconnect all connectors.
28. Turn the ignition switch ON (II).
29. Reset the PCM with the HDS.
30. Do the PCM idle learn procedure (see page 11-340).
31. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
32. Do the EGR TEST in the INSPECTION MENU with the HDS.
33. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0404 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM. If the connections and terminals are OK, go to step 35. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 31 and recheck.

35. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
36. Do the EGR TEST in the INSPECTION MENU with the HDS.
37. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0404 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

EGR System

DTC Troubleshooting (cont'd)

DTC P0406: EGR Valve Position Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the EGR VLS in the DATA LIST with the HDS.

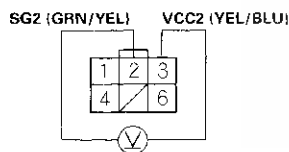
Is 4.88 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

3. Turn the ignition switch OFF.
4. Disconnect the EGR valve 6P connector.
5. Turn the ignition switch ON (II).
6. Measure voltage between EGR valve 6P connector terminals No. 2 and No. 3.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

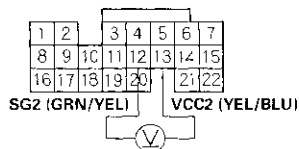
Is there about 5 V?

YES—Go to step 8.

NO—Go to step 7.

7. Measure voltage between PCM connector terminals C12 and C13.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the EGR valve and the PCM (C12), then go to step 10.

NO—Go to step 14.

8. Turn the ignition switch OFF.
9. Replace the EGR valve (see page 11-404).
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-340).
13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0406 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

14. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0406 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■



DTC P2413: EGR System Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II).
7. Check the EGR VLS in the DATA LIST with the HDS.

Is about 0 V indicated?

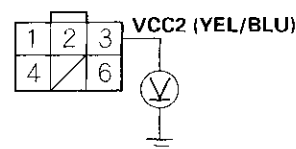
YES—Go to step 8.

NO—Go to step 19.

8. Turn the ignition switch OFF.
9. Disconnect the EGR valve 6P connector.
10. Turn the ignition switch ON (II).

11. Measure voltage between EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

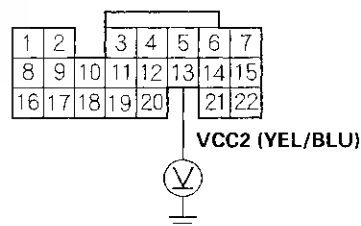
Is there about 5 V?

YES—Go to step 13.

NO—Go to step 12.

12. Measure voltage between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair open in the wire between the EGR valve and the PCM (C13), then go to step 44.

NO—Go to step 51.

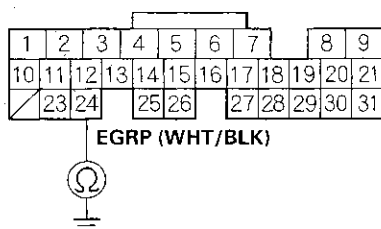
(cont'd)

EGR System

DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector A (31P).
16. Check for continuity between PCM connector terminal A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

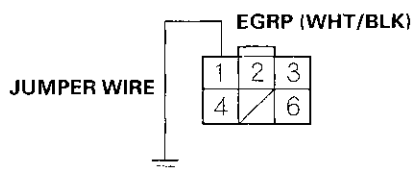
Is there continuity?

YES—Repair short in the wire between the PCM (A24) and the EGR valve, then go to step 44.

NO—Go to step 17.

17. Connect EGR valve 6P connector terminal No. 1 to body ground with a jumper wire.

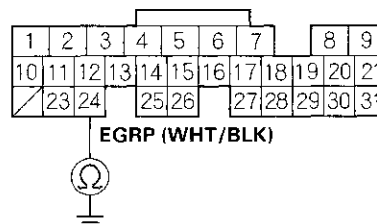
EGR VALVE 6P CONNECTOR



Wire side of female terminals

18. Check for continuity between PCM connector terminal A24 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

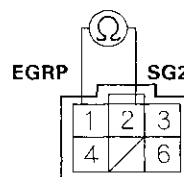
Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (A24) and the EGR valve, then go to step 44.

19. Turn the ignition switch OFF.
20. Disconnect the EGR valve 6P connector.
21. At the sensor side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

Is there continuity or resistance of 100 kΩ or more?

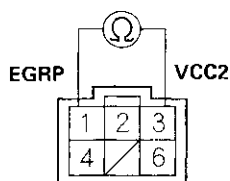
YES—Go to step 43.

NO—Go to step 22.



22. Measure resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

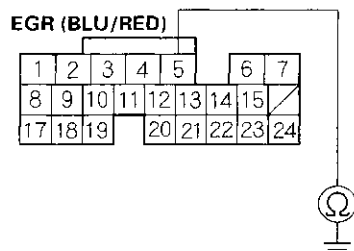
Is there 100 k Ω or more?

YES—Go to step 43.

NO—Go to step 23.

23. Jump the SCS line with the HDS.
24. Disconnect PCM connector B (24P). (Skip this step if the connector is already disconnected.)
25. Check for continuity between PCM connector terminal B5 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

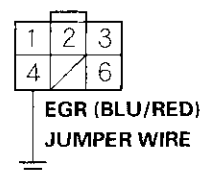
Is there continuity?

YES—Repair short in the wire between the PCM (B5) and the EGR valve, then go to step 44.

NO—Go to step 26.

26. Connect EGR valve 6P connector terminal No. 4 to body ground with a jumper wire.

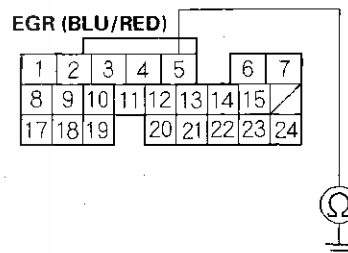
EGR VALVE 6P CONNECTOR



Wire side of female terminals

27. Check for continuity between PCM connector terminal B5 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between the PCM (B5) and the EGR valve, then go to step 44.

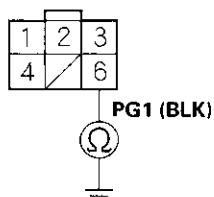
(cont'd)

EGR System

DTC Troubleshooting (cont'd)

28. Remove the jumper wire from the EGR valve 6P connector.
29. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

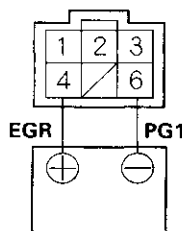
Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the EGR valve and G101, then go to step 44.

30. Reconnect PCM connectors B (24P) and C (22P).
31. Connect the positive battery terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

32. Start the engine and let it idle, then connect the negative battery terminal to EGR valve 6P connector terminal No. 6 with a jumper wire.

Does the engine stall or run rough?

YES—Go to step 51.

NO—Go to step 33.

33. Turn the ignition switch OFF.
34. Remove the EGR valve (see page 11-404).
35. Clean the intake manifold EGR port with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.
36. Install the EGR valve (see page 11-404).
37. Reconnect the EGR valve 6P connector.
38. Turn the ignition switch ON (II).
39. Reset the PCM with the HDS.
40. Do the PCM idle learn procedure (see page 11-340).
41. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 49.

NO—Go to step 42.



42. Turn the ignition switch OFF.
43. Replace the EGR valve (see page 11-404).
44. Reconnect all connectors.
45. Turn the ignition switch ON (II).
46. Reset the PCM with the HDS.
47. Do the PCM idle learn procedure (see page 11-340).
48. Do the EGR TEST in the INSPECTION MENU with the HDS.
49. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2413 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 50.

50. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 48 and recheck.

51. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
52. Do the EGR TEST in the INSPECTION MENU with the HDS.
53. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

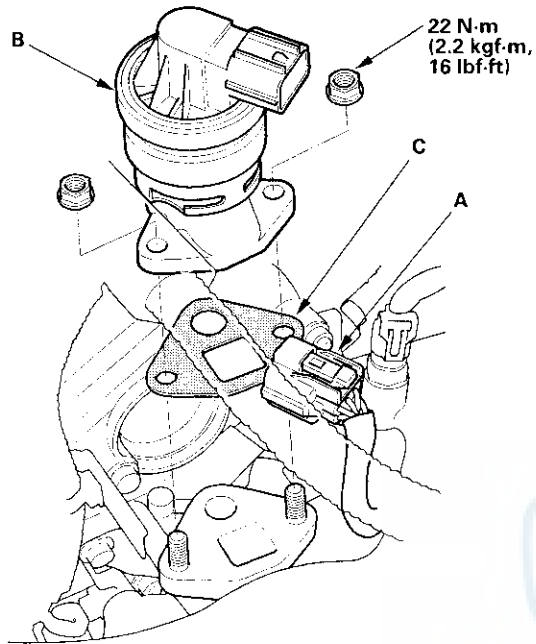
YES—If DTC P2413 is indicated, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

EGR System

EGR Valve Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Disconnect the EGR valve 6P connector (A).



3. Remove the EGR valve (B).
4. Install the valve in the reverse order of removal with a new gasket (C).



DTC Troubleshooting

DTC P2279: Intake Air System Leak

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are DTC P2279 and DTC P0101, or P1128, or P1129 indicated at the same time?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Check for vacuum leaks at these parts:

- PCV valve
- PCV hose
- Purge (PCS) line
- Throttle body
- Intake manifold
- Brake booster hose

Are there any leaks?

YES—Repair or replace the damaged part(s), then go to step 14.

NO—Go to step 4.

4. Start the engine. Hold the engine speed at 3,000rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 1 minute.
5. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, go to step 6. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

6. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 7.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates EXECUTING, let the engine idle until a result comes on. If the screen indicates OUT OF CONDITION, go to step 4 and recheck.

7. Do the PCS ON/OFF in the INSPECTION MENU with the HDS.

8. Listen for a clicking sound at the EVAP canister purge valve.

Does the valve click?

YES—Go to step 9.

NO—Replace the EVAP canister purge valve (see page 11-436), then go to step 14.

9. Do the PC V valve test (see page 11-407).

Is the test OK?

YES—Go to step 10.

NO—Replace the PCV valve (see page 11-407), then go to step 14.

(cont'd)

PCV System

DTC Troubleshooting (cont'd)

10. Remove the air cleaner (see page 11-382).
11. Check for crack or damage at the air cleaner.

Is the air cleaner OK?

YES—Go to step 12.

NO—Replace the air cleaner (see page 11-382), then go to step 4.

12. Remove the air cleaner element.
13. Check for damage at the air cleaner element.

Is the air cleaner element OK?

YES—Check the camshaft timing (see step 3 on page 6-20), then go to step 14.

NO—Replace the air cleaner element (see page 11-382), then go to step 14.

14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-340).
16. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 1 minute.
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P2279 is indicated, check for vacuum leaks at the PCV valve, the PCV hose, the purge (PCS) line, the throttle body, or the brake booster hose, the intake manifold, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

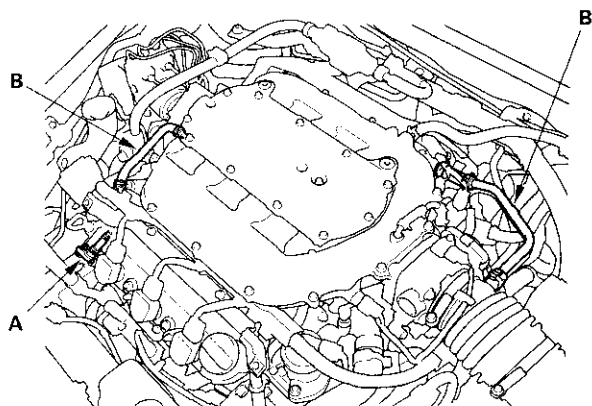
YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates NOT COMPLETED, go to step 16 and recheck.



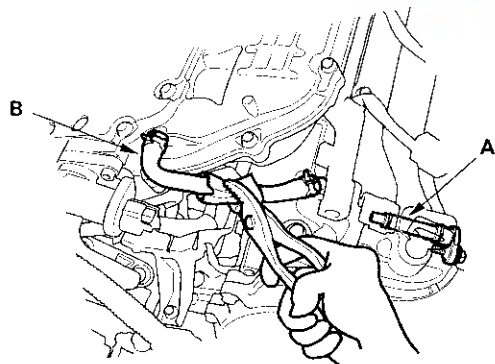
PCV Valve Inspection and Test

1. Remove the intake manifold cover (see step 1 on page 9-3).
2. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.



3. At idle, listen to the PCV valve (A) with a stethoscope as you lightly pinch the PCV hose (B) with your fingers or pliers several times. Each time the hose is pinched, the valve should click.

If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.

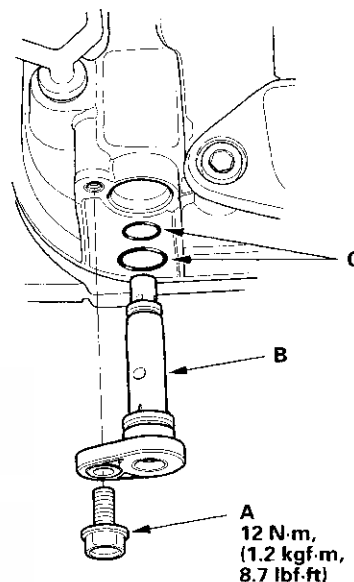


PCV Valve Replacement

1. Remove the intake manifold cover (see step 1 on page 9-3).

2. Remove the bolt (A).

NOTE: Take care not to spill oil on the hot exhaust manifold.



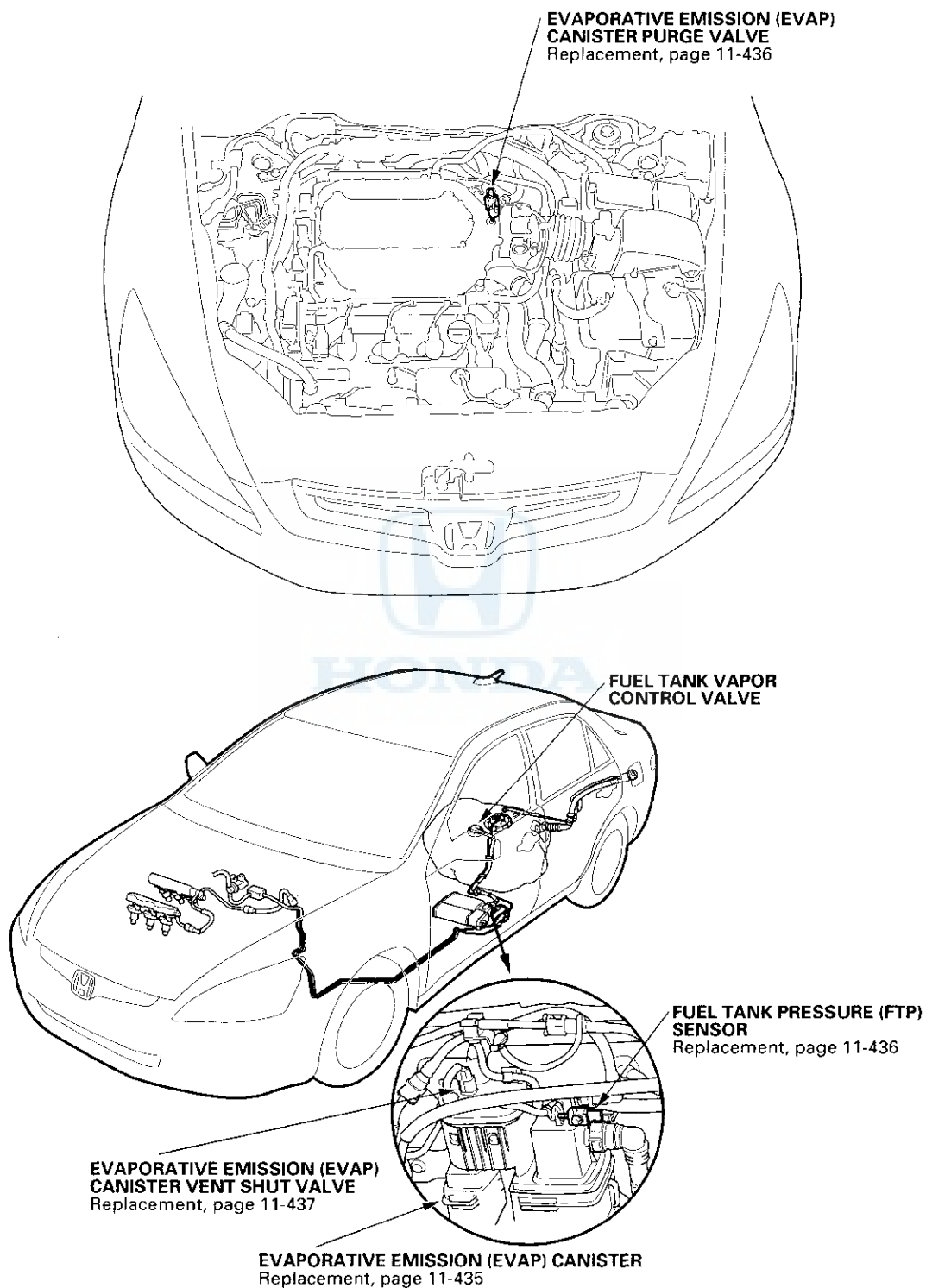
3. Remove the PCV valve (B).
4. Install the valve in the reverse order of removal.

NOTE:

- When installing a new PCV valve, make sure the O-rings (C) are in place.
- When installing a used PCV valve, use new O-rings (C).

EVAP System

Component Location Index





DTC Troubleshooting

DTC P0443: EVAP Canister Purge Valve Circuit Malfunction

Special Tools Required

Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

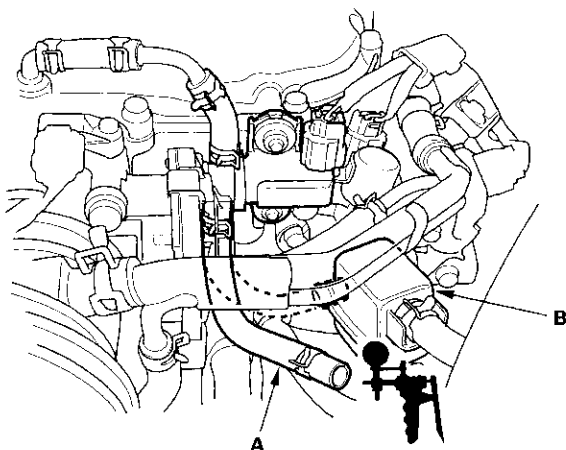
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. ■

5. Turn the ignition switch OFF, and allow the engine to cool below 140 °F (60 °C).
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve joint (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



7. Start the engine, and let it idle.

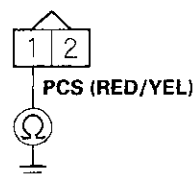
Is there vacuum?

YES—Go to step 8.

NO—Go to step 14.

8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Go to step 24.

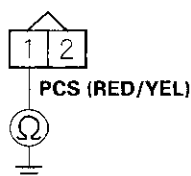
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (24P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

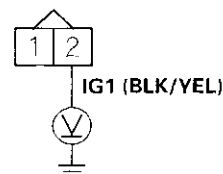
YES—Repair short in the wire between the EVAP canister purge valve and the PCM (B2), then go to step 25.

NO—Go to step 31.

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).

17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

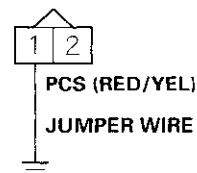
Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 18 ACG (15 A) fuse in the under-dash fuse/relay box, then go to step 25.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector B (24P).
21. Connect EVAP canister purge valve 2P connector terminal No. 1 to body ground with a jumper wire.

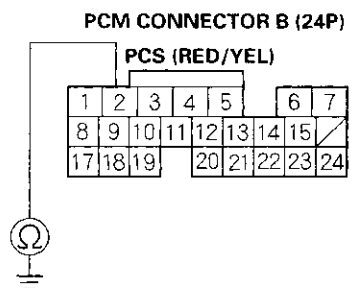
EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals



22. Check for continuity between PCM connector terminal B2 and body ground.



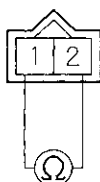
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the EVAP canister purge valve and the PCM (B2), then go to step 25.

23. Measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 33 Ω at room temperature?

YES—Go to step 31.

NO—Go to step 24.

24. Replace the EVAP canister purge valve (see page 11-436).

25. Reconnect all connectors.

26. Turn the ignition switch ON (II).

27. Reset the PCM with the HDS.

28. Do the PCM idle learn procedure (see page 11-340).

29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 28 and recheck.

(cont'd)

EVAP System

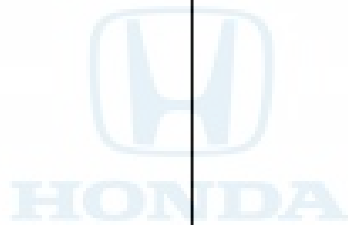
DTC Troubleshooting (cont'd)

31. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
32. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P0451: FTP Sensor Range/Performance Problem

NOTE: If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 5.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 3 and recheck.

5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see page 11-436).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-340).
10. Start the engine, and let it idle 1 minute.
11. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0451 is indicated, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 10 and recheck.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0452: FTP Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about -7.3 kPa (-2.16 in.Hg, -55 mmHg), or 0.3 V, or less indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

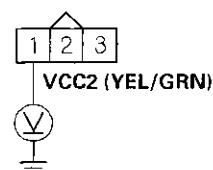
Is about 7.3 kPa (2.15 in.Hg, 54.7 mmHg), or 4.90 V indicated?

YES—Go to step 20.

NO—Go to step 14.

14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

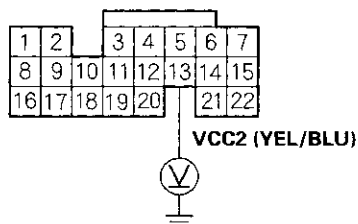
YES—Go to step 16.

NO—Go to step 15.



15. Measure voltage between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

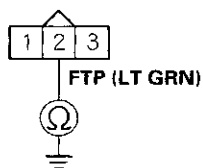
Is there about 5 V?

YES—Repair open in the wire between the PCM (C13) and the FTP sensor, then go to step 22.

NO—Go to step 28.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector E (31P).
19. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (E29) and the FTP sensor, then go to step 22.

NO—Go to step 28.

20. Turn the ignition switch OFF.
21. Replace the FTP sensor (see page 11-436).
22. Reconnect all connectors.
23. Turn the ignition switch ON (II).
24. Reset the PCM with the HDS.
25. Do the PCM idle learn procedure (see page 11-340).
26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0452 is indicated, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 27.

27. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 25 and recheck.

(cont'd)

EVAP System

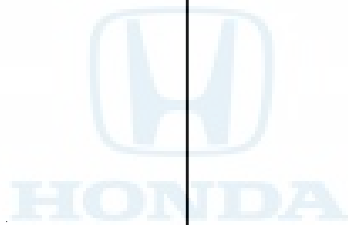
DTC Troubleshooting (cont'd)

28. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0452 is indicated, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■





DTC P0453: FTP Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V, or more indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

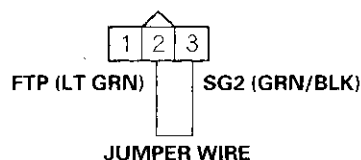
YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.

12. Connect FTP sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

13. Turn the ignition switch ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

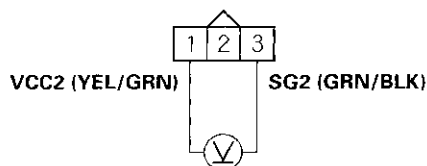
Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V, or more indicated?

YES—Go to step 15.

NO—Go to step 25.

15. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 21.

NO—Go to step 16.

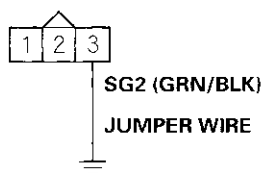
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector E (31P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

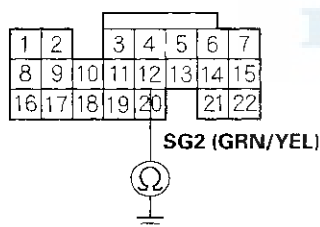
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

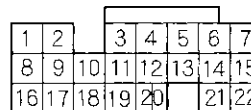
YES—Go to step 33.

NO—Repair open in the wire between the PCM (C12) and the FTP sensor, then go to step 27.

21. Turn the ignition switch OFF.
22. Connect PCM connector terminals C12 and E29 with a jumper wire.

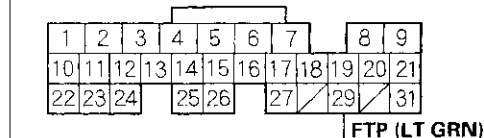
PCM CONNECTORS

C (22P)



E (31P)

JUMPER WIRE



Wire side of female terminals

23. Turn the ignition switch ON (II).
24. Check the FTP SENSOR in the DATA LIST with the HDS.
Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V, or more indicated?

YES—Go to step 33.

NO—Repair open in the wire between the PCM (E29) and the FTP sensor, then go to step 27.

25. Turn the ignition switch OFF.
26. Replace the FTP sensor (see page 11-436).
27. Reconnect all connectors.



28. Turn the ignition switch ON (II).
29. Reset the PCM with the HDS.
30. Do the PCM idle learn procedure (see page 11-340).
31. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0453 is indicated, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 32.

32. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 30 and recheck.

33. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
34. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0453 is indicated, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

EVAP System

DTC Troubleshooting (cont'd)

DTC P0455: EVAP System Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B

NOTE: Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank), just before starting these procedures.

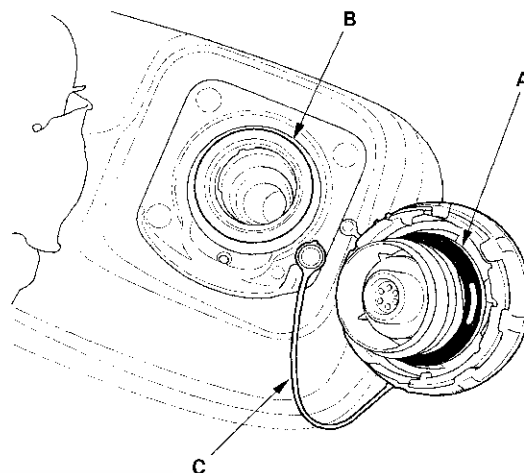
1. Check the fuel fill cap (the cap must say "Tighten to click"). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 24.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 24.

NO—Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the PCM. ■

NO—Go to step 6.



6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

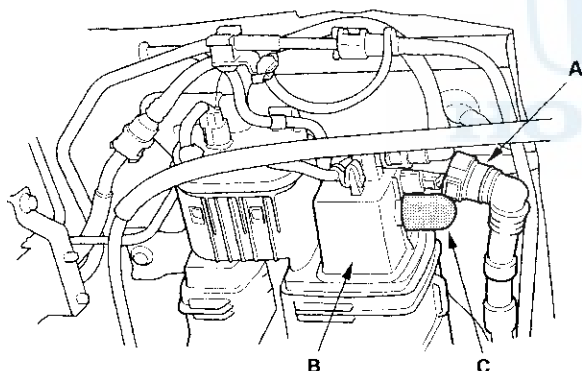
Is the tube OK?

YES—Go to step 9.

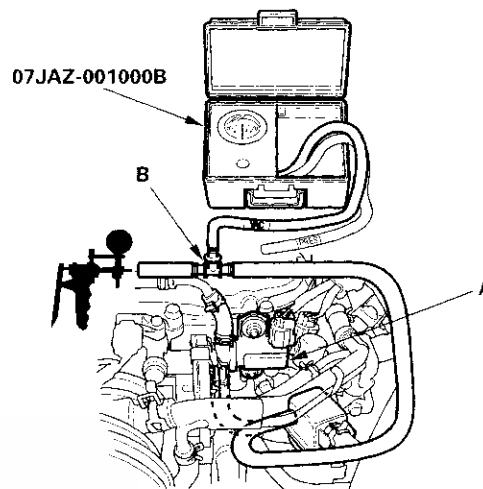
NO—

- Replace the fuel tank vapor recirculation tube, then go to step 24.
- If necessary, replace the fuel tank (see page 11-367), then go to step 24.

9. Remove the EVAP system cover.
10. Remove the EVAP canister lower cover.
11. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).



12. Disconnect the vacuum hose (purge line) from the EVAP canister purge valve (A) in the engine compartment, and connect a T-fitting (B) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



13. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
14. Apply vacuum to the hose until the FTP reads 1.90 V (0.59 in.Hg, -15.1 mmHg).
15. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage rise less than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

YES—Go to step 21.

NO—Go to step 16.

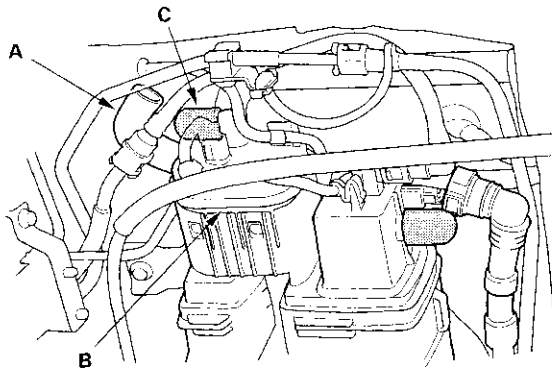
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

16. Do the EVAP CVS OFF in the INSPECTION MENU with the HDS.

17. Disconnect the fresh air hose (A) from the EVAP canister vent shut valve (B), and plug the EVAP canister vent shut valve ports (C).



18. Apply vacuum to the hose (disconnected in step 10) until the FTP reads 1.90 V (−0.59 in.Hg, −15.1 mmHg).

19. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage rise less than 0.2 V (0.1 in.Hg, 2.5 mmHg)?

YES—Replace the EVAP canister vent shut valve, then go to step 23.

NO—Go to step 20.

20. Check for a loose or damaged PCS line between the EVAP canister and the EVAP canister purge valve.

Is the line OK?

YES—Replace the following parts, then go to step 23.

- FTP sensor O-ring
- EVAP canister vent shut valve case and O-ring
- EVAP canister

NO—Reconnect or repair the PCS hose, then go to step 23.

21. Do the EVAP CVS OFF in the INSPECTION MENU with the HDS.

22. Check these parts for looseness or damage.

- Fuel fill pipe
- Fuel vapor return pipe

Are the parts OK?

YES—Check the fuel tank unit base gasket (see page 11-366), and check the fuel tank, then go to step 23.

NO—Repair or replace the damaged part(s), then go to step 27.

23. Reconnect all hoses and connectors.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-340).

27. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the PCM, then go to step 1.



DTC P0457: EVAP System Leak Detected Fuel Fill Cap Loose or Missing

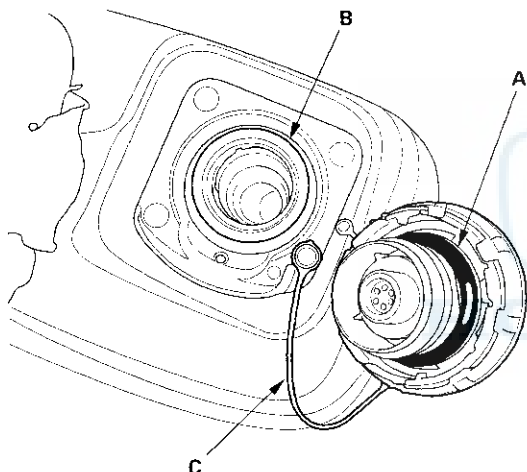
1. Check the fuel fill cap (the cap must say "Tighten to click"). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the cap, then go to step 19.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 19.

NO—Go to step 3.

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.

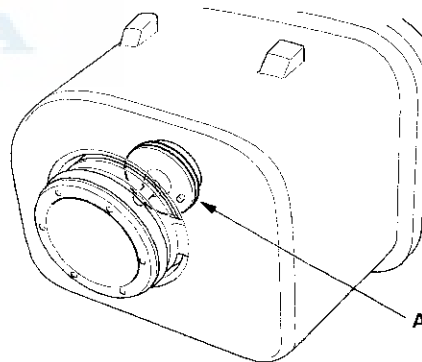
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the PCM. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-437).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
11. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

YES—Check the routing of the EVAP canister vent tube, then go to step 18.

NO—Go to step 12.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see page 11-437).
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-340).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the PCM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve.
19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-340).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the PCM, then go to step 1.



DTC P0496: EVAP System High Purge Flow

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the PCM. ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see page 11-436).
6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-340).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the PCM, then go to step 1.

EVAP System

DTC Troubleshooting (cont'd)

DTC P0497: EVAP System Low Purge Flow

Special Tools Required

- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

1. Check the fuel fill cap (the cap must say "Tighten to click"). It should turn 1/4 turn after it's tight, then it clicks.

Is the correct fuel fill cap installed and properly tightened?

YES—Go to step 2.

NO—Replace or tighten the fuel fill cap, then go to step 25.

2. Turn the ignition switch ON (II).

3. Clear the DTC with the HDS.

4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the PCM. ■

NO—Go to step 5.

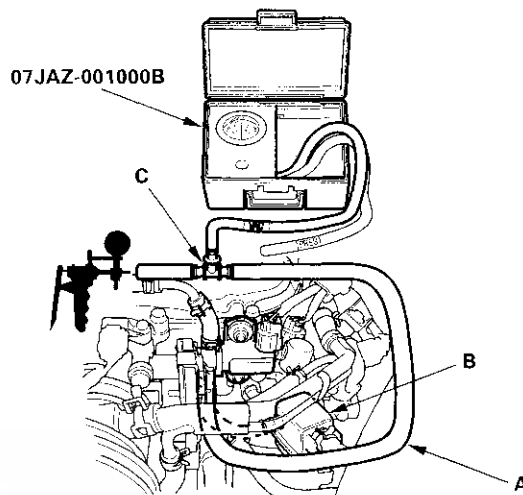
5. Check for a loose or damaged PCS line between the intake manifold and the EVAP canister purge valve.

Is the line OK?

YES—Go to step 6.

NO—Reconnect or repair the PCS line, then go to step 25.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve joint (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



7. Do the EVAP PCS ON in the INSPECTION MENU with the HDS.

8. Slowly apply about 0.6 in.Hg (15 mmHg) of vacuum to the hose.

Does it hold vacuum?

YES—Replace the EVAP canister purge valve, then go to step 24.

NO—Go to step 9.

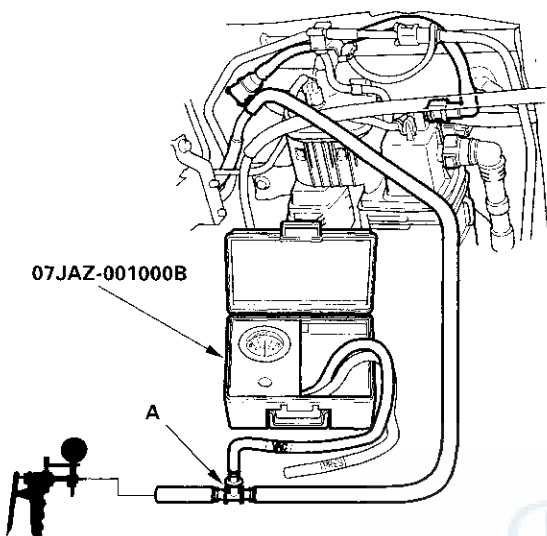
9. Reconnect the vacuum hose to the EVAP service port.

10. Remove the EVAP system cover.

11. Remove the EVAP canister lower cover.



12. Disconnect the vacuum hose from the PCS line (at the EVAP canister side), and connect a T-fitting (A) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



13. Do the EVAP PCS ON in the INSPECTION MENU with the HDS.
14. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

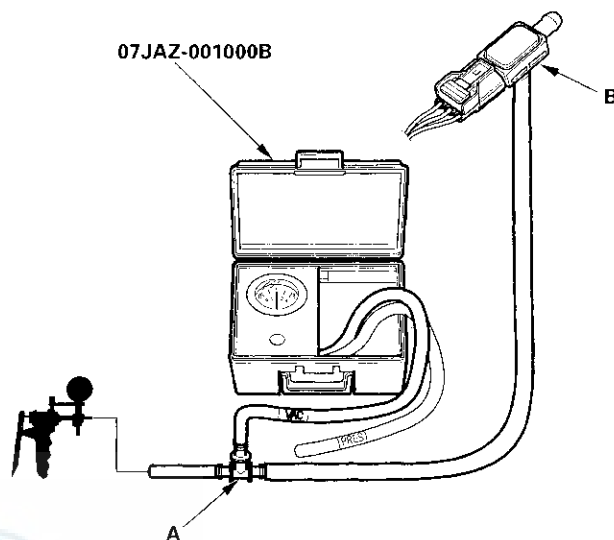
Does it hold vacuum?

YES—Check for a restricted PCS line between the EVAP canister purge valve and the EVAP canister, then go to step 24.

NO—Go to step 15.

15. Remove the FTP sensor with its connector connected (see page 11-436).

16. Connect a T-fitting (A) from the vacuum gauge and a vacuum pump/gauge, 0—30 in.Hg, to the FTP sensor (B) as shown.



17. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.
18. Slowly apply about 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.
19. Check the FTP SENSOR in the DATA LIST with the HDS.

Is there a difference of more than 1.1 kPa (0.31 in.Hg, 8 mmHg) before and after applying vacuum?

YES—Go to step 20.

NO—Replace the FTP sensor (see page 11-436), then go to step 25.

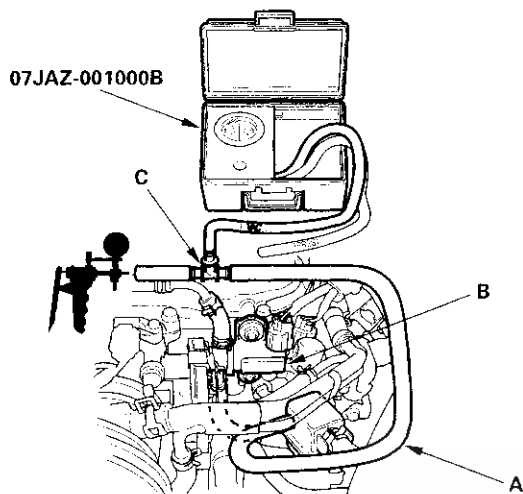
20. Reconnect the vacuum hoses to the PCS line (EVAP canister side), and reinstall the FTP sensor.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

21. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0–30 in.Hg, to the hose as shown.



22. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
23. Slowly apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

Does the hose hold vacuum?

YES—Check for blockage at the EVAP canister port, then go to step 24.

NO—Replace the EVAP canister vent shut valve (see page 11-437), then go to step 24.

24. Reconnect all hoses.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure (see page 11-340).
28. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Troubleshooting is complete. ■

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the PCM, then go to step 1.



DTC P0498: EVAP Canister Vent Shut Valve Control Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

YES—Go to step 6.

NO—Go to step 4.

4. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0498 indicated?

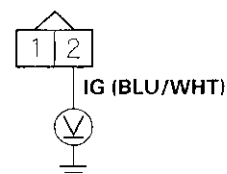
YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. ■

6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch ON (II).

9. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

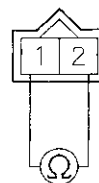
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the A/F sensor relay, then go to step 19.

10. Turn the ignition switch OFF.
11. Measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 25—30 Ω at room temperature?

YES—Go to step 12.

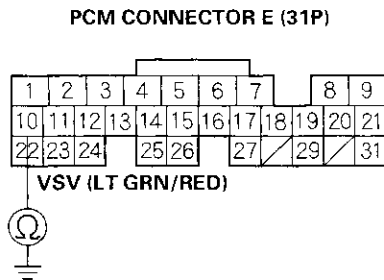
NO—Go to step 18.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector E (31P).
15. Check for continuity between PCM connector terminal E10 and body ground.



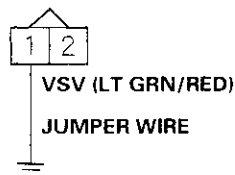
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the PCM (E10), then go to step 19.

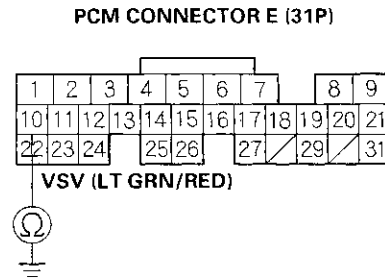
NO—Go to step 16.

16. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



17. Check for continuity between PCM connector terminal E10 and body ground.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PCM (E10), then go to step 19.

18. Replace the EVAP canister vent shut valve (see page 11-437).
19. Reconnect all connectors.



20. Turn the ignition switch ON (II).
21. Reset the PCM with the HDS.
22. Do the PCM idle learn procedure (see page 11-340).
23. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0498 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).
26. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0498 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-219). ■

EVAP System

DTC Troubleshooting (cont'd)

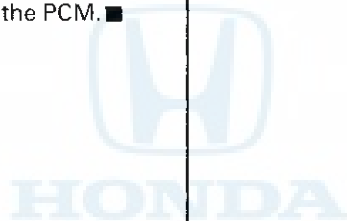
DTC P0499: EVAP Canister Vent Shut Valve Control Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0499 indicated?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-219). ■

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. ■





DTC P1454: FTP Sensor Range/Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Closed Malfunction

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Check the FTP SENSOR in the DATA LIST with the HDS.

Is it between - 0.67 kPa and 0.67 kPa (- 0.2 - 0.2 in.Hg, - 5 - 5 mmHg), or 2.4 - 2.6 V?

YES—Go to step 6.

NO—Go to step 17.

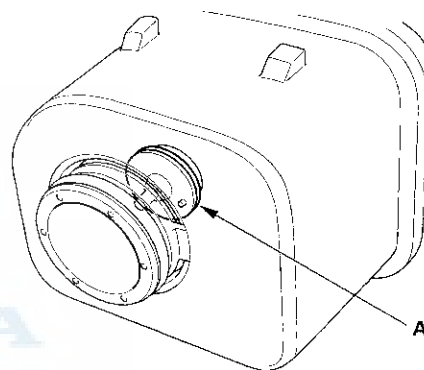
6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park on neutral) until the radiator fan comes on, then let it idle.
9. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, system is OK at this time, check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the PCM. If the screen indicates NOT COMPLETED, go to step 8 and recheck.

10. Clear the DTC with the HDS.
11. Turn the ignition switch OFF.
12. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-437).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch ON (II).
15. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

YES—Check for a blockage in the EVAP canister, then install the EVAP canister vent shut valve, and go to step 25.

NO—Replace the EVAP canister vent shut valve (see page 11-437), then go to step 25.

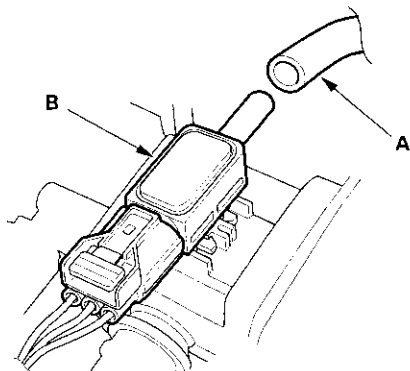
17. Remove the EVAP system cover.
18. Remove the EVAP canister lower cover.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

19. Disconnect the air tube (A) from the FTP sensor (B).



20. Check the FTP SENSOR in the DATA LIST with the HDS.

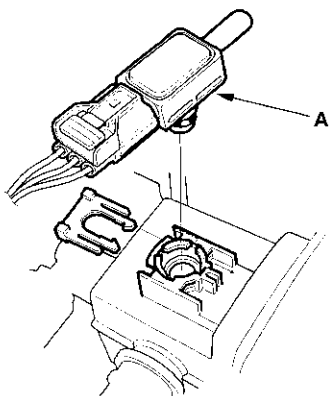
*Is it between -0.67 kPa and 0.67 kPa
($-0.2-0.2$ in.Hg, $-5-5$ mmHg), or $2.4-2.6$ V?*

YES—Check for a blockage in the FTP sensor air tube, then go to step 25.

NO—Go to step 21.

21. Turn the ignition switch OFF.

22. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-436).



23. Turn the ignition switch ON (II).

24. Check the FTP SENSOR in the DATA LIST with the HDS.

*Is it between -0.67 kPa and 0.67 kPa
($-0.2-0.2$ in.Hg, $-5-5$ mmHg), or $2.4-2.6$ V?*

YES—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 25.

NO—Replace the FTP sensor (see page 11-436), then go to step 25.

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Do the PCM idle learn procedure (see page 11-340).

28. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1454 and/or P2422 is indicated, check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the PCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

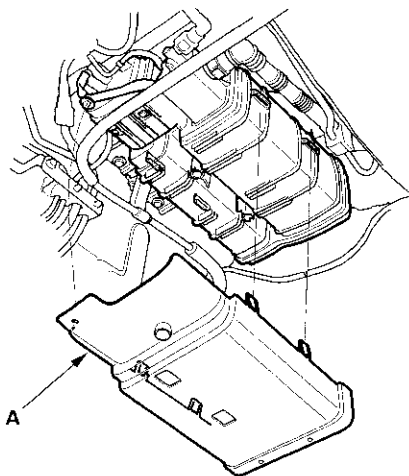
YES—Troubleshooting is complete. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, or the EVAP canister vent shut valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 26 and recheck.

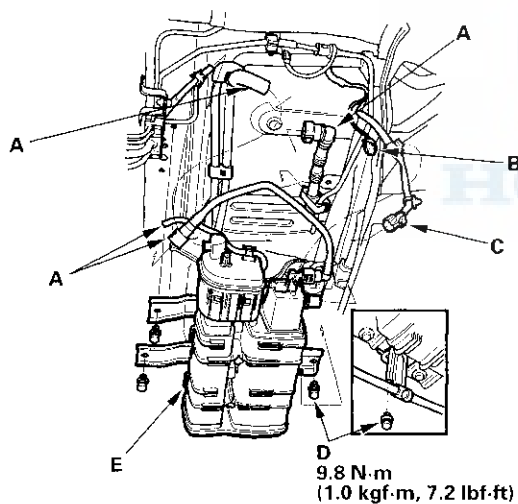


EVAP Canister Replacement

1. Remove the EVAP canister lower cover (A).

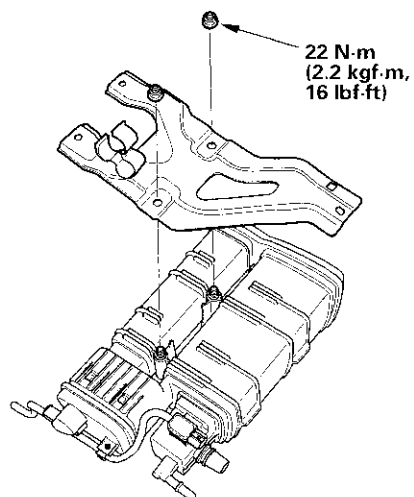


2. Remove the hoses (A), the FTP sensor 3P connector (B), and the EVAP canister vent shut valve 2P connector (C).



3. Remove the bolts (D).
4. Remove the EVAP canister assembly (E).

5. Remove the EVAP canister bracket (A).

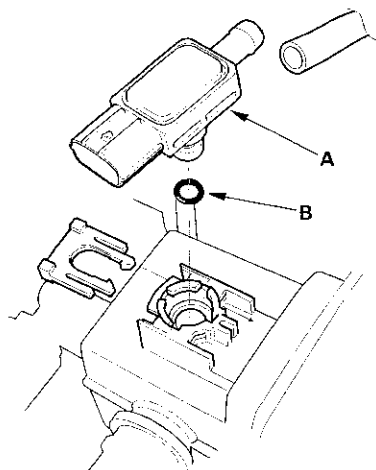


6. Install the canister in the reverse order of removal.

EVAP System

FTP Sensor Replacement

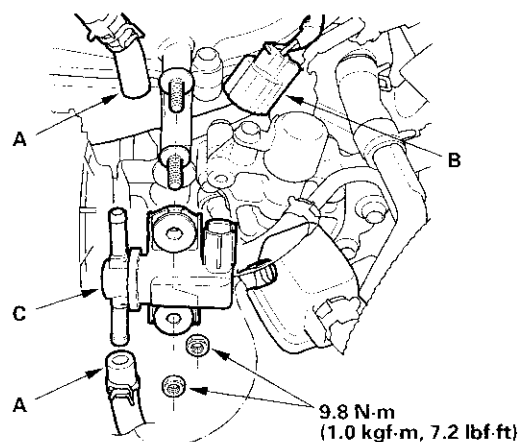
1. Remove the EVAP canister (see page 11-435).
2. Remove the FTP sensor (A).



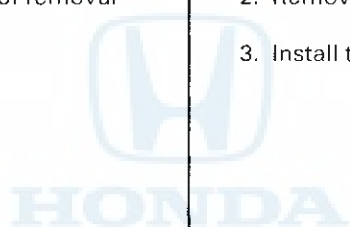
3. Install the sensor in the reverse order of removal with a new O-ring (B).

EVAP Canister Purge Valve Replacement

1. Disconnect the hoses (A) and the EVAP canister purge valve 2P connector (B).



2. Remove the EVAP canister purge valve (C).
3. Install the valve in the reverse order of removal.

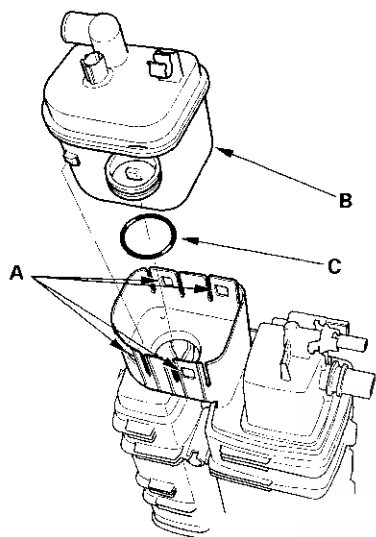




EVAP Canister Vent Shut Valve Replacement

1. Remove the EVAP canister (see page 11-435).
2. Pry the lock tabs outward (A) then remove the EVAP canister vent shut valve (B).

NOTE: Be careful not to damage the lock tabs.



3. Install the valve in the reverse order of removal with a new O-ring (C).

NOTE: Do not coat the O-ring with oil.

IMA System

IMA System

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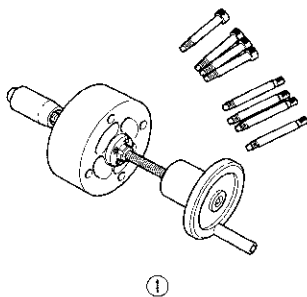


IMA System

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAF-RCJA100	Rotor Puller*	1


* : These tools are available for loan from AHM Special Tools





Service Precautions

IMA System

- The IMA (Integrated Motor Assisted) system uses high voltage (144 V) circuits. Be sure to shut off the electrical circuits and isolate the IMA system and related parts before servicing the IMA system.
- The high voltage cables and their covers are identified by orange coloring. The caution labels are attached to high voltage and other related parts (see page 1-4). Be careful not to touch these cables and parts without adequate protective gear. The front floor under-cover protecting the high voltage cables is marked .
- If the 12 V battery has been discharged, or its cable has been disconnected, or the MCM (Motor Control Module) has been reset, the IMA battery level gauge (BAT) will not display the state of charge when the engine is started. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the level gauge (BAT) displays at least three segments.
- Observe the following instructions when inspecting or servicing the IMA system.
 - When the IMA system indicator is on, perform the IMA system troubleshooting first (see page 12-5).
 - Wear insulated gloves whenever you inspect or service the IMA system. Be sure to check the gloves for pin holes, tears, or other damage.
 - Turn the battery module switch OFF, and secure the switch in the OFF position with the locking cover before servicing the IMA system (see Turning off power to the high voltage circuit).
 - Wait for 5 or more minutes after turning off the battery module switch, then disconnect the negative cable from the 12 V battery (it takes about 5 minutes for the PDU capacitor to discharge).
 - Before disconnecting the high voltage cable terminals, make sure that the voltage between the terminals is below 30 V when measured with a voltmeter.
- When servicing the parts without the insulating sheath, be sure to use the insulated tools to prevent short circuiting.
- The rotor assembly contains very strong magnets and should be handled with special care. People with pacemakers or other magnetically sensitive medical devices should not handle the rotor assembly.
- Use the special tool to remove or install the rotor assembly.

WARNING

If the rotor is installed by hand, it may suddenly be pulled toward the stator with great force causing serious hand or finger injury. Always use the special tool to remove or install a rotor assembly.

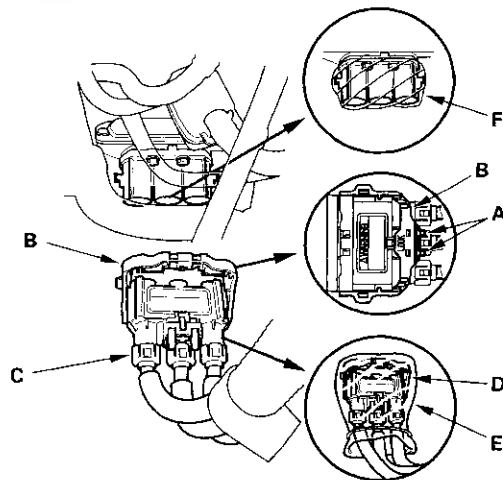
- Keep the rotor assembly away from magnetically sensitive devices.
- After disconnecting the high voltage terminals, busbars, etc., insulate the parts with insulated tape.
- As a safety warning, attach a sign saying, "WORKING ON HIGH VOLTAGE PARTS. DO NOT TOUCH!" to the steering wheel.

Disconnecting the motor power cable connector from the motor stator

Push the tabs (A), then raise the lever (B). Remove the motor power cable (C) from the motor stator.

NOTE:

- If the motor power cable connector is dirty, clean it.
- Cover the disconnected connector (D) with a plastic bag (E), and wrap the motor power cable terminals with tape (F).
- If the motor power cable is wet, wait until it is dry.



(cont'd)

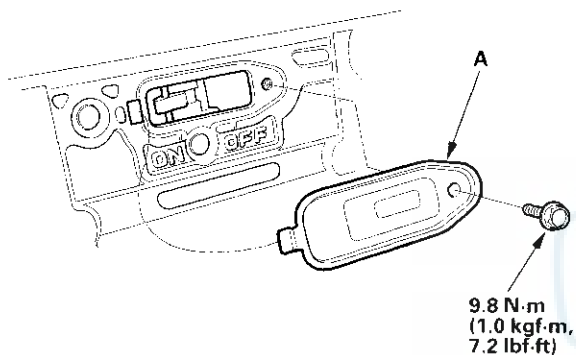
IMA System

Service Precautions (cont'd)

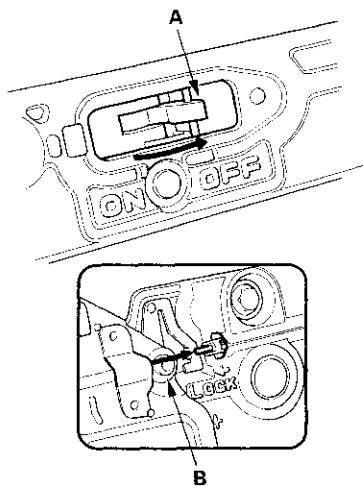
Turning Off and On Power to the High Voltage Circuit

The following procedure should be performed prior to working on or near any high voltage components. Follow the procedure exactly. Otherwise, you may be injured or may damage equipment.

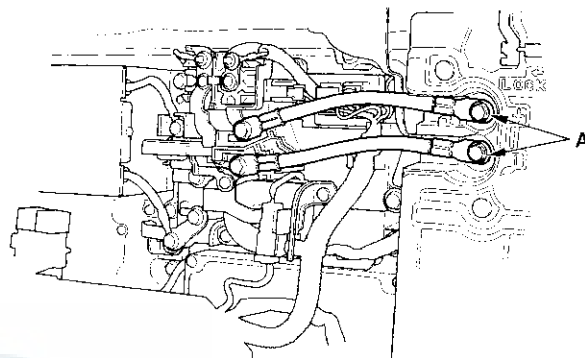
1. Turn the ignition switch OFF.
2. Remove the rear seat back (see page 20-95).
3. Remove the battery module switch lid (A) from the battery module.



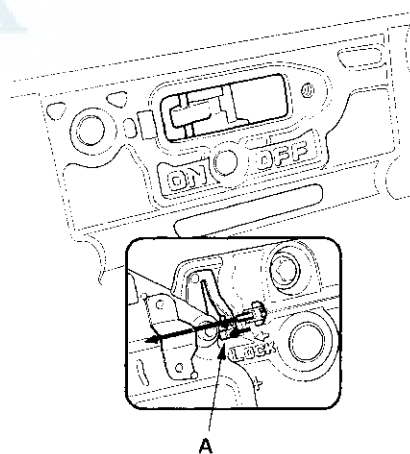
4. Turn the battery module switch (A) OFF, then check that the bolt (B) is showing.



5. Wait at least 5 minutes to allow the PDU capacitors to discharge.
6. Remove the IPU lid (see page 12-140).
7. Measure voltage at the battery module terminals (A). There should be 30 V or less. If more than 30 V is present, there is a problem in the circuit; do the DTC troubleshooting first.



8. Before the battery module switch is turned ON, make sure all the high voltage circuits are connected properly. Then push the tab (A), and turn the battery module switch ON.





General Troubleshooting Information

Intermittent Failures

The term “intermittent failure” means a system may have had a failure, but it checks OK now. If the IMA system indicator light on the dash does not come on, check for poor connections or loose wires at all connectors related to the circuit you are troubleshooting.

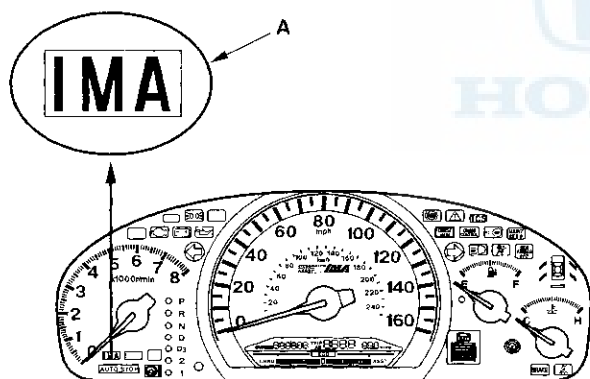
Opens and Shorts

“Open” and “Short” are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won’t work at all. With complex electronics such as the MCM, this can mean something works, but not the way it’s supposed to.

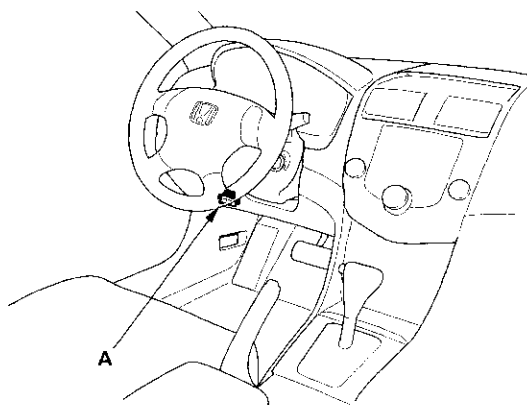
How to Use the HDS to Check for DTCs

If the IMA system indicator has come on

1. Start the engine and check the IMA system indicator (A).



2. If the IMA system indicator stays on, turn the ignition switch OFF, then connect the HDS to the data link connector (DLC) (A) located under the driver’s side of the dashboard.



3. Turn the ignition switch ON (II).
4. Select IMA SYSTEM on the HDS.
5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data. Refer to the DTC troubleshooting and begin the appropriate troubleshooting procedure.

NOTE: For specific operations, refer to the user’s manual that came with the HDS.

If you can’t duplicate the DTC

Some of the troubleshooting requires you to reset the MCM and try to duplicate the DTC. If the problem is intermittent and you can’t duplicate the code, do not continue through the procedure. To do so will only result in confusion and, possibly, a needlessly replaced MCM.

(cont’d)

IMA System

General Troubleshooting Information (cont'd)

Reset the MCM with the HDS

1. Turn the ignition switch ON (II). Do not start the engine.
2. Use the HDS to clear the DTC.

NOTE: For specific operations, refer to the user's manual that came with the HDS.

How to End a Troubleshooting Session (required after any troubleshooting)

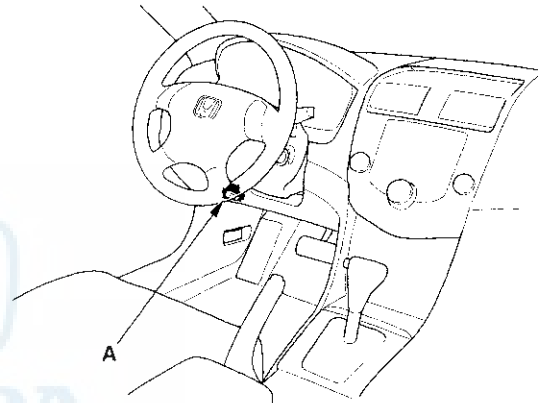
1. Reset the MCM as described above.
2. Turn the ignition switch OFF.
3. Disconnect the HDS from the DLC.
4. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.
5. Do the PCM idle learn procedure (see page 11-340).

Motor Rotor Position Calibration

Do the motor rotor position calibration whenever you do any of these actions:

- The MCM is replaced.
- The motor rotor position sensor is replaced.
- The IMA motor is replaced.
- The motor stator is replaced.
- The engine assembly is replaced.
- The transmission is replaced.

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



2. Turn the ignition switch ON (II).
3. Select IMA SYSTEM on the HDS.
4. Select the MOTOR ROTOR POSITION CALIBRATION in the ADJUSTMENT MENU of the HDS.
5. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

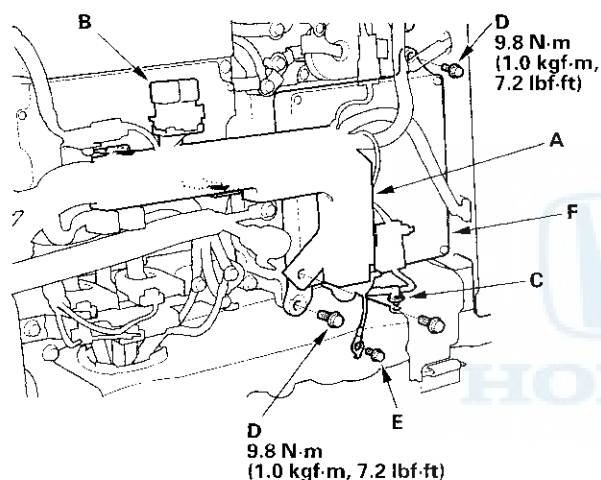
How to Troubleshoot Circuits at the MCM

Special Tools Required

- Digital multimeter KS-AHM-32-003 (1) or a commercially available digital multimeter
- Backprobe set 07SAZ-001000A (2)

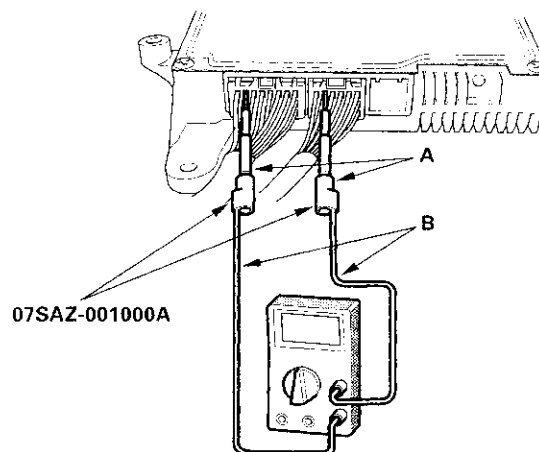
If DTC troubleshooting requires voltage or resistance checks at the MCM connectors, remove the MCM and test it.

1. Remove the IPU lid (see page 12-140).
2. Remove the harness holder (A), the MCM relay (B), and the clip (C).



3. Remove the bolts (D), disconnect ground bolt (E), and then raise the MCM (F).

4. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a digital multimeter.



5. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.

(cont'd)

IMA System

General Troubleshooting Information (cont'd)

MCM Updating and Substitution for Testing

Special Tools Required

Honda interface module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good MCM in a troubleshooting procedure. The MCM has the programs for the IMA motor control and the IMA battery condition monitor. Update the MCM if either or both programs are not the latest.

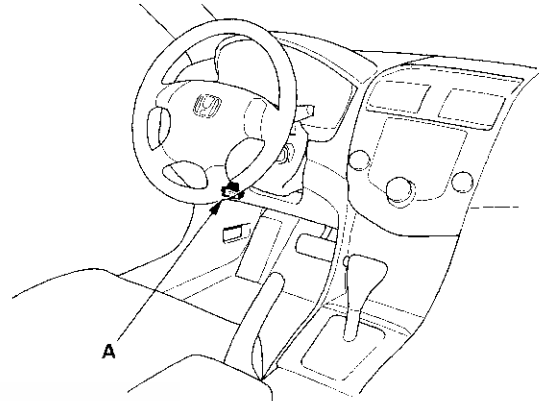
NOTE: Do not turn the ignition switch OFF while updating the MCM. If you turn the ignition switch OFF before completion, the MCM can be damaged.

How to Update the MCM

NOTE:

- To ensure the latest programs are installed, do an MCM update whenever the MCM is substituted or replaced.
- Select IMA motor and/or IMA battery in the HIM ECM/PCM update menu.
- You can not update an MCM with the program it already has. It will only accept a new program.
- Before you update the MCM, make sure the vehicle's battery is fully charged.
- To prevent MCM damage, do not operate anything electrical (audio system, brakes, A/C, power windows, door locks, etc.) during the update.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the data link connector (DLC). This will prevent MCM damage.

1. Turn the ignition switch ON (II). Do not start the engine.
2. Connect the HDS or the Honda Interface Module (HIM) to the data link connector (DLC) (A) located under the driver's side of dashboard.



3. Do the MCM update procedure as described on the HIM label and in the MCM update system.
4. Do the PCM idle learn procedure (see page 11-340).

How to Substitute the MCM

1. Remove the MCM (see page 12-140).
2. Install a known-good MCM.
3. Do the MOTOR ROTOR POSITION CALIBRATION.

NOTE: If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.



DTC Troubleshooting Index

DTC (IMA System Indicator)	Detection Item	IMA System Indicator	Page
P0562 (15)	Motor Control Module (MCM) Power Source Circuit Unexpected Voltage	ON	(see page 12-33)
P0725 (43)	Engine Speed Input Circuit Malfunction	ON	(see page 12-35)
P0A1B (60)	Motor Control Module (MCM) Internal Circuit Malfunction	ON	(see page 12-37)
P0A1B (82)	Motor Control Module (MCM) Internal Circuit Malfunction	ON	(see page 12-37)
P0A1B (84)	Motor Control Module (MCM) Internal Circuit Malfunction	ON	(see page 12-37)
P0A27 (46)	High Voltage Contactor/Bypass Contactor Stays Activated	ON	(see page 12-38)
P0A3C (39)	Motor Power Inverter (MPI) Module Overheating	ON	(see page 12-40)
P0A3F (89)	Motor Rotor Position Sensor Circuit Malfunction	ON	(see page 12-41)
P0A5E (24)	U Phase Motor Current Sensor Circuit Low Voltage	ON	(see page 12-44)
P0A5F (25)	U Phase Motor Current Sensor Circuit High Voltage	ON	(see page 12-47)
P0A61 (26)	V Phase Motor Current Sensor Circuit Low Voltage	ON	(see page 12-49)
P0A62 (27)	V Phase Motor Current Sensor Circuit High Voltage	ON	(see page 12-52)
P0A64 (28)	W Phase Motor Current Sensor Circuit Low Voltage	ON	(see page 12-54)
P0A65 (29)	W Phase Motor Current Sensor Circuit High Voltage	ON	(see page 12-57)
P0A7E (72)	Battery Module Overheating	ON	(see page 12-58)
P0A7F (78)	Battery Module Deterioration	ON	(see page 12-59)
P0A94 (48)	DC-DC Converter Output Low Voltage	OFF	(see page 12-60)
P0A9D (49)	Battery Module Temperature Sensor 1 Circuit Low Voltage	ON	(see page 12-62)
P0A9E (50)	Battery Module Temperature Sensor 1 Circuit High Voltage	ON	(see page 12-64)
P0AA6 (59)	High Voltage Short Circuit	ON	(see page 12-66)
P0AA7 (76)	Motor Control Module (MCM) Internal Circuit Malfunction	ON	(see page 12-72)
P0AC7 (51)	Battery Module Temperature Sensor 2 Circuit Low Voltage	ON	(see page 12-73)
P0AC8 (52)	Battery Module Temperature Sensor 2 Circuit High Voltage	ON	(see page 12-75)
P0ACC (53)	Battery Module Temperature Sensor 3 Circuit Low Voltage	ON	(see page 12-77)
P0ACD (54)	Battery Module Temperature Sensor 3 Circuit High Voltage	ON	(see page 12-79)
P1432 (73)	Battery Cell Overheating	ON	(see page 12-58)
P1434 (45)	Voltage Converter Module High Voltage	OFF	(see page 12-81)
P1435 (58)	Charge/Discharge Balance Malfunction	OFF	(see page 12-81)
P1437 (41)	Motor Power Inverter (MPI) Module Short Circuit	ON	(see page 12-82)
P1440 (57)	Motor Power Inverter (MPI) Module Output Circuit Malfunction	ON	(see page 12-83)
P1445 (62)	Bypass Contactor Malfunction	ON	(see page 12-88)
P1446 (74)	Battery Module Individual Voltage Input Deviation	ON	(see page 12-91)
P1448 (63)	Intelligent Power Unit (IPU) Module Fan Problem	ON	(see page 12-93)
P1569 (70)	Battery Cell Temperature Signal Circuit Malfunction	ON	(see page 12-96)
P1570 (66)	Battery Module Individual Voltage Problem	ON	(see page 12-98)
P1574 (68)	Battery Module Temperature Signal Circuit Malfunction	ON	(see page 12-100)
P1575 (12)	Motor Power Inverter (MPI) Module Voltage Malfunction	ON	(see page 12-101)

* : These DTCs are indicated by a blinking IMA system indicator when the SCS line is jumped with the HDS.

(cont'd)

IMA System

DTC Troubleshooting Index (cont'd)

DTC (IMA System Indicator')	Detection Item	IMA System Indicator	Page
P1580 (65)	Battery Current Sensor Circuit Malfunction	ON	(see page 12-104)
P1585 (30)	Motor Current Sensor Circuit Malfunction	ON	(see page 12-107)
P1586 (23)	Battery Current Signal Circuit Problem	ON	(see page 12-108)
P15A4 (81)	A/C Compressor Driver Relay Stays Activated	ON	(see page 12-110)
P15A5 (85)	Motor Current Sensor Circuit Malfunction	ON	(see page 12-112)
P15A6 (86)	U Phase Motor Current Sensor Circuit Malfunction	ON	(see page 12-114)
P15A7 (87)	V Phase Motor Current Sensor Circuit Malfunction	ON	(see page 12-115)
P15A8 (88)	W Phase Motor Current Sensor Circuit Malfunction	ON	(see page 12-117)
P15AA (93)	Motor Rotor Position Not Learned	ON	(see page 12-119)
P1629 (79)	Battery Current Sensor Circuit Malfunction	ON	(see page 12-120)
P1634 (47)	Motor Power Inverter (MPI) Module Signal Circuit Malfunction	ON	(see page 12-121)
P1636 (32)	Motor Power Inverter (MPI) Module Internal Circuit Malfunction	ON	(see page 12-124)
P1673 (22)	Motor Control Module (MCM) Relay Stays Activated	ON	(see page 12-124)
P16C1 (91)	Motor Control Module (MCM) Program Not Installed (Motor Control Program)	ON	(see page 12-125)
P16C2 (92)	Motor Control Module (MCM) Program Not Installed (Battery Condition Monitor Program)	ON	(see page 12-125)
P16C3 (31)	DC-DC Converter Temperature Sensor Circuit Malfunction	ON	(see page 12-126)
U0100 (55)	Motor Control Module (MCM) Lost Communication with PCM	ON	(see page 12-127)
U0164 (80)	Motor Control Module (MCM) Lost Communication with A/C Compressor Driver	ON	(see page 11-191)
U1202 (64)	Motor Control Module (MCM) Internal Circuit Malfunction	ON	(see page 12-129)
U1203 (75)	Motor Control Module (MCM) Internal Circuit Malfunction	ON	(see page 12-129)
U1220 (34)	DC-DC Converter Lost Communication with Motor Control Module (MCM)	ON	(see page 12-129)
U1221 (35)	Motor Control Module (MCM) Lost Communication with DC-DC Converter	ON	(see page 12-131)

* : These DTCs are indicated by a blinking IMA system indicator when the SCS line is jumped with the HDS.



System Description

MCM Inputs and Outputs at Connector A (31P)

1 MSFP	2 S1	3 UH	4 VH	5 WH	6 IMA CANL	7 IMA CANH			8 IPWR-	9 PWR+	
10 R1	11 S2	12 UL	13 VL	14 WL	15 SGIU	16 VCCIW	17 VCCIV	18 VCCIU	19 IUPH	20 PTC+	21 ISOC
22 R2	23 S4	24 S3		25 IPUA	26 SGIW		27 SGIV	28 IWPH	29 IVPH	30 PTC-	31 SGTB

Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	RED/YEL	MISFP (MOTOR ROTOR POSITION SIGNAL)	Sends motor rotor position signal to PCM	With engine running: pulses
2	ORN	S1 (MOTOR ROTOR POSITION SENSOR S1 SIGNAL)	Motor rotor position sensor S1 signal input	With engine running: pulses
3	WHT	UH (U PHASE HIGH SIDE)	U phase high side inverter gate drive signal output	With engine running: pulses
4	BLK	VH (V PHASE HIGH SIDE)	V phase high side inverter gate drive signal output	With engine running: pulses
5	BRN	WH (W PHASE HIGH SIDE)	W phase high side inverter gate drive signal output	With engine running: pulses
6	RED	IMACANL (IMA CAN COMMUNICATION SIGNAL LOW)	With PCM and A/C compressor driver communication signal	With ignition switch ON (II): pulses
7	WHT	IMACANH (IMA CAN COMMUNICATION SIGNAL HIGH)	With PCM and A/C compressor driver communication signal	With ignition switch ON (II): pulses
8	BLU	IPWR- (ISOC SENSOR POWER-)	Provides negative power source side for battery current sensor	With ignition switch ON (II): about -12 V
9	GRN	IPWR+ (ISOC SENSOR POWER+)	Provides positive power source side for battery current sensor	With ignition switch ON (II): about battery voltage
10	BRN	R1 (MOTOR ROTOR POSITION SENSOR R1 SIGNAL)	Motor rotor position sensor R1 signal output	With engine running: pulses
11	RED	S2 (MOTOR ROTOR POSITION SENSOR S2 SIGNAL)	Motor rotor position sensor S2 signal output	With engine running: pulses
12	BLU	UL (U PHASE LOW SIDE)	U phase low side inverter gate drive signal output	With engine running: pulses
13	GRN	VL (V PHASE LOW SIDE)	V phase low side inverter gate drive signal output	With engine running: pulses
14	RED	WL (W PHASE LOW SIDE)	W phase low side inverter gate drive signal output	With engine running: pulses
15	BLK	SGIU (U PHASE MOTOR CURRENT SENSOR GROUND)	U phase motor current sensor ground	Less than 0.1 V at all times
16	WHT/GRN	VCCIW (W PHASE MOTOR CURRENT SENSOR VOLTAGE)	W phase motor current sensor power	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
17	RED/BLU	VCCIV (V PHASE MOTOR CURRENT SENSOR VOLTAGE)	V phase motor current sensor power	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
18	WHT	VCCIU (U PHASE MOTOR CURRENT SENSOR VOLTAGE)	U phase motor current sensor power	With ignition switch ON (II): about 5 V With ignition switch OFF: about 0 V
19	RED	IUPH (I.U. PHASE)	U phase motor current sensor signal input	With ignition switch ON (II) and engine stopped: about 2.5 V

(cont'd)

IMA System

System Description (cont'd)

MCM Inputs and Outputs at Connector A (31P)

1 MISFP	2 S1	3 UH	4 VH	5 WH	6 IMA CANL	7 IMA CANH						8 IPWR-	9 IPWR+
10 R1	11 S2	12 UL	13 VL	14 WL	15 SGIU	16 VCCIW	17 VCCIV	18 VCCIU	19 IUPH	20 PTC+	21 ISOC		
22 R2	23 S4	24 S3		25 IPUA	26 SGIW		27 SGIV	28 IWPH	29 IVPH	30 PTC-	31 SGTE		

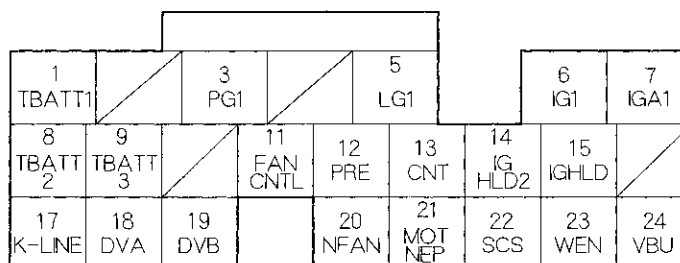
Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
20	RED	PTC+ (POSITIVE TEMPERATURE COEFFICIENT THERMISTOR+)	Battery module PTC+ overheating signal input	With ignition switch ON (II): about 2.5—4.5 V (depending on battery module temperature)
21	YEL	ISOC (I. STATE OF CHANGE)	Battery current sensor signal input	With engine running: about 0.3—5 V
22	GRN	R2 (MOTOR ROTOR POSITION SENSOR R2 SIGNAL)	Motor rotor position sensor R2 signal output	With engine running: pulses
23	YEL	S4 (MOTOR ROTOR POSITION SENSOR S4 SIGNAL)	Motor rotor position sensor S4 signal output	With engine running: pulses
24	WHT/GRN	S3 (MOTOR ROTOR POSITION SENSOR S3 SIGNAL)	Motor rotor position sensor S3 signal output	With engine running: pulses
25	YEL	IPUA (INTELLIGENT POWER UNIT A)	IPU serial signal input	With ignition switch ON (II): pulses
26	WHT/BLU	SGIW (W PHASE MOTOR CURRENT SENSOR GROUND)	W phase motor current sensor ground	Less than 0.1 V at all times
27	BLK/GRN	SGIV (V PHASE MOTOR CURRENT SENSOR GROUND)	V phase motor current sensor ground	Less than 0.1 V at all times
28	GRN	IWPH (I.W. PHASE)	W phase motor current sensor signal input	With ignition switch ON (II) and engine stopped: about 2.5 V
29	RED/WHT	IVPH (I.V. PHASE)	V phase motor current sensor signal input	With ignition switch ON (II) and engine stopped: about 2.5 V
30	BLU/YEL	PTC- (POSITIVE TEMPERATURE COEFFICIENT THERMISTOR-)	Battery module PTC- overheating signal input	With ignition switch ON (II): about 0.5—2.5 V (depending on battery module temperature)
31	BLU/ORN	SGTB (BATTERY TEMPERATURE SENSOR GROUND)	Battery module (temperature sensor) ground	Less than 0.1 V at all times



MCM Inputs and Outputs at Connector B (24P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

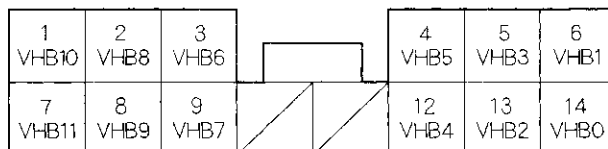
Terminal number	Wire color	Terminal name	Description	Signal
1	YEL	TBATT1 (BATTERY 1 TEMPERATURE)	Battery module TBATT 1 temperature signal 1 input	With ignition switch ON (II): about 0.5–4.5 V (depending on battery module temperature)
3	BLK	PG1 (POWER GROUND)	Ground for the MCM	Less than 0.1 V at all times
5	BRN/YEL	LG1 (LOGIC GROUND)	Ground for the MCM	Less than 0.1 V at all times
6	YEL	IG1	MCM power	With ignition switch ON (II): battery voltage With ignition switch OFF: about 0 V
7	RED/BLU	IGA1 (IGNITION FOR ASSIST SYSTEM)	Power source for MCM control circuit	With ignition switch ON (II): battery voltage With ignition switch OFF: battery voltage for several seconds, then 0 V
8	GRY	TBATT2 (BATTERY 2 TEMPERATURE)	Battery module TBATT 2 temperature signal 2 input	With ignition switch ON (II): about 0.5–4.5 V (depending on battery module temperature)
9	WHT	TBATT3 (BATTERY 3 TEMPERATURE)	Battery module TBATT 3 temperature signal 3 input	With ignition switch ON (II): about 0.5–4.5 V (depending on battery module temperature)
11	BLK	FANCTL (FAN CONTROL)	IPU module fan speed control signal output	IPU module fan OFF: about 5 V IPU module fan ON: duty controlled
12	RED	PRE (PRE CHARGE CONTACTOR)	Drives bypass contactor momentarily (after that about 0 V)	With ignition switch ON (II): about 0 V
13	BLU	CNT (CONTACTOR)	Drives high voltage contactor	With ignition switch ON (II): battery voltage
14	WHT	IGHLD2 (IGNITION HOLD 2)	Drives MCM relay 2	With ignition switched from ON (II) to OFF: about 0 V for several seconds
15	WHT/RED	IGHLD (IGNITION HOLD)	Drives MCM relay 1	With ignition switched from ON (II) to OFF: 0–1 V for several seconds, then battery voltage
17	BLU	K-LINE	Communication signal with HDS	With ignition switch ON (II): battery voltage
18	GRN/BLK	DVA (DC-DC CONVERTER SIGNAL A)	Communication signal with DC-DC converter	With ignition switch ON (II): pulses
19	YEL/BLU	DVB (DC-DC CONVERTER SIGNAL B)	Communication signal with DC-DC converter	With ignition switch ON (II): pulses
20	WHT	NFAN (FAN CONTROL)	Drives IPU module fan	With ignition switch ON (II): about 5 V IPU module fan ON: duty controlled
21	LT GRN	MOTNEP		With engine running: pulses
22	BRN	SCS (SERVICE CHECK SIGNAL)	Service check connector signal output	With terminal connected: about 0 V With terminal disconnected: about 5 V
23	RED/WHT	WEN (WRITE ENABLE SIGNAL)	Write enable signal input	With ignition switch ON (II): about 0 V
24	WHT/RED	VBU (VOLTAGE BACK UP)	Power source for MCM control circuit Power source for DTC memory	Battery voltage at all times

(cont'd)

IMA System

System Description (cont'd)

MCM Inputs and Outputs at Connector C (14P)



Wire side of female terminals

NOTE: Standard battery voltage is 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLU	VHB10 (HIGH VOLTAGE BATTERY 10 VOLTAGE)	Battery module No. 10 terminal voltage input	With battery module switch ON: about 1/10 of VHB0 voltage (compared to VHB11 terminal)
2	GRN/BLK	VHB8 (HIGH VOLTAGE BATTERY 8 VOLTAGE)	Battery module No. 8 terminal voltage input	With battery module switch ON: about 3/10 of VHB0 voltage (compared to VHB11 terminal)
3	BLU/YEL	VHB6 (HIGH VOLTAGE BATTERY 6 VOLTAGE)	Battery module No. 6 terminal voltage input	With battery module switch ON: about 5/10 of VHB0 voltage (compared to VHB11 terminal)
4	GRN/WHT	VHB5 (HIGH VOLTAGE BATTERY 5 VOLTAGE)	Battery module No. 5 terminal voltage input	With battery module switch ON: about 6/10 of VHB0 voltage (compared to VHB11 terminal)
5	GRN	VHB3 (HIGH VOLTAGE BATTERY 3 VOLTAGE)	Battery module No. 3 terminal voltage input	With battery module switch ON: about 7/10 of VHB0 voltage (compared to VHB11 terminal)
6	GRN/YEL	VHB1 (HIGH VOLTAGE BATTERY 1 VOLTAGE)	Battery module No. 1 terminal voltage input	With battery module switch ON: about 9/10 of VHB0 voltage (compared to VHB11 terminal)
7	WHT	VHB11 (HIGH VOLTAGE BATTERY 11 VOLTAGE)	Battery module No. 11 terminal voltage input	
8	YEL	VHB9 (HIGH VOLTAGE BATTERY 9 VOLTAGE)	Battery module No. 9 terminal voltage input	With battery module switch ON: about 2/10 of VHB0 voltage (compared to VHB11 terminal)
9	BLU/RED	VHB7 (HIGH VOLTAGE BATTERY 7 VOLTAGE)	Battery module No. 7 terminal voltage input	With battery module switch ON: about 4/10 of VHB0 voltage (compared to VHB11 terminal)
12	GRN/RED	VHB4 (HIGH VOLTAGE BATTERY 4 VOLTAGE)	Battery module No. 4 terminal voltage input	With battery module switch ON: about 6/10 of VHB0 voltage (compared to VHB11 terminal)
13	BLK	VHB2 (HIGH VOLTAGE BATTERY 2 VOLTAGE)	Battery module No. 2 terminal voltage input	With battery module switch ON: about 8/10 of VHB0 voltage (compared to VHB11 terminal)
14	RED	VHB0 (HIGH VOLTAGE BATTERY 0 VOLTAGE)	Battery module No. 0 terminal voltage input	With battery module switch ON: below 200 V (compared to VHB11 terminal)



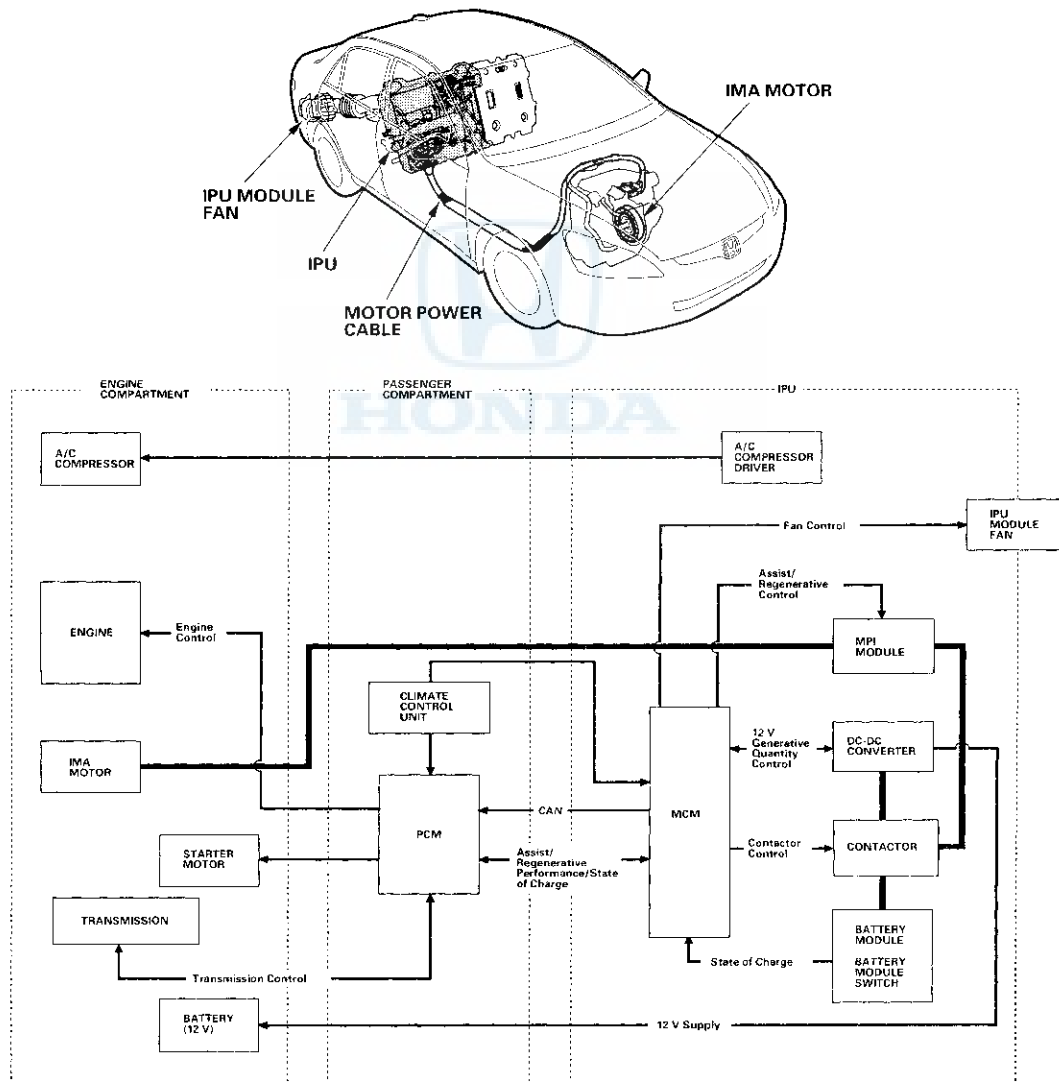
IMA System

The IMA (Integrated Motor Assisted) system is a highly-efficient parallel hybrid drive system consisting of a main power unit (gasoline-fueled engine) and the assist unit (electric IMA motor).

The engine is 60 °, V6 power plant that has a displacement of 2,997 liters. To reduce fuel consumption, the IMA system is equipped with i-VTEC, lean-burn control and valve pause system that reduces engine pumping loss and increases the regeneration of electric energy during deceleration.

The IMA motor, directly connected to the engine crankshaft, functions as a generator during deceleration, an engine starter, and a motor to assist the engine that drives the wheels.

The IMA system contains the DC 144 V battery and AC synchronous motor, control system, and related accessories. For optimal electrical safety, the intelligent power unit (IPU) is located behind the rear seat.



(cont'd)

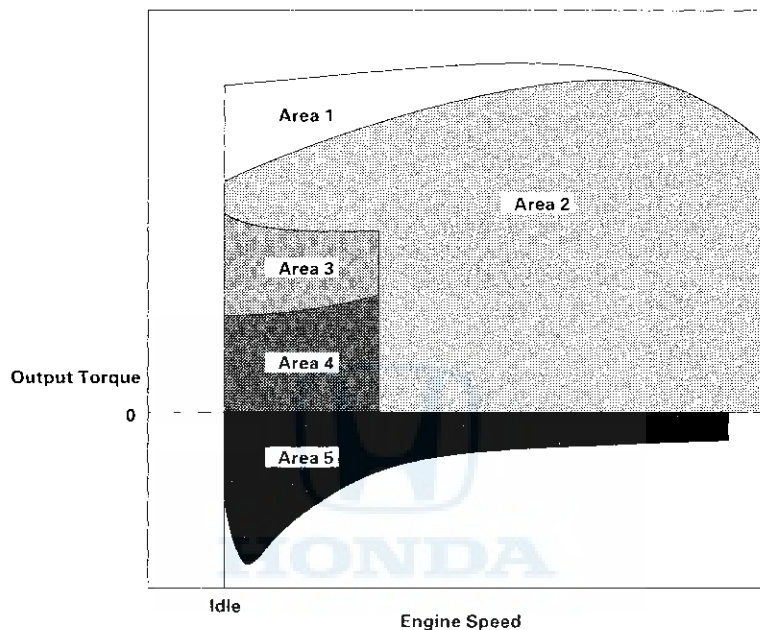
IMA System

System Description (cont'd)

IMA Torque On-demand Control

Depending on the output torque requirements from the driver, A/T, cruise control, TCS, and ABS, the powertrain control module (PCM) controls the total output of the engine and the IMA motor by controlling the variable cylinder management (VCM), the electric throttle control system (ETCS), and the IMA system. With this IMA torque on-demand control, the driving performance and the fuel efficiency are improved.

The PCM controls the output of the engine and the IMA motor in the following six methods with the required torque and the engine speed. Depending on the condition of the engine, IMA system, A/T, HVAC, and other systems, the control methods are modified.



Area 1

When maximum output torque is required, the engine is driven by six cylinders with wide open throttle, and the IMA motor assists the engine to increase torque.

Area 2

At high engine speed except wide open throttle and deceleration, the engine is driven by six cylinders without assist from the IMA motor.

Area 3

When partial output torque is required at low engine speed, the engine is driven by three cylinders and the IMA motor assists the engine to increase output torque. This control method saves fuel consumption during acceleration.

Area 4

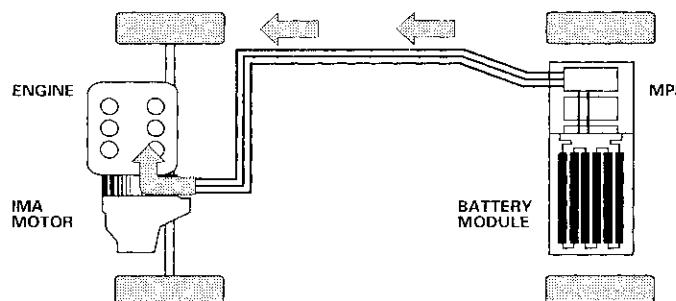
When low output torque is required at low engine speed, the engine is driven by three cylinders without assist from the IMA motor. This control method saves fuel consumption during cruise and light load conditions.

Area 5

During deceleration, the PCM stops the fuel injection to all cylinders, and the IMA motor functions as a generator to charge the IMA battery. The intake and exhaust valves of the rear bank are deactivated by the VCM to reduce mechanical friction and increase the energy for charging.

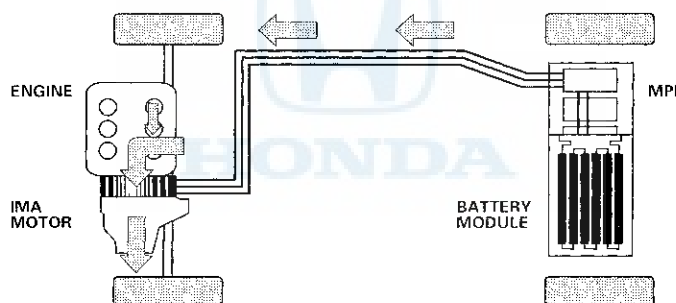
Engine start

The IMA system drives the IMA motor, starts the engine at normal start, and restarts the engine after auto-stop. The IMA motor is directly connected to the engine crankshaft, so it is quieter than the 12 V starter. If a problem occurs with IMA system, for example, low battery module status of charge (SOC), low temperature, faulty IMA system, etc. The PCM receives a signal from the MCM and starts the engine with the 12 V starter.



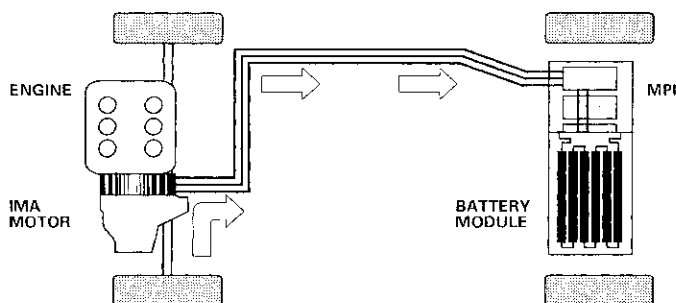
Motor assisting function

During acceleration, energy is supplied from the battery module to the IMA motor, and the motor generates a maximum torque of 84.3 N·m (8.6 kgf·m, 62 lbf·ft) to assist the engine. The PCM and MCM communicate to control the assist to maintain the battery module SOC within a specified range. When the battery module SOC is below the specified range, the MCM stops the assist to prevent over-discharge or damage to the battery. Assist is also not available when the IMA battery is very cold or very hot.



Regenerative control (at deceleration)

During deceleration, the IMA motor, driven by the wheels, functions as a generator. It charges the battery module by generating electrical energy. This is done by converting the kinetic energy of the vehicle during braking into electric energy that is stored in the IMA battery. When the battery module is full, regeneration stops to prevent overcharge of the battery.



(cont'd)

IMA System

System Description (cont'd)

Auto Idle Stop System

The auto idle stop system stops the engine automatically when the vehicle comes to a stop to reduce fuel consumption and minimize tailpipe emissions. When the following operating conditions are met, the auto idle stop will occur.

Auto idle stop system operating conditions

Idle stop will occur	<ul style="list-style-type: none">• With the vehicle is driven above 7 mph (12 km/h) in D or D3 position, then decelerates with the brake pedal pressed (operation speed varies depending on the conditions).• When the vehicle is driven above 7 mph (12 km/h) in D or D3 position after restart from auto idle stop condition, then decelerates with the brake pedal pressed, the engine will stop (two times only).
Engine does not stop	<ul style="list-style-type: none">• When the vehicle stops suddenly by sharp application of the brake pedal.• When the engine coolant temperature is low.• When the climate control unit prohibits the engine from stopping.^{*1}• When the PCM (A/T system) prohibits the engine from stopping.^{*2}• When the IMA battery state of charge is low.• When the IMA battery module temperature is low.• When the electric load on the 12 V system is high.• When the accelerator pedal is pressed.• When ignition switch ON (II) just after that engine starting.• When windshield defrost button• When a fault is detected in a related system.^{*3}

* 1: With the ambient temperature at 10 °F (−13 °C) or below, or 100 °F (38 °C) or more.

* 2: When the ATF temperature is low.

* 3: PGM-FI system, IMA system, A/T system, A/C system, etc.

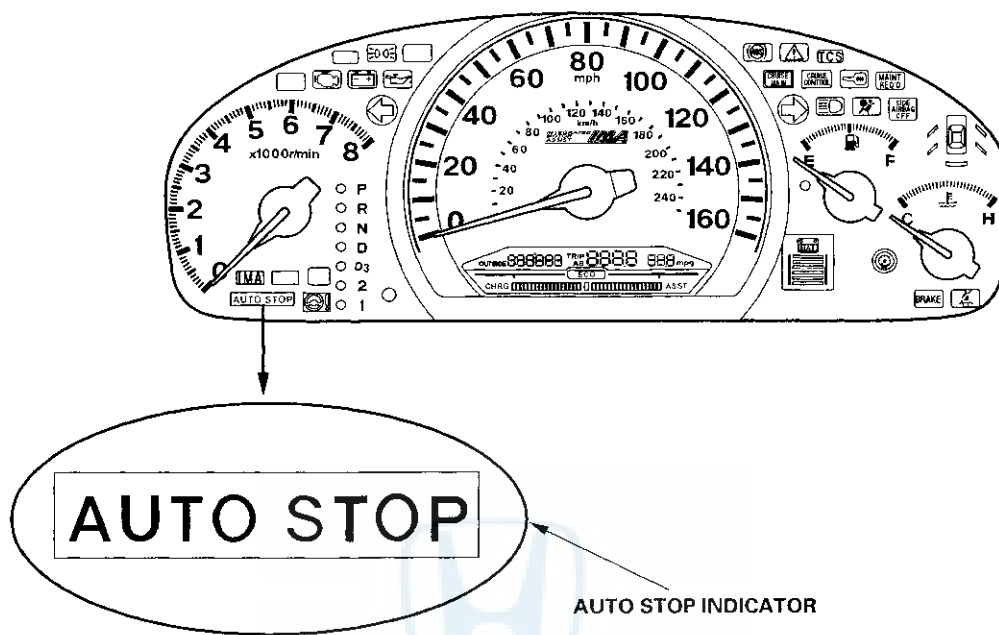
When the following engine restart conditions are met, the ECM restarts the engine by driving the IMA motor via the MCM and restarting fuel injection.

Engine restart conditions

Engine restarts	<ul style="list-style-type: none">• When the brake pedal is released.• When the select lever is set in the neutral to R, or D3 to 2, 1 position.• When the accelerator pedal is pressed.• When the vehicle speed signal is input.• When the vacuum in the brake booster is low.• When the engine coolant temperature is low.• When the IMA battery SOC is low.
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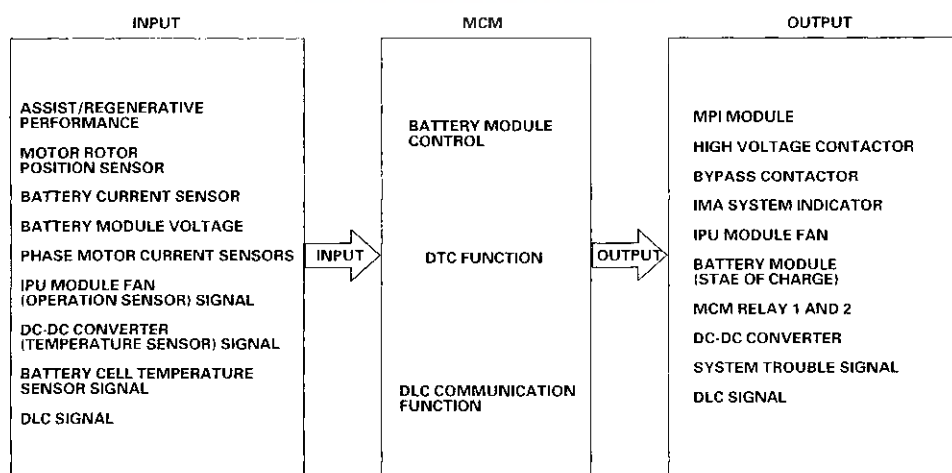
Auto Stop Indicator

When auto idle stop is operating, the auto stop indicator blinks. If the driver's door is opened during auto idle stop, the auto stop indicator blinks and the warning buzzer sounds to remind the driver that auto stop is in operation.



Motor Control Module (MCM)

The MCM controls the IMA motor, via the motor power inverter (MPI) module, to control the assist and regeneration. The MCM computes the battery module state of charge (SOC) and controls the IPU module fan.



(cont'd)

IMA System

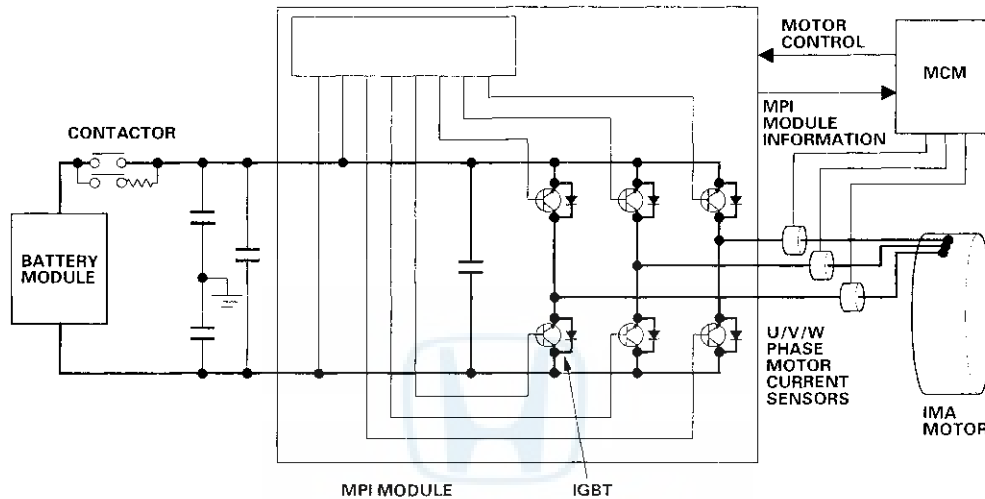
System Description (cont'd)

Motor Power Inverter (MPI) Module

The MPI converts 144 V DC power into 3-phase AC power to run the electric motor during assist. During regeneration, the MPI converts AC voltage to DC. The system's SOC is computed by the MCM using voltage, temperature, input current, and output current readings from the battery module.

The MPI module controls the DC/AC conversion (from the IMA battery's 144 V DC to the IMA motor's 3-phase AC and vice versa).

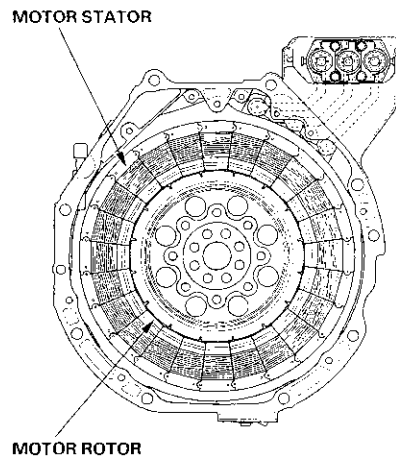
The MPI module is air cooled. The heat fed through the heat sink is exhausted to the trunk compartment and outside of vehicle by the IPU module fan.



IMA Motor

The IMA motor is a synchronous AC type that converts electrical energy into kinetic energy, assists the engine during acceleration, and starts the engine.

The motor is located between the engine and the transmission. It consists of a 3-phase coil stator and a permanent magnet rotor that is directly connected to the engine crankshaft. Motor rotor position sensor is mounted on the back of the engine block to detect the position of the rotor.

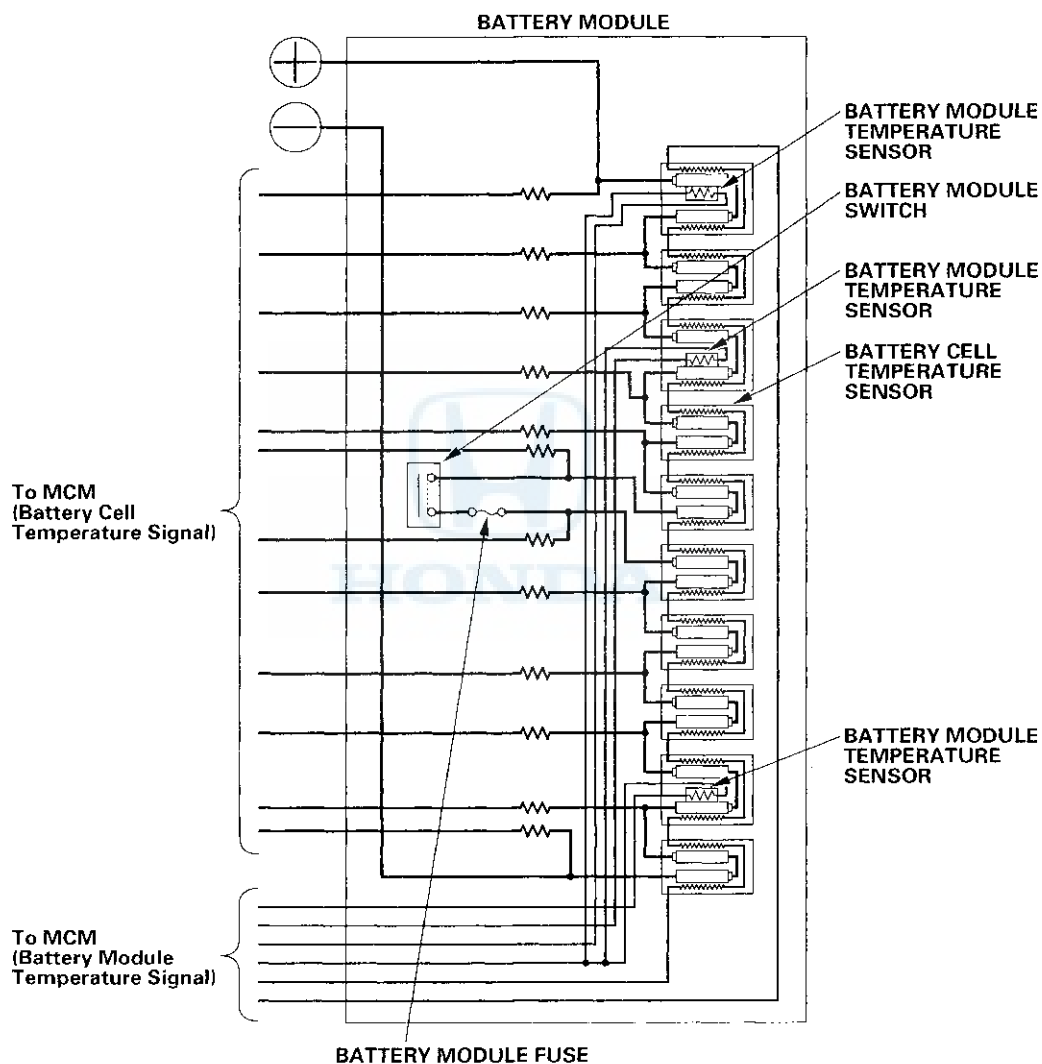


Battery Module

A light-weight and compact Ni-MH (nickel-metal hydride) battery supplies energy to the IMA system.

The battery has 10 modules that are connected in series. Within each module are 12 1.2 V cells. Total battery voltage is a nominal 144 V, and maximum capacity is 6.0 Ah.

The battery module has 3 built-in thermistor-type temperature sensors, and a PTC (positive temperature coefficient)-type temperature sensor for each cell.



Battery Module Switch

The battery module switch is connected in series to the battery module fuse. Always turn the battery module switch to the OFF position whenever service or checks are required on or around the high voltage circuits. Follow the service precautions (see page 12-3).

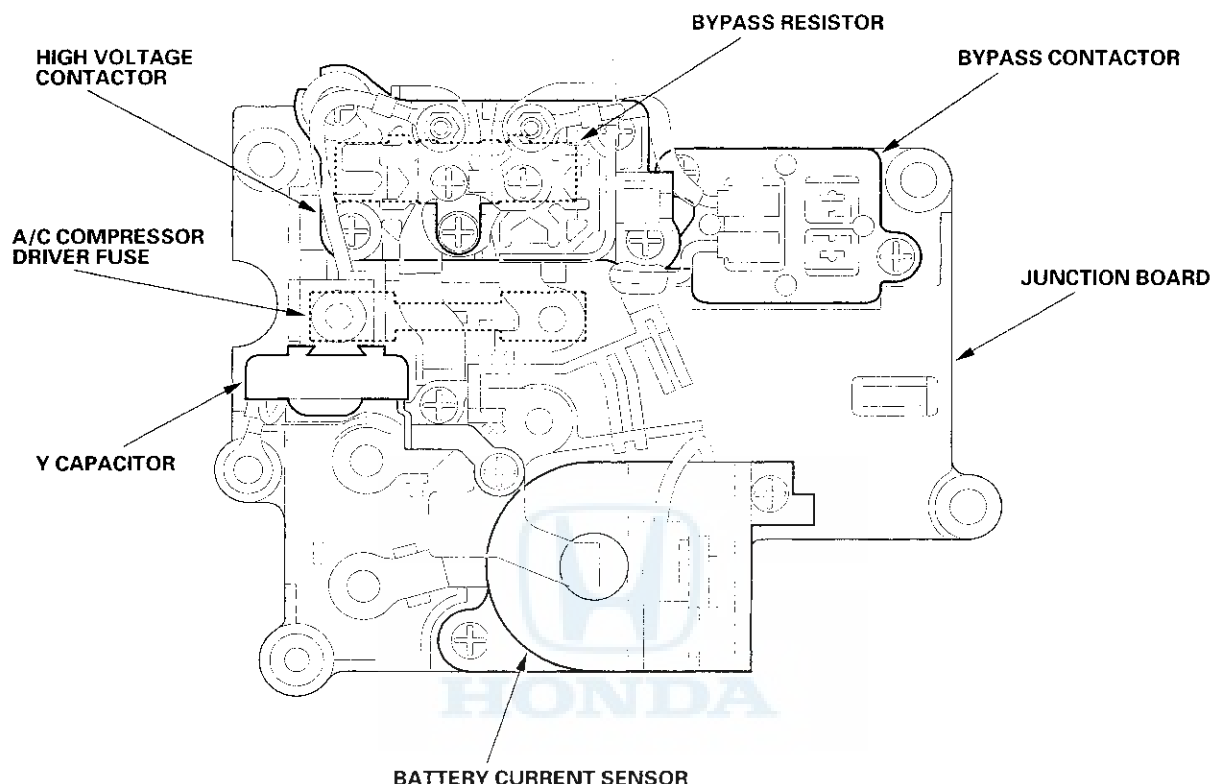
(cont'd)

IMA System

System Description (cont'd)

Junction board

The junction board, located next to the battery module, distributes high voltage energy to the IMA system. The contactors, "Y" capacitor, bypass resistor, A/C compressor driver fuse, and the battery current sensor are all on the junction board.



Contactors

The high voltage contactor and bypass contactor are connected at the positive (+) output side of battery module. These contactors are controlled by the MCM, connecting the IMA battery to the high voltage circuits. The current flows through the bypass contactor and bypass resistor first.

DC-DC Converter

Instead of using an alternator to maintain the 12 V battery, the electrical system uses a DC-DC converter. The converter converts high voltage direct current into low voltage direct current with little energy loss.

The DC-DC converter will illuminate the charging system indicator in the gauge assembly if a problem is detected in the 12 V charging system.

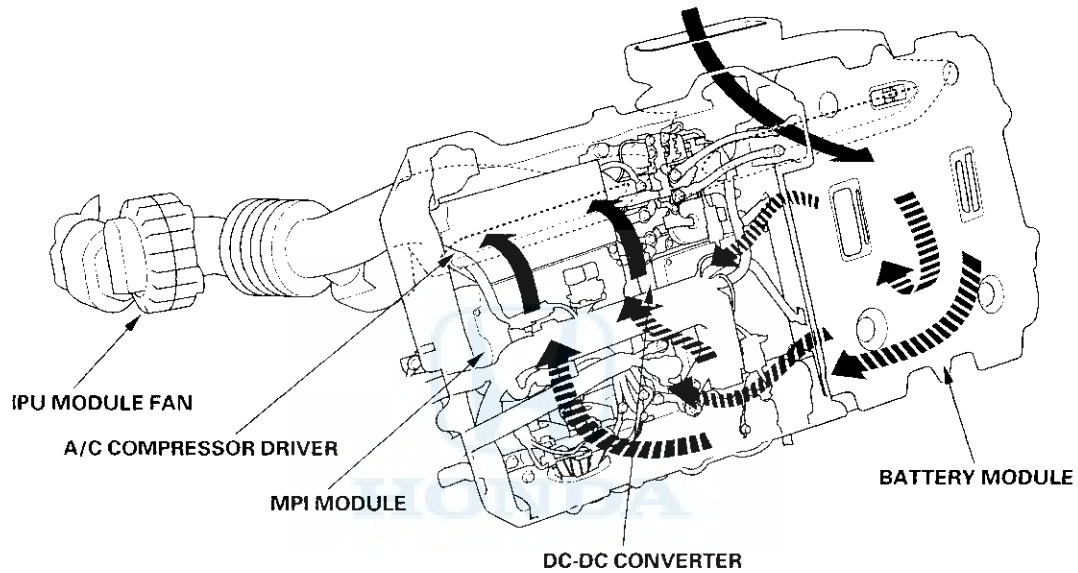
The DC-DC converter has a temperature monitoring system that will signal the MCM if its temperature is abnormally high. If needed, the MCM can signal the DC-DC converter to shut down.

Heat generated by the DC-DC converter is exhausted to the trunk compartment by the IPU module fan.

The DC-DC converter can also generate PGM-FI and/or IMA DTCs.

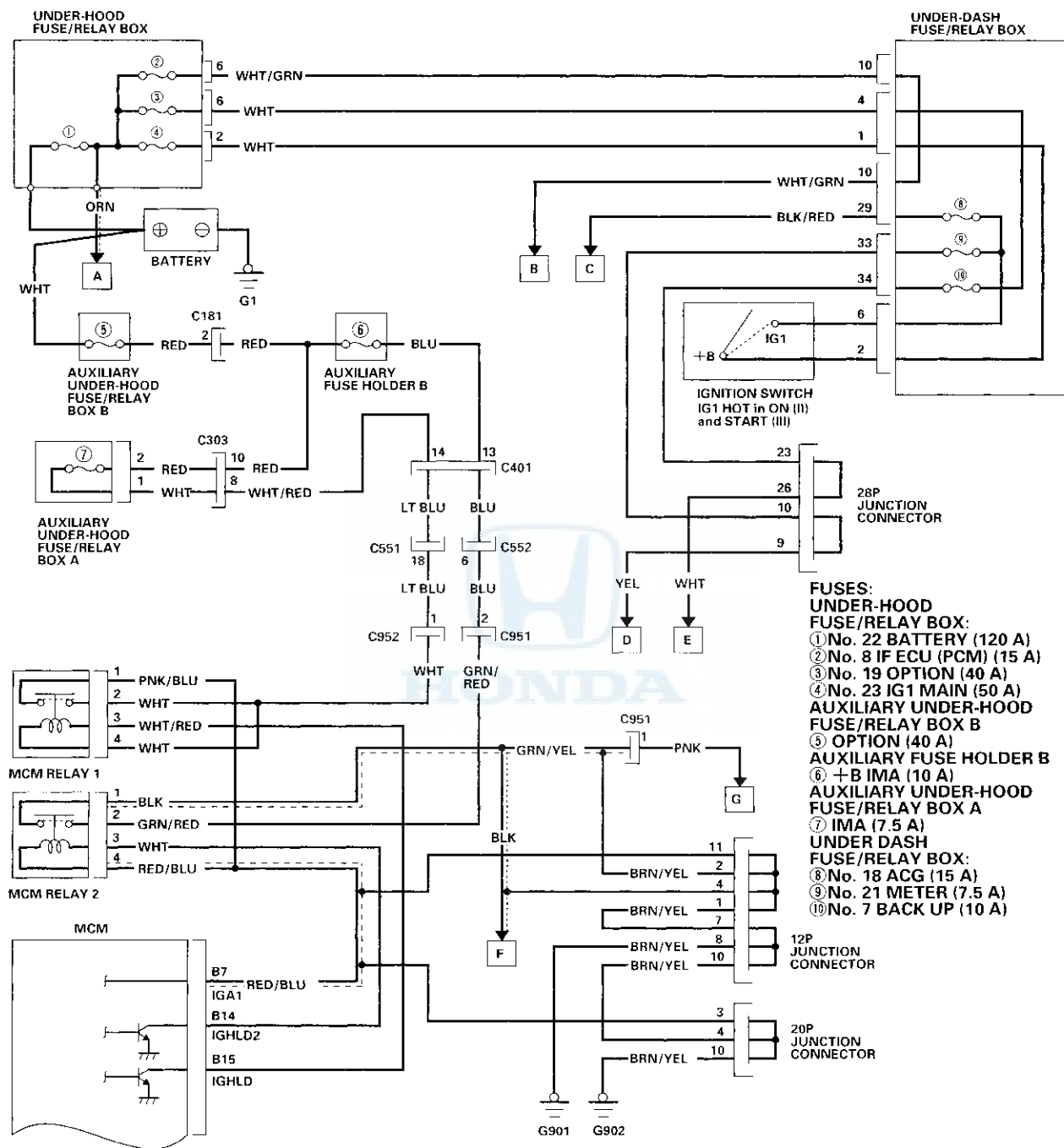
IPU Module Fan

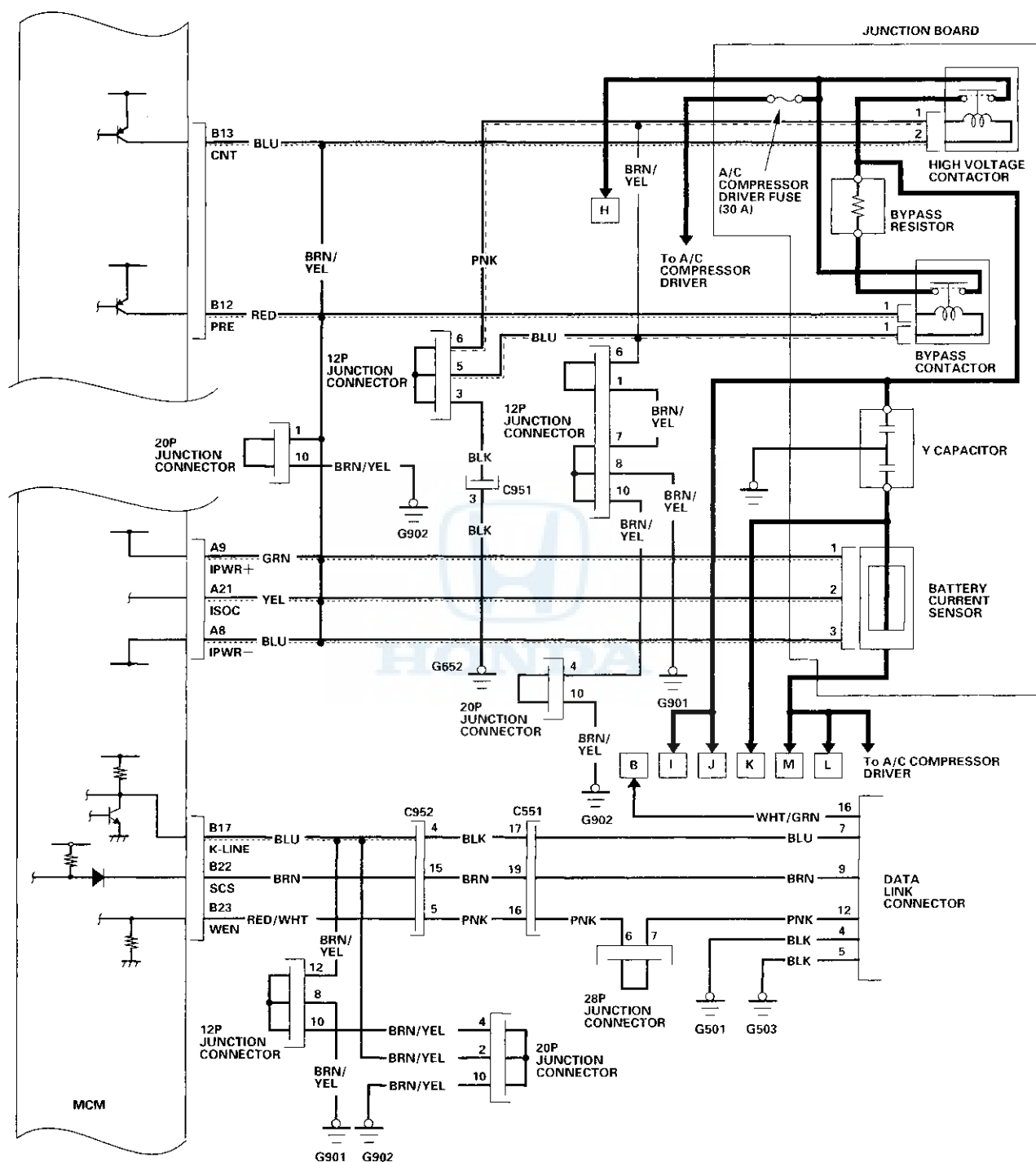
The battery module, MPI module, and DC-DC converter generate heat during assist/regeneration. The IPU is equipped with a fan to cool it down, assure proper battery performance, and protect the system. The fan has a control circuit and rotation sensor that are controlled by the MCM. The cooling air is drawn into the battery module from the top of the rear tray, then it is exhausted into the trunk compartment and outside of vehicle through the MPI module heat sink, the DC-DC converter and A/C compressor driver heat sink.



IMA System

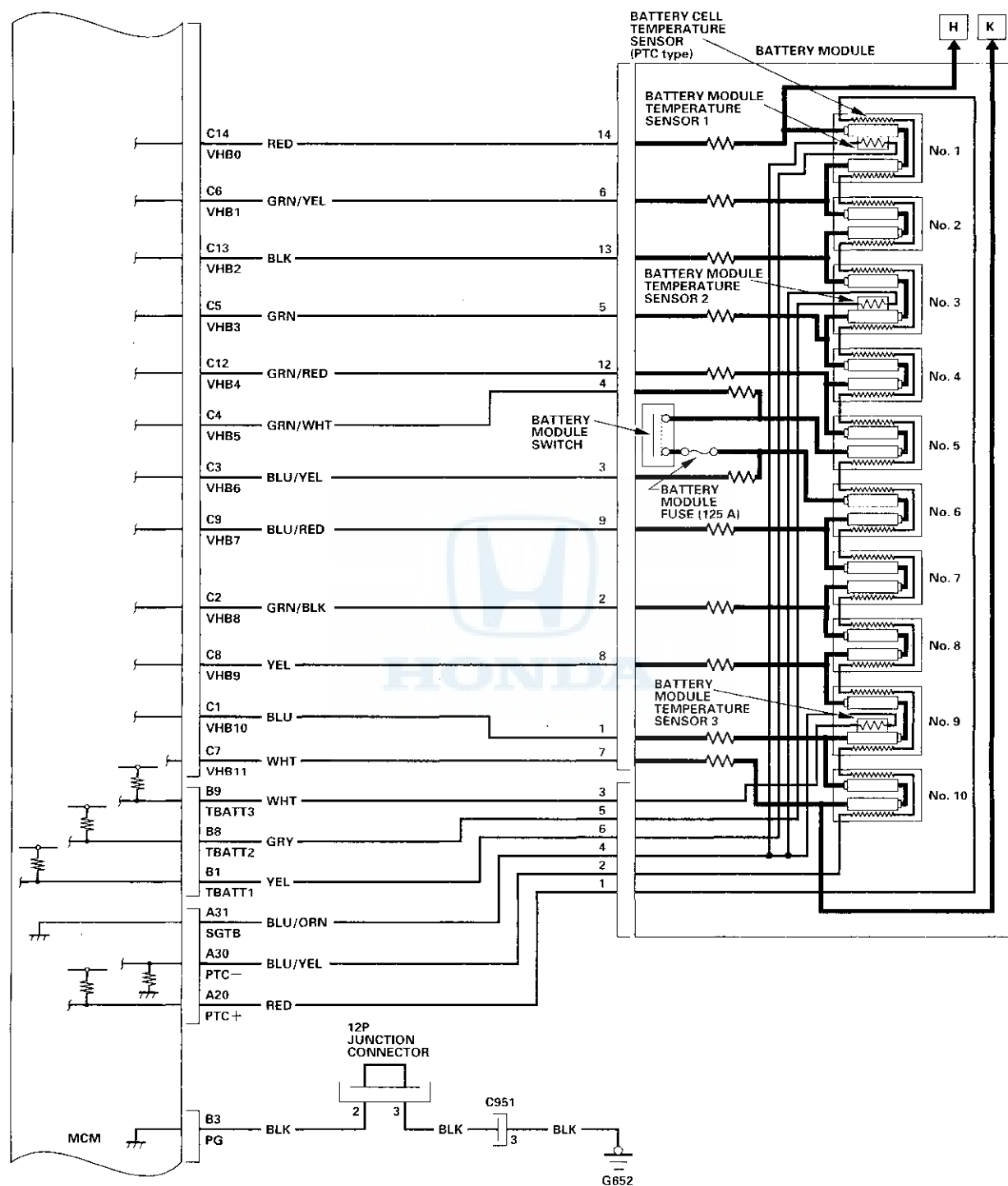
Circuit Diagram

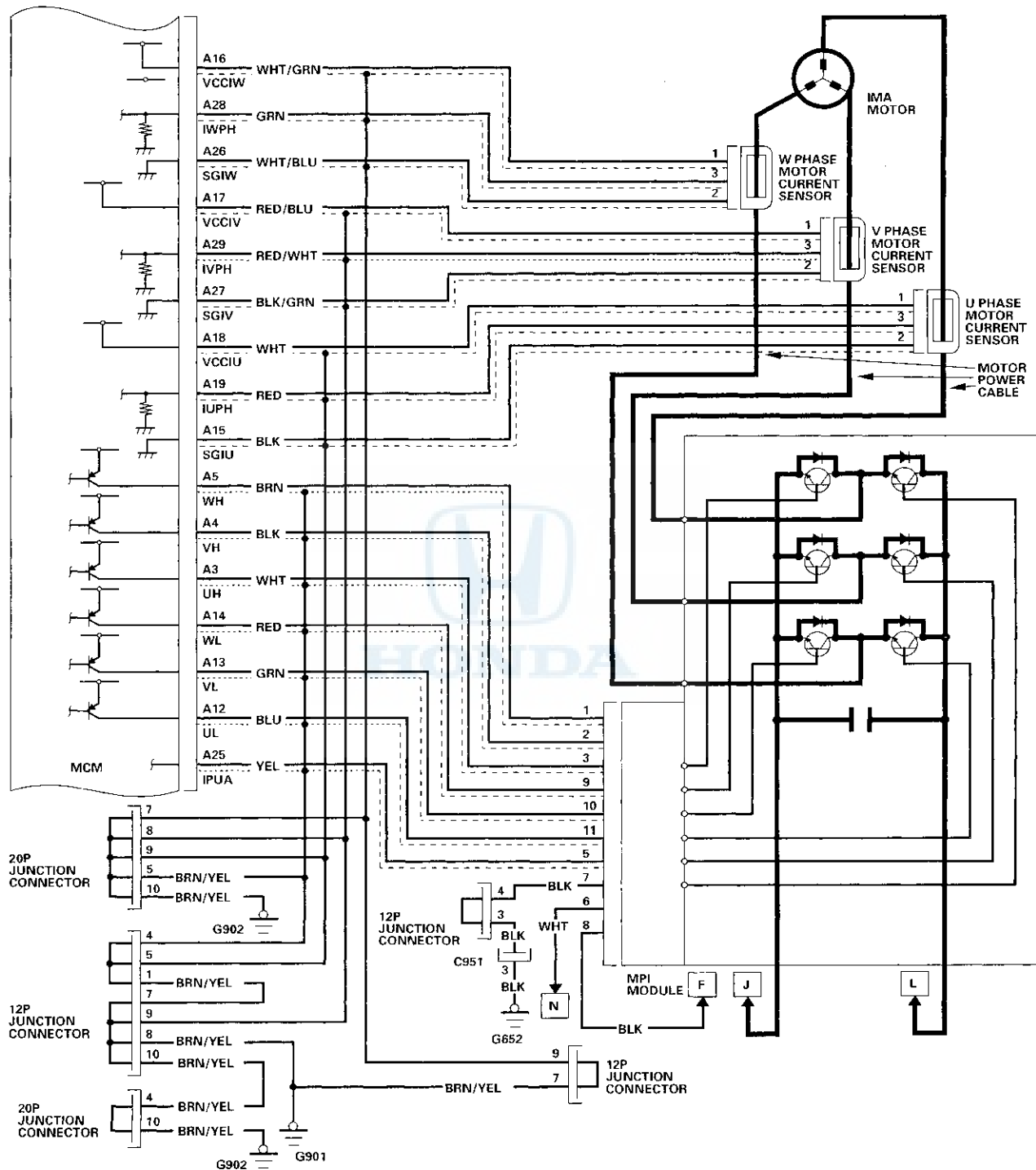




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Circuit Diagram (cont'd)

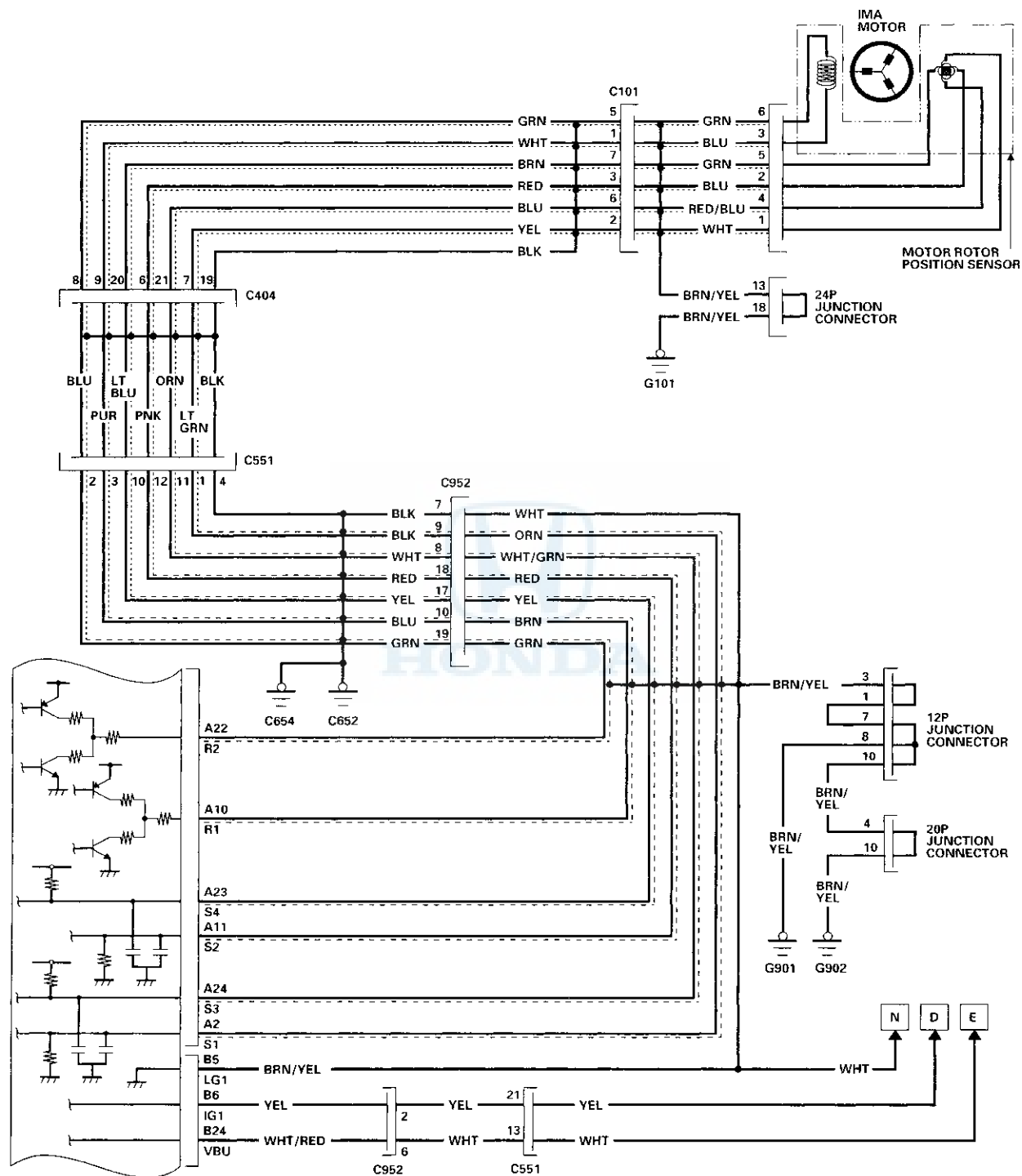


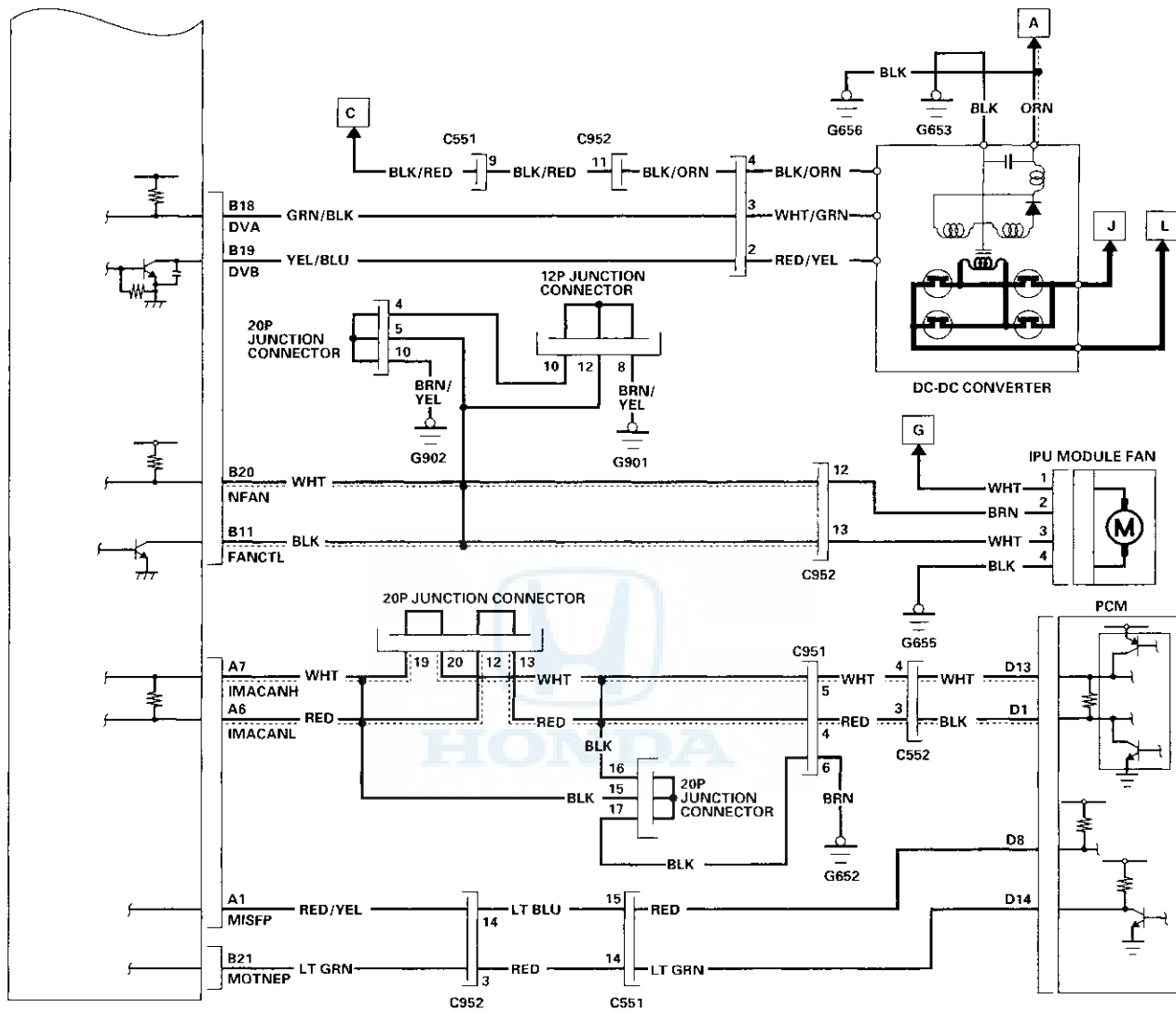


(cont'd)

IMA System

Circuit Diagram (cont'd)





MCM A (32P)

1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31					

MCM B (24P)

1	3	5	6	7
8	9	11	12	13
14	15	17	18	19
20	21	22	23	24

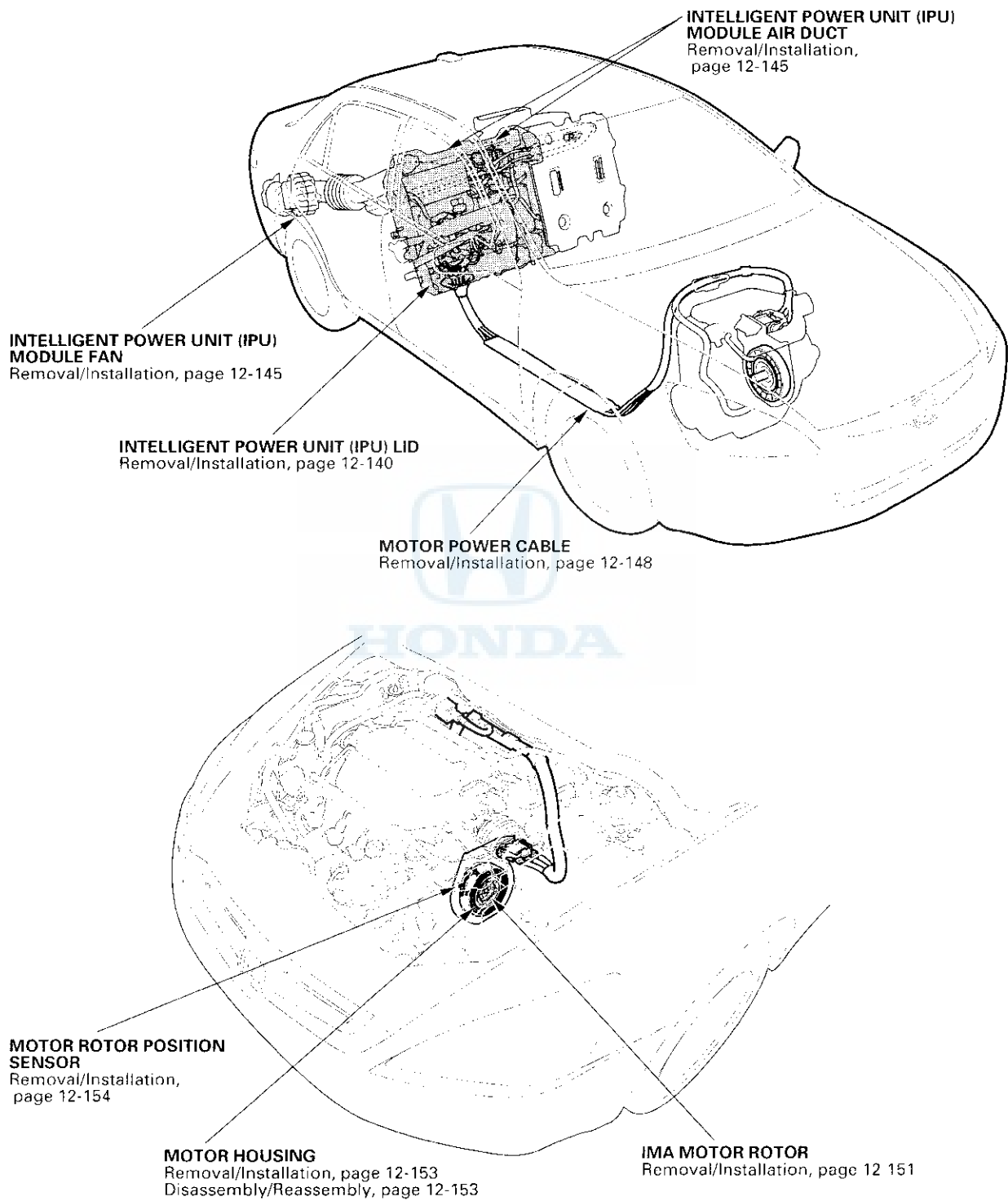
MCM C (14P)

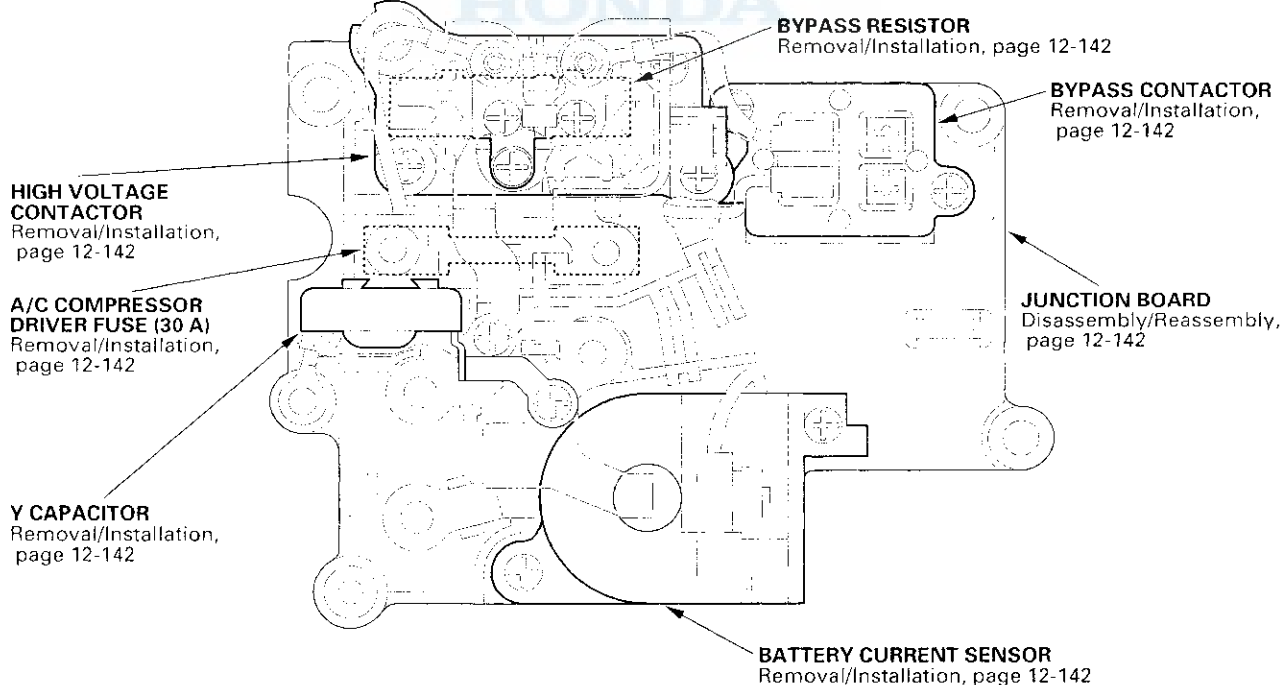
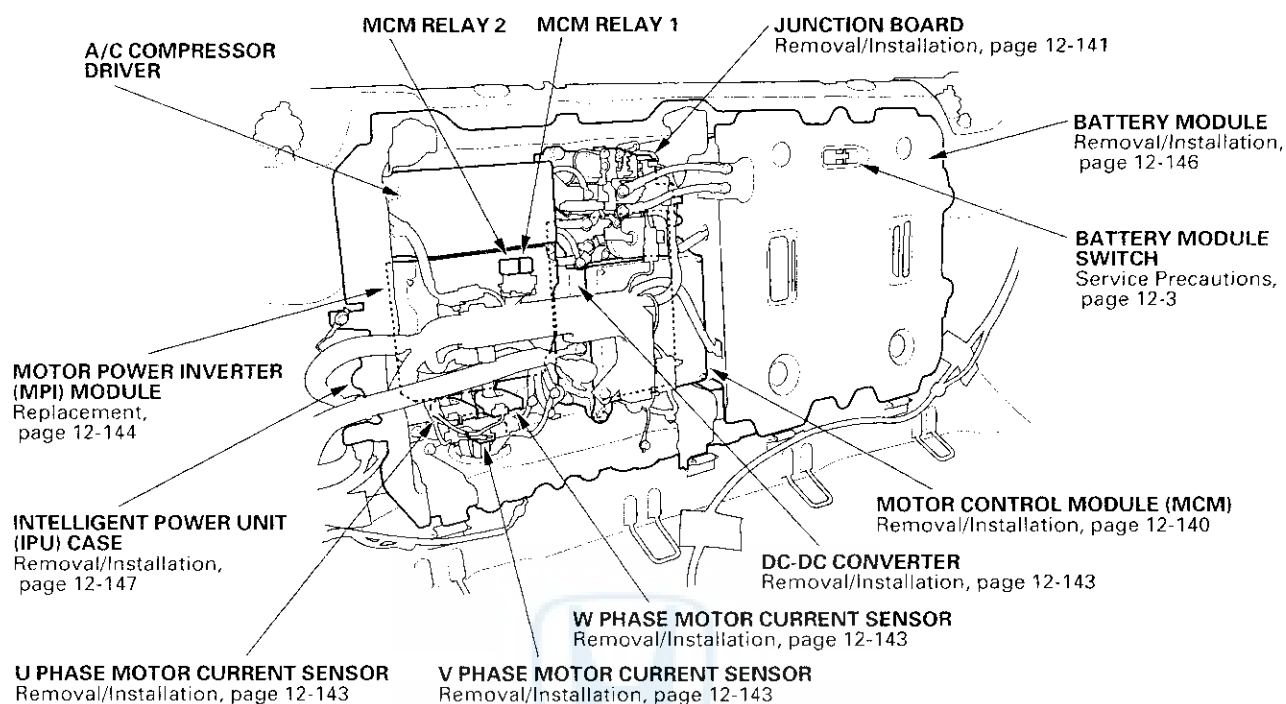
1	2	3	4	5	6
7	8	9	12	13	14

TERMINAL LOCATIONS

IMA System

Component Location Index

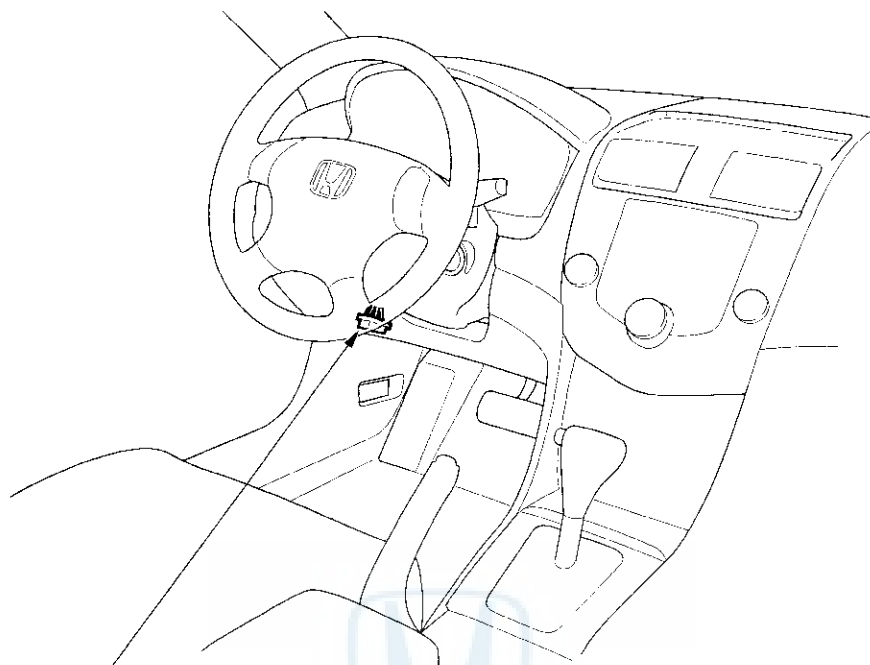




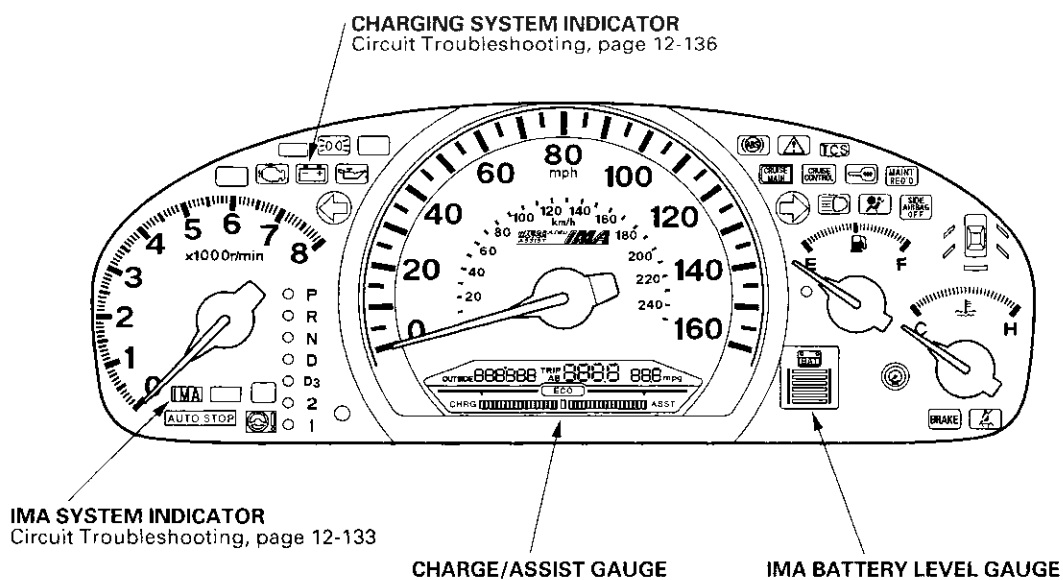
(cont'd)

IMA System

Component Location Index (cont'd)



DATA LINK CONNECTOR (DLC)
General Troubleshooting Information, page 12-5
Circuit Troubleshooting, page 12-137



DTC Troubleshooting

DTC P0562 (15): Motor Control Module (MCM) Power Source Circuit Unexpected Voltage

1. Inspect the No. 7 BACK UP (10 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the No. 7 BACK UP (10 A) fuse, then go to step 9.

2. Turn the ignition switch ON (II).
3. Check the MCM BACK UP VOLTAGE in the DATA LIST with the HDS.

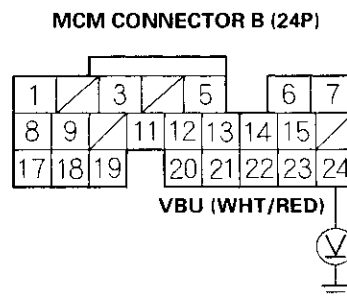
Is there less than 4.0 V?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the No. 7 BACK UP (10 A) fuse and the MCM. ■

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect MCM connector B (24P).

8. Measure voltage between body ground and MCM connector terminal B24.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 19.

NO—Repair open in the wire between the No. 7 BACK UP (10 A) fuse and the MCM (B24), then go to step 13.

9. Check the No. 7 BACK UP (10 A) fuse again.

Is the fuse OK?

YES—Go to step 19.

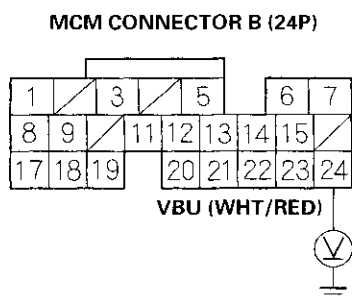
NO—Go to step 10.

10. Disconnect MCM connector B (24P).
11. Replace the No. 7 BACK UP (10 A) fuse.

(cont'd)

DTC Troubleshooting (cont'd)

12. Measure voltage between body ground and MCM connector terminal B24.



Wire side of female terminals

Is there battery voltage?

YES—Go to step 19.

NO—Repair short in the wire between the No. 7 BACK UP (10 A) fuse and the MCM (B24), then go to step 13.

13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
16. Turn the ignition switch ON (II).
17. Reset the MCM (see page 12-6).
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0562 is indicated, check for poor connections or loose terminals at the No. 7 BACK UP (10 A) fuse and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

19. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

20. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0562 is indicated, check for poor connections or loose terminals at the No. 7 BACK UP (10 A) fuse and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P0725 (43): Engine Speed Input Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs of PGM-FI system with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Start the engine, and hold it at 2,000 rpm for 5 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0725 indicated?

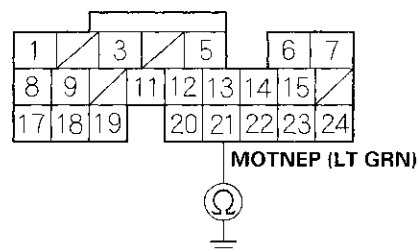
YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the PCM and the MCM. ■

6. Turn the ignition switch OFF.
7. Turn the battery module switch OFF (see page 12-4).
8. Remove the IPU lid (see page 12-140).
9. Disconnect MCM connector B (24P).
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (24P).

12. Check for continuity between MCM connector terminal B21 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

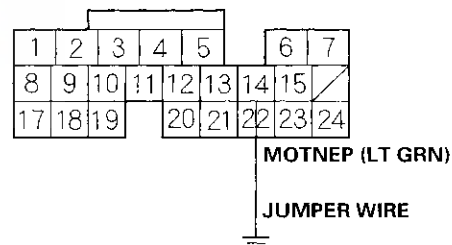
Is there continuity?

YES—Repair short in the wire between the PCM (B14) and the MCM (B21), then go to step 15.

NO—Go to step 13.

13. Connect PCM connector terminal B14 to body ground with a jumper wire.

PCM CONNECTOR B (24P)

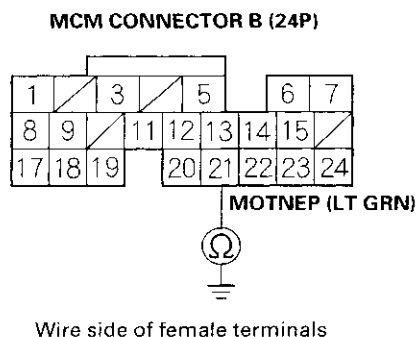


Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between MCM connector terminal B21 and body ground.



Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the PCM (B14) and the MCM (B21), then go to step 15.

15. Turn the ignition switch OFF.
16. Reconnect all connectors.
17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
18. Turn the ignition switch ON (II).
19. Reset the MCM (see page 12-6).
20. Start the engine, and hold it at 2,000 rpm for 5 seconds.
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0725 is indicated, check for poor connections or loose terminals at the PCM and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

22. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
23. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0725 is indicated, check for poor connections or loose terminals at the MCM, then update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P0A1B (60, 82, 84): Motor Control Module (MCM) Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1629 indicated?

YES—Do the troubleshooting for DTC P1629 (see page 12-120).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A1B indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. ■

5. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
6. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A1B is indicated, check for poor connections or loose terminals at the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P0A27 (46): High Voltage Contactor/ Bypass Contactor Stays Activated

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16C1 indicated?

YES—Do the troubleshooting for DTC P16C1 (see page 12-125).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Turn the ignition switch OFF, and wait 30 seconds.
5. Turn the ignition switch ON (II).
6. Check the SOC in the DATA LIST with the HDS.
7. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the SOC increases to 70 %.
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A27 indicated?

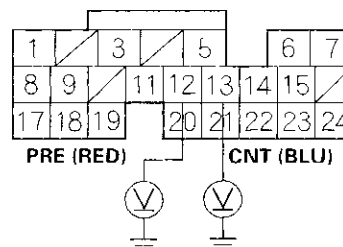
YES—Go to step 9.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the high voltage contactor, the bypass contactor, and the MCM. ■

9. Turn the ignition switch OFF.
10. Turn the battery module switch OFF (see page 12-4).
11. Remove the IPU lid (see page 12-140).

12. Measure voltage between body ground and MCM connector terminals B12 and B13 individually.

MCM CONNECTOR B (24P)



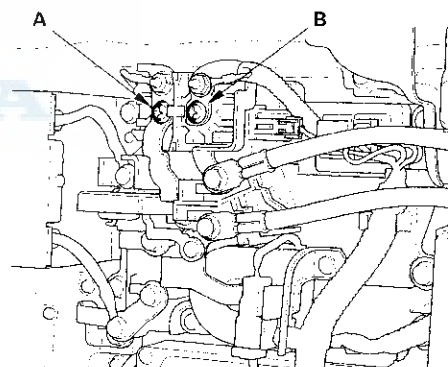
Wire side of female terminals

Is there battery voltage?

YES—Go to step 25.

NO—Go to step 13.

13. Measure resistance between high voltage contactor terminals No. 1 (A) and No. 2 (B).

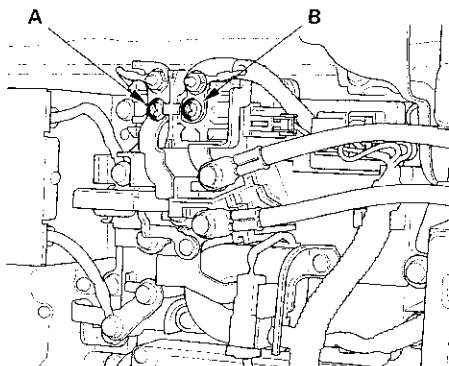


Is there about 0 Ω?

YES—Replace the high voltage contactor (see page 12-142), then go to step 15.

NO—Go to step 14.

14. Measure resistance between high voltage contactor terminals No. 1 (A) and No. 2 (B).



Is there 38–42 Ω ?

YES—Replace the bypass contactor (see page 12-142), then go to step 15.

NO—Replace the MPI module (see page 12-144), then go to step 15.

15. Turn the ignition switch OFF.
16. Reconnect all connectors.
17. Reinstall IPU lid (see page 12-140), and turn on the battery module switch (see page 12-4).
18. Turn the ignition switch ON (II).
19. Reset the MCM (see page 12-6).
20. Turn the ignition switch OFF, and wait 30 seconds.
21. Turn the ignition switch ON (II).
22. Check the SOC in the DATA LIST with the HDS.
23. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the SOC increases to 70 %.

24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A27 is indicated, check for poor connections or loose terminals at the high voltage contactor, the bypass contactor, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

25. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
26. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A27 is indicated, check for poor connections or loose terminals at the high voltage contactor, the bypass contactor, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P0A3C (39): Motor Power Inverter (MPI) Module Overheating

NOTE: If the IPU module fan duct is blocked, DTC P0A3C may be detected.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1448 indicated?

YES—Do the troubleshooting for DTC P1448 (see page 12-93).

NO—Go to step 3.

3. Check the MPI MDL TEMP. in the DATA LIST with the HDS.

Is more than 212 °F (100 °C) indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for block at the IPU module fan inlet duct. ■

4. Check the IPU module air duct or IPU module fan for disconnecting, damage or obstructions, and IPU lid for installation.

Is the IPU module air duct, IPU module fan, or IPU lid OK?

YES—Replace the MPI module (see page 12-144), then go to step 5.

NO—Repair the IPU module air duct, IPU module fan, or IPU lid as necessary, then go to step 5.

5. Turn the ignition switch ON (II).
6. Reset the MCM (see page 12-6).

7. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C3 is indicated, check for poor connections or loose terminals at the DC-DC converter and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

DTC P0A3F (89): Motor Rotor Position Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

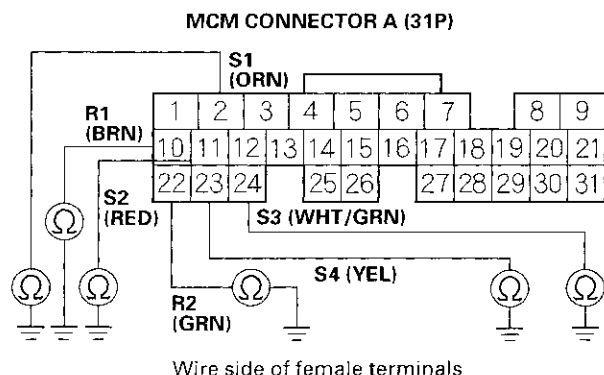
Is DTC P0A3F indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the motor rotor position sensor and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Disconnect MCM connector A (31P).
9. Disconnect the motor rotor position sensor 6P connector.
10. Check for continuity between the following MCM connector terminals individually:

- A2 and body ground
- A11 and body ground
- A24 and body ground
- A23 and body ground
- A10 and body ground
- A22 and body ground



Is there continuity?

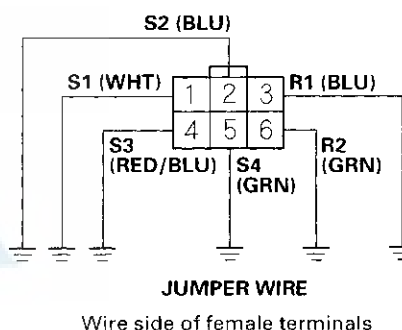
YES—Repair short in the wire between the motor rotor position sensor and the MCM (A2, A11, A24, A23, A10, A22), then go to step 17.

NO—Go to step 11.

11. Connect the following motor rotor position sensor 6P connector terminals with a jumper wire individually:

- No. 1 and body ground
- No. 2 and body ground
- No. 3 and body ground
- No. 4 and body ground
- No. 5 and body ground
- No. 6 and body ground

MOTOR ROTOR POSITION SENSOR 6P CONNECTOR

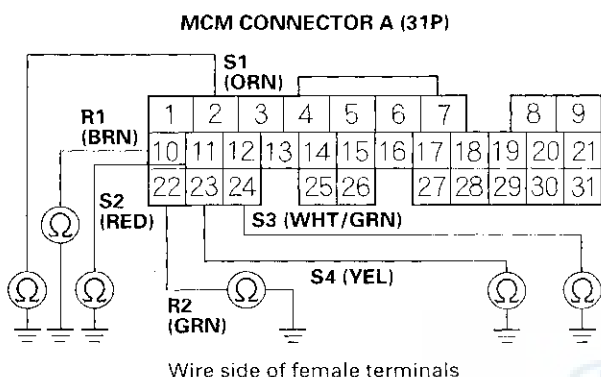


(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between the following MCM connector terminals individually:

- A2 and body ground
- A11 and body ground
- A24 and body ground
- A23 and body ground
- A10 and body ground
- A22 and body ground



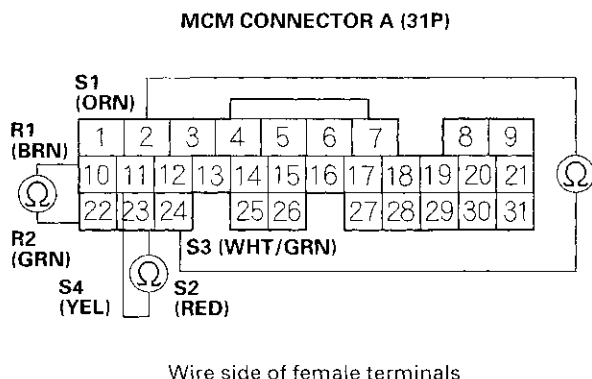
Are there continuities at all the terminals?

YES—Go to step 13.

NO—Repair open in the wire between the motor rotor position sensor and the MCM (A2, A11, A24, A23, A10, A22), then go to step 17.

13. Remove the jumper wire from motor rotor position sensor 6P connector. Check for continuity between the following MCM connector terminals individually.

- A2 and A24
- A11 and A23
- A10 and A22



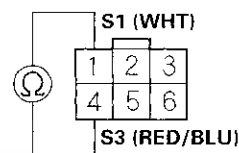
Is there continuity?

YES—Repair short in the wire(s) that had the continuity between motor rotor position sensor and the MCM (A2, A10, A11, A22, A23, A24), then go to step 17.

NO—Go to step 15.

14. Measure resistance between motor rotor position sensor 6P connector terminals No. 1 and No. 4.

MOTOR ROTOR POSITION SENSOR 6P CONNECTOR



Wire side of female terminals

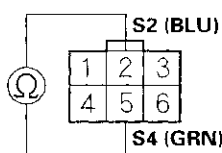
Is there about 14.6–17.8 Ω?

YES—Go to step 15.

NO—Replace the motor rotor position sensor (see page 12-154), then go to step 17.

15. Measure resistance between motor rotor position sensor 6P connector terminals No. 2 and No. 5.

MOTOR ROTOR POSITION SENSOR 6P CONNECTOR



Wire side of female terminals

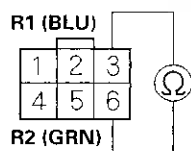
Is there about 8 - 10 Ω ?

YES—Go to step 16.

NO—Replace the motor rotor position sensor (see page 12-154), then go to step 17.

16. Measure resistance between motor rotor position sensor 6P connector terminals No. 3 and No. 6.

MOTOR ROTOR POSITION SENSOR 6P CONNECTOR



Wire side of female terminals

Is there about 9 Ω ?

YES—Go to step 24.

NO—Replace the motor rotor position sensor (see page 12-154), then go to step 17.

17. Turn the ignition switch OFF.

18. Reconnect all connectors.

19. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

20. Turn the ignition switch ON (II).

21. Reset the MCM (see page 12-6).

22. Start the engine.

23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A3F is indicated, check for poor connections or loose terminals at the motor rotor position sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

24. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

25. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A3F is indicated, check for poor connections or loose terminals at the motor rotor position sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P0A5E (24): U Phase Motor Current Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the U PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

Is about 0.15 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the U phase motor current sensor and the MCM. ■

3. Check for Temporary DTCs or DTCs with the HDS.

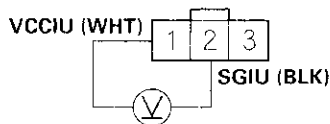
Are DTC P0A5E, P0A61, and P0A64 indicated at the same time?

YES—Go to step 21.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect the U phase motor current sensor 3P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between U phase motor current sensor 3P connector terminals No. 1 and No. 2.

U PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

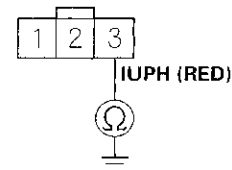
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 18.

10. Turn the ignition switch OFF.
11. Disconnect MCM connector A (31P).
12. Check for continuity between U phase motor current sensor 3P connector terminal No. 3 and body ground.

U PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

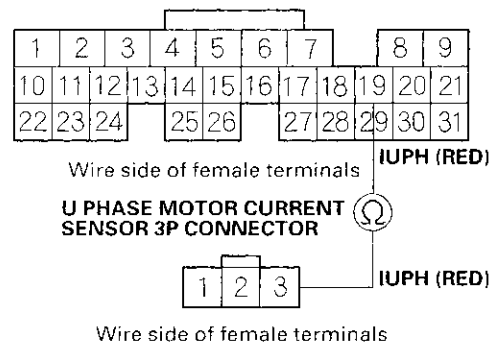
Is there continuity?

YES—Repair short in the wire between the U phase motor current sensor and the MCM (A19), then go to step 41.

NO—Go to step 13.

13. Check for continuity between U phase motor current sensor 3P connector terminal No. 3 and MCM connector terminal A19.

MCM CONNECTOR A (31P)



Wire side of female terminals

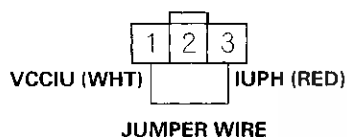
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the U phase motor current sensor and the MCM (A19), then go to step 41.

14. Reconnect MCM connector A (31P).
15. Connect U phase motor current sensor 3P connector terminals No. 1 and No. 3 with a jumper wire.

U PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

16. Turn the ignition switch ON (II).
17. Check the U PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

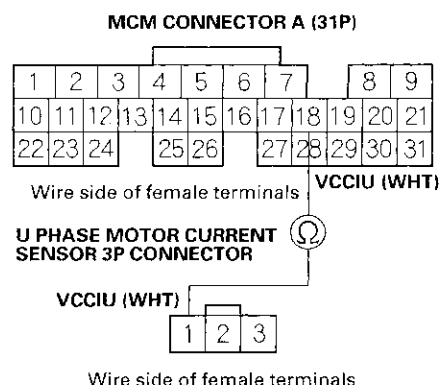
Is about 0.15 V or less indicated?

YES—Go to step 48.

NO—Replace the U phase motor current sensor (see page 12-143), then go to step 41.

18. Turn the ignition switch OFF.
19. Disconnect MCM connector A (31P).

20. Check for continuity between U phase motor current sensor 3P connector terminal No. 1 and MCM connector terminal A18.



Is there continuity?

YES—Go to step 48.

NO—Repair open in the wire between the U phase motor current sensor and the MCM (A18), then go to step 41.

21. Turn the ignition switch OFF.
22. Turn the battery module switch OFF (see page 12-4).
23. Remove the IPU lid (see page 12-140).
24. Disconnect the U phase motor current sensor 3P connector.
25. Turn the ignition switch ON (II).
26. Reset the MCM (see page 12-6).
27. Check for Temporary DTCs or DTCs with the HDS.

Are DTCs P0A5E, P0A61, and P0A64 indicated at the same time?

YES—Go to step 28.

NO—Replace the U phase motor current sensor (see page 12-143), then go to step 41.

28. Turn the ignition switch OFF.
29. Disconnect the V phase motor current sensor 3P connector.

(cont'd)

IMA System

DTC Troubleshooting (cont'd)

30. Turn the ignition switch ON (II).

31. Reset the MCM (see page 12-6).

32. Check for Temporary DTCs or DTCs with the HDS.

Are DTCs P0A5E, P0A61, and P0A64 indicated at the same time?

YES—Go to step 33.

NO—Replace the V phase motor current sensor (see page 12-143), then go to step 41.

33. Turn the ignition switch OFF.

34. Disconnect the W phase motor current sensor 3P connector.

35. Turn the ignition switch ON (II).

36. Reset the MCM (see page 12-6).

37. Check for Temporary DTCs or DTCs with the HDS.

Are DTCs P0A5E, P0A61, and P0A64 indicated at the same time?

YES—Go to step 38.

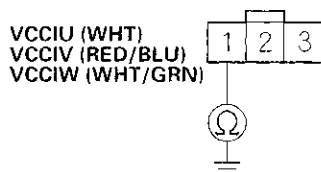
NO—Replace the W phase motor current sensor (see page 12-143), then go to step 41.

38. Turn the ignition switch OFF.

39. Disconnect MCM connector A (31P).

40. Check for continuity between U/V/W phase motor current sensor 3P connectors terminal No. 1 and body ground individually.

U/V/W PHASE MOTOR CURRENT SENSOR 3P CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the U/V/W phase motor current sensor and the MCM (A16, A17, or A18), then go to step 41.

NO—Go to step 46.

41. Turn the ignition switch OFF.

42. Reconnect all connectors.

43. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

44. Turn the ignition switch ON (II).

45. Reset the MCM (see page 12-6).

46. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A5E is indicated, check for poor connections or loose terminals at the U phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

47. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

48. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

49. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A5E is indicated, check for poor connections or loose terminals at the U phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P0A5F (25): U Phase Motor Current Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the U PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

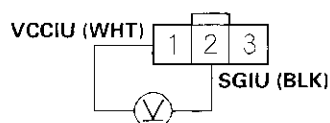
Is about 4.84 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the U phase motor current sensor and the MCM. ■

3. Turn the ignition switch OFF.
4. Turn the battery module switch OFF (see page 12-4).
5. Remove the IPU lid (see page 12-140).
6. Disconnect the U phase motor current sensor 3P connector.
7. Turn the ignition switch ON (II). Measure voltage between U phase motor current sensor 3P connector terminals No. 1 and No. 2.

U PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

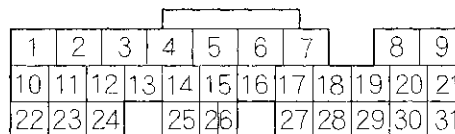
Is there about 5 V?

YES—Replace the U phase motor current sensor (see page 12-143), then go to step 11.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect MCM connector A (31P).
10. Check for continuity between U phase motor current sensor 3P connector terminal No. 2 and MCM connector terminal A15.

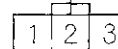
MCM CONNECTOR A (31P)



SGIU (BLK)

U PHASE MOTOR CURRENT SENSOR 3P CONNECTOR  Wire side of female terminals

SGIU (BLK)



Wire side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the U phase motor current sensor and the MCM (A15), then go to step 11.

11. Turn the ignition switch OFF.
12. Reconnect all connectors.
13. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
14. Turn the ignition switch ON (II).
15. Reset the MCM (see page 12-6).
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A5F is indicated, check for poor connections or loose terminals at the U phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

(cont'd)

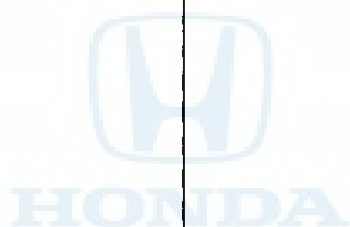
DTC Troubleshooting (cont'd)

17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
18. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A5F is indicated, check for poor connections or loose terminals at the U phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P0A61 (26): V Phase Motor Current Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the V PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

Is about 0.15 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the V phase motor current sensor and the MCM. ■

3. Check for Temporary DTCs or DTCs with the HDS.

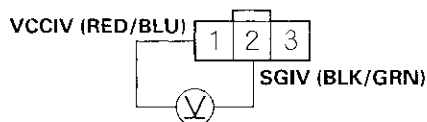
Are DTC P0A5E, P0A61, and P0A64 indicated at the same time?

YES—Go to step 21.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect the V phase motor current sensor 3P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between V phase motor current sensor 3P connector terminals No. 1 and No. 2.

V PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

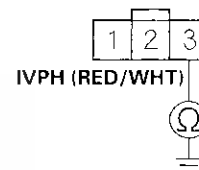
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 18.

10. Turn the ignition switch OFF.
11. Disconnect MCM connector A (31P).
12. Check for continuity between V phase motor current sensor 3P connector terminal No. 3 and body ground.

V PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

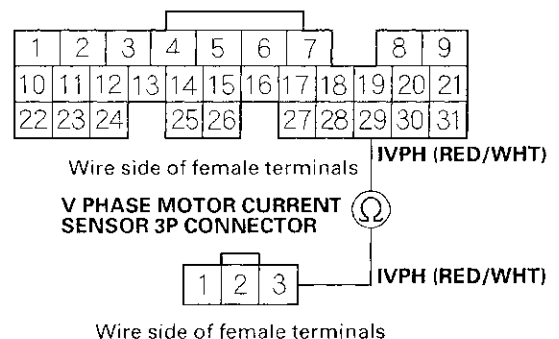
Is there continuity?

YES—Repair short in the wire between the V phase motor current sensor and the MCM (A29), then go to step 41.

NO—Go to step 13.

13. Check for continuity between V phase motor current sensor 3P connector terminal No. 3 and MCM connector terminal A29.

MCM CONNECTOR A (31P)



Wire side of female terminals

(cont'd)

IMA System

DTC Troubleshooting (cont'd)

Is there continuity?

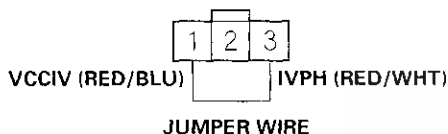
YES—Go to step 14.

NO—Repair open in the wire between the V phase motor current sensor and the MCM (A29), then go to step 41.

14. Reconnect MCM connector A (31P).

15. Connect the V phase motor current sensor 3P connector terminals No. 1 and No. 3 with a jumper wire.

**V PHASE MOTOR CURRENT SENSOR
3P CONNECTOR**



Wire side of female terminals

16. Turn the ignition switch ON (II).

17. Check the V PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

Is about 0.15 V or less indicated?

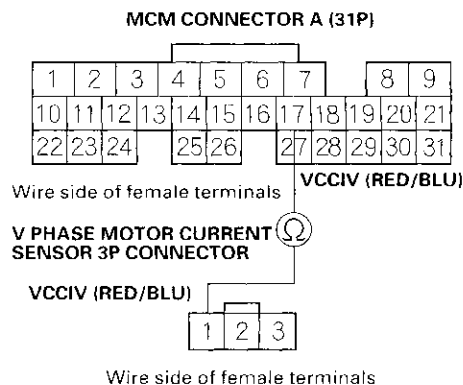
YES—Go to step 47.

NO—Replace the V phase motor current sensor (see page 12-143), then go to step 41.

18. Turn the ignition switch OFF.

19. Disconnect MCM connector A (31P).

20. Check for continuity between V phase motor current sensor 3P connector terminal No. 1 and MCM connector terminal A17.



Is there continuity?

YES—Go to step 47.

NO—Repair open in the wire between the V phase motor current sensor and the MCM (A17), then go to step 41.

21. Turn the ignition switch OFF.

22. Turn the battery module switch OFF (see page 12-4).

23. Remove the IPU lid (see page 12-140).

24. Disconnect the U phase motor current sensor 3P connector.

25. Turn the ignition switch ON (II).

26. Reset the MCM (see page 12-6).

27. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P0A5E, P0A61 and P0A64 indicated at the same time?

YES—Go to step 28.

NO—Replace the U phase motor current sensor (see page 12-143), then go to step 41.

28. Turn the ignition switch OFF.

29. Disconnect the V phase motor current sensor 3P connector.

30. Turn the ignition switch ON (II).
31. Reset the MCM (see page 12-6).
32. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P0A5E, P0A61 and P0A64 indicated at the same time?

YES—Go to step 33.

NO—Replace the V phase motor current sensor (see page 12-143), then go to step 41.

33. Turn the ignition switch OFF.
34. Disconnect the W phase motor current sensor 3P connector.
35. Turn the ignition switch ON (II).
36. Reset the MCM (see page 12-6).
37. Check for Temporary DTCs or DTCs with the HDS.

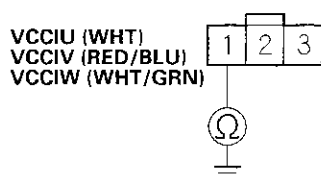
Are DTC P0A5E, P0A61 and P0A64 indicated at the same time?

YES—Go to step 38.

NO—Replace the W phase motor current sensor (see page 12-143), then go to step 41.

38. Turn the ignition switch OFF.
39. Disconnect MCM connector A (31P).
40. Check for continuity between U/V/W phase motor current sensor 3P connectors terminal No. 1 and body ground individually.

U/V/W PHASE MOTOR CURRENT SENSOR 3P CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the U/V/W phase motor current sensor and the MCM (A16, A17, or A18), then go to step 41.

NO—Go to step 46.

41. Turn the ignition switch OFF.
42. Reconnect all connectors.
43. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
44. Turn the ignition switch ON (II).
45. Reset the MCM (see page 12-6).
46. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A61 is indicated, check for poor connections or loose terminals at the V phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

47. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
48. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
49. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A61 is indicated, check for poor connections or loose terminals at the V phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P0A62 (27): V Phase Motor Current Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the V PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

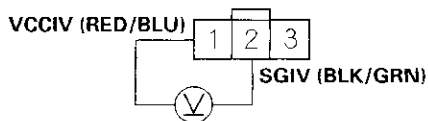
Is about 4.84 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the V phase motor current sensor and the MCM. ■

3. Turn the ignition switch OFF.
4. Turn the battery module switch OFF (see page 12-4).
5. Remove the IPU lid (see page 12-140).
6. Disconnect the V phase motor current sensor 3P connector.
7. Turn the ignition switch ON (II). Measure voltage between V phase motor current sensor 3P connector terminals No. 1 and No. 2.

V PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

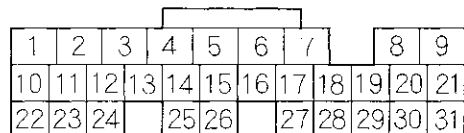
Is there about 5 V?

YES—Replace the V phase motor current sensor (see page 12-143), then go to step 11.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect MCM connector A (31P).
10. Check for continuity between V phase motor current sensor 3P connector terminal No. 2 and MCM connector terminal A27.

MCM CONNECTOR A (31P)

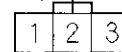


Wire side of female terminals

SGIV (BLK/GRN)

V PHASE MOTOR CURRENT SENSOR 3P CONNECTOR

SGIV (BLK/GRN)



Wire side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the V phase motor current sensor and the MCM (A27), then go to step 11.

11. Turn the ignition switch OFF.
12. Reconnect all connectors.
13. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
14. Turn the ignition switch ON (II).
15. Reset the MCM (see page 12-6).
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A62 is indicated, check for poor connections or loose terminals at the V phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

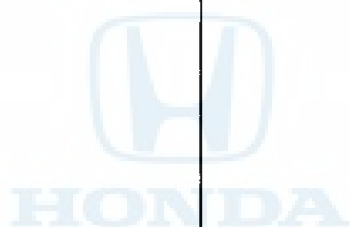


17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
18. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A62 is indicated, check for poor connections or loose terminals at the V phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



IMA System

DTC Troubleshooting (cont'd)

DTC P0A64 (28): W Phase Motor Current Sensor Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the W PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

Is about 0.15 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the W phase motor current sensor and the MCM. ■

3. Check for Temporary DTCs or DTCs with the HDS.

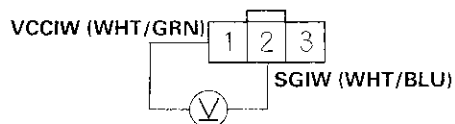
Are DTC P0A5E, P0A61, and P0A64 indicated at the same time?

YES—Go to step 21.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect the W phase motor current sensor 3P connector.
8. Turn the ignition switch ON (II).
9. Measure voltage between W phase motor current sensor 3P connector terminals No. 1 and No. 2.

W PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

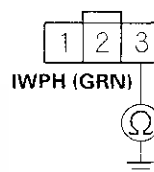
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 18.

10. Turn the ignition switch OFF.
11. Disconnect MCM connector A (31P).
12. Check for continuity between W phase motor current sensor 3P connector terminal No. 3 and body ground.

W PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

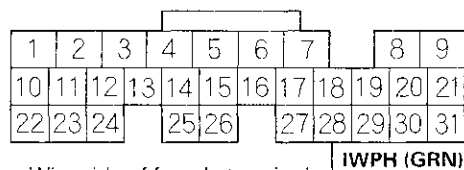
Is there continuity?

YES—Repair short in the wire between the W phase motor current sensor and the MCM (A28), then go to step 41.

NO—Go to step 13.

13. Check for continuity between W phase motor current sensor 3P connector terminal No. 3 and MCM connector terminal A28.

MCM CONNECTOR A (31P)



Wire side of female terminals

W PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

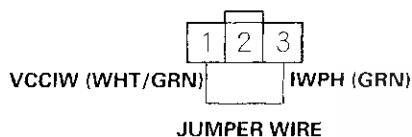
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the W phase motor current sensor and the MCM (A28), then go to step 41.

14. Reconnect MCM connector A (31P).
15. Connect W phase motor current sensor 3P connector terminals No. 1 and No. 3 with a jumper wire.

**W PHASE MOTOR CURRENT SENSOR
3P CONNECTOR**



Wire side of female terminals

16. Turn the ignition switch ON (II).
17. Check the W PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

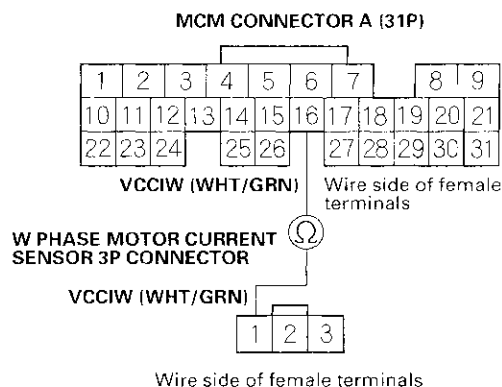
Is about 0.15 V or less indicated?

YES—Go to step 47.

NO—Replace the W phase motor current sensor (see page 12-143), then go to step 41.

18. Turn the ignition switch OFF.
19. Disconnect MCM connector A (31P).

20. Check for continuity between W phase motor current sensor 3P connector terminal No. 1 and MCM connector terminal A16.



Is there continuity?

YES—Go to step 47.

NO—Repair open in the wire between the W phase motor current sensor and the MCM (A16), then go to step 41.

21. Turn the ignition switch OFF.
22. Turn the battery module switch OFF (see page 12-4).
23. Remove the IPU lid (see page 12-140).
24. Disconnect the U phase motor current sensor 3P connector.
25. Turn the ignition switch ON (II).
26. Reset the MCM (see page 12-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P05AE, P0A61 and P0A64 indicated at the same time?

YES—Go to step 28.

NO—Replace the U phase motor current sensor (see page 12-143), then go to step 41.

28. Turn the ignition switch OFF.
29. Disconnect the V phase motor current sensor 3P connector.

(cont'd)

IMA System

DTC Troubleshooting (cont'd)

30. Turn the ignition switch ON (II).
31. Reset the MCM (see page 12-6).
32. Check for Temporary DTCs or DTCs with the HDS.

Are DTC P05AE, P0A61 and P0A64 indicated at the same time?

YES—Go to step 33.

NO—Replace the V phase motor current sensor (see page 12-143), then go to step 41.

33. Turn the ignition switch OFF.
34. Disconnect the W phase motor current sensor 3P connector.
35. Turn the ignition switch ON (II).
36. Reset the MCM (see page 12-6).
37. Check for Temporary DTCs or DTCs with the HDS.

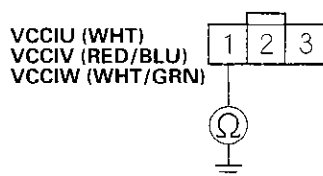
Are DTC P05AE, P0A61 and P0A64 indicated at the same time?

YES—Go to step 38.

NO—Replace the W phase motor current sensor (see page 12-143), then go to step 41.

38. Turn the ignition switch OFF.
39. Disconnect MCM connector A (31P).
40. Check for continuity between U/V/W phase motor current sensor 3P connectors terminal No. 1 and body ground individually.

U/V/W PHASE MOTOR CURRENT SENSOR 3P CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the U/V/W phase motor current sensor and the MCM (A16, A17, or A18), then go to step 41.

NO—Go to step 47.

41. Turn the ignition switch OFF.
42. Reconnect all connectors.
43. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
44. Turn the ignition switch ON (II).
45. Reset the MCM (see page 12-6).
46. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A64 is indicated, check for poor connections or loose terminals at the W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

47. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
48. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
49. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A64 is indicated, check for poor connections or loose terminals at the W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P0A65 (29): W Phase Motor Current Sensor Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the W PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS.

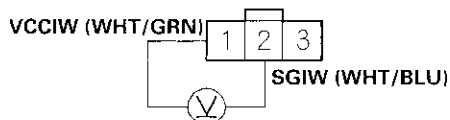
Is about 4.84 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the W phase motor current sensor and the MCM. ■

3. Turn the ignition switch OFF.
4. Turn the battery module switch OFF (see page 12-4).
5. Remove the IPU lid (see page 12-140).
6. Disconnect the W phase motor current sensor 3P connector.
7. Turn the ignition switch ON (II). Measure voltage between W phase motor current sensor 3P connector terminals No. 1 and No. 2.

W PHASE MOTOR CURRENT SENSOR 3P CONNECTOR



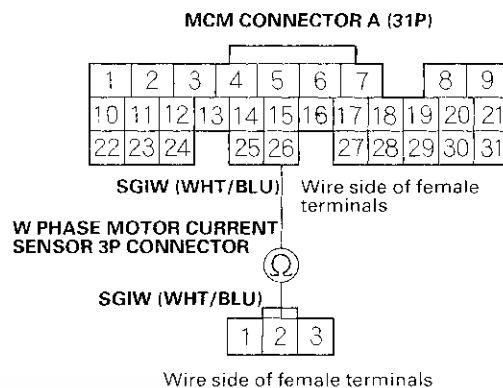
Wire side of female terminals

Is there about 5 V?

YES—Replace the W phase motor current sensor (see page 12-143), then go to step 11.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Disconnect MCM connector A (31P).
10. Check for continuity between W phase motor current sensor 3P connector terminal No. 2 and MCM connector terminal A26.



Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the W phase motor current sensor and the MCM (A26), then go to step 11.

11. Turn the ignition switch OFF.
12. Reconnect all connectors.
13. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
14. Turn the ignition switch ON (II).
15. Reset the MCM (see page 12-6).
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A65 is indicated, check for poor connections or loose terminals at the W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

(cont'd)

IMA System

DTC Troubleshooting (cont'd)

17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
18. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

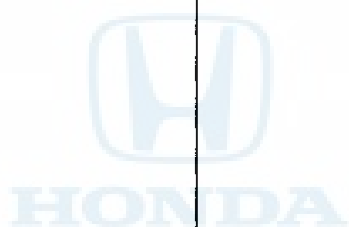
YES—If DTC P0A65 is indicated, check for poor connections or loose terminals at the W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P0A7E (72): Battery Module Overheating

DTC P1432 (73): Battery Cell Overheating

Replace the battery module (see page 12-146). ■





DTC P0A7F (78): Battery Module Deterioration

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1586 indicated?

YES—Do the troubleshooting for DTC P1586 (see page 12-108).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check the SOC in the DATA LIST with the HDS.
5. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the SOC increases to 70 %.
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1586 indicated?

YES—Do the troubleshooting for DTC P1586 (see page 12-108).

NO—Replace the battery module (see page 12-146), then go to step 7.

7. Turn the ignition switch ON (II).
8. Reset the MCM (see page 12-6).
9. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A7F is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

IMA System

DTC Troubleshooting (cont'd)

DTC P0A94 (48): DC-DC Converter Output Low Voltage

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1221 or P0562 indicated?

YES—Do the troubleshooting for DTC U1221 (see page 12-131), or DTC P0562 (see page 12-33).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check under these conditions:

- Headlights on high beam
- Blower fan at maximum speed
- Rear window defogger on

5. Start the engine, and let it idle 2 minutes.
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A94 indicated?

YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the DC-DC converter, +B terminal (on the under-hood fuse/relay box), and the MCM. ■

7. Start the engine.
8. Measure voltage between 12 V battery terminals +terminal and -terminal.
9. Compare the 12 V battery voltage and the MCM BACK UP VOLTAGE in the DATA LIST with the HDS.

Is there more than 2.0 V difference between 12 V battery voltage and MCM BACK UP VOLTAGE?

YES—Go to step 22.

NO—Go to step 10.

10. Turn the ignition switch OFF.

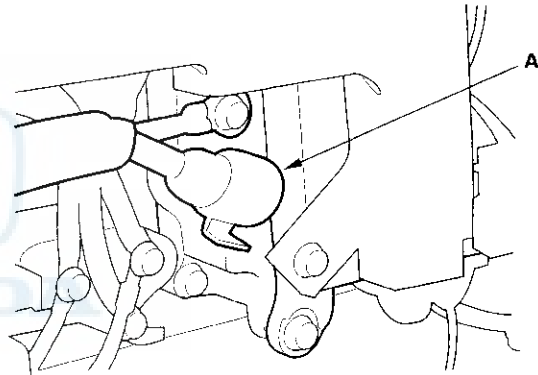
11. Check the under-hood fuse/relay box +B terminal (ORN wire) connection.

Is the connection OK?

YES—Go to step 12.

NO—Repair connection in the wire +B terminal, then go to step 15.

12. Turn the battery module switch OFF (see page 12-4).
13. Remove the IPU lid (see page 12-140).
14. Check the +B connector (A) on the DC-DC converter.



Is the connection OK?

YES—Replace the DC-DC converter (see page 12-143), then go to step 15.

NO—Repair the +B connector on the DC-DC converter as necessary, then go to step 15.

15. Reconnect all connectors.
16. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
17. Turn the ignition switch ON (II).
18. Reset the MCM (see page 12-6).



19. Check under these conditions:

- Headlights on high beam
- Blower fan at maximum speed
- Rear window defogger on

20. Start the engine, and let it idle 2 minutes.

21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A94 is indicated, check for poor connections or loose terminals at the DC-DC converter, under-hood fuse/relay box, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

22. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

23. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A94 is indicated, check for poor connections or loose terminals at the DC-DC converter, under-hood fuse/relay box, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

IMA System

DTC Troubleshooting (cont'd)

DTC P0A9D (49): Battery Module Temperature Sensor 1 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check for BATT. MDLS TEMP S1 in the DATA LIST with the HDS.

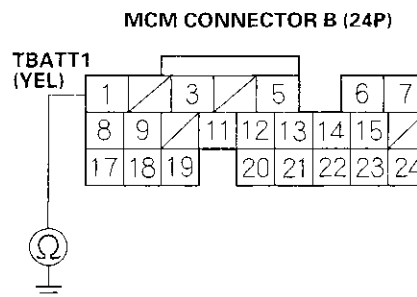
Is about 0.05 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

3. Turn the ignition switch OFF.
 4. Turn the battery module switch OFF (see page 12-4).
 5. Remove the IPU lid (see page 12-140).
 6. Disconnect the battery module 6P connector.
 7. Turn the ignition switch ON (II).
 8. Check the BATT. MDLS TEMP S1 in the DATA LIST with the HDS.
- Is about 0.05 V or less indicated?*
- YES**—Go to step 9.
- NO**—Replace the battery module (see page 12-146), then go to step 12.
9. Turn the ignition switch OFF.
 10. Disconnect MCM connector B (24P).

11. Check for continuity between MCM connector terminal B1 and body ground.



Is there continuity?

YES—Repair short in the wire between the battery module and the MCM (B1), then go to step 12.

NO—Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
15. Turn the ignition switch ON (II).
16. Reset the MCM (see page 12-6).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A9D is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

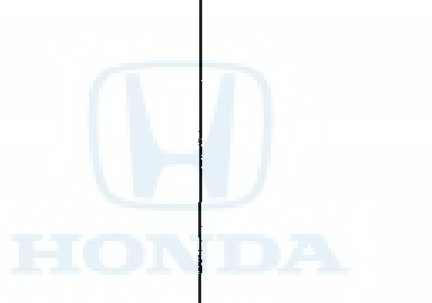


18. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
19. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A9D is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC Troubleshooting (cont'd)

DTC P0A9E (50): Battery Module Temperature Sensor 1 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the BATT. MDLS TEMP S1 in the DATA LIST with the HDS.

Is about 4.95 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

3. Check for Temporary DTCs or DTCs with the HDS.

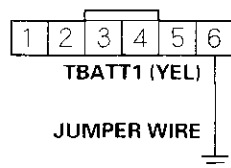
Are DTC P0A9E, P0AC8, and P0ACD indicated at the same time?

YES—Go to step 14.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect battery module 6P connector.
8. Connect battery module 6P connector terminal No. 6 to body ground with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch ON (II).

10. Check the BATT. MDLS TEMP S1 in the DATA LIST with the HDS.

Is about 4.95 V or more indicated?

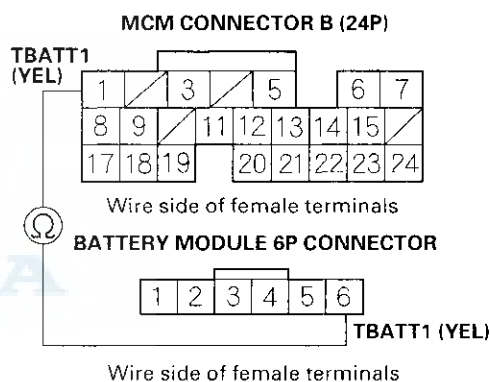
YES—Go to step 11.

NO—Replace the battery module (see page 12-146), then go to step 24.

11. Turn the ignition switch OFF.

12. Disconnect MCM connector B (24P).

13. Check for continuity between MCM connector terminal B1 and battery module 6P connector terminal No. 6.



Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the battery module and the MCM (B1), then go to step 24.

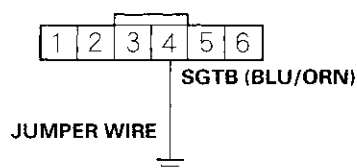
14. Turn the ignition switch OFF.

15. Turn the battery module switch OFF (see page 12-4).

16. Remove the IPU lid (see page 12-140).

17. Connect battery module 6P connector terminal No. 4 to body ground with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

18. Turn the ignition switch ON (II).
19. Check the BATT. MDLS TEMP S1, BATT. MDLS TEMP S2, and BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

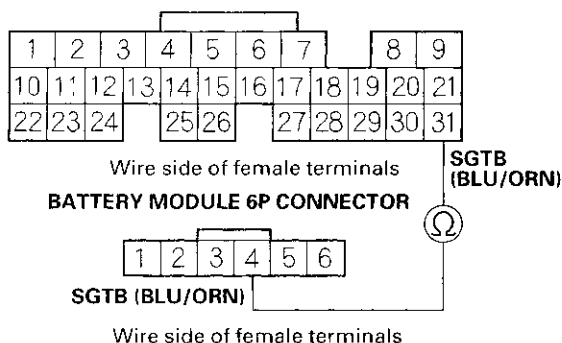
Are about 4.95 V or more indicated?

YES—Replace the battery module (see page 12-146), then go to step 24.

NO—Go to step 20.

20. Turn the ignition switch OFF.
21. Disconnect the battery module 6P connector.
22. Disconnect MCM connector A (31P).
23. Check for continuity between MCM connector terminal A31 and battery module 6P connector terminal No. 4.

MCM CONNECTOR A (31P)



Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the battery module and the MCM (A31), then go to step 24.

24. Turn the ignition switch OFF.
25. Reconnect all connectors.
26. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
27. Turn the ignition switch ON (II).
28. Reset the MCM (see page 12-6).
29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A9E is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

30. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
31. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0A9E is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

IMA System

DTC Troubleshooting (cont'd)

DTC P0AA6 (59): High Voltage Short Circuit

NOTE: If the wrong A/C compressor oil was used in the A/C system, P0AA6 may be set.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1629 indicated?

YES—Do the troubleshooting for DTC P1629 (see page 12-120).

NO—Go to step 3.

3. Turn the A/C switch off.
4. Check the H.V. INSLT in the DATA LIST with the HDS.

Is about 239 k Ω or less indicated?

YES—Go to step 5.

NO—Go to step 22.

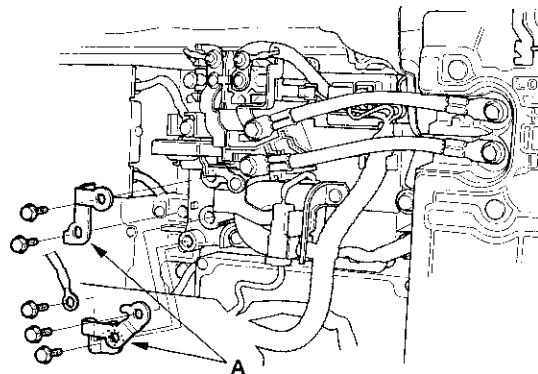
5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Check the high voltage cable (orange cable) connection and busbar connection on the junction board.

Is the connection OK?

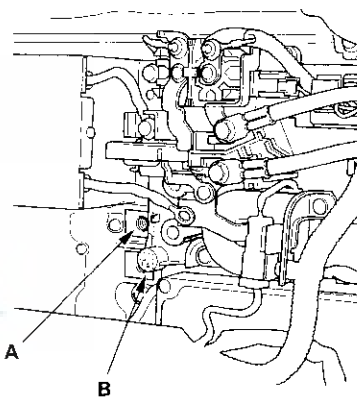
YES—Go to step 9.

NO—Repair connection in the cable, and go to step 41.

9. Remove the busbars (A) from the MPI module.



10. Measure resistance between body ground and MPI module terminals + (A), - (B) individually.



Is there 350 k Ω or higher?

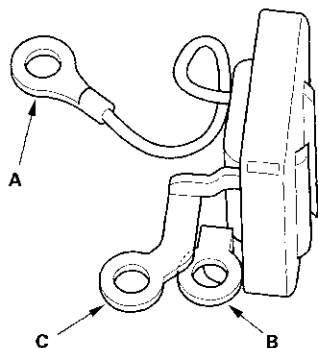
YES—Go to step 11.

NO—Replace the MPI module (see page 12-144), then go to step 49.

11. Remove the Y capacitor (see page 12-142).

12. Measure resistance between ground wire (A) and Y capacitor terminals + (B), - (C) individually.

NOTE: Use 250 V range of the insulation resistance tester.

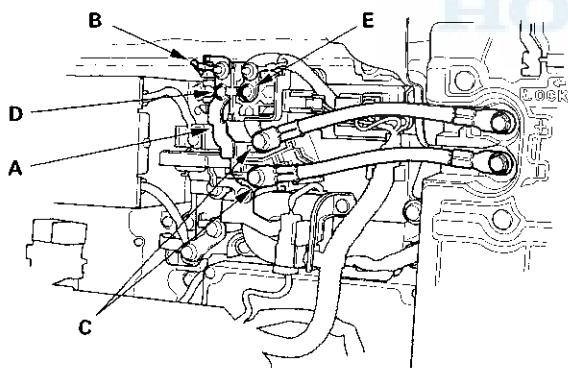


Is there 350 k Ω or higher?

YES—Go to step 13.

NO—Replace the Y capacitor (see page 12-142), then go to step 49.

13. Remove the busbar (A) and wire (B) from the high voltage contactor.



14. Remove the junction board terminals (C).

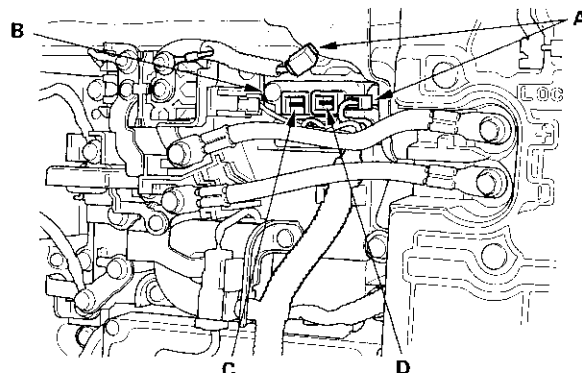
15. Measure resistance between body ground and high voltage contactor terminals + (D), - (E) individually.

Is there 350 k Ω or higher?

YES—Go to step 16.

NO—Replace the high voltage contactor (see page 12-142), then go to step 49.

16. Disconnect the wires (A) from the bypass contactor (B).



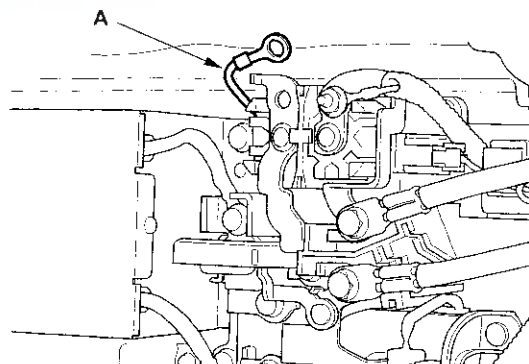
17. Measure resistance between body ground and bypass contactor terminals No. 1 (C), No. 2 (D) individually.

Is there 350 k Ω or higher?

YES—Go to step 18.

NO—Replace the bypass contactor (see page 12-142), then go to step 49.

18. Measure resistance between body ground and wire (A).



Is there 350 k Ω or higher?

YES—Go to step 19.

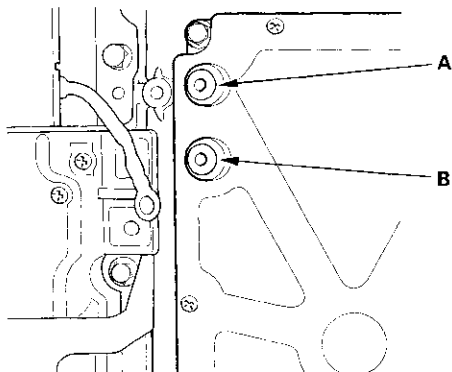
NO—Replace the bypass contactor (see page 12-142), then go to step 49.

(cont'd)

DTC Troubleshooting (cont'd)

19. Remove the junction board (see page 12-141).

20. Measure resistance between body ground and DC-DC converter terminals + (A), - (B) individually.



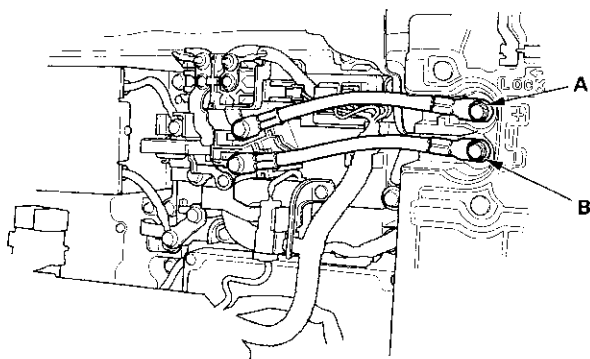
Is there 350 k Ω or higher?

YES—Go to step 21.

NO—Replace the DC-DC converter (see page 12-143), then go to step 49.

21. Disconnect MCM connector C (14P).

22. Measure resistance between body ground and battery module terminals + (A), - (B) individually.



Is there 350 k Ω or higher?

YES—Go to step 57.

NO—Replace the battery module (see page 12-146), then go to step 49.

23. Start the engine, and let it idle 1 minute.

24. Check the H.V. INSLT in the DATA LIST with the HDS.

Is about 239 k Ω or less indicated?

YES—Go to step 25.

NO—Go to step 33.

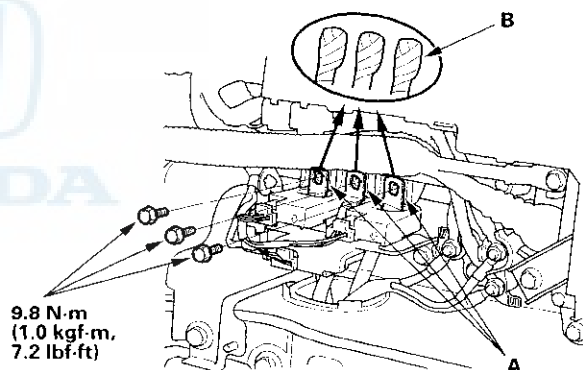
25. Turn the ignition switch OFF.

26. Turn the battery module switch OFF (see page 12-4).

27. Remove the IPU lid (see page 12-140).

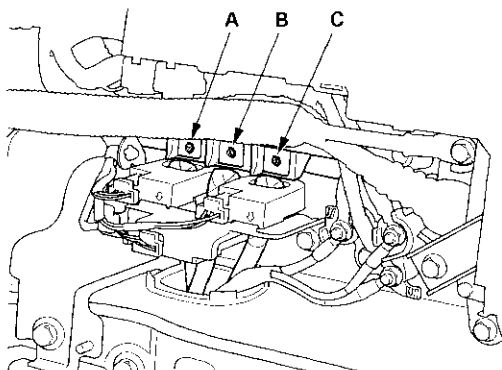
28. Remove the motor power cables (A) from the MPI module.

NOTE: Wrap motor power cables with insulating tape (B).



29. Measure resistance between body ground and the MPI module terminals (A), (B) and (C) individually.

NOTE: Use 250 V range of the insulation resistance tester.



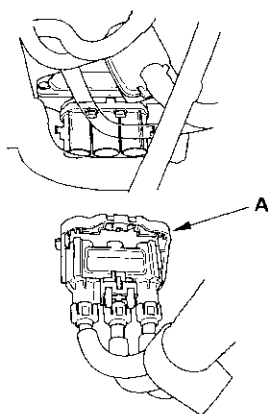
Is there 350 k Ω or higher?

YES—Go to step 29.

NO—Replace the MPI module (see page 12-144), then go to step 49.

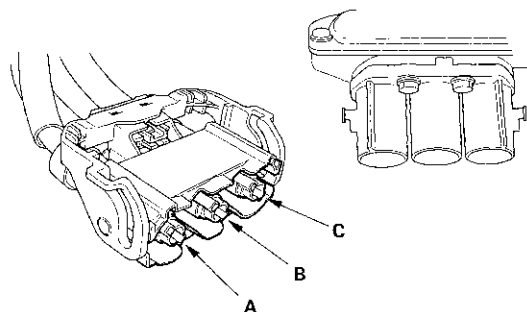
30. Disconnect the motor power cable (A).

NOTE: Refer to disconnecting motor power cable connector from motor starter (see page 12-3).



31. Measure for resistance between body ground and the motor power cable terminals (A), (B) and (C) individually.

NOTE: If the motor power cable terminals are wet, dry them with a clean towel. Do not use compressed air to dry the motor power cables.



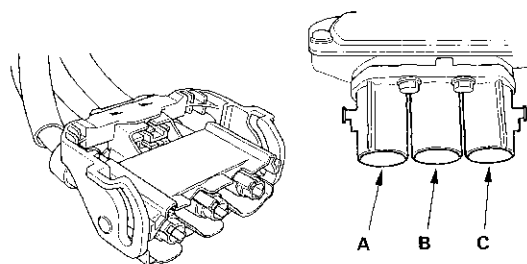
Is there 350 k Ω or higher?

YES—Go to step 32.

NO—Replace the motor power cable (see page 12-148), then go to step 49.

32. Measure for resistance between body ground and the motor stator terminals (A), (B) and (C) individually.

NOTE: If the motor power cable terminals are wet, wait until it dry.



Is there 350 k Ω or higher?

YES—Go to step 57.

NO—Replace the motor stator (see page 12-153), then go to step 49.

(cont'd)

IMA System

DTC Troubleshooting (cont'd)

33. Note the outside temperature.

NOTE: Outside temperature is above 41 °F (5 °C).

34. Turn the ignition switch OFF.

35. Start the engine, and let it idle 5 minutes.

36. Turn the A/C on, then set the temperature to 72 °F (22 °C).

37. Let it idle for 1 minute.

38. Check the H.V. INSLT in the DATA LIST with the HDS.

Is about 239 k Ω or less indicated?

YES—Go to step 39.

NO—Temporary short detect at the high voltage parts, system is OK at this time. ■

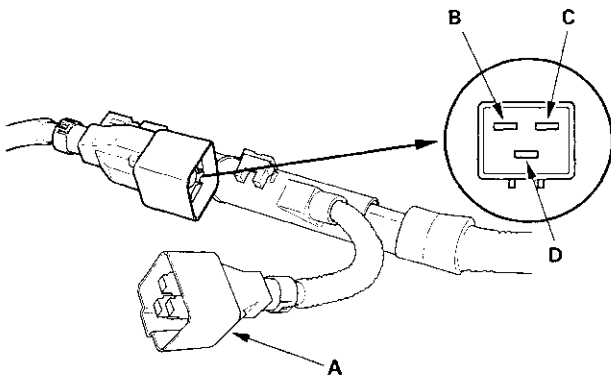
39. Turn the ignition switch OFF.

40. Turn the battery module switch OFF (see page 12-4).

41. Disconnect the A/C compressor power cable connector (A) in the engine compartment.

42. Measure for resistance between body ground and the A/C compressor power cable terminals (B), (C) and (D) individually.

NOTE: If the A/C compressor power cable connector terminals are wet, dry them with a clean towel. Do not use compressed air to dry the A/C compressor power cables.



Is there 350 k Ω or higher?

YES—Replace the motor power cable (see page 12-148), then go to step 49.

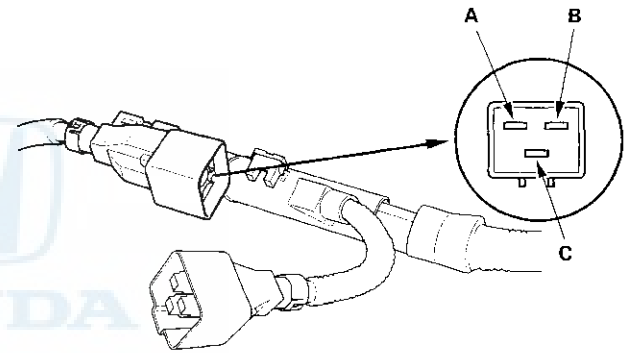
NO—Go to step 43.

43. Remove the A/C compressor (see page 21-96).

44. Drain the oil from the A/C compressor.

45. Measure for resistance between body ground and the A/C compressor power cable connector terminals (A), (B) and (C) individually.

NOTE: If the A/C compressor power cable connector terminals are wet, wait until it dry.



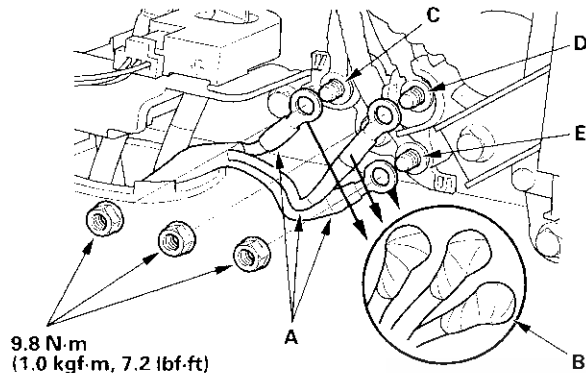
Is there 350 k Ω or higher?

YES—Replace the A/C compressor (see page 21-92), the A/C condenser (see page 21-97), the A/C system lines and hoses, and the evaporator (see page 21-87), then go to step 49.

NO—Replace the A/C compressor (see page 21-92), then go to step 49.

46. Remove the IPU lid (see page 12-140).
47. Disconnect the A/C compressor power cables (A) from the stay.

NOTE: Wrap A/C compressor power cable switch insulating tape (B).



48. Check for continuity between body ground and the terminals (C), (D) and (E) individually.

Is there 350 k Ω or higher?

YES—Replace the A/C compressor driver (see page 21-99), then go to step 49.

NO—Replace motor power cable (see page 12-148), then go to step 49.

49. Turn the ignition switch OFF.
50. Reconnect all connectors.
51. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
52. Turn the ignition switch ON (II).
53. Reset the MCM (see page 12-6).

54. Start the engine, and let it idle 5 minutes.
55. Turn the A/C on, then set the temperature to 72 °F (22 °C).
56. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0AA6 is indicated, temporary short detect at the high voltage parts, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

57. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
58. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

59. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0AA6 is indicated, temporary short detect at the high voltage parts, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

IMA System

DTC Troubleshooting (cont'd)

DTC P0AA7 (76): Motor Control Module (MCM) Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0AA7 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. ■

4. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
5. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0AA7 is indicated, check for poor connections or loose terminals at the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P0AC7 (51): Battery Module Temperature Sensor 2 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the BATT. MDLS TEMP S2 in the DATA LIST with the HDS.

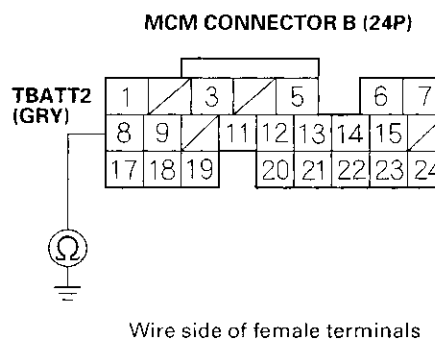
Is about 0.05 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

3. Turn the ignition switch OFF.
4. Turn the battery module switch OFF (see page 12-4).
5. Remove the IPU lid (see page 12-140).
6. Disconnect the battery module 6P connector.
7. Turn the ignition switch ON (II).
8. Check the BATT. MDLS TEMP S2 in the DATA LIST with the HDS.
Is about 0.05 V or less indicated?
YES—Go to step 9.
NO—Replace the battery module (see page 12-146), then go to step 12.
9. Turn the ignition switch OFF.
10. Disconnect MCM connector B (24P).

11. Check for continuity between MCM connector terminal B8 and body ground.



Is there continuity?

YES—Repair short in the wire between the battery module and the MCM (B8), then go to step 12.

NO—Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
15. Turn the ignition switch ON (II).
16. Reset the MCM (see page 12-6).
17. Check for Temporary DTCs or DTCs with the HDS.
Are any Temporary DTCs or DTCs indicated?
YES—If DTC P0AC7 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.
NO—Troubleshooting is complete. ■
18. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
19. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

(cont'd)

IMA System

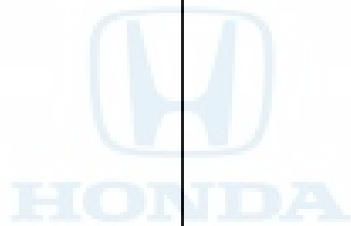
DTC Troubleshooting (cont'd)

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0AC7 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P0AC8 (52): Battery Module Temperature Sensor 2 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the BATT. MDLS TEMP S2 in the DATA LIST with the HDS.

Is about 4.95 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

3. Check for Temporary DTCs or DTCs with the HDS.

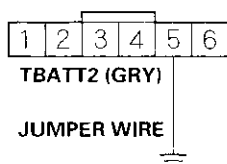
Are DTC P0A9E, P0AC8, and P0ACD indicated at the same time?

YES—Go to step 14.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect the battery module 6P connector.
8. Connect battery module 6P connector terminal No. 5 to body ground with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch ON (II).

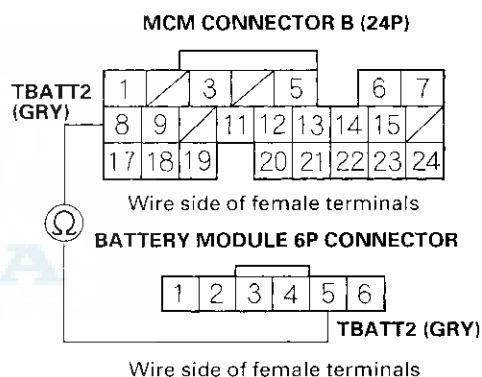
10. Check the BATT. MDLS TEMP S2 in the DATA LIST with the HDS.

Is about 4.95 V or more indicated?

YES—Go to step 11.

NO—Replace the battery module (see page 12-146), then go to step 24.

11. Turn the ignition switch OFF.
12. Disconnect MCM connector B (24P).
13. Check for continuity between MCM connector terminal B8 and battery module 6P connector terminal No. 5.



Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the battery module and the MCM (B8), then go to step 24.

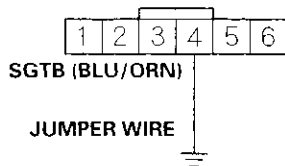
14. Turn the ignition switch OFF.
15. Turn the battery module switch OFF (see page 12-4).
16. Remove the IPU lid (see page 12-140).

(cont'd)

DTC Troubleshooting (cont'd)

17. Connect battery module 6P connector terminal No. 4 to body ground with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

18. Turn the ignition switch ON (II).
19. Check the BATT. MDLS TEMP S1, BATT. MDLS TEMP S2 and BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

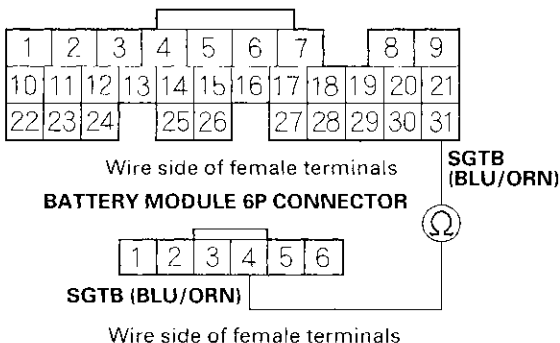
Are about 4.95 V or more indicated?

YES—Replace the battery module (see page 12-146), then go to step 24.

NO—Go to step 20.

20. Turn the ignition switch OFF.
21. Disconnect the battery module 6P connector.
22. Disconnect MCM connector A (31P).
23. Check for continuity between MCM connector terminal A31 and battery module 6P connector terminal No. 4.

MCM CONNECTOR A (31P)



Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the battery module and the MCM (A31), then go to step 24.

24. Turn the ignition switch OFF.
25. Reconnect all connectors.
26. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
27. Turn the ignition switch ON (II).
28. Reset the MCM (see page 12-6).
29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0AC8 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

30. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
31. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0AC8 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P0ACC (53): Battery Module Temperature Sensor 3 Circuit Low Voltage

1. Turn the ignition switch ON (II).
2. Check the BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

Is about 0.05 V or less indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

3. Turn the ignition switch OFF.
4. Turn the battery module switch OFF (see page 12-4).
5. Remove the IPU lid (see page 12-140).
6. Disconnect the battery module 6P connector.
7. Turn the ignition switch ON (II).
8. Check the BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

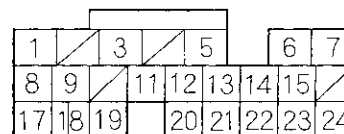
Is about 0.05 V or less indicated?

YES—Go to step 9.

NO—Replace the battery module (see page 12-146), then go to step 12.
9. Turn the ignition switch OFF.
10. Disconnect MCM connector B (24P).

11. Check for continuity between MCM connector terminal B9 and body ground.

MCM CONNECTOR B (24P)



TBATT3 (WHT)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the battery module and the MCM (B9), then go to step 12.

NO—Go to step 18.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
15. Turn the ignition switch ON (II).
16. Reset the MCM (see page 12-6).
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0ACC is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■
18. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
19. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

(cont'd)

IMA System

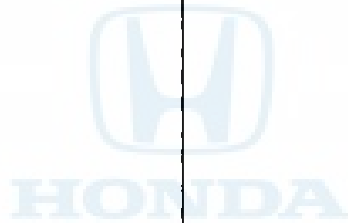
DTC Troubleshooting (cont'd)

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0ACC is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P0ACD (54): Battery Module Temperature Sensor 3 Circuit High Voltage

1. Turn the ignition switch ON (II).
2. Check the BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

Is about 4.95 V or more indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

3. Check for Temporary DTCs or DTCs with the HDS.

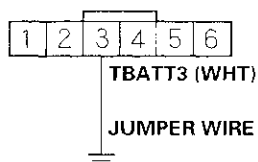
Are DTC P0A9E, P0AC8, and P0ACD indicated at the same time?

YES—Go to step 14.

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect the battery module 6P connector.
8. Connect battery module 6P connector terminal No. 3 to body ground with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

9. Turn the ignition switch ON (II).

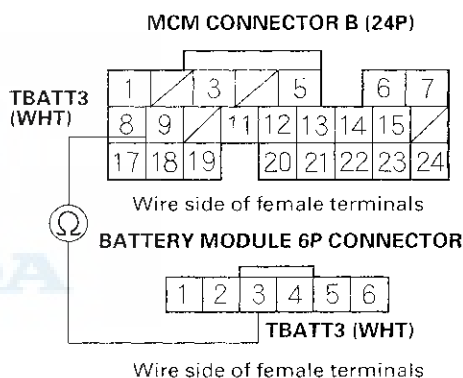
10. Check the BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

Is about 4.95 V or more indicated?

YES—Go to step 11.

NO—Replace the battery module (see page 12-146), then go to step 24.

11. Turn the ignition switch OFF.
12. Disconnect MCM connector B (24P).
13. Check for continuity between MCM connector terminal B9 and battery module 6P connector terminal No. 3.



Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the battery module and the MCM (B9), then go to step 24.

14. Turn the ignition switch OFF.
15. Turn the battery module switch OFF (see page 12-4).
16. Remove the IPU lid (see page 12-140).

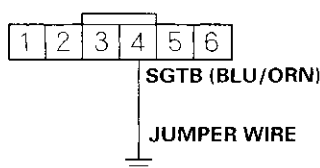
(cont'd)

IMA System

DTC Troubleshooting (cont'd)

17. Connect battery module 6P connector terminal No. 4 to body ground with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

18. Turn the ignition switch ON (II).
19. Check the BATT. MDLS TEMP S1, BATT. MDLS TEMP S2, and BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

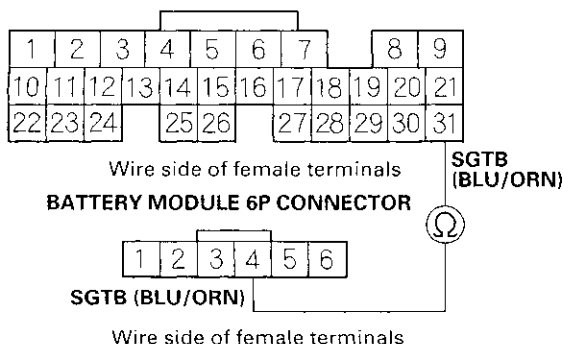
Are about 4.95 V or more indicated?

YES—Replace the battery module (see page 12-146), then go to step 24.

NO—Go to step 20.

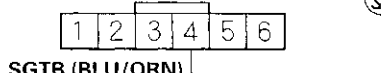
20. Turn the ignition switch OFF.
21. Disconnect the battery module 6P connector.
22. Disconnect MCM connector A (31P).
23. Check for continuity between MCM connector terminal A31 and battery module 6P connector terminal No. 4.

MCM CONNECTOR A (31P)



Wire side of female terminals

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the battery module and the MCM (A31), then go to step 24.

24. Turn the ignition switch OFF.
25. Reconnect all connectors.
26. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
27. Turn the ignition switch ON (II).
28. Reset the MCM (see page 12-6).
29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0ACD is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

30. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
31. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P0ACD is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P1434 (45): Voltage Converter Module High Voltage

NOTE: The DTC P1434 is DTC to protect the battery module from very low temperature. System is OK.

DTC P1435 (58): Charge/Discharge Balance Malfunction

NOTE: If the 12 V battery is very low, or there is a problem in the charging system, DTC P1435 may be stored, and the charging system indicator may come on.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs of the PGM-FI system with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Connect the known-good 12 V battery to the 12 V battery.
5. Check under these conditions:
 - Headlights on high beam
 - Blower fan at maximum speed
 - Rear window defogger on
6. Start the engine, and let it idle for 2 seconds.
7. Check the BATT. MDL VOLTAGE 1 to BATT. MDL VOLTAGE 10 in the DATA LIST with the HDS.

Is about 8 V or more indicated?

YES—Temporary lack of charging, system is OK at this time. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the IMA battery level gauge (BAT) displays at least three segments. ■

NO—Charge and/or replace the 12 V battery. Turn the ignition switch ON (II), start the engine and watch the charging system indicator. If the charging system indicator comes on and then goes off after the engine starts, system is OK at this time. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the IMA battery level gauge (BAT) displays at least three segments. ■

IMA System

DTC Troubleshooting (cont'd)

DTC P1437 (41): Motor Power Inverter (MPI) Module Short Circuit

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0AA6, P1440, and/or P15A5 indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1437 indicated?

YES—Go to step 7.

NO—Go to step 5.

5. Start the engine, and let it idle.
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1437 indicated?

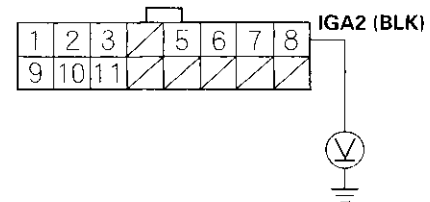
YES—Replace the MPI module (see page 12-144), then go to step 13.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MPI module and the MCM. ■

7. Turn the ignition switch OFF.
8. Turn the battery module switch OFF (see page 12-4).
9. Remove the IPU lid (see page 12-140).
10. Disconnect the battery module 16P connector.

11. Turn the ignition switch ON (II).
12. Measure voltage between body ground and MPI module 16P connector terminal No. 8.

MPI MODULE 16P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the MPI module (see page 12-144), then go to step 13.

NO—

- Repair connection in the MPI module connector.
- Repair open or short in the wire between +B IMA (10 A) fuse, MCM relay 2 and the MPI module, then go to step 13.

13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
16. Turn the ignition switch ON (II).
17. Reset the MCM (see page 12-6).
18. Start the engine, and let it idle.
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1437 is indicated, check for poor connections or loose terminals at the MPI module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P1440 (57): Motor Power Inverter (MPI) Module Output Circuit Malfunction

NOTE: If the DTCs listed below are stored at the same time as DTC P1440, troubleshoot those DTCs first, then recheck for P1440.

- P0A5E (24), P0A5F (25): U Phase Motor Current Sensor Circuit Low/High Voltage
- P0A61 (26), P0A62 (27): V Phase Motor Current Sensor Circuit Low/High Voltage
- P0A64 (28), P0A65 (29): W Phase Motor Current Sensor Circuit Low/High Voltage
- P1585 (30): Motor Current Sensor Circuit Malfunction
- P1586 (23): Battery Current Signal Circuit Problem
- P1437 (41): Motor Power Inverter (MPI) Module Short Circuit
- P15A5 (85): Motor Current Sensor Circuit Malfunction
- P15A6 (86): U Phase Motor Current Sensor Circuit Malfunction
- P15A7 (87): V Phase Motor Current Sensor Circuit Malfunction
- P15A8 (88): W Phase Motor Current Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Turn the headlights on high beam.
4. Start the engine, and let it idle 1 minute.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1440 indicated?

YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MPI module, the U/V/W phase motor current sensor, and the MCM. ■

6. Turn the ignition switch OFF.

7. Turn the battery module switch OFF (see page 12-4).

8. Check the motor power cable connection at the motor stator.

Is the connection OK?

YES—Go to step 9.

NO—Repair connection in the cable, then go to step 35.

9. Turn the ignition switch OFF.

10. Remove the IPU lid (see page 12-140).

11. Check the MPI module, the U/V/W phase motor current sensors, and the MCM connections.

Are the connections OK?

YES—Go to step 12.

NO—Repair connection in the cable, then go to step 35.

12. Check the motor power cable connection at the MPI module.

Is the connection OK?

YES—Go to step 13.

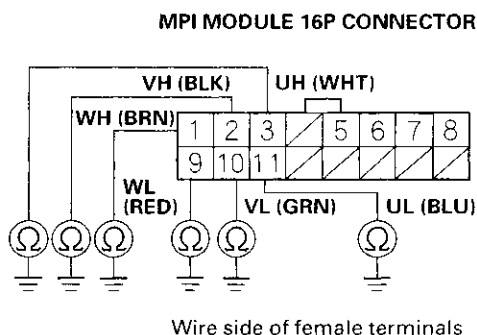
NO—Repair connection in the cable, then go to step 35.

13. Disconnect MCM connector A (31P), the MPI module 16P connector.

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between body ground and MPI module 16P connector terminals No. 1, No. 2, No. 3, No. 9, No. 10, and No. 11 individually.



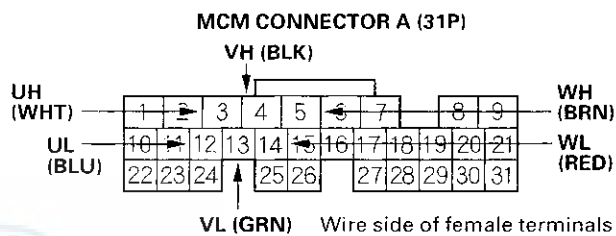
Is there continuity?

YES—Repair short in the wire(s) that had the continuity between MPI module and the MCM (A3, A4, A5, A12, A13, A14), then go to step 35.

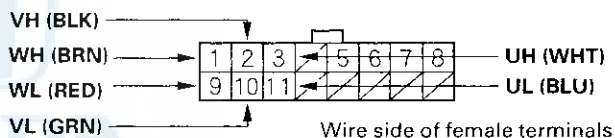
NO—Go to step 15.

15. Check for continuity between these terminals.

- MCM connector terminal A3 and MPI module 16P connector terminal No. 3
- MCM connector terminal A4 and MPI module 16P connector terminal No. 2
- MCM connector terminal A5 and MPI module 16P connector terminal No. 1
- MCM connector terminal A12 and MPI module 16P connector terminal No. 11
- MCM connector terminal A13 and MPI module 16P connector terminal No. 10
- MCM connector terminal A14 and MPI module 16P connector terminal No. 9



MCI MODULE 16P CONNECTOR



Is there continuity?

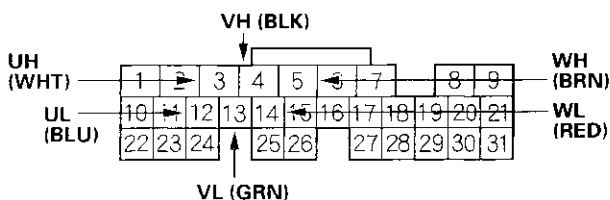
YES—Go to step 16.

NO—Repair an open in the wire(s) that did not have continuity between MPI module and the MCM (A3, A4, A5, A12, A13, A14), then go to step 35.

16. Check for continuity between these terminals.

- MCM connector terminals A3 and A12
- MCM connector terminals A4 and A13
- MCM connector terminals A5 and A14

MCM CONNECTOR A (31P)



Wire side of female terminals

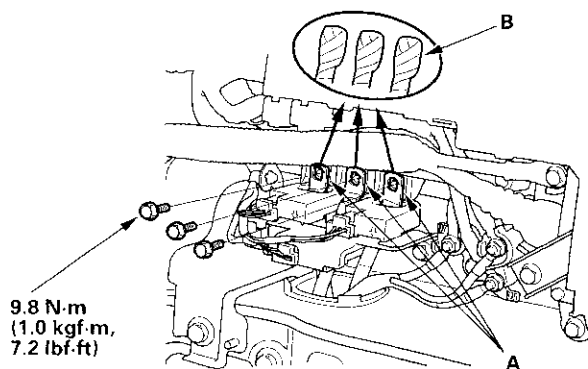
Is there continuity?

YES—Repair short in the wire(s) that had the continuity between MPI module and the MCM (A3, A4, A5, A12, A13, A14), then go to step 35.

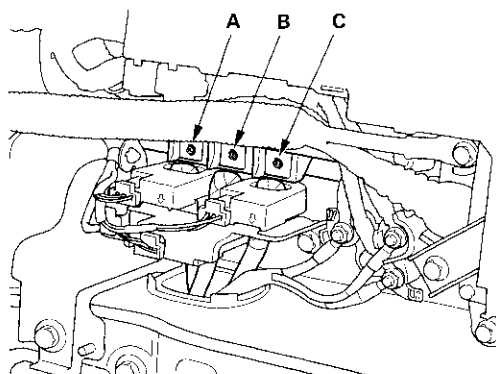
NO—Go to step 17.

17. Remove the motor power cables (A) from the MPI module.

NOTE: Wrap motor power cables with insulating tape (B).



18. Check for continuity between the motor power cable terminals (A) and (B), (B) and (C), (C) and (A) individually.



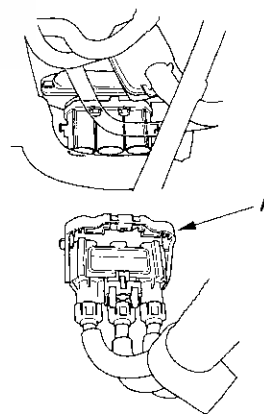
Is there continuity?

YES—Go to step 21.

NO—Go to step 19.

19. Disconnect the motor power cable (A).

NOTE: Refer to disconnecting motor power cable connector from motor starter (see page 12-3).

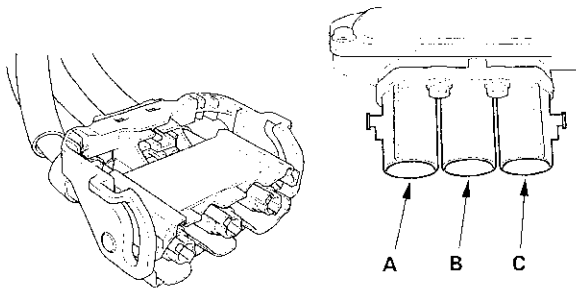


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IMA System

DTC Troubleshooting (cont'd)

20. Check for continuity between the motor power cable terminals (A) and (B), (B) and (C), (C) and (A) individually.



Is there continuity?

YES—Replace the motor power cable (see page 12-148), then go to step 35.

NO—Replace the motor stator (see page 12-153), then go to step 35.

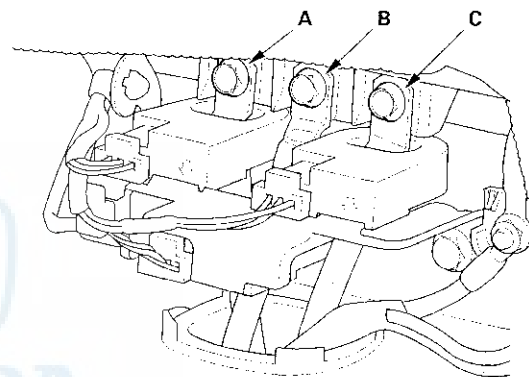
21. Reconnect the motor power cable.

22. Connect (clamp) your voltmeter lead (AC range) to these terminals. Start the engine, and measure voltage between these terminals at idle.

- The U phase terminal (A) and V phase terminal (B).
- The W phase terminal (C) and V phase terminal (B).
- The U phase terminal (A) and W phase terminal (C).

NOTE:

- When using clamp-type voltmeter leads, be careful not to touch any other terminals.
- Battery module switch OFF.



Is each measurement about 30 - 43 V?

YES—Go to step 27.

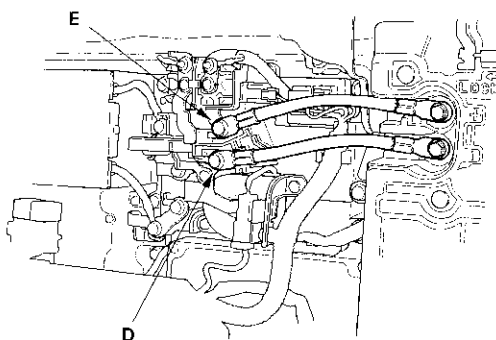
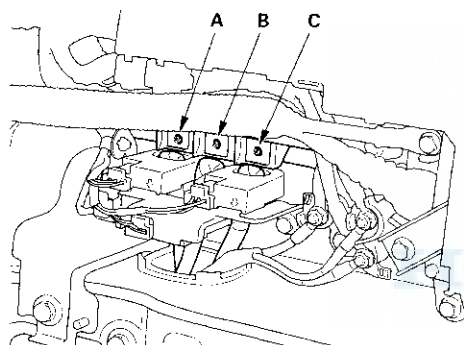
NO—Go to step 23.

23. Turn the ignition switch OFF.
24. Remove the motor power cable from the MPI module.
25. Turn the ignition switch ON (II).

26. Check for continuity between the following terminals.

- U terminal (A) (+) and junction board —terminal (D) (—)
- V terminal (B) (+) and junction board —terminal (D) (—)
- W terminal (C) (+) and junction board —terminal (D) (—)
- junction board +terminal (E) (+) and U terminal (A) (—)
- junction board +terminal (E) (+) and V terminal (B) (—)
- junction board +terminal (E) (+) and W terminal (C) (—)

NOTE: Place the positive and negative probes of the ohmmeter as indicated by the (+) and (—) symbols.



Is there continuity?

YES—Replace the MPI module (see page 12-144), then go to step 35.

NO—Replace the motor rotor (see page 12-151), then go to step 35.

27. Turn the ignition switch OFF.

28. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

29. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

30. Turn the ignition switch ON (II).

31. Reset the MCM (see page 12-6).

32. Turn the headlights on high beam.

33. Start the engine, and let it idle 1 minute.

34. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1440 indicated?

YES—Replace the MPI module (see page 12-144), then go to step 35.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

35. Turn the ignition switch OFF.

36. Reconnect all connectors.

37. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

38. Turn the ignition switch ON (II).

39. Reset the MCM (see page 12-6).

40. Turn the headlights on high beam.

41. Start the engine, and let it idle 1 minute.

42. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1440 is indicated, check for poor connections or loose terminals at the MPI module, the U/V/W phase motor current sensor, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

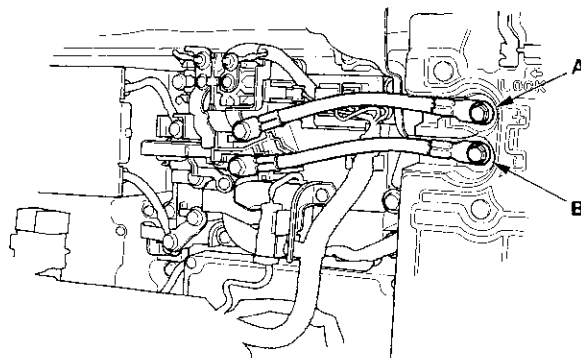
IMA System

DTC Troubleshooting (cont'd)

DTC P1445 (62): Bypass Contactor Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.
Is DTC P1634 or P1570 indicated?
YES—Do the troubleshooting for DTC P1634 (see page 12-121), or DTC P1570 (see page 12-98).
NO—Go to step 3.
3. Check the MPI VOLTAGE, TOTAL VOLTAGE IMA BATT. MDLS in the DATA LIST with the HDS.
Is there more than 18 V difference between MPI VOLTAGE and TOTAL VOLTAGE IMA BATT. MDLS?
YES—Go to step 4.
NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the high voltage contactor, the bypass contactor, the DC-DC converter, and the MCM. ■
4. Check the battery module switch.
Is the battery module switch ON?
YES—go to step 5.
NO—Turn the battery module switch ON (see page 12-4), then go to step 27.
5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Turn the battery module switch ON (see page 12-4).

9. Measure voltage between battery module terminals + (A) and - (B).

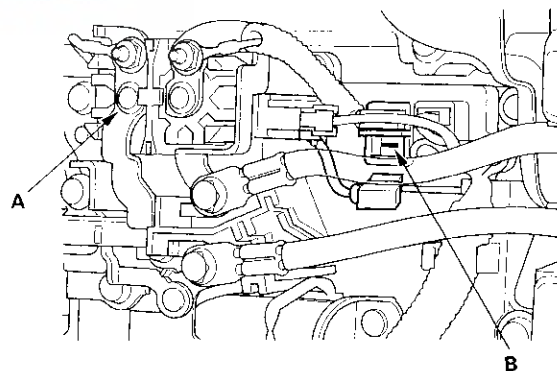


Is there more than 120 V?

YES—Go to step 10.

NO—Replace the battery module (see page 12-146), then go to step 27.

10. Turn the battery module switch OFF (see page 12-4).
11. Measure resistance between high voltage contactor terminal (A) and bypass contactor terminal (B).

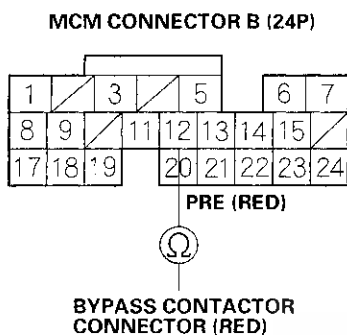


Is there 38–42 Ω ?

YES—Go to step 12.

NO—Replace the bypass resistor (see page 12-142), then go to step 27.

12. Turn the ignition switch OFF.
13. Disconnect the bypass contactor RED connector.
14. Disconnect MCM connector B (24P).
15. Check for continuity between MCM connector terminal B12 and bypass contactor RED connector terminal No. 1.



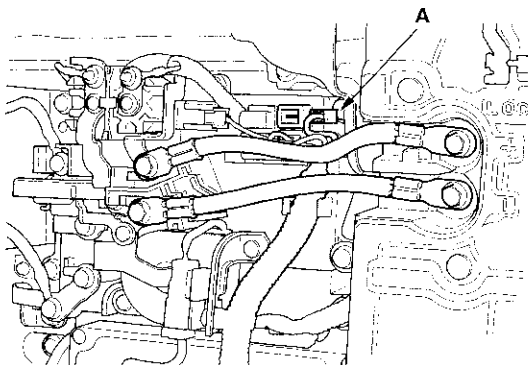
Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair short in the wire between the bypass contactor and the MCM (B1), then go to step 27.

16. Check for continuity between body ground and bypass contactor BLU connector terminal No. 1 (A).



Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the bypass contactor and G652, then go to step 27.

17. Turn the ignition switch OFF.
18. Reconnect all connectors.
19. Disconnect the DC-DC converter 4P connector.
20. Turn the battery module switch ON (see page 12-4).
21. Turn the ignition switch ON (II).
22. Check the MPI VOLTAGE, TOTAL VOLTAGE IMA BATT. MDLS in the DATA LIST with the HDS.

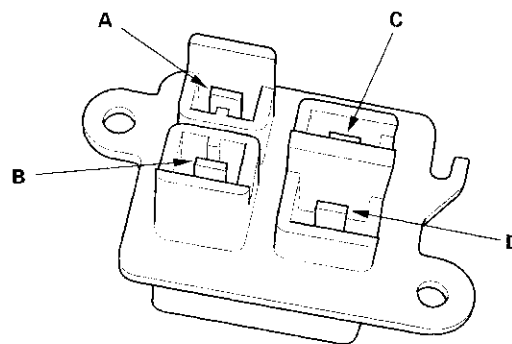
Is there more than 18 V difference between MPI VOLTAGE and TOTAL VOLTAGE IMA BATT. MDLS?

YES—Go to step 23.

NO—Replace the DC-DC converter (see page 12-143), then go to step 27.

23. Turn the ignition switch OFF (see page 12-4).
24. Remove the bypass contactor (see page 12-142).
25. Connect battery terminal to bypass contactor terminals No. 1 (A) and No. 2 (B).

NOTE: When connecting the battery terminal, connect to bypass contactor terminal first, then connect to battery.



(cont'd)

DTC Troubleshooting (cont'd)

26. Check for continuity between bypass contactor terminals No. 3 (C) and No. 4 (D).

Is there continuity?

YES—Replace the MPI module (see page 12-144), then go to step 33.

NO—Replace the bypass contactor (see page 12-142), then go to step 27.

27. Turn the ignition switch OFF.
28. Reconnect all connectors.
29. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
30. Turn the ignition switch ON (II).
31. Reset the MCM (see page 12-6).
32. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1445 is indicated, check for poor connections or loose terminals at the high voltage contactor, the bypass contactor, the DC-DC converter, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

33. Turn the ignition switch OFF.
34. Reconnect all connectors.
35. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
36. Turn the ignition switch ON (II).
37. Reset the MCM (see page 12-6).

38. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

39. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1445 is indicated, check for poor connections or loose terminals at the high voltage contactor, the bypass contactor, the DC-DC converter, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P1446 (74): Battery Module Individual Voltage Input Deviation

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A7F indicated?

YES—Do the troubleshooting for DTC P0A7F (see page 12-59).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Start the engine, and wait 1 minute.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1446 indicated?

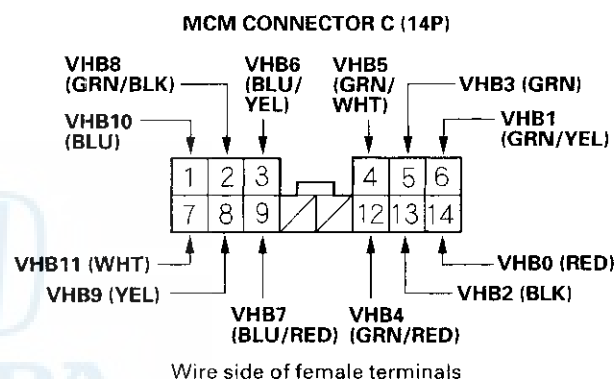
YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

6. Note the value of BATT. MDL VOLTAGE 1 to BATT. MDL VOLTAGE 10 in the DATA LIST with the HDS.
7. Turn the ignition switch OFF.
8. Turn the battery module switch OFF (see page 12-4).
9. Remove the IPU lid (see page 12-140).
10. Turn the ignition switch ON (II).
11. Disconnect MCM connector C (14P).

12. Measure voltage between the following MCM connector terminals, then compare the following value of BATT. MDL VOLTAGE 1 to BATT. MDL VOLTAGE 10 in the DATA LIST with the HDS.

- C14 and C6, and value of BATT. MDL VOLTAGE 1
- C6 and C13, and value of BATT. MDL VOLTAGE 2
- C13 and C5, and value of BATT. MDL VOLTAGE 3
- C5 and C12, and value of BATT. MDL VOLTAGE 4
- C12 and C4, and value of BATT. MDL VOLTAGE 5
- C3 and C9, and value of BATT. MDL VOLTAGE 6
- C9 and C2, and value of BATT. MDL VOLTAGE 7
- C2 and C8, and value of BATT. MDL VOLTAGE 8
- C8 and C1, and value of BATT. MDL VOLTAGE 9
- C1 and C7, and value of BATT. MDL VOLTAGE 10



Is there more than 1 V difference between the MCM measurement and the DATA LIST measurement?

YES—Go to step 19.

NO—Replace the battery module (see page 12-146), and go to step 13.

13. Reconnect all connectors.
14. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
15. Turn the ignition switch ON (II).
16. Reset the MCM (see page 12-6).

(cont'd)

DTC Troubleshooting (cont'd)

17. Start the engine, and wait 1 minute.
18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1446 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

19. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
20. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1446 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P1448 (63): Intelligent Power Unit (IPU) Module Fan Problem

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1634 indicated?

YES—Do the troubleshooting for DTC P1634 (see page 12-121).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Do the IPU MODULE FAN DRIVE in the INSPECTION MENU with the HDS.

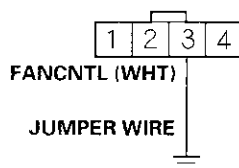
Does the screen indicate OUT OF RANGE?

YES—Go to step 5.

NO—If screen indicates CONDITION IS NORMAL, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the IPU module fan and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Disconnect the IPU module fan 4P connector.
9. Connect IPU module fan 4P connector terminal No. 3 to body ground with a jumper wire.

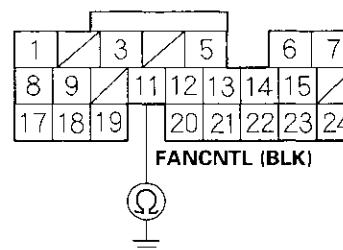
IPU MODULE FAN 4P CONNECTOR



Wire side of female terminals

10. Disconnect MCM connector B (24P).
11. Check for continuity between MCM connector terminal B11 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

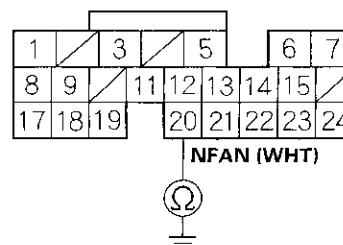
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the IPU module fan and the MCM (B11), then go to step 22.

12. Disconnect a jumper wire from the IPU module fan 4P connector.
13. Check for continuity between MCM connector terminal B20 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the IPU module fan and the MCM (B20), then go to step 22.

NO—Go to step 14.

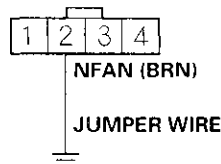
(cont'd)

IMA System

DTC Troubleshooting (cont'd)

14. Connect IPU module fan 4P connector terminal No. 2 to body ground with a jumper wire.

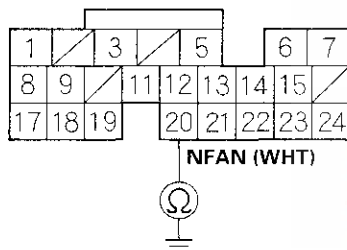
IPU MODULE FAN 4P CONNECTOR



Wire side of female terminals

15. Check for continuity between MCM connector terminal B20 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

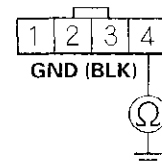
YES—Go to step 16.

NO—Repair open in the wire between the IPU module fan and the MCM (B20), then go to step 22.

16. Disconnect a jumper wire from the IPU module fan 4P connector.

17. Check for continuity between IPU module fan 4P connector terminal No. 4 and body ground.

IPU MODULE FAN 4P CONNECTOR



Wire side of female terminals

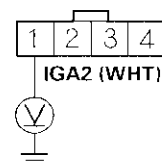
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the IPU module fan and G655, then go to step 22.

18. Reconnect MCM connector B (24P).
19. Turn the ignition switch ON (II).
20. Measure voltage between IPU module fan 4P connector terminal No. 1 and body ground.

IPU MODULE FAN 4P CONNECTOR



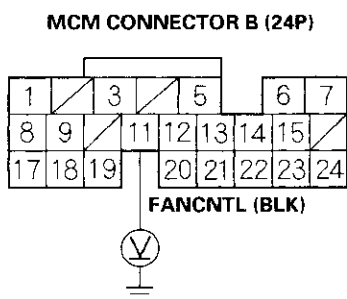
Wire side of female terminals

Does the screen indicate OUT OF RANGE?

YES—Go to step 21.

NO—If screen indicates CONDITION IS NORMAL, repair open in the wire between the IPU module fan and MCM relay 2, then go to step 22.

21. Measure voltage between body ground and MCM connector terminal B11.



Wire side of female terminals

Is there more than 2.0 V?

YES—Go to step 28.

NO—Replace the IPU module fan (see page 12-145), then go to step 22.

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
25. Turn the ignition switch ON (II).
26. Reset the MCM (see page 12-6).
27. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1448 is indicated, check for poor connections or loose terminals at the IPU module fan and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

28. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
29. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

30. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1448 is indicated, check for poor connections or loose terminals at the IPU module fan and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

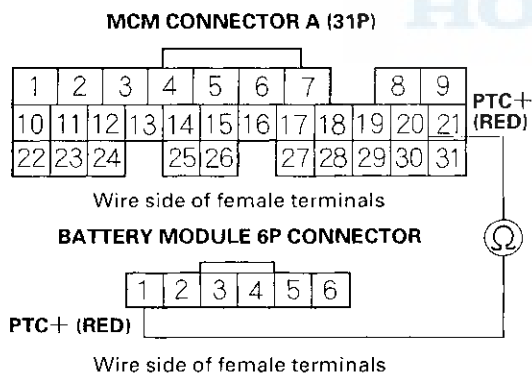
NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

IMA System

DTC Troubleshooting (cont'd)

DTC P1569 (70): Battery Cell Temperature Signal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check the PTC in the DATA LIST with the HDS.
Is about 0.2 V or less indicated?
YES—Go to step 3.
NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■
3. Turn the ignition switch OFF.
4. Turn the battery module switch OFF (see page 12-4).
5. Remove the IPU lid (see page 12-140).
6. Disconnect MCM connector A (31P).
7. Disconnect the battery module 6P connector.
8. Check for continuity between MCM connector terminal A20 and battery module 6P connector terminal No. 1.

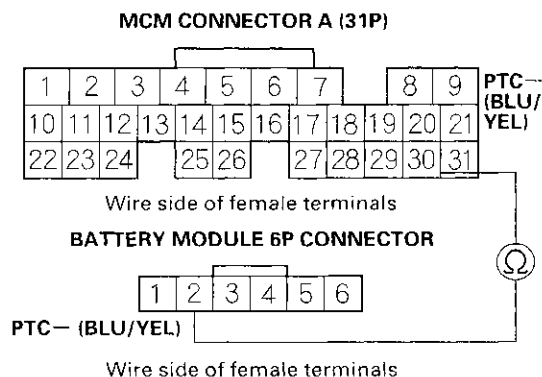


Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the battery module and the MCM (A20), then go to step 16.

9. Check for continuity between MCM connector terminal A30 and battery module 6P connector terminal No. 2.

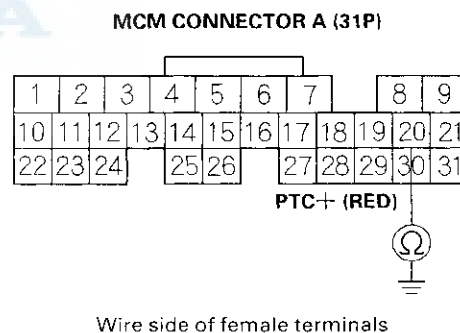


Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the battery module and the MCM (A30), then go to step 16.

10. Check for continuity between MCM connector terminal A20 and body ground.

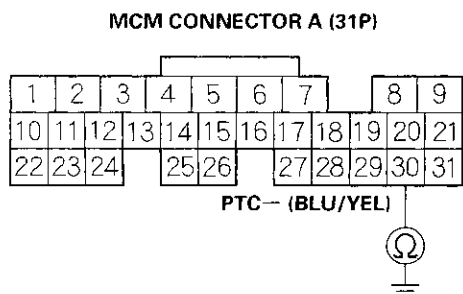


Is there continuity?

YES—Repair short in the wire between the battery module and the MCM (A20), then go to step 16.

NO—Go to step 11.

11. Check for continuity between MCM connector terminal A30 and body ground.



Wire side of female terminals

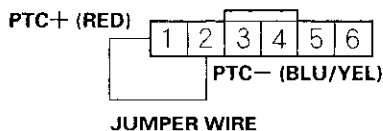
Is there continuity?

YES—Repair short in the wire between the battery module and the MCM (A30), then go to step 16.

NO—Go to step 12.

12. Reconnect MCM connector A (31P).
13. Connect battery module 6P connector terminals No. 1 to No. 2 with a jumper wire.

BATTERY MODULE 6P CONNECTOR



Wire side of female terminals

14. Turn the ignition switch ON (II).
15. Check the PTC in the DATA LIST with the HDS.

Is about 0.2 V or less indicated?

YES—Go to step 22.

NO—Replace the battery module (see page 12-146), then go to step 16.

16. Turn the ignition switch OFF.
17. Reconnect all connectors.
18. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
19. Turn the ignition switch ON (II).
20. Reset the MCM (see page 12-6).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1589 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

22. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
23. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
24. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1589 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P1570 (66): Battery Module Individual Voltage Problem

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1570 indicated?

YES—Go to step 6.

NO—Go to step 4.

4. Turn the ignition switch ON (II).
5. Check the BATT. MDL VOLTAGE 1 to BATT. MDL VOLTAGE 10 in the DATA LIST with the HDS.

Is there more than 15 V at least one?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Turn the battery module switch OFF (see page 12-4).
8. Remove the IPU lid (see page 12-140).
9. Check for connections at MCM connector C (14P).

Is the connection OK?

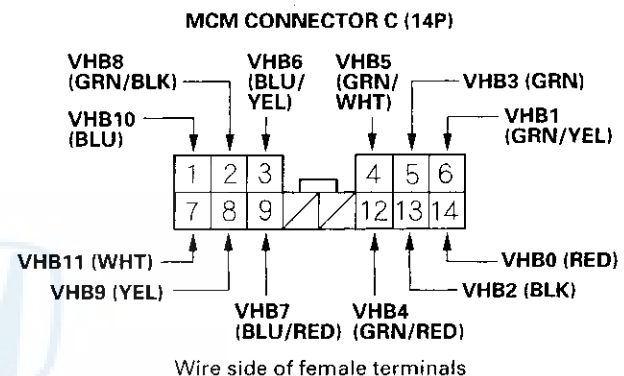
YES—Go to step 7.

NO—Repair connection in the MCM connector, then go to step 12.

10. Disconnect MCM connector C (14P).

11. Measure voltage between the following MCM connector terminals:

- C14 and C6
- C6 and C13
- C13 and C5
- C5 and C12
- C12 and C4
- C3 and C9
- C9 and C2
- C2 and C8
- C8 and C1
- C1 and C7



Are all measurements about 7.0 V or higher?

YES—Go to step 18.

NO—Replace the battery module (see page 12-146), then go to step 12.

12. Turn the ignition switch OFF.
13. Reconnect all connectors.
14. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
15. Turn the ignition switch ON (II).
16. Reset the MCM (see page 12-6).



17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1570 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

18. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

19. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1570 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P1574 (68): Battery Module Temperature Signal Circuit Malfunction

NOTE: If the IPU module fan duct is blocked, DTC P1574 may be detected.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1448 indicated?

YES—Do the troubleshooting for DTC P1448 (see page 12-93).

NO—Go to step 3.

3. Note the value of BATT. MDLS TEMP S1, BATT. MDLS TEMP S2, and BATT. MDLS TEMP S3 in the DATA LIST with the HDS.
4. Check the SOC in the DATA LIST with the HDS. If the SOC is higher than 70 %, start the engine with the IMA motor several times until the SOC decreases less than 70 %.
5. Reset the MCM (see page 12-6).
6. Compare the value of BATT. MDLS TEMP S1, BATT. MDLS TEMP S2, and BATT. MDLS TEMP S3 in the DATA LIST with the HDS.

Did BATT. MDLS TEMP S1, BATT. MDLS TEMP S2, and BATT. MDLS TEMP S3 change 1.0 °F (0.5 °C) or more?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery module and the MCM. ■

NO—Go to step 6.

7. Check the IPU module air duct and IPU module fan for disconnections, damage or obstructions.

Is the IPU module air duct or IPU module fan OK?

YES—Replace the battery module (see page 12-146), then go to step 7.

NO—Repair the IPU module air duct or IPU module fan as necessary, then go to step 8.

8. Turn the ignition switch ON (II).
9. Reset the MCM (see page 12-6).
10. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1574 is indicated, check for poor connections or loose terminals at the battery module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC P1575 (12): Motor Power Inverter (MPI) Module Voltage Malfunction

NOTE: If the battery module switch is turned OFF and the ignition switch is ON (II), DTC P1575 may be detected.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1445 indicated?

YES—Do the troubleshooting for DTC P1445 (see page 12-88).

NO—Go to step 3.

3. Start the engine, then wait 1 minute.
4. Check the MPI VOLTAGE, TOTAL VOLTAGE IMA BATT. MDLS in the DATA LIST with the HDS.

Is there more than 9 V difference between MPI VOLTAGE and TOTAL VOLTAGE IMA BATT. MDLS?

YES—Go to step 9.

NO—Go to step 5.

5. Clear the DTC with the HDS.
6. Check the SOC in the DATA LIST with the HDS.
7. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the SOC increases 70 %.
8. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1575 indicated?

YES—Go to step 25.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MPI module, the high voltage contactor, and the MCM. ■

9. Note the value of MPI VOLTAGE in the DATA LIST with the HDS.

10. Compare the MPI VOLTAGE and the TOTAL VOLTAGE IMA BATT. MDLS in the DATA LIST with the HDS.

Did MPI VOLTAGE change 9 V or less?

YES—Go to step 11.

NO—Go to step 21.

11. Turn the ignition switch OFF.
12. Turn the battery module switch OFF (see page 12-4).
13. Remove the IPU lid (see page 12-140).

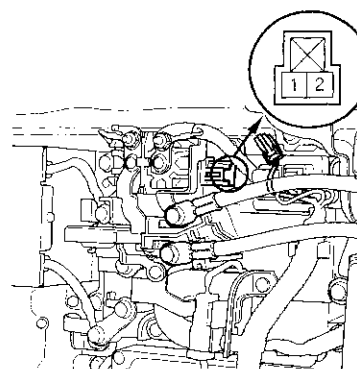
14. Check the high voltage cable (orange cable) connection and busbar connection on the junction board.

Is the connection OK?

YES—Go to step 15.

NO—Repair connection in the cable, then go to step 29.

15. Disconnect the high voltage contactor 2P connector.
16. At the contactor side, check for continuity between high voltage contactor 2P connector terminals No. 1 and No. 2.



Terminal side of male terminals

Is there continuity?

YES—Go to step 17.

NO—Replace the high voltage contactor (see page 12-142), then go to step 29.

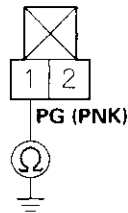
(cont'd)

IMA System

DTC Troubleshooting (cont'd)

17. At the wire harness side, check for continuity between high voltage contactor 2P connector terminal No. 1 and body ground.

HIGH VOLTAGE CONTACTOR 2P CONNECTOR



Wire side of female terminals

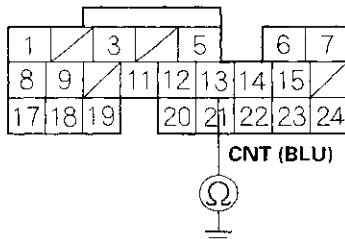
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the high voltage contactor and G652, then go to step 29.

18. Disconnect MCM connector B (24P).
19. Check for continuity between MCM connector terminal B13 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

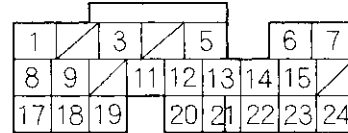
Is there continuity?

YES—Repair short in the wire between the high voltage contactor and the MCM (B13), then go to step 29.

NO—Go to step 20.

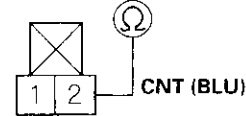
20. Check for continuity between MCM connector terminal B13 and high voltage contactor 2P connector terminal No. 2.

MCM CONNECTOR B (24P)



Wire side of female terminals

HIGH VOLTAGE CONTACTOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

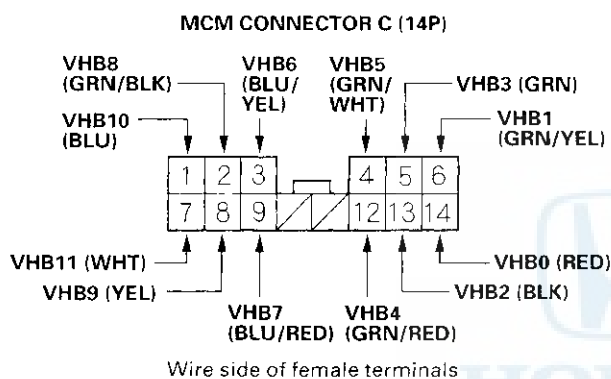
YES—Go to step 36.

NO—Repair open in the wire between the high voltage contactor and the MCM (B13), then go to step 29.

21. Turn the ignition switch OFF.
22. Turn the battery module switch OFF (see page 12-4).
23. Remove the IPU lid (see page 12-140).
24. Check the MCM connector connection.
Is the connection OK?
YES—Go to step 25.
NO—Repair connection in the MCM, and go to step 29.
25. Turn the ignition switch ON (II).
26. Note the value of BATT. MDL VOLTAGE 1 to BATT. MDL VOLTAGE 10 in the DATA LIST with the HDS.
27. Disconnect MCM connector C (14P).

28. Measure voltage between following MCM connector terminals, then compare the following value of BATT. MDL VOLTAGE 1 to BATT. MDL VOLTAGE 10 in the DATA LIST with the HDS.

- C14 and C6, and value of BATT. MDL VOLTAGE 1
- C6 and C13, and value of BATT. MDL VOLTAGE 2
- C13 and C5, and value of BATT. MDL VOLTAGE 3
- C5 and C12, and value of BATT. MDL VOLTAGE 4
- C12 and C4, and value of BATT. MDL VOLTAGE 5
- C3 and C9, and value of BATT. MDL VOLTAGE 6
- C9 and C2, and value of BATT. MDL VOLTAGE 7
- C2 and C8, and value of BATT. MDL VOLTAGE 8
- C8 and C1, and value of BATT. MDL VOLTAGE 9
- C1 and C7, and value of BATT. MDL VOLTAGE 10



Is there more than 1 V difference between the MCM measurement and the DATA LIST measurement?

YES—Go to step 26.

NO—Replace the battery module (see page 12-146), and go to step 29.

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
32. Turn the ignition switch ON (II).
33. Reset the MCM (see page 12-6).
34. Start the engine, then wait 1 minute.

35. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1575 is indicated, check for poor connections or loose terminals at the MPI module, the high voltage contactor, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

36. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

37. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

38. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1575 is indicated, check for poor connections or loose terminals at the MPI module, the high voltage contactor, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P1580 (65): Battery Current Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Turn the ignition switch OFF, and wait 1 minute.
4. Check for Temporary DTCs or DTCs with the HDS.

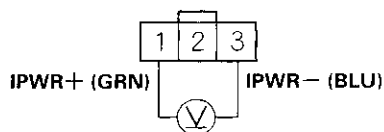
Is DTC P1580 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery current sensor and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Turn the ignition switch ON (II).
9. Measure voltage between battery current sensor 3P connector terminals No. 1 and No. 3.

BATTERY CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

Is there 23–25 V?

YES—Go to step 10.

NO—Go to step 15.

10. Reset the MCM (see page 12-6).

11. Turn the ignition switch OFF, and wait 1 minute.
12. Disconnect the battery current sensor 3P connector.
13. Turn the ignition switch ON (II).
14. Check for Temporary DTCs or DTCs with the HDS.

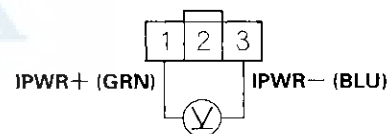
Is DTC P1580 indicated?

YES—Go to step 34.

NO—Replace the battery current sensor (see page 12-142), then go to step 26.

15. Turn the ignition switch OFF.
16. Disconnect the battery current sensor 3P connector.
17. Turn the ignition switch ON (II).
18. Measure voltage between battery current sensor 3P connector terminals No. 1 and No. 3.

BATTERY CURRENT SENSOR 3P CONNECTOR



Wire side of female terminals

Is there 23–25 V?

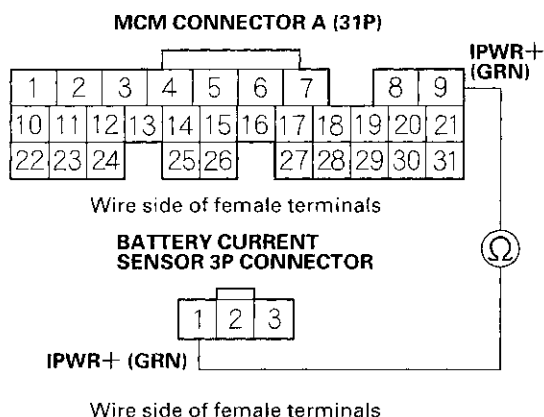
YES—Replace the battery current sensor (see page 12-142), then go to step 26.

NO—Go to step 19.

19. Turn the ignition switch OFF.
20. Disconnect MCM connector A (31P).



21. Check for continuity between MCM connector terminal A9 and battery current sensor 3P connector terminal No. 1.

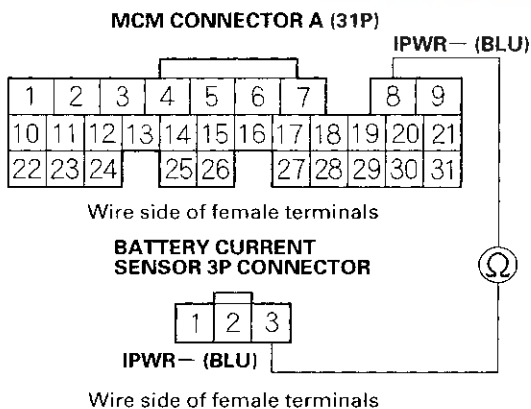


Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the battery current sensor and the MCM (A9), then go to step 26.

22. Check for continuity between MCM connector terminal A8 and battery current sensor 3P connector terminal No. 3.



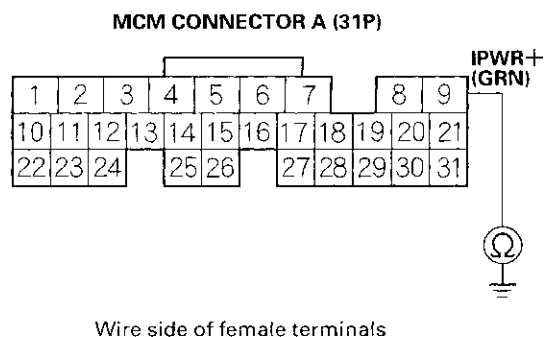
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the battery current sensor and the MCM (A8), then go to step 26.

23. Disconnect MCM connector A (31P).

24. Check for continuity between MCM connector terminal A9 and body ground.

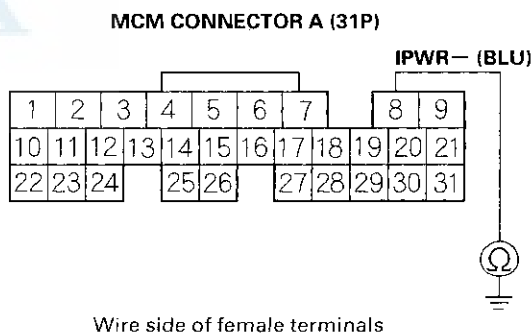


Is there continuity?

YES—Repair short in the wire between the battery current sensor and the MCM (A9), then go to step 26.

NO—Go to step 25.

25. Check for continuity between MCM connector terminal A8 and body ground.



Is there continuity?

YES—Repair short in the wire between the battery current sensor and the MCM (A8), then go to step 26.

NO—Go to step 31.

(cont'd)

DTC Troubleshooting (cont'd)

26. Turn the ignition switch OFF.
27. Reconnect all connectors.
28. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
29. Turn the ignition switch ON (II).
30. Reset the MCM (see page 12-6).
31. Turn the ignition switch OFF, and wait 1 minute.
32. Turn the ignition switch ON (II).
33. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1580 is indicated, check for poor connections or loose terminals at the battery current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

34. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
35. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
36. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1580 is indicated, check for poor connections or loose terminals at the battery current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



DTC P1585 (30): Motor Current Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A5E, P0A5F, P0A61, P0A62, P0A64, or P0A65 indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Turn the ignition switch ON (II).
4. Reset the MCM (see page 12-6).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1585 indicated?

YES—Go to step 8.

NO—Go to step 6.

6. Start the engine.
7. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1585 indicated?

YES—Replace the U/V/W phase motor current sensors (see page 12-143), then go to step 9.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the U/V/W phase motor current sensor and the MCM. ■

8. Check the values of the U phase motor current sensor, V phase motor current sensor, and W phase motor current sensor with the HDS, then total the values together.

Is the total of the sensor values between + 60 and - 60 A?

YES—Go to step 14.

NO—Replace the U/V/W phase motor current sensors (see page 12-143), then go to step 9.

9. Turn the ignition switch OFF.

10. Reconnect all connectors.

11. Turn the ignition switch ON (II).

12. Reset the MCM (see page 12-6).

13. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1585 is indicated, check for poor connections or loose terminals at the U/V/W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

14. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1585 is indicated, check for poor connections or loose terminals at the U/V/W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P1586 (23): Battery Current Signal Circuit Problem

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.
Is any DTC except DTC P1586 and P0A7F indicated?
YES—Do the troubleshooting for the indicated DTC.
NO—Go to step 3.
3. Reset the MCM (see page 12-6).
4. Start the engine.
5. Check the BATTERY CURRENT SENSOR in the DATA LIST with the HDS.
Is there 0 A?
YES—Go to step 9.
NO—Go to step 6.
6. Start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the IMA battery level gauge (BAT) displays at least three segments.
7. Check for Temporary DTCs or DTCs with the HDS.
Is DTC P1586 indicated?
YES—Replace the battery current sensor (see page 12-142), then go to step 17.
NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery current sensor and the MCM. ■
8. Turn the ignition switch OFF.
9. Turn the battery module switch OFF (see page 12-4).

10. Remove the IPU lid (see page 12-140).

11. Check the battery current sensor connection.

Is the connection OK?

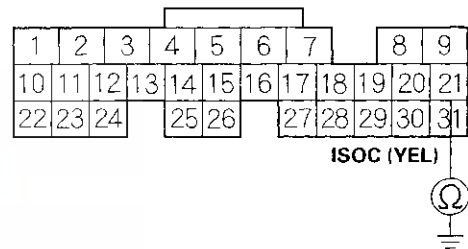
YES—Go to step 12.

NO—Repair connection in the battery current sensor, then go to step 18.

12. Disconnect MCM connector A (31P).

13. Check for continuity between body ground and MCM connector terminal A21.

MCM CONNECTOR A (31P)



Wire side of female terminals

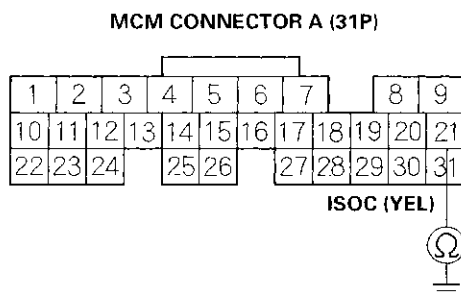
Is there continuity?

YES—Go to step 14.

NO—Go to step 16.

14. Disconnect the battery current sensor 3P connector.

15. Check for continuity between body ground and MCM connector terminal A21.



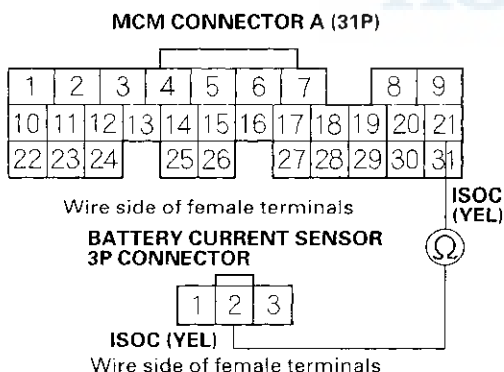
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the MCM (A21) and the battery current sensor, then go to step 17.

NO—Replace the battery current sensor (see page 12-142), then go to step 17.

16. Check for continuity between battery current sensor 3P connector terminal No. 2 and MCM connector terminal A21.



Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the MCM (A21) and the battery current sensor, then go to step 18.

17. Turn the ignition switch OFF.

18. Reconnect all connectors.

19. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

20. Turn the ignition switch ON (II).

21. Reset the MCM (see page 12-6).

22. Start the engine.

23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1586 is indicated, check for poor connections or loose terminals at the battery current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

24. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

25. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

26. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1586 is indicated, check for poor connections or loose terminals at the battery current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P15A4 (81): A/C Compressor Driver Relay Stays Activated

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Note the outside temperature.

NOTE: Outside temperature is above 41 °F (5 °C).

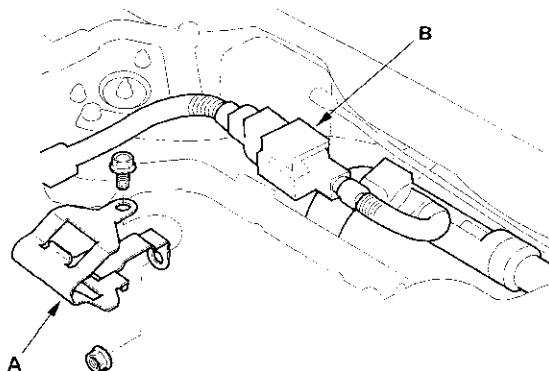
4. Start the engine, let it idle 5 minutes.
5. Turn the A/C on, then set to 72 °F (22 °C).
6. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15A4 indicated?

YES—Go to step 7.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the A/C driver and the MCM. ■

7. Turn the ignition switch OFF.
8. Turn the battery module switch OFF (see page 12-4).
9. Remove the cover (A). Check the connections at the A/C compressor power cable connector (B) in the engine compartment.



Is the connection OK?

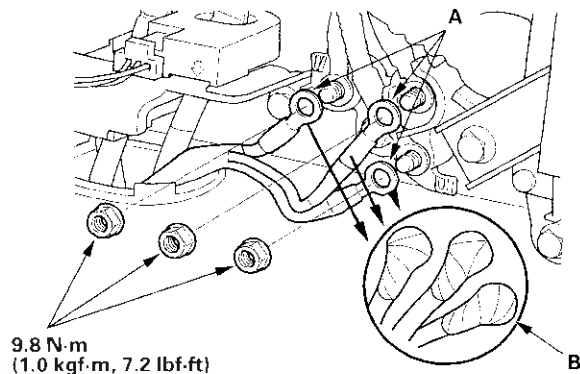
YES—Go to step 10.

NO—Repair connection, then go to step 13.

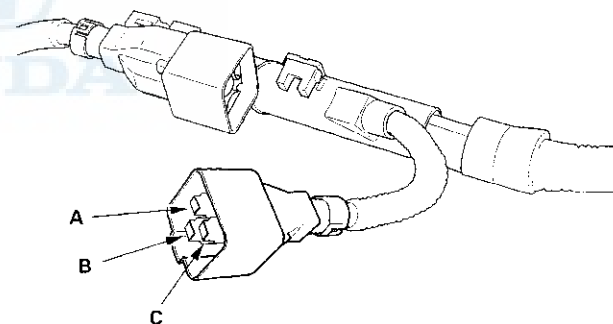
10. Remove the IPU lid (see page 12-140).

11. Disconnect the A/C compressor power cable (A) from the stay.

NOTE: Wrap A/C compressor power cables with insulating tape (B).



12. Check for continuity between A/C compressor power cable terminals (A) and (B), (B) and (C), (C) and (A) individually.



Is there continuity?

YES—Replace the A/C compressor driver (see page 21-99), then go to step 13.

NO—Replace the A/C compressor and A/C compressor power cable (see page 21-92), then go to step 13.



13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
16. Turn the ignition switch ON (II).
17. Reset the MCM (see page 12-6).
18. Note the outside temperature.

NOTE: Outside temperature is above 41 °F (5 °C).

19. Start the engine, let it idle 5 minutes.
20. Turn the A/C on, then set to 77 °F (25 °C).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A4 is indicated, check for poor connections or loose terminals at the A/C driver and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P15A5 (85): Motor Current Sensor Circuit Malfunction

1. Start the engine, and let it idle 10 seconds.
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A5E, P0A5F, P0A61, P0A62, P0A64, P1440, P0A3F, and/or P0A65 indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Test drive the vehicle using wide open throttle for at least 2 seconds and then decelerate using light braking.
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15A5 indicated?

YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the motor power cable, U/V/W phase motor current sensor, and the MCM. ■

6. Check the U PHASE MOTOR CURRENT SENSOR, V PHASE MOTOR CURRENT SENSOR, and W PHASE MOTOR CURRENT SENSOR in the DATA LIST with the HDS individually with idle.

Does the data stick 0 A?

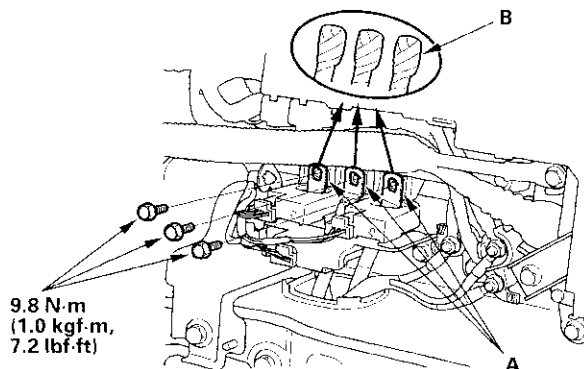
YES—Replace the the U/V/W phase motor current sensor that caused the data to stick, then go to step 22.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Turn the battery module switch OFF (see page 12-4).
9. Remove the IPU lid (see page 12-140).

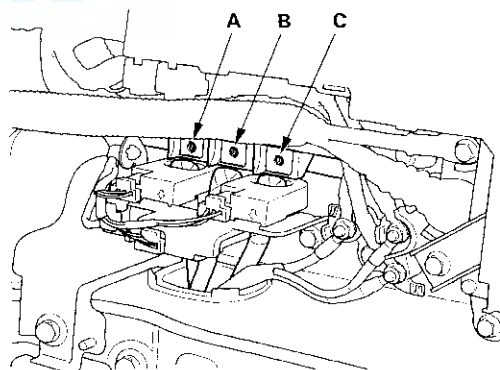
10. Remove the motor power cables (A) from the MPI module.

NOTE: Wrap motor power cables with insulating tape (B).



11. Disconnect the motor power cable connector from the motor stator (see page 12-148).
12. Measure resistance between the motor power cable terminals (A) and (B), (B) and (C), (C) and (A) individually.

NOTE: Use 250 V range of the insulation resistance tester.



Is there 350 kΩ or higher?

YES—Replace the MPI module (see page 12-144), then go to step 13.

NO—Replace the motor power cable (see page 12-148), then go to step 22.



13. Turn the ignition switch OFF.
14. Reconnect all connectors.
15. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
16. Turn the ignition switch ON (II).
17. Reset the MCM (see page 12-6).
18. Test drive the vehicle using wide open throttle for at least 2 seconds and then decelerate using light braking.
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A5 is indicated, check for poor connections or loose terminals at the U/V/W phase motor current sensor, the motor power cable, and the MCM, then go to step 20. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

20. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
21. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A5 is indicated, replace the motor stator (see page 12-153), then go to step 22. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

22. Turn the ignition switch OFF.
23. Reconnect all connectors.
24. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
25. Turn the ignition switch ON (II).
26. Reset the MCM (see page 12-6).

27. Test drive the vehicle using wide open throttle for at least 2 seconds and then decelerate using light braking.

28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A5 is indicated, check for poor connections or loose terminals at the U/V/W phase motor current sensor, the motor power cable, and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

IMA System

DTC Troubleshooting (cont'd)

DTC P15A6 (86): U Phase Motor Current Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A5E, and/or P0A5F indicated?

YES—Do the troubleshooting for DTC P0A5E (see page 12-44), and/or DTC P0A5F (see page 12-47).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check for Temporary DTCs or DTCs with the HDS.

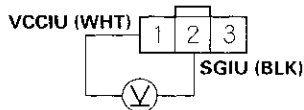
Is DTC P15A6 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at U phase motor current sensor and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Measure voltage between U phase motor current sensor 3P connector terminals No. 1 and No. 2.

U PHASE MOTOR CURRENT SENSOR
3P CONNECTOR



Wire side of female terminals

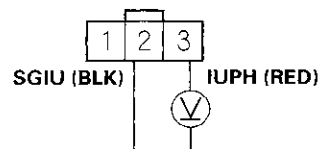
Is there 4.8–5.2 V?

YES—Go to step 9.

NO—Go to step 16.

9. Measure voltage between U phase motor current sensor 3P connector terminals No. 2 and No. 3.

U PHASE MOTOR CURRENT SENSOR
3P CONNECTOR



Wire side of female terminals

Is there 2.3–2.7 V?

YES—Go to step 16.

NO—Replace the U phase motor current sensor (see page 12-143), then go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
13. Turn the ignition switch ON (II).
14. Reset the MCM (see page 12-6).
15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A6 is indicated, check for poor connections or loose terminals at the U phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

16. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
17. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).



18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A6 is indicated, check for poor connections or loose terminals at the U phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P15A7 (87): V Phase Motor Current Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A61, and/or P0A62 indicated?

YES—Do the troubleshooting for DTC P0A61 (see page 12-49), and/or DTC P0A62 (see page 12-52).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P15A7 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the V phase motor current sensor and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).

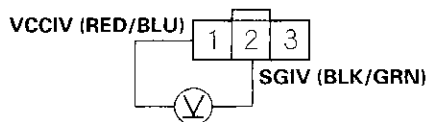
(cont'd)

IMA System

DTC Troubleshooting (cont'd)

8. Measure voltage between V phase motor current sensor 3P connector terminals No. 1 and No. 2.

V PHASE MOTOR CURRENT SENSOR
3P CONNECTOR



Wire side of female terminals

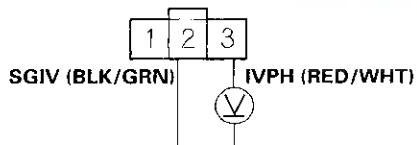
Is there 4.8–5.2 V?

YES—Go to step 9.

NO—Go to step 16.

9. Measure voltage between V phase motor current sensor 3P connector terminals No. 2 and No. 3.

V PHASE MOTOR CURRENT SENSOR
3P CONNECTOR



Wire side of female terminals

Is there 2.3–2.7 V?

YES—Go to step 16.

NO—Replace the V phase motor current sensor (see page 12-143), then go to step 10.

10. Turn the ignition switch OFF.

11. Reconnect all connectors.

12. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

13. Turn the ignition switch ON (II).

14. Reset the MCM (see page 12-6).

15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A7 is indicated, check for poor connections or loose terminals at the V phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

16. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

17. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A7 is indicated, check for poor connections or loose terminals at the V phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P15A8 (88): W Phase Motor Current Sensor Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0A64, and/or P0A65 indicated?

YES—Do the troubleshooting for DTC P0A64 (see page 12-54), and/or P0A65 (see page 12-57).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check for Temporary DTCs or DTCs with the HDS.

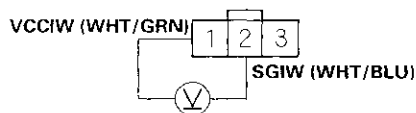
Is DTC P15A8 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the W phase motor current sensor and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Measure voltage between W phase motor current sensor 3P connector terminals No. 1 and No. 2.

**W PHASE MOTOR CURRENT SENSOR
3P CONNECTOR**



Wire side of female terminals

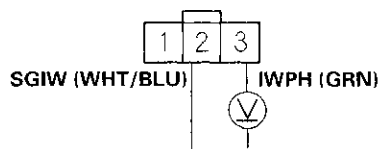
Is there 4.8—5.2 V?

YES—Go to step 9.

NO—Go to step 16.

9. Measure voltage between W phase motor current sensor 3P connector terminals No. 2 and No. 3.

**W PHASE MOTOR CURRENT SENSOR
3P CONNECTOR**



Wire side of female terminals

Is there 2.3—2.7 V?

YES—Go to step 16.

NO—Replace the W phase motor current sensor (see page 12-143), then go to step 10.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
13. Turn the ignition switch ON (II).
14. Reset the MCM (see page 12-6).
15. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A8 is indicated, check for poor connections or loose terminals at the W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

16. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
17. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

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IMA System

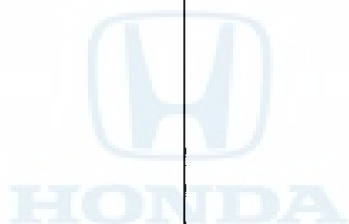
DTC Troubleshooting (cont'd)

18. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15A8 is indicated, check for poor connections or loose terminals at the W phase motor current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■





DTC P15AA (93): Motor Rotor Position Not Learned

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Start the engine, and let it idle 1 minute.
4. Turn the ignition switch OFF, then turn it ON (II).
5. Check for Temporary DTCs or DTCs with the HDS.

Are any DTC(s) except P15AA indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 6.

6. Reset the MCM (see page 12-6).
7. Do the MOTOR ROTOR POSITION CALIBRATION in the INSPECTION MENU with the HDS.

Does the screen indicate COMPLETE?

YES—Troubleshooting is complete. ■

NO—Check for poor connections at the motor rotor position sensor, motor rotor position rotor, and at the motor stator. If connections are not OK, replace the motor rotor position sensor that had a poor connection (see page 12-154), then go to step 8.

8. Turn the ignition switch OFF.
9. Reconnect all connectors.

10. Turn the ignition switch ON (II).
11. Reset the MCM (see page 12-6).
12. Start the engine, and let it idle 1 minute.
13. Turn the ignition switch OFF, then it ON (II).
14. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P15AA is indicated, check for poor connections or loose terminals at the motor rotor position sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

DTC Troubleshooting (cont'd)

DTC P1629 (79): Battery Current Sensor Circuit Malfunction

NOTE: If DTC P0A1B is stored at the same time as DTC P1629, troubleshoot DTC P1629 first, then recheck for DTC P0A1B.

1. Turn the ignition switch ON (II), and wait 10 seconds.
2. Check the BATTERY CURRENT SENSOR SUPPLY VOLTAGE (POSITIVE) in the DATA LIST with the HDS.

Is about 9.5 – 14.5 V?

YES—Go to step 3.

NO—Go to step 4.

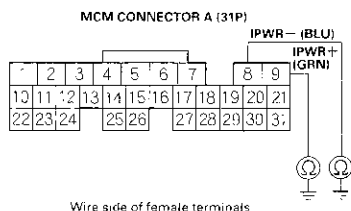
3. Check the BATTERY CURRENT SENSOR SUPPLY VOLTAGE (NEGATIVE) in the DATA LIST with the HDS.

Is about – 9.5 – – 14.5 V?

YES—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the battery current sensor and the MCM. ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect the battery current sensor 3P connector.
8. Disconnect MCM connector A (31P).
9. Check for continuity between body ground and MCM connector terminals A8, A9 individually.



Is there continuity?

YES—Repair short in the wire between the battery current sensor and the MCM (A8, A9), then go to step 10.

NO—Go to step 17.

10. Turn the ignition switch OFF.
11. Reconnect all connectors.
12. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
13. Turn the ignition switch ON (II).
14. Reset the MCM (see page 12-6).
15. Turn the ignition switch ON (II), and wait 10 seconds.
16. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1629 is indicated, check for poor connections or loose terminals at the battery current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
18. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1629 is indicated, check for poor connections or loose terminals at the battery current sensor and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P1634 (47): Motor Power Inverter (MPI) Module Signal Circuit Malfunction

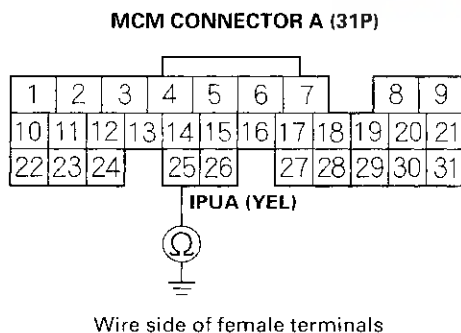
1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1634 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MPI module and the MCM. ■

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect MCM connector A (31P).
8. Disconnect the MPI module 16P connector.
9. Check for continuity between MCM connector terminal A25 and body ground.

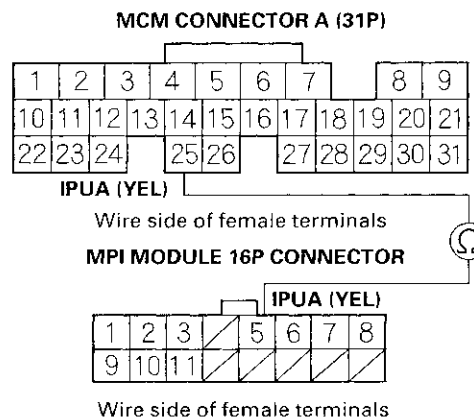


Is there continuity?

YES—Repair short in the wire between the MPI module and the MCM (A25), then go to step 24.

NO—Go to step 10.

10. Check for continuity between MCM connector terminal A25 and MPI module 16P connector terminal No. 5.

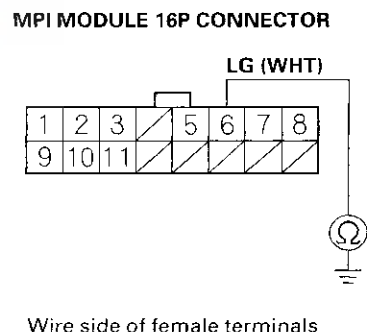


Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the MPI module and the MCM (A25), then go to step 24.

11. Check for continuity between MPI module 16P connector terminal No. 6 and body ground.



Is there continuity?

YES—Go to step 12.

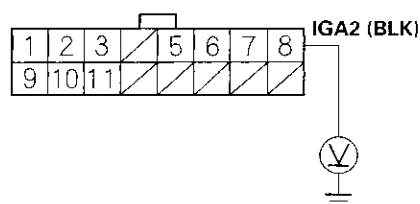
NO—Repair open in the wire between the MPI module and G652, then go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

12. Reconnect MCM connector A (31P).
13. Turn the ignition switch ON (II).
14. Measure voltage between MPI module 16P connector terminal No. 8 and body ground.

MPI MODULE 16P CONNECTOR



Wire side of female terminals

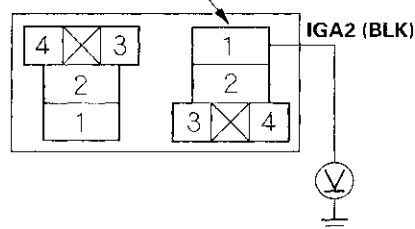
Is there 12 V battery voltage?

YES—Replace the MPI module (see page 12-144), then go to step 30.

NO—Go to step 15.

15. Measure voltage between MCM relay 2 4P connector terminal No. 1 and body ground.

MCM RELAY 2 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between MCM relay 2 and the MPI module, then go to step 24.

NO—Go to step 16.

16. Check MCM relay 2 (see page 22-72).

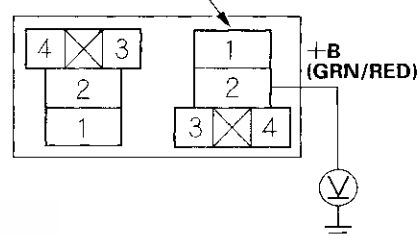
Is the relay OK?

YES—Go to step 17.

NO—Replace MCM relay 2, then go to step 24.

17. Measure voltage between MCM relay 2 4P connector terminal No. 2 and body ground.

MCM RELAY 2 4P CONNECTOR



Wire side of female terminals

Is there 12 V battery voltage?

YES—Go to step 19.

NO—Go to step 18.

18. Check the +B IMA (10 A) fuse.

Is the fuse OK?

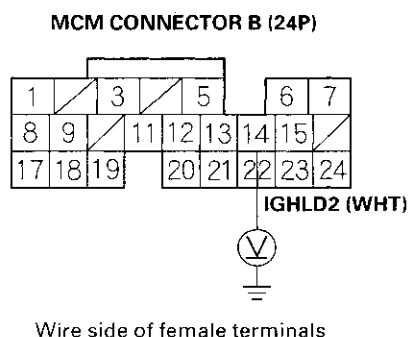
YES—

- Replace the +B IMA (10 A) fuse
- Repair open in the wire the +B IMA (10 A) fuse and ignition hold relay 2.
- Repair open in the wire the +B IMA (10 A) fuse and the OPTION (40 A) fuse.
- Repair open in the wire the 12 V battery and the OPTION (40 A) fuse.

NO—Repair open in the wire between MCM relay 2 and the +B IMA (10 A). Also replace the +B IMA (10 A) fuse, OPTION (40 A) fuse, then go to step 24.

19. Turn the ignition switch ON (II).

20. Measure voltage between MCM connector terminal B14 and body ground.

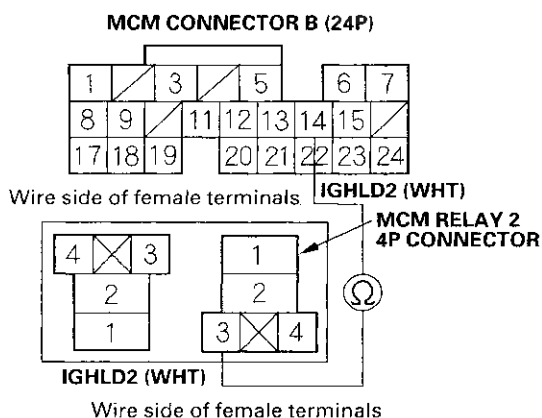


Is there battery voltage?

YES—Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4), then go to step 35.

NO—Go to step 21.

21. Turn the ignition switch OFF.
22. Disconnect MCM connector B (24P).
23. Check for continuity between MCM connector terminal B14 and MCM relay 2 4P connector terminal No. 3.



Is there continuity?

YES—Repair open in the wire between MCM relay 1 and MCM relay 2, then go to step 24.

NO—Repair open in the wire between MCM relay 2 and the MCM (B14), then go to step 24.

24. Turn the ignition switch OFF.
25. Reconnect all connectors.
26. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
27. Turn the ignition switch ON (II).
28. Reset the MCM (see page 12-6).
29. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1634 is indicated, check for poor connections or loose terminals at the MPI module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

30. Turn the ignition switch OFF.
31. Reconnect all connectors.
32. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
33. Turn the ignition switch ON (II).
34. Reset the MCM (see page 12-6).
35. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
36. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1634 is indicated, check for poor connections or loose terminals at the MPI module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P1636 (32): Motor Power Inverter (MPI) Module Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1636 indicated?

YES—Replace the MPI module (see page 12-144), then go to step 4.

NO—Intermittent failure, system is OK at this time. ■

4. Turn the ignition switch ON (II).
5. Reset the MCM (see page 12-6).
6. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1636 is indicated, check for poor connections or loose terminals at the MPI module and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

DTC P1673 (22): Motor Control Module (MCM) Relay Stays Activated

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Turn the ignition switch ON (II) then OFF, and wait at least 30 seconds. Turn the ignition switch ON (II) again.

4. Check for Temporary DTCs or DTCs with the HDS.

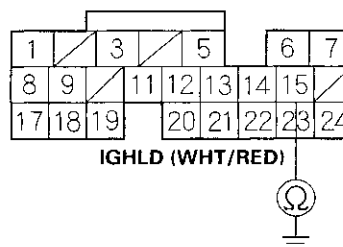
Is DTC P1673 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MCM relay and the MCM. ■

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Disconnect MCM connector B (24P).
9. Check for continuity between body ground and MCM connector terminal B15.

MCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between MCM relay 1 and the MCM (B15), then go to step 11.

NO—Go to step 10.



10. Check the MCM relay (see page 22-72).

Is the relay OK?

YES—Go to step 18.

NO—Replace the MCM relay, then go to step 11.

11. Turn the ignition switch OFF.
12. Reconnect all connectors.
13. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
14. Turn the ignition switch ON (II).
15. Reset the MCM (see page 12-6).
16. Turn the ignition switch ON (II) then OFF, and wait at least 30 seconds. Turn the ignition switch ON (II) again.
17. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1673 is indicated, check for poor connections or loose terminals at the No. 7 BACK UP (10 A) fuse and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

18. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
19. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P1673 is indicated, check for poor connections or loose terminals at the No. 7 BACK UP (10 A) fuse and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC P16C1 (91): Motor Control Module (MCM) Program Not Installed (Motor Control Program)

DTC P16C2 (92): Motor Control Module (MCM) Program Not Installed (Battery Condition Monitor Program)

NOTE: If DTC P16C1 is stored at the same time as DTC P0A27, troubleshoot DTC P16C1 first, then recheck for P0A27.

1. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
2. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C1, P16C2 is indicated, replace the original MCM (see page 12-8). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC Troubleshooting (cont'd)

DTC P16C3 (31): DC-DC Converter Temperature Sensor Circuit Malfunction

NOTE: If the IPU module fan duct is blocked, DTC P16C3 may be detected.

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1220 or U1221 indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Go to step 3.

3. Check the DC-DC CONVERTER TEMP. in the DATA LIST with the HDS.

Is about more than 419 °F (215 °C), or less than -40 °F (-40 °C) indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. ■

4. Check the IPU module air duct and IPU module fan for disconnection, damage or obstructions.

Are the IPU module air duct and IPU module fan OK?

YES—Replace the DC-DC converter (see page 12-143), then go to step 5.

NO—Repair the IPU module air duct or IPU module fan as necessary, then go to step 5.

5. Turn the ignition switch ON (II).
6. Reset the MCM (see page 12-6).

7. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC P16C3 is indicated, check for poor connections or loose terminals at the DC-DC converter and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■



DTC U0100 (55): Motor Control Module (MCM) Lost Communication with PCM

1. Connect the HDS (see page 11-3).
2. Turn the ignition switch ON (II), and read the HDS.

Does the HDS communicate with the PCM?

YES—Go to step 3.

NO—Go to “DLC Circuit Troubleshooting” (see page 11-137). If no problem is found in the DLC troubleshooting.

3. Check for Temporary DTCs or DTCs of the PGM-FI system with the HDS.

Is DTC U0037 indicated?

YES—Do the troubleshooting for DTC U0037 (see page 11-180).

NO—Go to step 4.

4. Reset the MCM (see page 12-6).
5. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0100 indicated?

YES—Go to step 6.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the PCM and the MCM. ■

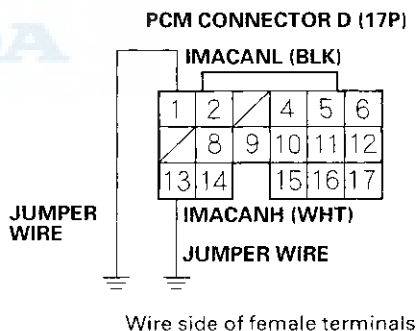
6. Check for Temporary DTCs or DTCs of the PGM-FI system with the HDS.

Are DTC U1201, U0110, and U0164 indicated at same time?

YES—Go to step 7.

NO—Go to step 15.

7. Turn the ignition switch OFF.
8. Turn the battery module switch OFF (see page 12-4).
9. Remove the IPU lid (see page 12-140).
10. Disconnect MCM connector A (31P).
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector D (17P).
13. Disconnect the A/C compressor driver 4P connector.
14. Connect PCM connector terminals D13 and D1 to body ground with a jumper wire individually.

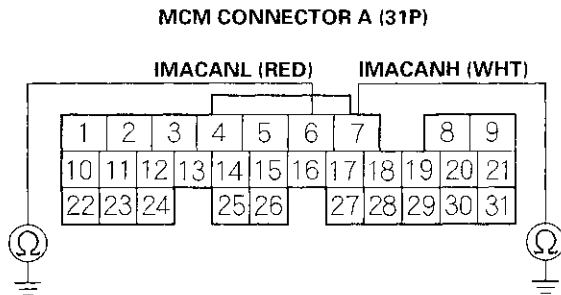


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IMA System

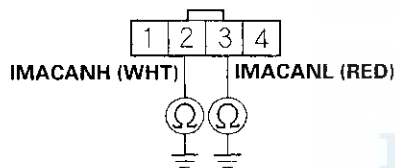
DTC Troubleshooting (cont'd)

15. Check for continuity between MCM connector terminals A7, A6 and body ground, and between A/C compressor driver 4P connector terminals No. 2, No. 3 and body ground individually.



Wire side of female terminals

A/C COMPRESSOR DRIVER 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the A/C compressor driver, the MCM (A7, A6), and the PCM (D13, D1).

16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0164 indicated?

YES—Go to step 17.

NO—Go to step 20.

17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

18. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

19. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0100 is indicated, check for poor connections or loose terminals at the PCM and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

20. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).

21. Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 11-6).

22. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U0100 is indicated, check for poor connections or loose terminals at the PCM and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-5).

DTC U1202 (64): Motor Control Module (MCM) Internal Circuit Malfunction

DTC U1203 (75): Motor Control Module (MCM) Internal Circuit Malfunction

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs of the PGM-FI system with the HDS.

Is DTC U0037 indicated?

YES—Do the troubleshooting for DTC U0037 (see page 11-180).

NO—Go to step 3.

3. Reset the MCM (see page 12-6).
4. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1202 or U1203 indicated?

YES—Go to step 5.

NO—Intermittent failure, system is OK at this time. ■

5. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).

6. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1202 or U1203 is indicated, check for poor connections or loose terminals at the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC U1220 (34): DC-DC Converter Lost Communication with Motor Control Module (MCM)

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Check for Temporary DTCs or DTCs with the HDS.

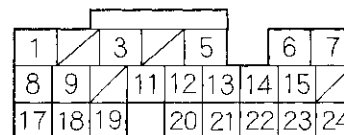
Is DTC U1220 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the DC-DC converter and the MCM. ■

4. Turn the ignition switch OFF.
5. Turn the battery module switch OFF (see page 12-4).
6. Remove the IPU lid (see page 12-140).
7. Disconnect MCM connector B (24P).
8. Disconnect the DC-DC converter 4P connector.
9. Check for continuity between MCM connector terminal B19 and body ground.

MCM CONNECTOR B (24P)



DVB (YEL/BLU)



Wire side of female terminals

Is there continuity?

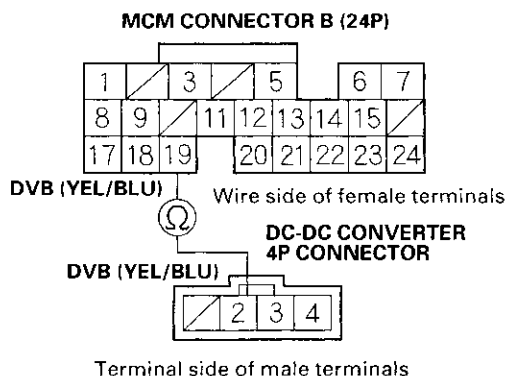
YES—Repair short in the wire between the DC-DC converter and the MCM (B19), then go to step 15.

NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between MCM connector terminal B19 and DC-DC converter 4P connector terminal No. 2.



Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the DC-DC converter and the MCM (B19), then go to step 15.

11. Turn the ignition switch ON (II).
12. Reset the MCM (see page 12-6).
13. Substitute a known-good DC-DC converter (see page 12-143).
14. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1220 indicated?

YES—Go to step 21.

NO—Replace the original DC-DC converter (see page 12-143), then go to step 15.

15. Turn the ignition switch OFF.
16. Reconnect all connectors.
17. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
18. Turn the ignition switch ON (II).
19. Reset the MCM (see page 12-6).

20. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1220 is indicated, check for poor connections or loose terminals at the DC-DC converter and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

21. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
22. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
23. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1220 is indicated, check for poor connections or loose terminals at the DC-DC converter and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■

DTC U1221 (35): Motor Control Module (MCM) Lost Communication with DC-DC Converter

1. Turn the ignition switch ON (II).
2. Reset the MCM (see page 12-6).
3. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1221 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the DC-DC converter and the MCM. ■

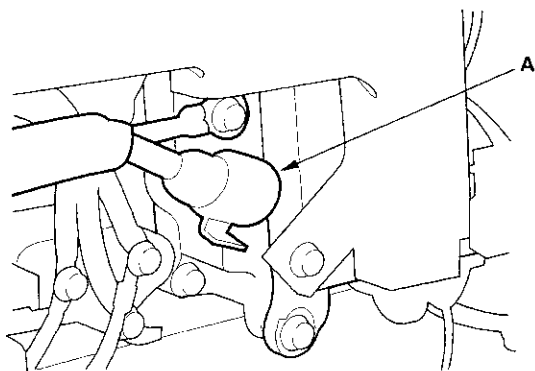
4. Check the under-hood fuse/relay box terminal (ORN wire) connection.

Is the connection OK?

YES—Go to step 5.

NO—Repair connection in the wire terminal, then go to step 18.

5. Turn the ignition switch OFF.
6. Turn the battery module switch OFF (see page 12-4).
7. Remove the IPU lid (see page 12-140).
8. Check the +B connector (A) on the DC-DC converter.



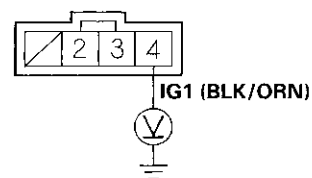
Is +B connector OK?

YES—Go to step 9.

NO—Repair the +B connector (A) on the DC-DC converter as necessary, then go to step 20.

9. Disconnect the DC-DC converter 4P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between DC-DC converter 4P connector terminal No. 4 and body ground.

DC-DC CONVERTER 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES—Go to step 12.

NO—

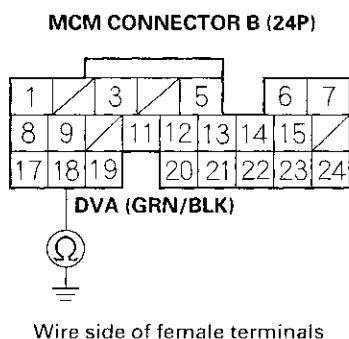
- Repair open in the wire between the DC-DC converter and the No. 18 ACG (15 A) fuse in the under-dash fuse/relay box, then go to step 20.
- Replace the No. 18 ACG (15 A) fuse.

12. Turn the ignition switch OFF.
13. Disconnect MCM connector B (24P).

(cont'd)

DTC Troubleshooting (cont'd)

14. Check for continuity between MCM connector terminal B18 and body ground.

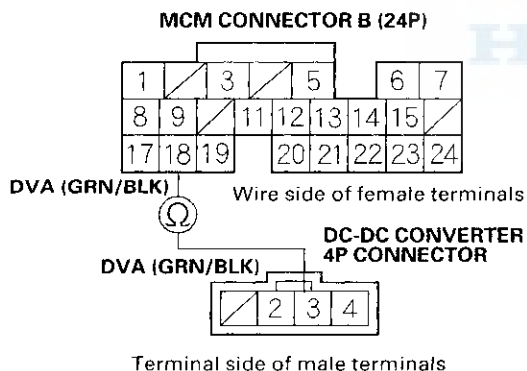


Is there continuity?

YES—Repair short in the wire between the DC-DC converter and the MCM (B18), then go to step 20.

NO—Go to step 15.

15. Check for continuity between MCM connector terminal B18 and DC-DC converter 4P connector terminal No. 3.



Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the DC-DC converter and the MCM (B18), then go to step 20.

16. Substitute a known-good DC-DC converter (see page 12-143).
17. Turn the ignition switch ON (II).
18. Reset the MCM (see page 12-6).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U1221 indicated?

YES—Go to step 26.

NO—Replace the original DC-DC converter (see page 12-143), then go to step 20.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
23. Turn the ignition switch ON (II).
24. Reset the MCM (see page 12-6).
25. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1221 is indicated, check for poor connections or loose terminals at the DC-DC converter and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—Troubleshooting is complete. ■

26. Reinstall the IPU lid (see page 12-140), then turn the battery module switch ON (see page 12-4).
27. Update the MCM if it does not have the latest software, or substitute a known-good MCM (see page 12-8).
28. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—If DTC U1221 is indicated, check for poor connections or loose terminals at the DC-DC converter and the MCM, then go to step 1. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.

NO—If the MCM was updated, troubleshooting is complete. If the MCM was substituted, replace the original MCM (see page 12-8). ■



IMA System Indicator Circuit Troubleshooting

NOTE: If the IMA system indicator stay on or never comes on, then do this troubleshooting (if no DTC's are set).

1. Turn the ignition switch ON (II), and watch the IMA system indicator.

Does the IMA system indicator come on?

YES—Go to step 2.

NO—Go to step 4.

2. Turn the ignition switch ON (II), wait 2 seconds, and watch the IMA system indicator.

Does the IMA system indicator come on and stay on?

YES—Go to step 3.

NO—The IMA system indicator circuit is OK. ■

3. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting.

NO—Do the gauge self-diagnostic function (see page 22-226).

4. Do the gauge self-diagnostic function (see page 22-226).

Does the IMA system indicator flash?

YES—Go to step 5.

NO—Substitute a known-good gauge control module, and recheck. If the IMA system indicator circuit is OK, replace the original gauge control module. ■

5. Check the 12 V battery terminal connections.

Are the connections OK?

YES—Go to step 6.

NO—Repair the connections or replace the 12 V battery. ■

6. Turn the ignition switch OFF.

7. Turn the battery module switch OFF (see page 12-4).

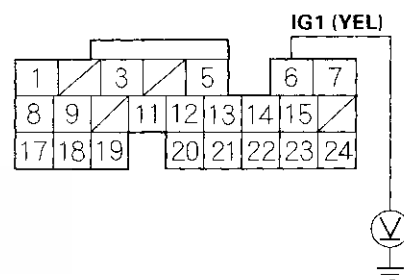
8. Remove the IPU lid (see page 12-140).

9. Disconnect MCM connector B (24P).

10. Turn the ignition switch ON (II).

11. Measure voltage between MCM connector terminal B6 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 12.

NO—

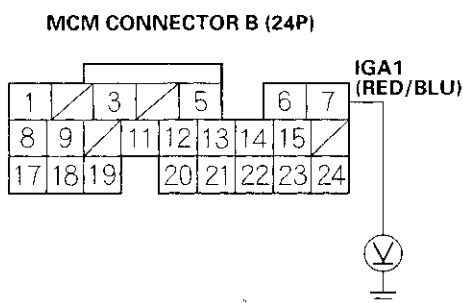
- Repair open or short in the wire between the No. 21 METER (7.5 A) fuse in the under-dash fuse/relay box and the MCM (B6).
- Replace the No. 21 METER (7.5 A) fuse. ■

(cont'd)

IMA System

IMA System Indicator Circuit Troubleshooting (cont'd)

12. Measure voltage between MCM connector terminal B7 and body ground.



Wire side of female terminals

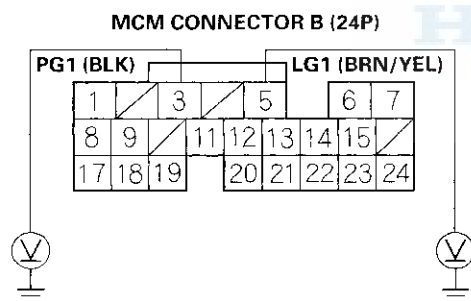
Is there battery voltage?

YES—Go to step 13.

NO—Go to step 15.

13. Disconnect MCM connector B (24P).

14. Check for continuity between body ground and MCM connector terminals B3 and B5 individually.



Wire side of female terminals

Is there continuity?

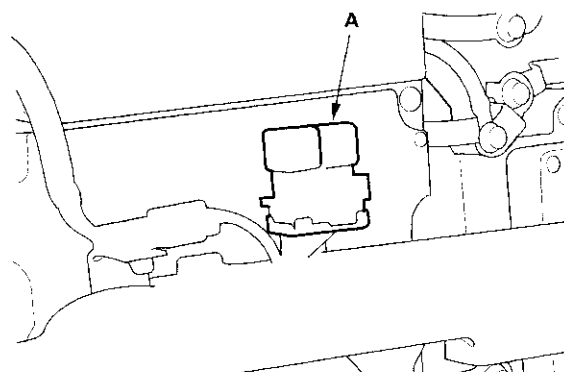
YES—Update the MCM if it does not have the latest software, or substitute a known-good MCM, then recheck (see page 12-8). If the symptom/indication goes away with a known-good MCM, replace the original MCM (see page 12-8). ■

NO—

- Repair open in the wire between G652 and the MCM (B3).
- Repair open in the wire between G901, G902 and the MCM (B5). ■

15. Turn the ignition switch OFF.

16. Remove MCM relay 1 (A).



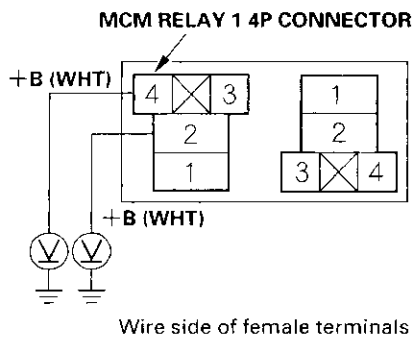
17. Check MCM relay 1 (see page 22-72).

Is the relay OK?

YES—Go to step 18.

NO—Replace MCM relay 1. ■

18. Measure voltage between body ground and MCM relay 1 4P connector terminals No. 2 and No. 4 individually.



Is there battery voltage?

YES—Go to step 20.

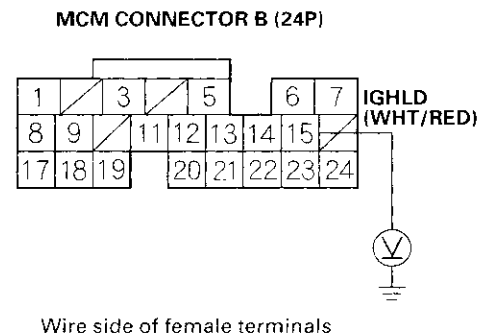
NO—

- Repair open in the wire between the IMA (7.5 A) and MCM relay 1. Also replace the IMA (7.5 A) fuse.
- Repair short in the wire between MCM relay 1, MCM relay 2, and MCM (B7).
- Repair open in the wire between the IMA (7.5 A) and OPTION (40 A) fuse. Also replace the OPTION (40 A) fuse. ■

19. Reconnect MCM relay 1.

20. Turn the ignition switch ON (II).

21. Measure voltage between MCM connector terminal B15 and body ground.



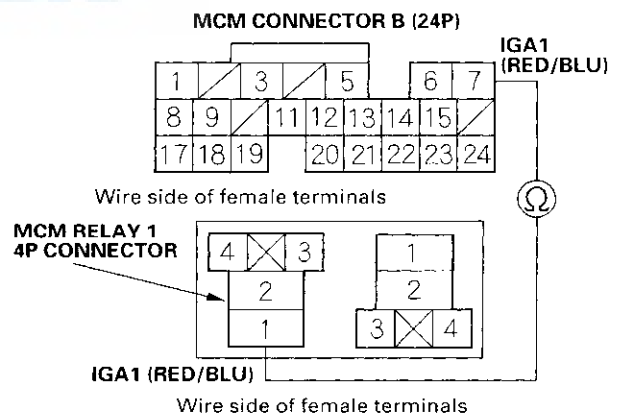
Is there battery voltage?

YES—Go to step 22.

NO—Repair open in the wire between MCM relay 1 and the MCM (B15). ■

22. Turn the ignition switch OFF.

23. Check for continuity between MCM connector terminals B7 and MCM relay 1 4P connector terminal No. 1.



Is there continuity?

YES—Update the MCM if it does not have the latest software, or substitute a known-good MCM, then recheck (see page 12-8). If the symptom/indication goes away with a known-good MCM, replace the original MCM (see page 12-8). ■

NO—Repair open in the wire between MCM relay 1 and the MCM (B7). ■

IMA System

Charging System Indicator Circuit Troubleshooting

NOTE:

- If the 12 V battery voltage is too low charge for starter motor turned, the charging system indicator light may come on.
- If the charging system indicator light stay on or never comes on at all, then do this troubleshooting (if no DTC's are set).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 3.

3. Turn the ignition switch OFF.
4. Check the 12 V battery (see page 22-71).

Is 12 V battery OK?

YES—Go to step 5.

NO—Charge or replace the 12 V battery. ■

5. Turn the ignition switch ON (II).

Does the charging system indicator comes on?

YES—Go to step 6.

NO—Do the gauge self-diagnostic function (see page 22-226). ■

6. Start the engine.

Does the charge system indicator go off?

YES—The charging system indicator circuit is OK. ■

NO—Go to step 7.

7. Do the gauge self-diagnostic function (see page 22-226).

Does the charging system indicator flash?

YES—Go to step 8.

NO—Substitute a known-good gauge control module, and recheck. If the charging system indicator circuit is OK, replace the original gauge control module. ■

8. Wait 2 minutes at idle.

9. Check for Temporary DTCs or DTCs with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES—Go to the indicated DTC's troubleshooting. ■

NO—Go to step 10.

10. Watch the charging system indicator.

Does the charge system indicator go off?

YES—The DC-DC converter was in temporary shut down mode, due to temperature extremes. ■

NO—Go to step 11.

11. Check the MPI VOLTAGE in the DATA LIST with the HDS.

Is about 90–192 V indicated?

YES—Check for installation of the DC-DC converter. ■

NO—Replace the DC-DC converter (see page 12-143). ■

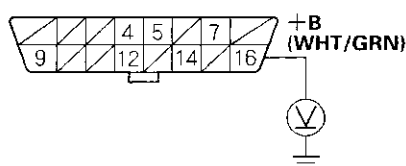
DLC Circuit Troubleshooting

NOTE:

- If the MCM does not communicate with the HDS, do this troubleshooting procedure.
- Check that the IMA system indicator circuit is normal, then do this troubleshooting.

1. Measure voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

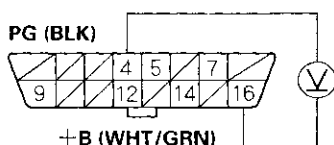
Is there battery voltage?

YES—Go to step 2.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 8 FI ECU (PCM) (15 A) fuse in the under-hood fuse/relay box. ■

2. Measure voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

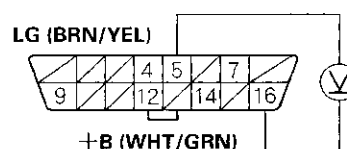
Is there battery voltage?

YES—Go to step 3.

NO—Repair open in the wire between DLC terminal No. 4 and body ground. ■

3. Measure voltage between DLC terminals No. 5 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

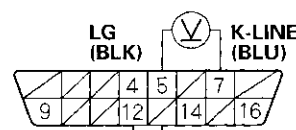
Is there battery voltage?

YES—Go to step 4.

NO—Repair open in the wire between DLC terminal No. 5 and body ground. ■

4. Turn the ignition switch ON (II).
5. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 8.5 V or more?

YES—Go to step 13.

NO—Go to step 6.

6. Turn the ignition switch OFF.

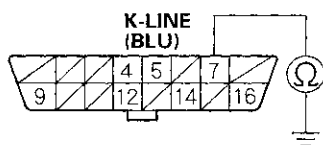
(cont'd)

IMA System

DLC Circuit Troubleshooting (cont'd)

7. Turn the battery module switch OFF (see page 12-4).
8. Remove the IPU lid (see page 12-140).
9. Disconnect MCM connector B (24P). Make sure the HDS is disconnected from the DLC.
10. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

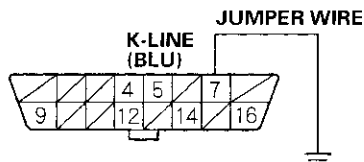
Is there continuity?

YES—Repair short to ground in the wire between DLC terminal No. 7 and the MCM (B17). After repairing the wire, check for a DTC with the HDS. If there is a DTC, go to the DTC Troubleshooting. ■

NO—Go to step 11.

11. Connect DLC terminal No. 7 to body ground with a jumper wire.

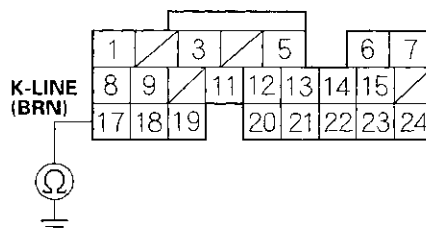
DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

12. Check for continuity between MCM terminal B17 and body ground.

MCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

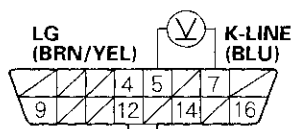
YES—Update the MCM if it does not have the latest software, or substitute a known-good MCM, then recheck (see page 12-8). If the symptom/indication goes away with a known-good MCM, replace the original MCM (see page 12-8). ■

NO—Repair open in the wire between DLC terminal No. 7 and the MCM (B17). After repairing the wire, check for a DTC with the HDS. If there is a DTC, go to the DTC Troubleshooting. ■

13. Turn the ignition switch OFF.
14. Turn the battery module switch OFF (see page 12-4).
15. Remove the IPU lid (see page 12-140).
16. Disconnect MCM connector B (24P). Make sure the HDS is disconnected from the DLC.

17. Turn the ignition switch ON (II).
18. Measure voltage between DLC terminals No. 5 and No. 7.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there 0 V?

YES—Update the MCM if it does not have the latest software, or substitute a known-good MCM, then recheck (see page 12-8). If the symptom/indication goes away with a known-good MCM, replace the original MCM (see page 12-8). ■

NO—Repair short to power in the wire between DLC terminal No. 7 and the MCM (B17). After repairing the wire, check for a DTC with the HDS. If there is a DTC, go to the DTC Troubleshooting. ■

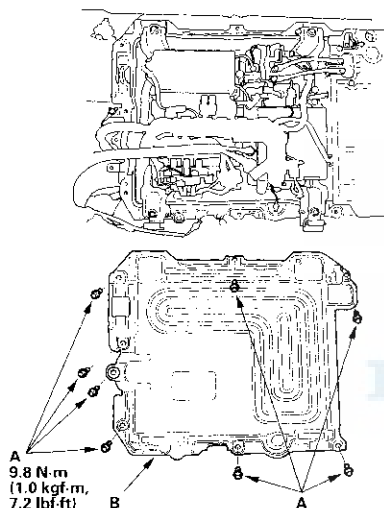
IMA System

IPU Lid Removal/Installation

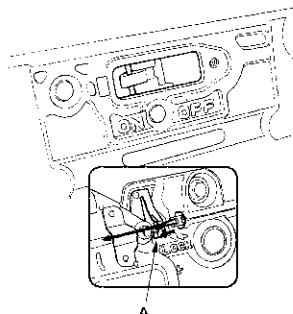
NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the rear seat back, and seat cushion (see page 20-95).
2. Turn the battery module switch OFF (see page 12-4).
3. Remove the bolts (A).



4. Remove the IPU lid (B).
5. Install the parts in the reverse order of removal.
6. Before the battery module switch is turned ON, make sure all the high voltage circuits are connected properly. Then push the tab (A) and then turn the battery module switch ON.

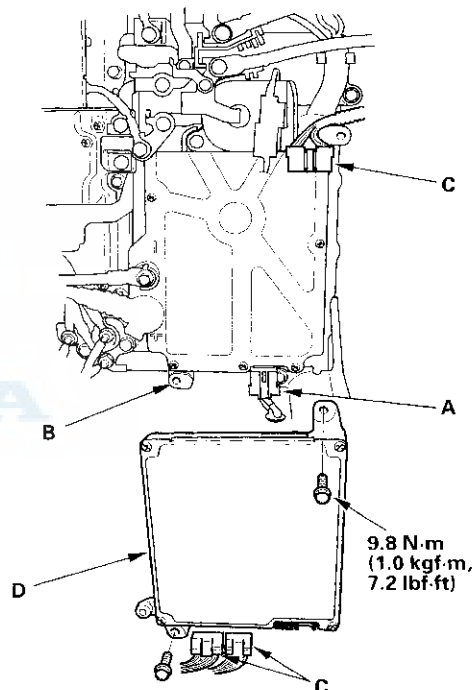


MCM Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the IPU lid (see page 12-140).
2. Rise the harness holder. Disconnect the DC-DC converter connector (A) and ground wire from the terminal (B).



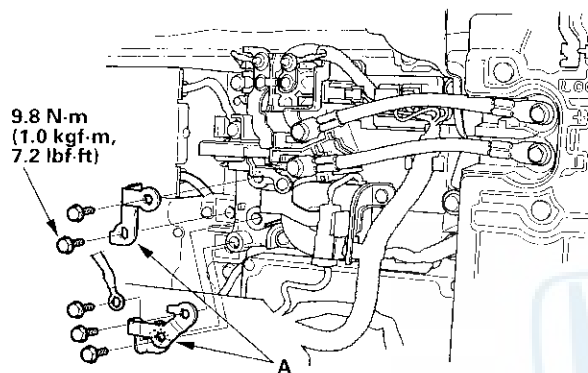
3. Disconnect MCM connectors (C).
4. Remove the MCM (D).
5. Install the parts in the reverse order of removal.
6. Do the PCM idle learn procedure (see page 11-340).
7. Do the MOTOR ROTOR POSITION CALIBRATION (see page 12-6), if the MCM has been replaced.

Junction Board Removal/Installation

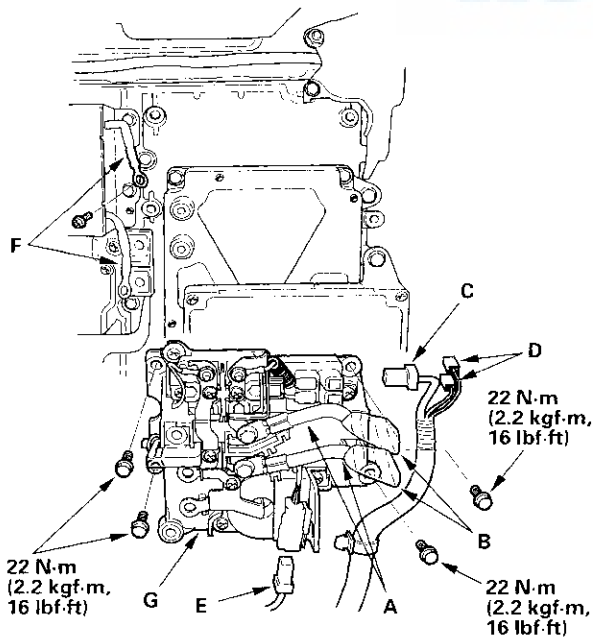
NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the IPU lid (see page 12-140).
2. Remove the busbars (A).



3. Remove the high voltage cables (A), then wrap them with insulating tape (B).

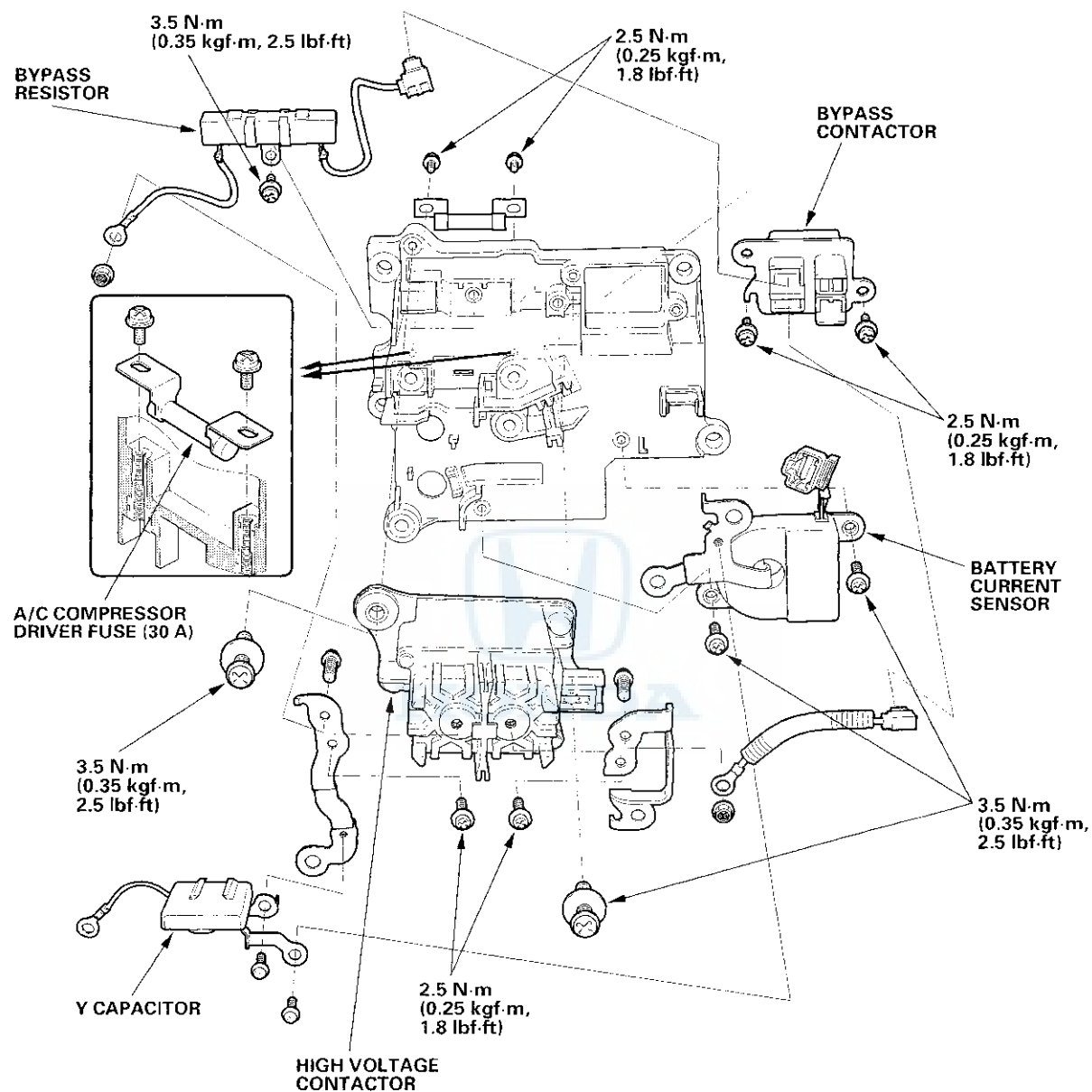


4. Disconnect the high voltage contactor connector (C), and bypass contactor terminals (D).
5. Disconnect the battery current sensor connector (E), and A/C compressor driver wires (F).
6. Remove the bolts.
7. Remove the junction board (G).
8. Install the parts in the reverse order of removal.

IMA System

Junction Board Disassembly/Reassembly

1. Remove the junction board (see page 12-141).



2. Install the parts in the reverse order of removal.

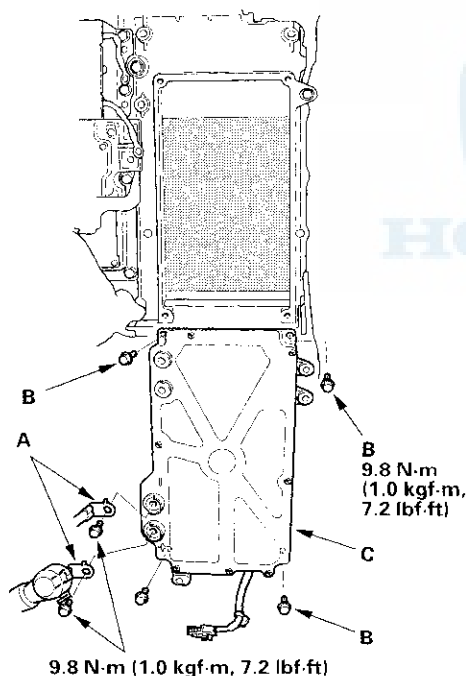


DC-DC Converter Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Disconnect the negative cable from the 12 V battery.
2. Remove the IPU lid (see page 12-140).
3. Remove the MCM (see page 12-140).
4. Remove the junction board (see page 12-142).
5. Remove the wires (A).



6. Remove the bolts (B), and DC-DC converter (C).
7. Install the parts in the reverse order of removal.

NOTE: If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

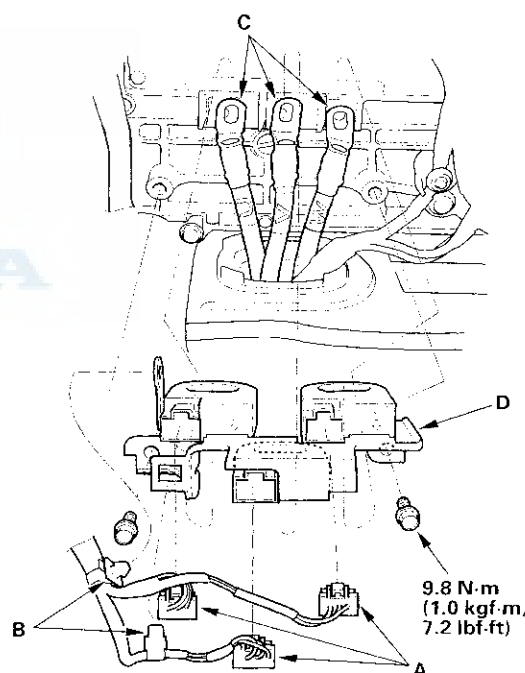
Motor Current Sensor Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the IPU lid (see page 12-140).
2. Disconnect the motor current sensor connectors (A), and clips (B).

NOTE: Check the position of the U phase, V phase and W phase cables before disconnecting the motor power cables.



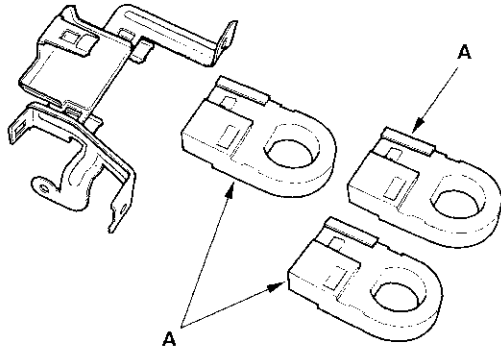
3. Remove the motor power cables (C) and wrap them with insulating tape.
4. Remove the motor current sensor stay (D).

(cont'd)

IMA System

Motor Current Sensor Removal/Installation (cont'd)

5. Remove the motor current sensors (A).



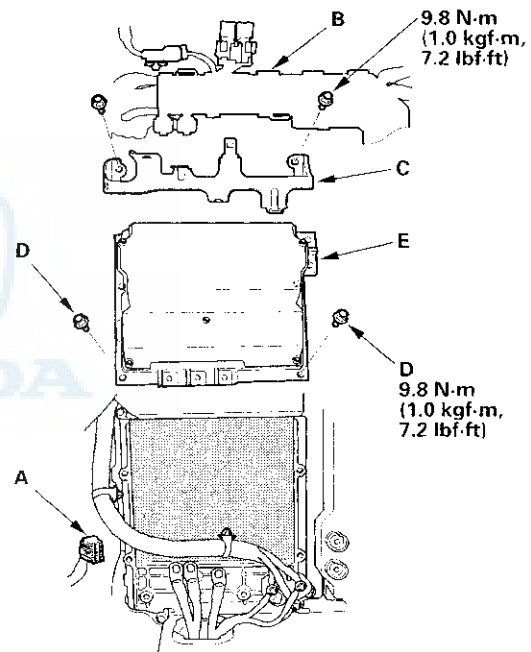
6. Install the parts in the reverse order of removal.

MPI Module Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

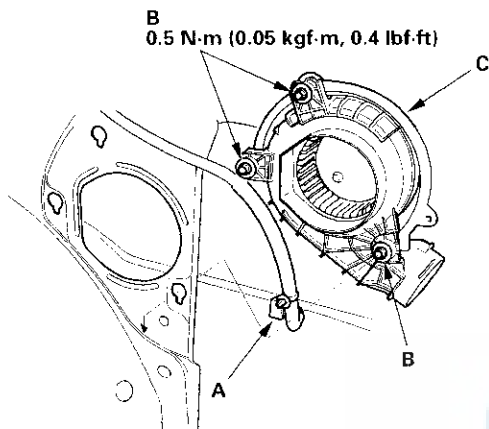
1. Remove the IPU lid (see page 12-140).
2. Remove the motor current sensor (see page 12-143).
3. Disconnect the MPI module connector (A).



4. Remove the harness holder (B), and harness holder stay (C).
5. Remove the bolts (D), and MPI module (E).
6. Install the parts in the reverse order of removal.

IPU Module Fan Removal/ Installation

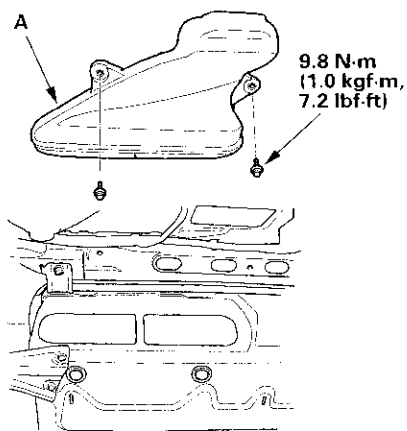
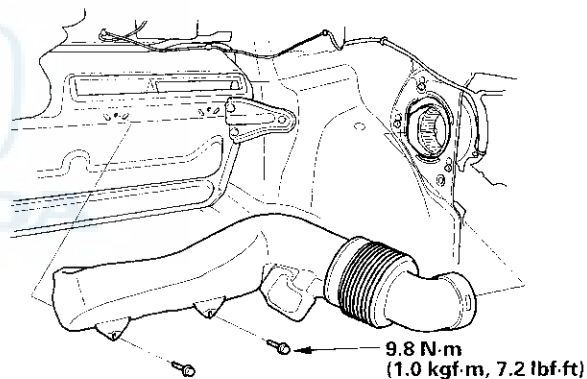
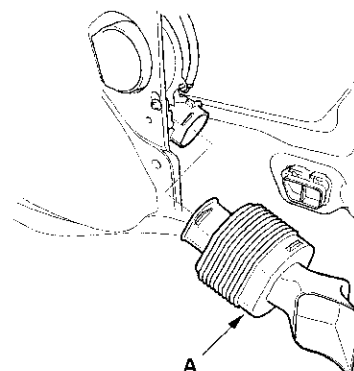
1. Remove the spare tire lid and the trunk front trim panel (see page 20-53).
2. Remove the IPU module air duct (see page 12-145).
3. Disconnect the IPU module fan connector (A).



4. Remove the bolts (B).
5. Remove the IPU module fan (C).
6. Install the parts in the reverse order of removal.

IPU Module Air Duct Removal/ Installation

1. Remove the spare tire lid and the trunk front trim panel (see page 20-53).
2. Remove the IPU module air ducts (A).



3. Install the parts in the reverse order of removal.

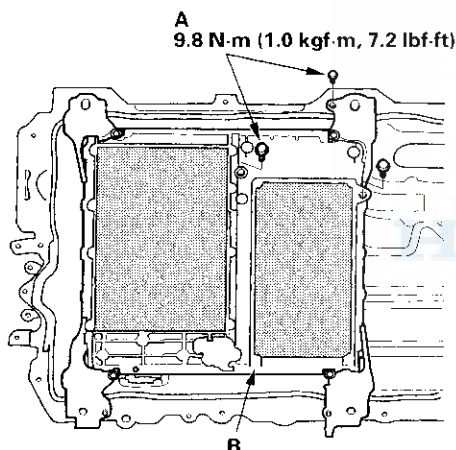
IMA System

PDU/DC-DC Converter Heatsink Air Duct Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the MPI module (see page 12-144).
2. Remove the DC-DC converter (see page 12-143).
3. Remove the A/C compressor driver (see page 21-99).
4. Remove the bolts (A) and PDU/DC-DC converter heatsink air duct (B).



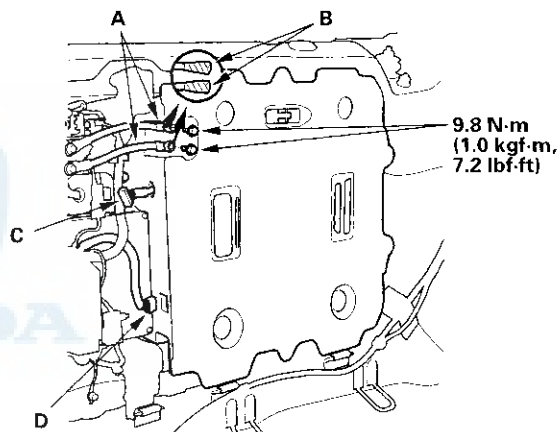
5. Install the parts in the reverse order of removal.

Battery Module Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Disconnect the negative cable to the 12 V battery.
2. Remove the IPU lid (see page 12-140).
3. Remove the high voltage cables (A), then wrap them with insulating tape (B).

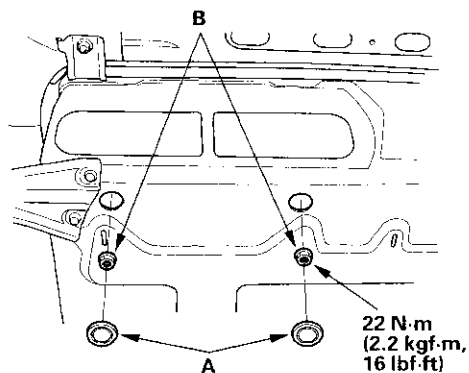


4. Disconnect the MCM connector (C), and battery module connector (D).
5. Remove the spare tire lid and the trunk front trim panel (see page 20-53).

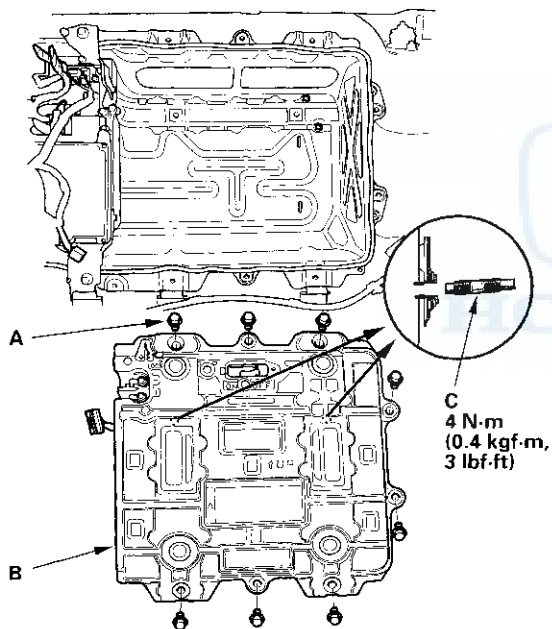


IPU Case Removal/Installation

6. Remove the caps (A) and nuts (B).



7. Remove the bolts (A).



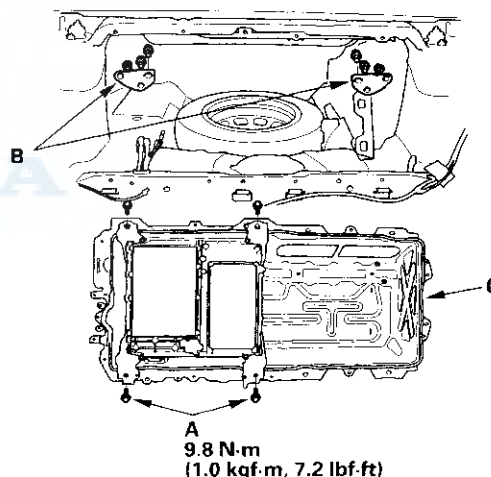
8. Remove the battery module (B).
9. Remove the stud bolts (C) from the battery module, if necessary.

10. Install the parts in the reverse order of removal.

NOTE: Put on gloves to protect your hands from electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the MPI module (see page 12-144).
2. Remove the DC-DC converter (see page 12-143).
3. Remove the A/C compressor driver (see page 21-99).
4. Remove the battery module (see page 12-146).
5. Remove the PDU/DC-DC converter heatsink air duct (see page 12-146).
6. Remove the bolts (A).



7. Remove the stays (B).
8. Remove the IPU case (C).
9. Install the parts in the reverse order of removal.

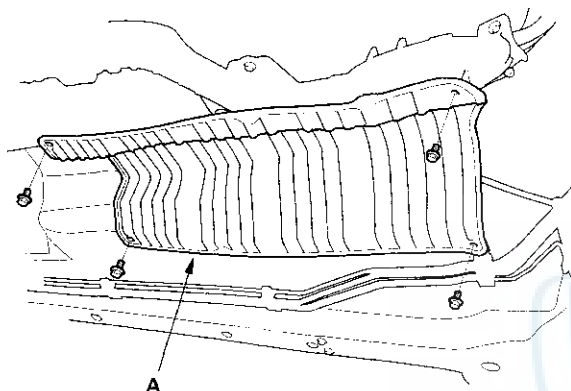
IMA System

Motor Power Cable Removal/Installation

NOTE: Put on gloves to protect your hands from electrical shock.

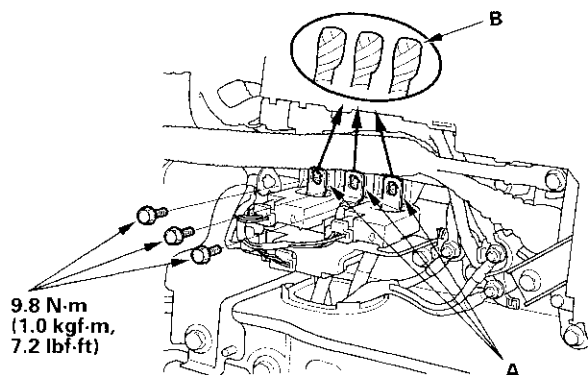
IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the fuel tank (see page 11-367).
2. Remove the heat shield (A).



3. Remove the IPU lid (see page 12-140).
4. Disconnect the motor power cables (A) from the MPI module, then wrap them with insulating tape (B).

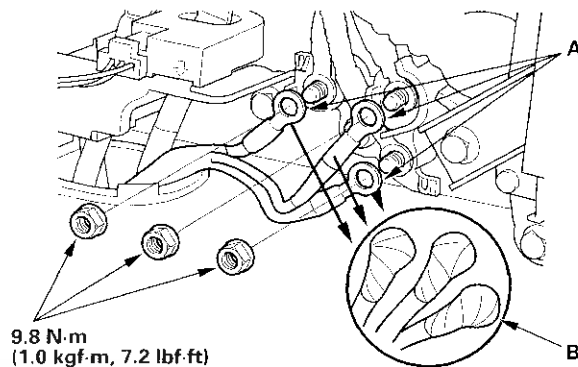
NOTE: Check the position of the U phase, V phase and W phase cables before disconnecting the motor power cables.



5. Remove the motor current sensors (see step 2 on page 12-143).

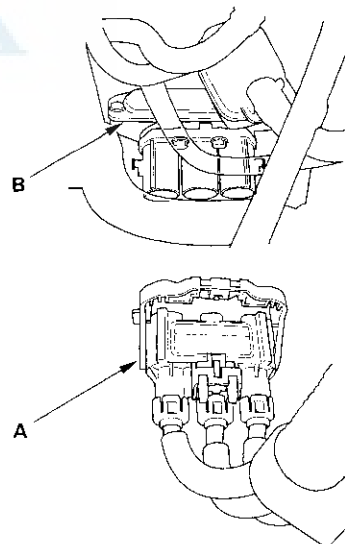
6. Disconnect the A/C compressor power cables (A) from the terminal stay, then wrap them with insulating tape (B).

Note the position of the U phase, V phase, and W phase cables before disconnecting the motor power cables.

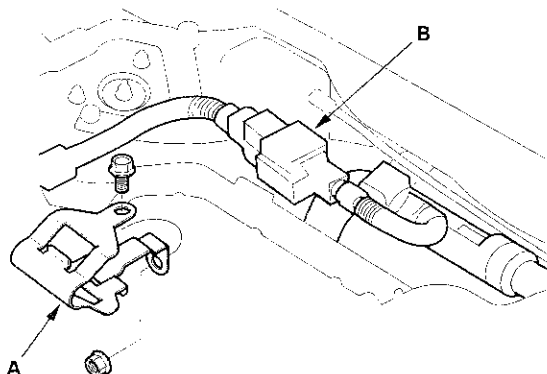


7. Disconnect the motor power cable connector (A) from the motor stator (B).

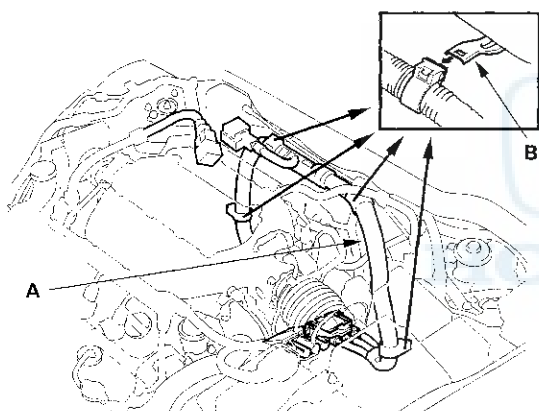
NOTE: Refer to disconnecting motor power cable connector from motor stator (see page 12-3).



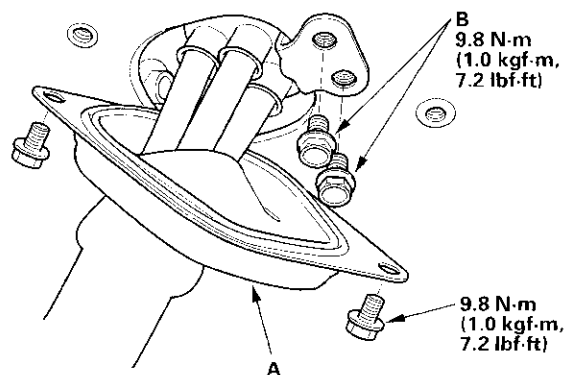
8. Remove the cover (A), and disconnect the motor power cable connector (B).



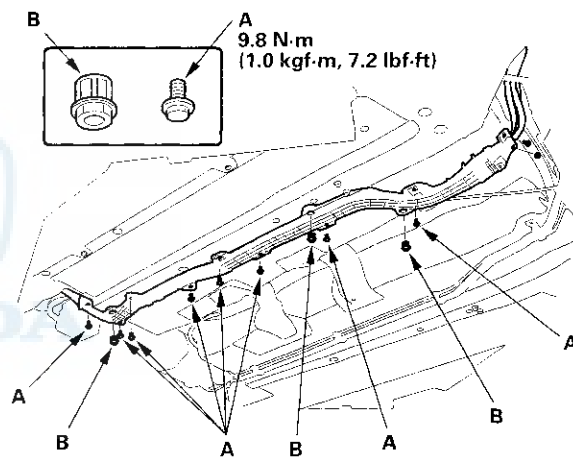
9. Remove the motor power cable (A) from the stays (B).



10. Remove the cover (A), and bolts (B).



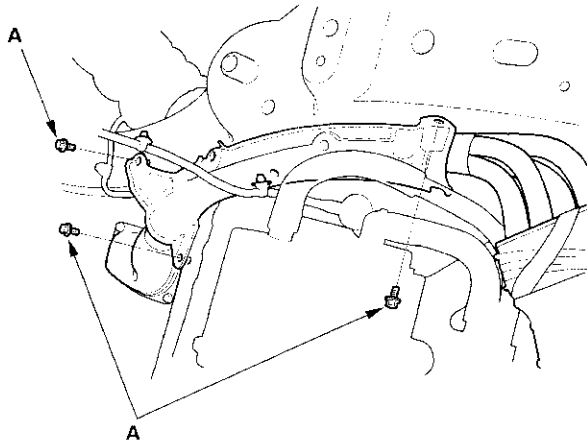
11. Remove the bolts (A), and grommets (B).



(cont'd)

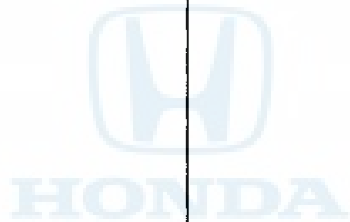
IMA System

Motor Power Cable Removal/Installation (cont'd)



12. Install the parts in the reverse order of removal.

NOTE: When installing the motor power cable, set the grommets first.





IMA Motor Rotor Removal/Installation

Special Tools Required

Rotor puller (Available for loan from AHM Special Tools) 07AAF-RCJA100

The motor rotor contains very strong magnets and should be handled with special care. People with pacemakers or other sensitive medical devices should not handle the motor rotor.

⚠ WARNING

If the motor rotor is installed by hand, it may suddenly be pulled toward the motor stator with great force causing serious hand or finger injury. Always use the special tool to remove or install a motor rotor.

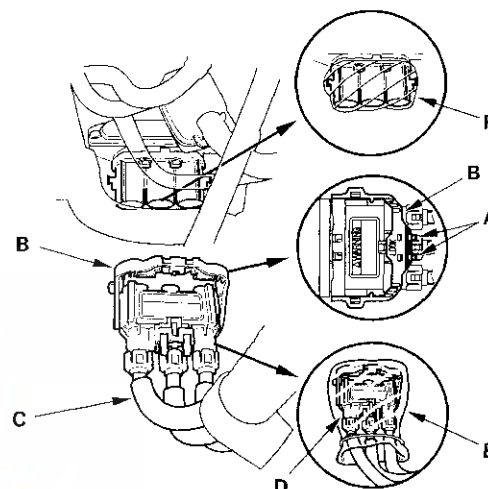
- Keep the motor rotor away from magnetically sensitive devices.
- Do not blow air near the rotor, as metal particles may get on the magnet.
- Store the rotor in the designated storage box and hold it away from the sensitive device during storage.

1. Remove the transmission (see page 14-232).
2. Remove the drive plate and torque converter support hub (see page 14-242).

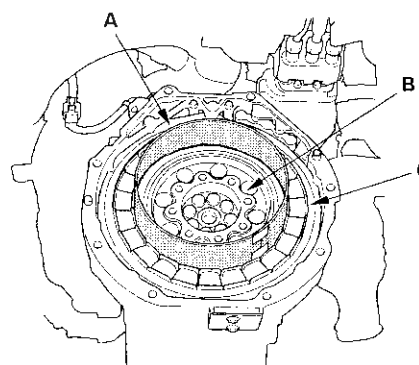
3. Push the tabs (A), then raise the lever (B). Remove the motor power cable (C) from the motor stator.

NOTE:

- If the motor power cable connector is dirty, clean it.
- Cover the disconnect connector (D) with plastic bag (E), and wrap motor power cable terminal with tape (F).
- If the motor power cable is wet, wait until it dry.



4. Install a plastic film (A) between the motor rotor (B) and motor stator (C).

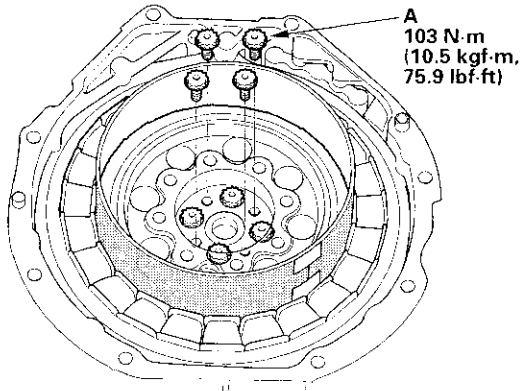


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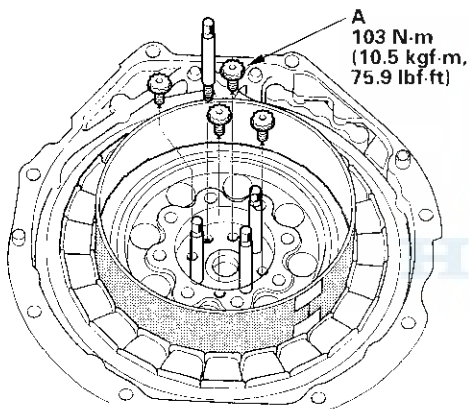
IMA System

IMA Motor Rotor Removal/Installation (cont'd)

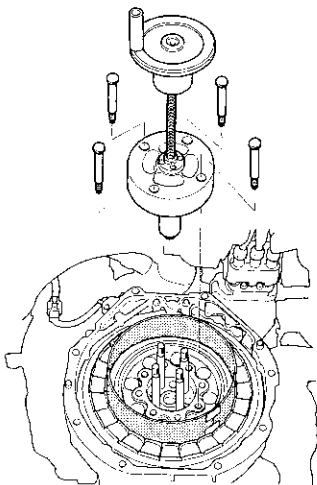
5. Remove four of the eight bolts (A) as shown.



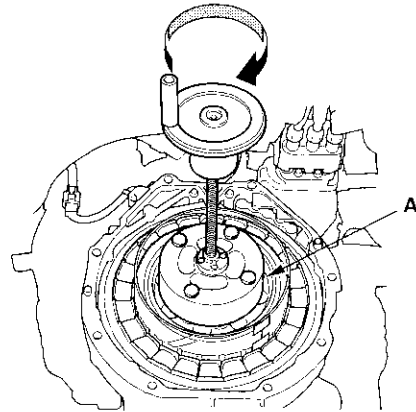
6. Install the rotor puller guide pins, then remove the remaining four bolts (A).



7. Attach the rotor puller with the bolts supplied.

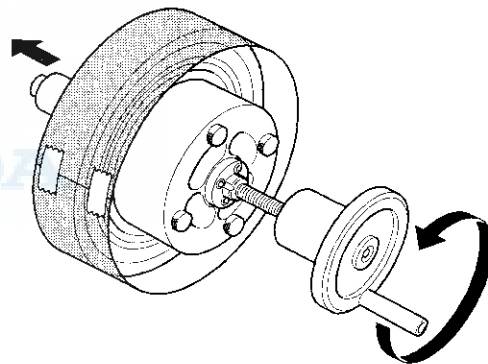


8. Remove the motor rotor (A).



9. Install the parts in the reverse order of removal.

NOTE: Turn the handle of the special tool slowly when inserting the rotor into the stator. The rotor is drawn into the stator by magnetic force.



10. Remove the plastic film.

11. Reconnect the motor power cable to the motor starter.

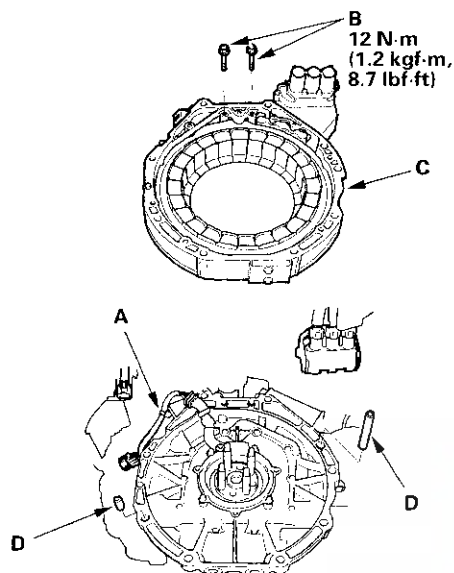
12. Install the drive plate and torque converter support hub (see page 14-242).

13. Install the transmission (see page 14-243).

14. Do the MOTOR ROTOR POSITION CALIBRATION (see page 12-6).

Motor Housing Removal/ Installation

1. Remove the IMA motor rotor (see page 12-151).
2. Remove the clip (A).



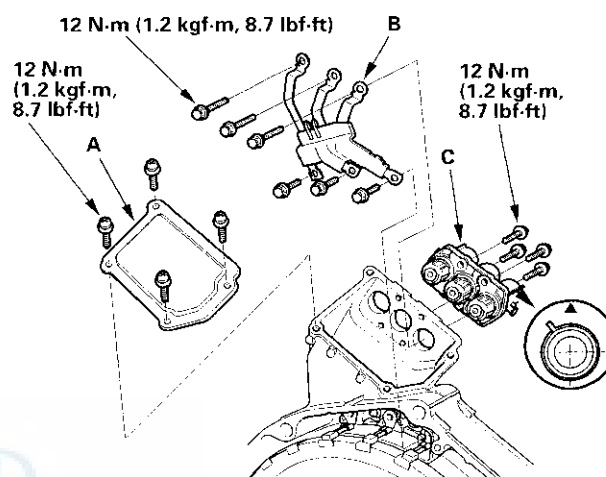
3. Remove the bolts (B), and motor housing (C).

NOTE: Set dowel pins (D) to the motor housing before install the motor stator to the engine.

4. Install the parts in the reverse order of removal.
5. Install the IMA motor rotor (see page 12-151).
6. Do the MOTOR ROTOR POSITION CALIBRATION (see page 12-6).

Motor Housing Disassembly/ Reassembly

1. Remove the IMA motor housing (see page 12-153).
2. Remove the terminal cover (A), busbars (B), shield male connector (C).



3. Install the parts in the reverse order of removal.

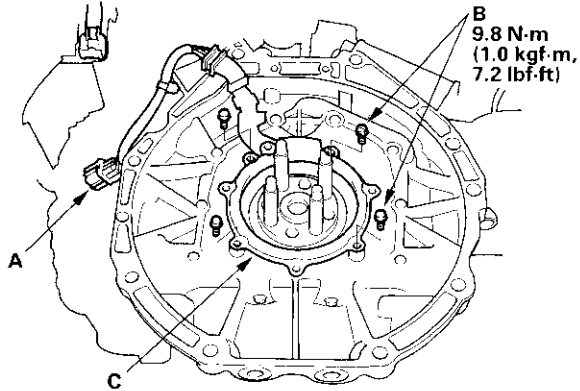
NOTE: When installing the terminal, make sure the direction is secure.

4. Install the IMA motor housing (see page 12-153).
5. Do the MOTOR ROTOR POSITION CALIBRATION (see page 12-6).

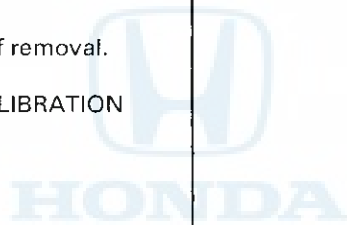
IMA System

Motor Rotor Position Sensor Removal/Installation

1. Remove the IMA motor housing (see page 12-153).
2. Disconnect the motor rotor position sensor connector (A).



3. Remove the bolts (B), and motor rotor position sensor (C).
4. Install the parts in the reverse order of removal.
5. Do the MOTOR ROTOR POSITION CALIBRATION (see page 12-6).



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SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If automatic transmission maintenance is required)

The Accord Hybrid SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components.

Servicing, disassembling, or replacing these items require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



INTEGRATED MOTOR ASSIST (IMA) SYSTEM (If automatic transmission maintenance is required)

IMA components are located in this area. The IMA is a high-voltage system. The high voltage cables and their covers are identified by orange coloring. The safety labels are attached to high voltage and other related parts (see page 1-4). You must be familiar with the IMA system before working on or around it. Make sure you have read the Service Precautions in the IMA section before performing repairs or service (see page 12-3).

Automatic Transmission

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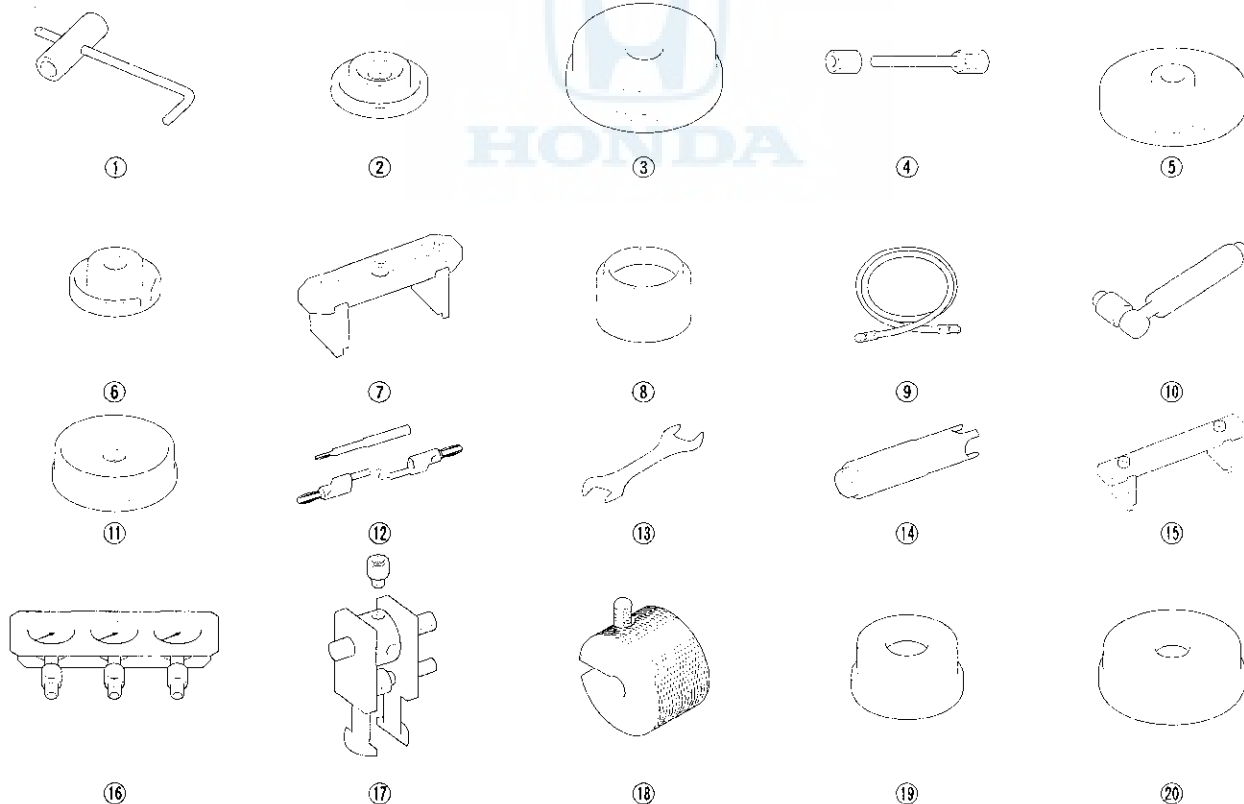


Automatic Transmission

Special Tools

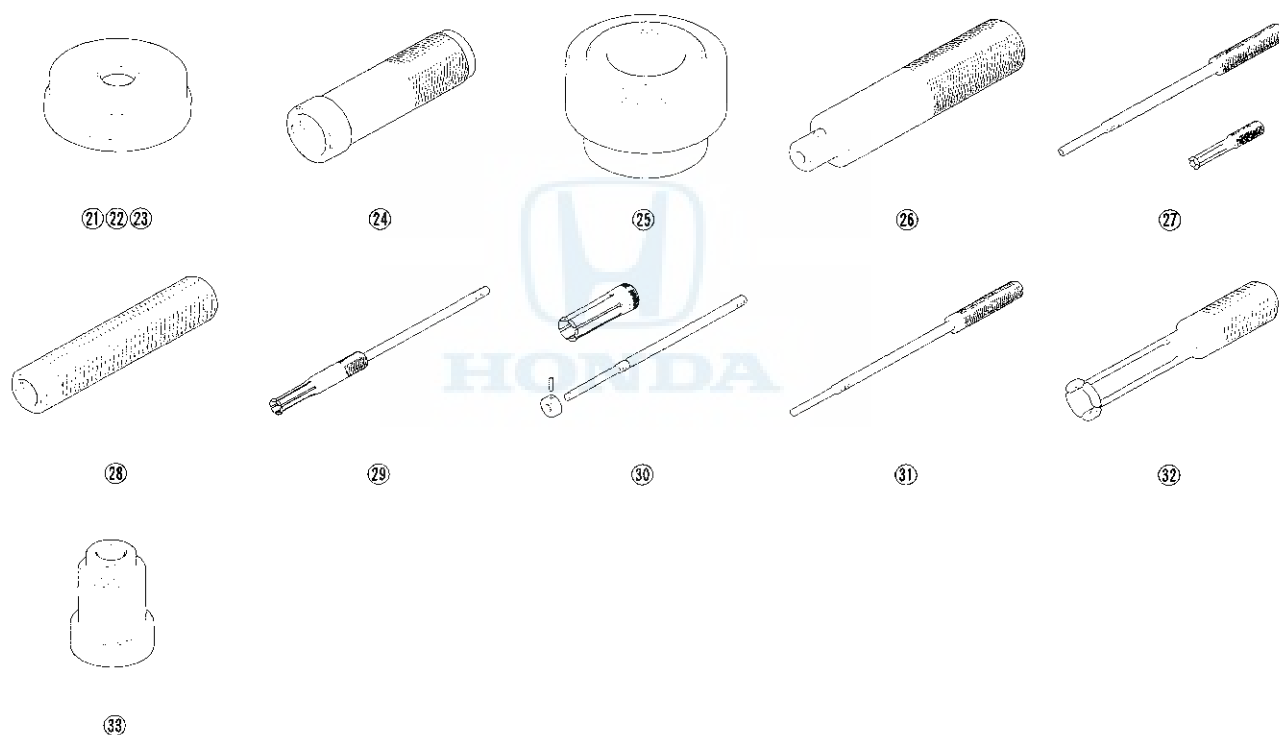
Ref. No.	Tool Number	Description	Qty
①	07GAB-PF50101 or 07GAB-PF50100	Mainshaft Holder	1
②	07GAD-PG40100 or 07GAD-PG40101	Oil Seal Driver Attachment	1
③	07GAD-SD40101	Attachment, 78 x 90 mm	1
④	07GAE-PG40200 or 07GAE-PG4020A	Clutch Spring Compressor Bolt Assembly	1
⑤	07HAD-SG00100	Attachment, 83 mm	1
⑥	07JAD-PH80101	Oil Seal Driver Attachment	1
⑦	07LAE-PX40100	Clutch Spring Compressor Attachment	2
⑧	07MAD-PR90100	Attachment, 45 x 55 mm	1
⑨	07MAJ-PY4011A	A/T Pressure Hose, 2,210 mm	4
⑩	07MAJ-PY40120	A/T Pressure Hose Adapter	4
⑪	07NAD-PX40100	Attachment, 78 x 80 mm	1
⑫	07SAZ-001000A	Backprobe Set	2
⑬	07XAA-002010A	Wrench, 40 x 42 mm	1
⑭	07YAJ-S3V0100	Preload Inspection Tool	1
⑮	07ZAE-PRP0100	Clutch Compressor Attachment	1
⑯	07406-0020400 or 07406-0020401	A/T Oil Pressure Gauge Set W/Pannel	1
⑰	07736-A01000B or 07736-A01000A	Adjustable Bearing Puller, 25—40 mm	1
⑱	07741-0010201	Sliding Hammer Weight	1
⑲	07746-0010200	Attachment, 37 x 40 mm	1
⑳	07746-0010400	Attachment, 52 x 55 mm	1

⑦: 07HAE-PL50101 may also be used to substitute one of these tools.





Ref. No.	Tool Number	Description	Qty
(21)	07746-0010500	Attachment, 62 x 68 mm	1
(22)	07746-0010600	Attachment, 72 x 75 mm	1
(23)	07746-0010800	Attachment, 22 x 24 mm	1
(24)	07746-0030100	Driver, 40 mm I.D.	1
(25)	07746-0030300	Attachment, 30 mm I.D.	1
(26)	07749-0010000	Driver	1
(27)	07936-1660101	Bearing Remover Shaft Set, 12 mm	1
(28)	07936-3710100	Bearing Remover Shaft Handle	1
(29)	07936-3710600	Bearing Remover Shaft Set, 20 mm	1
(30)	07936-8890300	Bearing Remover Shaft Set, 30 mm	1
(31)	07936-GE00100	Bearing Remover Shaft, 10 mm	1
(32)	07936-GE00200	Bearing Remover Head, 10 mm	1
(33)	07947-6340500	Driver Attachment	1

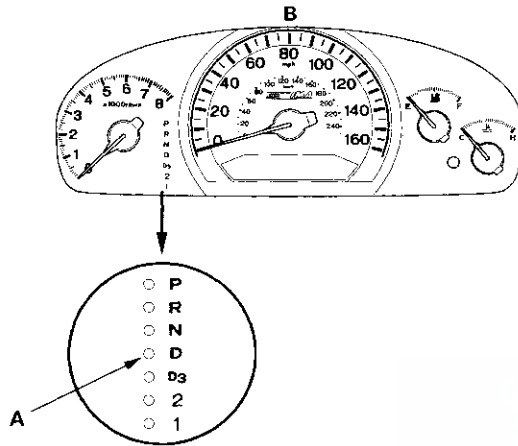


Automatic Transmission

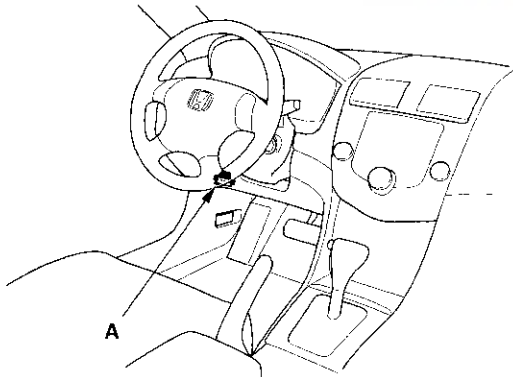
General Troubleshooting Information

How to Check for DTCs with the Honda Diagnostic System

When the powertrain control module (PCM) senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.



When the Honda diagnostic system (HDS) is connected to the data link connector (DLC) (A) (located under the steering column lower cover), it will indicate the diagnostic trouble code (DTC) when the ignition switch is turned ON (II) and the appropriate menu is selected.



If the D indicator or malfunction indicator lamp (MIL) has been reported on, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), select A/T system, and observe the DTC in the DTCs MENU on the HDS screen.
3. Record all fuel and emissions DTCs, and A/T DTCs, and freeze data.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except for DTC P0700; DTC P0700 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for a DTC. If the A/T DTC returns, go to the DTC troubleshooting index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

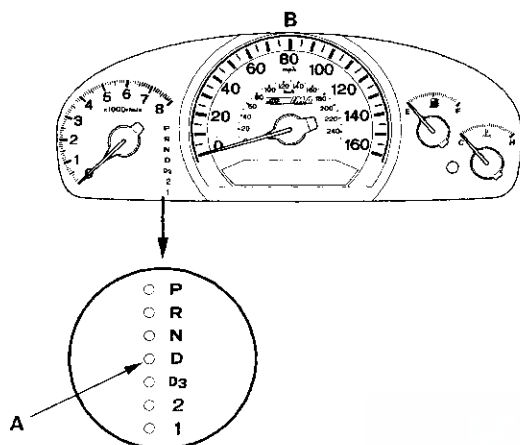
Symptom Troubleshooting Versus DTC Troubleshooting

Some symptoms will not trigger diagnostic trouble codes (DTCs) or cause the D indicator to blink. If the malfunction indicator lamp (MIL) was reported on or the D indicator has been blinking, check for DTCs. If the vehicle has an abnormal symptom, and there are no DTCs stored, go to the symptom troubleshooting index. Check the list of probable cause(s) for the symptom in the sequence listed, until you find the problem.

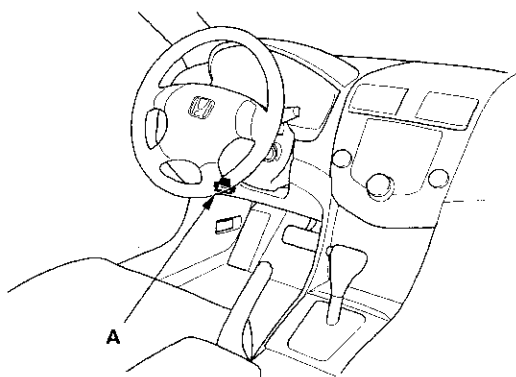


How to Check for DTCs with the SCS Mode (retrieving the flash codes)

When the PCM senses an abnormality in the input or output system, the D indicator (A) in the gauge assembly (B) will usually blink.



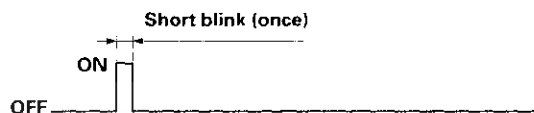
When the D indicator has been reported on, connect the HDS to the DLC (A) (located under the steering column lower cover). Turn the ignition switch ON (II), from the SELECT MODE MENU select SCS mode or connect the SCS line (BRN wire) at the DLC (A) to the body ground with a jumper wire, then the D indicator will indicate (blink) the DTC.



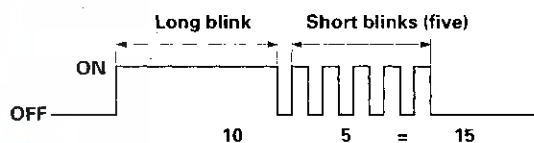
If the D indicator and the MIL come on at the same time, or if a driveability problem is suspected, follow this procedure:

1. Connect the HDS to the DLC. (See the HDS user's manual for specific instructions.)
2. Turn the ignition switch ON (II), from the SELECT MODE MENU select SCS mode, then observe the D indicator in the gauge assembly. Code 1 through 9 are indicated by individual short blinks. Code 10 and above are indicated by a series of long and short blinks. One long blink equals 10 short blinks. Add the long and short blinks together to determine the code.

Example: DTC 1-1



Example: DTC 15-5



3. Record all fuel and emissions DTCs and A/T DTCs.
4. If there is a fuel and emissions DTC, first check the fuel and emissions system as indicated by the DTC (except DTC 70; DTC 70 means there is one or more A/T DTCs, and no problems were detected in the fuel and emissions circuit of the PCM).
5. Clear the DTC and data.
6. Drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, and then recheck for DTC. If the A/T DTC returns, go to the DTC Troubleshooting Index. If the DTC does not return, there was an intermittent problem within the circuit. Make sure all pins and terminals in the circuit are tight.

(cont'd)

Automatic Transmission

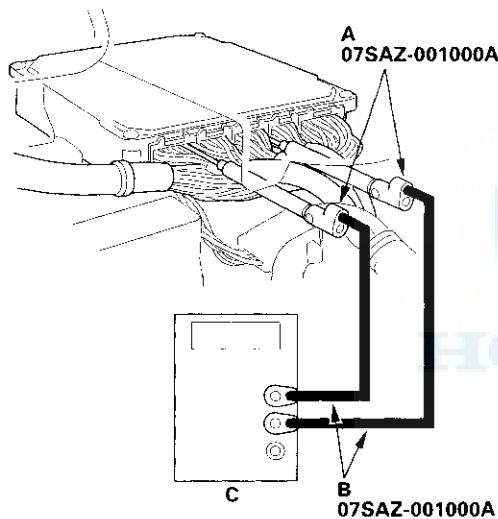
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM

Special Tools Required

Backprobe set 07SAZ-001000A (two required)

1. Pull back the carpet, and remove the passenger's center lower cover and rear vent duct (see step 5 on page 20-74).
2. Inspect the circuit on the PCM, according to the DTC troubleshooting, with the backprobe set and a digital multimeter.
3. Connect the backprobe adapters (A) to the stacking patch cords (B), and connect the cords to a multimeter (C).



4. Using the wire insulation as a guide for the contoured tip of the backprobe adapter, gently slide the tip into the connector from the wire side until it touches the end of the wire terminal.
5. If you cannot get to the wire side of the connector or the wire side is sealed, disconnect the connector and use the tester probe to probe the connectors from the terminal side. Do not force the probe into the connector.

Clear A/T DTCs, and PCM Reset Procedures

1. Connect the HDS to the DLC.
2. Turn the ignition switch ON (II).
3. Clear the DTC(s) on the HDS screen.

OBD Status

The OBD Status shows the current system status of each DTC and all of the parameters. This function is used to see if the technician's repair was successfully finished. The results of diagnostic tests for the DTC are displayed as:

- PASS: On Board Diagnosis is successfully finished.
- FAILED: On Board Diagnosis has finished but failed.
- NOT COMPLETED: The On Board Diagnosis was running but is out of the Enable conditions of the DTC.

How to Substitute the PCM

1. Connect the HDS to the DLC.
2. Turn the ignition switch OFF.
3. Jump the SCS line with the HDS.
4. Remove the PCM, and install a known-good PCM.
5. Rewrite the immobilizer code with the PCM replacement procedure in the HDS; this will allow you to start the engine.
6. After completing your test, reinstall the original PCM and rewrite the immobilizer code with the PCM replacement procedure in the HDS again.



PCM Updating and Substitution for Testing

Special Tools Required

Honda Interface Module (HIM) EQS05A35570

Use this procedure when you have to substitute a known-good PCM in a troubleshooting procedure. Update the PCM only if the PCM does not already have the latest software loaded.

Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF, the PCM can be damaged.

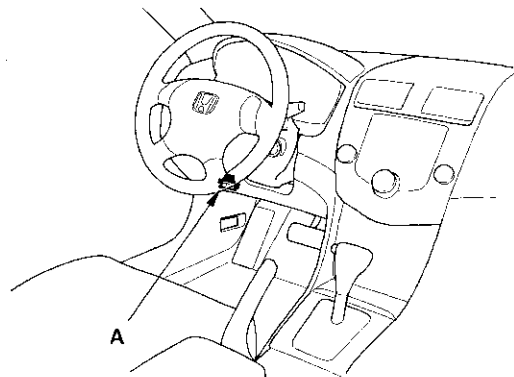
How to Update the PCM

NOTE:

- To ensure the latest program is installed, update a PCM whenever the PCM is substituted or replaced.
- Select A/T in the HIM ECM/PCM Update menu, and update the A/T system on the PCM. Update the PGM-FI system on the PCM if necessary, according to the update software.
- You cannot update a PCM with the program it already has. It will only accept a new program.
- Before you update the PCM, make sure the vehicle's battery is fully charged.
- To prevent PCM damage, do not operate any electrical system; audio system, brakes, air conditioning, power windows, moonroof, and door locks, during the update.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) light came on or was flashing during the update, leave the ignition switch in the ON (II) position when you disconnect the HIM from the DLC. This will prevent PCM damage.

1. Turn the ignition switch ON (II). Do not start the engine.

2. Connect the Honda interface module (HIM) to the DLC (A).



3. Update the PCM according to the procedures described on the HIM label. If the software in the PCM is the latest, replace the PCM.

How to Remove and Install the PCM

1. Pull back the carpet, and remove the driver's and passenger's center lower covers and rear vent ducts (see page 20-73).
2. Connect the HDS to the DLC.
3. Turn the ignition switch OFF.
4. Jump the SCS line with the HDS.
5. Disconnect PCM connectors.
6. Remove the PCM.
7. Install the PCM in the reverse order of the removal.

How to End a Troubleshooting Session


This procedure must be done after any troubleshooting.

1. Turn the ignition switch OFF.
2. Connect the HDS to the DLC.
3. Turn the ignition switch ON (II).
4. Clear the DTC(s) on the HDS screen.
5. To verify that the problem is repaired, test-drive the vehicle for several minutes at speeds over 30 mph (50 km/h) or in freeze data range.

Automatic Transmission

DTC Troubleshooting Index

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC ⁽¹⁾	D Indicator	MIL 	Detection Item	Page
P0705 (5-2) ⁽²⁾	Blinks	ON	Transmission range switch (short)	(see page 14-77)
P0706 (6-2) ⁽²⁾	OFF	ON	Transmission range switch (open)	(see page 14-86)
P0711 (28-5) ⁽²⁾	Blinks	OFF	ATF temperature sensor (range/performance)	(see page 14-89)
P0712 (28-3) ⁽²⁾	Blinks	OFF	ATF temperature sensor (short)	(see page 14-90)
P0713 (28-4) ⁽²⁾	Blinks	OFF	ATF temperature sensor (open)	(see page 14-91)
P0716 (15-5) ⁽²⁾	Blinks	ON	Input shaft (mainshaft) speed sensor (range/performance)	(see page 14-93)
P0717 (15-3) ⁽²⁾	Blinks	ON	Input shaft (mainshaft) speed sensor (no signal input)	(see page 14-98)
P0718 (15-6) ⁽²⁾	Blinks	ON	Input shaft (mainshaft) speed sensor (intermittent failure)	(see page 14-103)
P0721 (9-5) ⁽²⁾	Blinks	ON	Output shaft (countershaft) speed sensor (range/performance)	(see page 14-105)
P0722 (9-3) ⁽²⁾	Blinks	ON	Output shaft (countershaft) speed sensor (no signal input)	(see page 14-110)
P0723 (9-6) ⁽²⁾	Blinks	ON	Output shaft (countershaft) speed sensor (intermittent failure)	(see page 14-115)
P0731 (64-1)	Blinks	OFF	1st gear incorrect ratio	(see page 14-117)
P0732 (64-2)	Blinks	OFF	2nd gear incorrect ratio	(see page 14-118)
P0733 (64-3)	Blinks	OFF	3rd gear incorrect ratio	(see page 14-119)
P0734 (64-4)	Blinks	OFF	4th gear incorrect ratio	(see page 14-120)
P0735 (64-5)	Blinks	OFF	5th gear incorrect ratio	(see page 14-121)
P0741 (40-3)	OFF	ON	Torque converter clutch circuit performance or stuck OFF	(see page 14-122)
P0746 (76-3)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck OFF	(see page 14-123)
P0747 (76-4)	Blinks	ON	A/T clutch pressure control solenoid valve A stuck ON	(see page 14-124)
P0751 (70-3)	Blinks	ON	Shift solenoid valve A stuck OFF	(see page 14-125)
P0752 (70-4)	Blinks	ON	Shift solenoid valve A stuck ON	(see page 14-126)


NOTE:

⁽¹⁾: The DTC in parentheses is the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.

⁽²⁾: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.



NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC ^{*(1)}	D Indicator	MIL 	Detection Item	Page
P0756 (71-3)	Blinks	ON	Shift solenoid valve B stuck OFF	(see page 14-127)
P0757 (71-4)	Blinks	ON	Shift solenoid valve B stuck ON	(see page 14-128)
P0761 (72-3)	Blinks	ON	Shift solenoid valve C stuck OFF	(see page 14-129)
P0762 (72-4)	Blinks	ON	Shift solenoid valve C stuck ON	(see page 14-130)
P0766 (73-3)	Blinks	ON	Shift solenoid valve D stuck OFF	(see page 14-131)
P0767 (73-4)	Blinks	ON	Shift solenoid valve D stuck ON	(see page 14-132)
P0776 (77-3)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck OFF	(see page 14-133)
P0777 (77-4)	Blinks	ON	A/T clutch pressure control solenoid valve B stuck ON	(see page 14-134)
P0796 (78-3)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck OFF	(see page 14-135)
P0797 (78-4)	Blinks	ON	A/T clutch pressure control solenoid valve C stuck ON	(see page 14-136)
P0812 (62-2) ^{*(2)}	Blinks	ON	Transmission range switch ATP R switch (open)	(see page 14-137)
P0842 (25-3) ^{*(2)}	Blinks	ON	2nd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-139)
P0843 (25-4) ^{*(2)}	Blinks	ON	2nd clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-141)
P0847 (26-3) ^{*(2)}	Blinks	ON	3rd clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-143)
P0848 (26-4) ^{*(2)}	Blinks	ON	3rd clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-145)
P0872 (27-3)	Blinks	OFF	4th clutch transmission fluid pressure switch (short or stuck ON)	(see page 14-147)
P0873 (27-4)	Blinks	OFF	4th clutch transmission fluid pressure switch (open or stuck OFF)	(see page 14-149)
P0962 (16-3) ^{*(2)}	Blinks	ON	A/T clutch pressure control solenoid valve A (open/short)	(see page 14-151)
P0963 (16-4) ^{*(2)}	Blinks	ON	A/T clutch pressure control solenoid valve A	(see page 14-153)

NOTE:

^{*(1)}: The DTC in parentheses is the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.


^{*(2)}: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

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Automatic Transmission

DTC Troubleshooting Index (cont'd)

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC ^{*(1)}	D Indicator	MIL 	Detection Item	Page
P0966 (23-3) ^{*(2)}	Blinks	ON	A/T clutch pressure control solenoid valve B (open/short)	(see page 14-155)
P0967 (23-4) ^{*(2)}	Blinks	ON	A/T clutch pressure control solenoid valve B	(see page 14-157)
P0970 (29-3) ^{*(2)}	Blinks	ON	A/T clutch pressure control solenoid valve C (open/short)	(see page 14-159)
P0971 (29-4) ^{*(2)}	Blinks	ON	A/T clutch pressure control solenoid valve C	(see page 14-161)
P0973 (7-3) ^{*(2)}	Blinks	ON	Shift solenoid valve A (short)	(see page 14-163)
P0974 (7-4) ^{*(2)}	Blinks	ON	Shift solenoid valve A (open)	(see page 14-165)
P0976 (8-3) ^{*(2)}	Blinks	ON	Shift solenoid valve B (short)	(see page 14-167)
P0977 (8-4) ^{*(2)}	Blinks	ON	Shift solenoid valve B (open)	(see page 14-169)
P0979 (22-3) ^{*(2)}	Blinks	ON	Shift solenoid valve C (short)	(see page 14-171)
P0980 (22-4) ^{*(2)}	Blinks	ON	Shift solenoid valve C (open)	(see page 14-173)
P0982 (60-3) ^{*(2)}	Blinks	ON	Shift solenoid valve D (short)	(see page 14-175)
P0983 (60-4) ^{*(2)}	Blinks	ON	Shift solenoid valve D (open)	(see page 14-177)
P1717 (62-1)	Blinks	ON	Transmission range switch RVS switch (open)	(see page 14-179)
P1743 (45-11)	Blinks	OFF	Hydraulic control system (Shift valve E stuck OFF)	(see page 14-181)
P1744 (45-12)	Blinks	OFF	Hydraulic control system (Shift valve E stuck ON)	(see page 14-182)
P1745 (45-13)	Blinks	OFF	Hydraulic control system (Servo control valve or servo valve stuck OFF)	(see page 14-183)
P1780 (49-1)	Blinks	ON	Transmission default mode	(see page 14-184)
P1900 (115-7)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) relay (short or stuck ON)	(see page 14-185)
P1901 (115-8)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) relay (open or stuck OFF)	(see page 14-186)
P1902 (110-8)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) motor (open in U-phase circuit)	(see page 14-188)
P1903 (111-8)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) motor (open in V-phase circuit)	(see page 14-190)
P1904 (112-8)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) motor (open in W-phase circuit)	(see page 14-192)


NOTE:

^{*(1)}: The DTC in parentheses is the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.

^{*(2)}: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.



NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

DTC ⁽¹⁾	D Indicator	MIL 	Detection Item	Page
P2797 (114-1)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) (range/performance)	(see page 14-194)
P2798 (113-1)	Blinks	OFF	Auxiliary transmission fluid pump (ATFP) motor (short in U-phase, V-phase, and/or W-phase circuit)	(see page 14-195)
U1260 (116-1)	Blinks	OFF	PCM-to-ATFP control unit communication circuit (open/short)	(see page 14-197)

NOTE:

⁽¹⁾: The DTC in parentheses is the Honda code that you will see when you use the HDS. The first number(s) before the - (hyphen) is the flash code the D indicator indicates when the data link connector (DLC) is connected to the HDS, and in the SCS mode.

⁽²⁾: This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.



Automatic Transmission

Symptom Troubleshooting Index

Symptom	Probable cause(s)	Notes
When you turn the ignition switch ON (II), the D indicator comes on and stays on in all shift lever positions, or it never comes on at all	<ul style="list-style-type: none">• MET INH line between PCM and gauge control module defective• Gauge control module defective• PCM defective	<ul style="list-style-type: none">• Check for a short or an open in MET INH wire between PCM connector terminal E31 and gauge control module (see page 14-269).• Check A/T gear position indicator drive circuit in the gauge control module by gauge control module self-diagnostic function (see page 22-226).
A/T gear position indicator does not come on while the shift lever is in that position	<ul style="list-style-type: none">• MET INH line between PCM and gauge control module defective• Gauge control module defective• PCM defective	<ul style="list-style-type: none">• Check for a short or an open in MET INH wire between PCM connector terminal E31 and gauge control module (see page 14-269).• Check A/T gear position indicator drive circuit in the gauge control module by gauge control module self-diagnostic function (see page 22-226).
Shift lever cannot be moved from P while you're pressing on the brake pedal	A problem in the shift lock system of the interlock system	Check the interlock system - shift lock system circuit (see page 14-276).
Ignition switch cannot be moved from ACC (I) to LOCK (0) (key is pushed in, shift lever in P)	A problem in the key interlock system of the interlock system	Check the interlock system - key interlock system circuit (see page 14-278).





Symptom	Probable cause(s)	Notes
Engine runs, but vehicle does not move in any gear	<ol style="list-style-type: none"> 1. Low ATF level 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn 4. ATF pump worn or binding 5. Regulator valve stuck or spring worn 6. ATF strainer clogged 7. Mainshaft worn or damaged 8. Final gears worn or damaged 9. Park mechanism defective 10. Transmission-to-engine assembly error 11. Axle disengaged 	<ul style="list-style-type: none"> • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Inspect the differential pinion gears for wear. If the differential pinion gears are worn, replace the differential assembly, replace the ATF strainer, thoroughly clean the transmission, and clean the cooler and lines. Replace the torque converter. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools. • Install the main seal flush with the torque converter housing. If you push it into the torque converter housing until it bottoms out, it will block the fluid return passage and result in damage.
Vehicle moves in R, but not in D, D3, 2, or 1	<ol style="list-style-type: none"> 1. 1st accumulator defective 2. Idler gears worn or damaged 3. 1st clutch defective 	<ul style="list-style-type: none"> • Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Vehicle moves in 2 and R, but not in D, D3, or 1	<ol style="list-style-type: none"> 1. 1st gear one-way clutch defective 2. 1st gears worn or damaged 3. 1st clutch defective 	<ul style="list-style-type: none"> • Check the 1st clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Vehicle moves in D, D3, 2, and R, but not in 1	<ol style="list-style-type: none"> 1st-hold accumulator defective 1st-hold clutch defective 	<ul style="list-style-type: none"> • Check the 1st-hold clutch pressure. • Inspect the secondary shaft and 1st/1st-hold clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Vehicle moves in D, D3, 1, and R, but not in 2	<ol style="list-style-type: none"> 2nd accumulator defective 2nd clutch defective 	<ul style="list-style-type: none"> • Check the 2nd clutch pressure. • Inspect the secondary shaft and 2nd clutch assembly for wear and damage. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Vehicle moves in D, D3, 2, and 1, but not in R (or moves forward in R)	<ol style="list-style-type: none"> Shift fork shaft stuck Modulator valve defective Reverse CPC valve defective 5th accumulator defective 5th clutch defective Reverse gears worn or damaged 	<ul style="list-style-type: none"> • Check the line pressure and 5th clutch pressure. • Check for a missing shift fork bolt on the shift fork shaft. • Check the ATF strainer for debris. If the ATF strainer is clogged with particles of steel or aluminum, inspect the ATF pump. If the ATF pump is OK, find the damaged components that caused the debris. If no cause for the contamination is found, replace the torque converter. • Inspect the reverse selector gear teeth chamfers, and inspect the engagement teeth chamfers of the countershaft 5th gear and reverse gear. Replace the reverse gears and the reverse selector if they are worn or damaged. If the transmission makes clicking, grinding, or whirring noises, also replace the mainshaft 5th gear, reverse idler gear, and countershaft 5th gear. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.



Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in D, D3, and R	<ol style="list-style-type: none"> 1. Low ATF level 2. Shift cable broken or out of adjustment 3. ATF pump worn or binding 4. Regulator valve stuck or spring worn 5. ATF strainer clogged 6. Torque converter check valve defective 	<ul style="list-style-type: none"> • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the line pressure. • Check the ATF strainer for debris. If the strainer is clogged, find the damaged components that caused the debris. • Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptom is mostly an rpm-related ticking noise or a high pitched squeak. • Be careful not to damage the torque converter housing when replacing the main ball bearing. You may also damage the ATF pump when you torque down the main valve body. This will result in ATF pump seizure if not detected. Use the proper tools.
Poor acceleration; flares on starting off in D, D3, and R; stall speed high in D, D3, 2, and 1	<ol style="list-style-type: none"> 1. 1st accumulator defective 2. 1st clutch defective 	<ul style="list-style-type: none"> • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in D, D3, and R; stall speed high in 2	<ol style="list-style-type: none"> 1. 2nd accumulator defective 2. 2nd clutch defective 	<ul style="list-style-type: none"> • Check the 2nd clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Poor acceleration; flares on starting off in D, D3, and R; stall speed high in R	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. Shift cable broken or out of adjustment 3. Reverse CPC valve defective 4. 5th accumulator defective 5. 5th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve seizure, and inspect the O-rings. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Poor acceleration; flares on starting off in D, D3, and R; stall speed low	<ol style="list-style-type: none"> 1. Shift solenoid valve D defective 2. Torque converter one-way clutch defective 3. Engine output low 4. Torque converter clutch piston defective 5. Lock-up shift valve defective 	Check for a stuck lock-up valve in the valve body.
Engine idle vibration	<ol style="list-style-type: none"> 1. Low ATF level 2. Shift solenoid valve D defective 3. Drive plate defective or transmission misassembled 4. Engine output low 5. Torque converter clutch piston defective 6. ATF pump worn or binding 7. Lock-up shift valve defective 	<ul style="list-style-type: none"> • Set the idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts. • Check the ATF level and check the ATF cooler lines for leakage and loose connections. If necessary, clean the ATF cooler lines.
Vehicle moves in N	<ol style="list-style-type: none"> 1. Excessive ATF 2. Foreign material in separator plate orifice 3. Relief valve defective 4. Lubrication control valve defective 5. 1st-hold clutch defective 6. 1st clutch defective 7. 2nd clutch defective 8. 3rd clutch defective 9. 4th clutch defective 10. 5th clutch defective 11. Clutch end plate clearance incorrect 12. Needle bearing seized up, worn, or damaged 13. Thrust washer seized up, worn, or damaged 	<ul style="list-style-type: none"> • Check the ATF level, and drain the ATF if it is over filled. • Check all clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.



Symptom	Probable cause(s)	Notes
Late shift after shifting from N to D or D3, or excessive shock when shifting	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve A defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. Shift cable broken or out of adjustment 6. Connection between shift cable and transmission or body worn 7. Input shaft (mainshaft) speed sensor defective 8. Output shaft (countershaft) speed sensor defective 9. ATF temperature sensor defective 10. CPC valve A defective 11. CPC valve B defective 12. CPC valve C stuck 13. Foreign material in separator plate orifice 14. Shift valve C defective 15. Shift valve E defective 16. Servo control valve defective 17. 1st accumulator defective 18. 1st check ball stuck 19. One-way check ball stuck 20. 1st clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 1st clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Late shift after shifting from N to R, or excessive shock when shifting	<ol style="list-style-type: none"> 1. Shift solenoid valve C defective 2. A/T clutch pressure control solenoid valve B defective 3. A/T clutch pressure control solenoid valve C defective 4. Shift cable broken or out of adjustment 5. Connection between shift cable and transmission or body worn 6. Input shaft (mainshaft) speed sensor defective 7. Output shaft (countershaft) speed sensor defective 8. ATF temperature sensor defective 9. Shift fork shaft stuck 10. CPC valve C stuck 11. Reverse CPC valve defective 12. Foreign material in separator plate orifice 13. Shift valve E defective 14. 5th accumulator defective 15. 5th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the 5th clutch pressure. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
The transmission does not shift	<ol style="list-style-type: none"> 1. Input shaft (mainshaft) speed sensor defective 2. Output shaft (countershaft) speed sensor defective 3. Modulator valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the line pressure.
Erratic shifting: fails to shift in D and D3; starts off in 5th	<ol style="list-style-type: none"> 1. Shift solenoid valve B defective 2. Shift valve B defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings.
Erratic shifting: fails to shift into 2; starts off in 4th	<ol style="list-style-type: none"> 1. Shift solenoid valve B defective 2. Shift valve B defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings.
Erratic shifting: fails to shift in D, D3, and 1; starts off in 3rd	<ol style="list-style-type: none"> 1. Shift solenoid valve A defective 2. Shift valve A defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings.
Erratic shifting: fails to shift into 2; starts off in 1st	<ol style="list-style-type: none"> 1. Shift solenoid valve A defective 2. Shift valve A defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings.
Excessive shock or flares on all upshifts and downshifts	<ol style="list-style-type: none"> 1. A/T clutch pressure control solenoid valve A defective 2. Input shaft (mainshaft) speed sensor defective 3. Output shaft (countershaft) speed sensor defective 4. ATF temperature sensor defective 5. CPC valve A defective 6. Foreign material in separator plate orifice 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve body gasket and ATF feed pipes for wear and damage. If the A/T clutch pressure control solenoid valve is stuck, inspect the CPC valves. • Inspect the sensor O-rings.
Excessive shock or flares on 1-2 upshift or 2-1 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve A defective 2. Shift solenoid valve C defective 3. 2nd clutch transmission fluid pressure switch defective 4. Foreign material in separator plate orifice 5. 2nd accumulator defective 6. 2nd check ball stuck 7. 2nd clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 1st and 2nd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.



Symptom	Probable cause(s)	Notes
Excessive shock or flares on 2-3 upshift or 3-2 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve B defective 2. Shift solenoid valve C defective 3. A/T clutch pressure control solenoid valve B defective 4. 3rd clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 2nd accumulator defective 9. 3rd accumulator defective 10. 2nd check ball stuck 11. 2nd clutch defective 12. 3rd clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 2nd and 3rd clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.
Excessive shock or flares on 3-4 upshift or 4-3 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve A defective 2. Shift solenoid valve C defective 3. A/T clutch pressure control solenoid valve B defective 4. 4th clutch transmission fluid pressure switch defective 5. CPC valve B defective 6. Foreign material in separator plate orifice 7. Shift valve C defective 8. 3rd accumulator defective 9. 4th accumulator defective 10. 3rd clutch defective 11. 4th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings. • Check for clogged orifice in the transmission fluid pressure switch connector. If the orifice is clogged, remove it and clean the connector. • Check the 3rd and 4th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Excessive shock or flares on 4-5 upshift or 5-4 downshift	<ol style="list-style-type: none"> 1. Shift solenoid valve B defective 2. Shift solenoid valve C defective 3. A/T clutch pressure control solenoid valve B defective 4. A/T clutch pressure control solenoid valve C defective 5. CPC valve B defective 6. CPC valve C defective 7. Foreign material in separator plate orifice 8. Shift valve C defective 9. Shift valve E defective 10. 4th accumulator defective 11. 5th accumulator defective 12. 4th clutch defective 13. 5th clutch defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Check the shift solenoid valve for seizure, and inspect the O-rings. • Check the 4th and 5th clutch pressures. • Inspect the clutch piston, clutch piston check valve, and O-rings. Check the spring retainer for wear and damage. Inspect the clutch end-plate-to-top-disc clearance. If the clearance is out of tolerance, inspect the clutch discs and plates for wear and damage, and inspect the clutch waved-plate height. If the discs and flat-plates are worn or damaged, replace the discs and flat-plates as a set. If the waved-plate height is out of tolerance, replace the waved-plate. If the discs and plates are OK, adjust the clearance with the clutch end plate.





Symptom	Probable cause(s)	Notes
Noise from transmission in all shift lever positions	<ol style="list-style-type: none"> 1. ATF pump worn or binding 2. Idler gears worn or damaged 3. Thrust washer seized worn, or damaged 	Improper alignment of ATF pump and torque converter housing may cause ATF pump seizure. The symptoms are mostly an rpm-related ticking noise or a high pitched squeak.
Vehicle does not accelerate above 31 mph (50 km/h)	Torque converter one-way clutch defective	Replace torque converter.
Vibration in all shift lever positions	Drive plate defective or transmission misassembled	<ul style="list-style-type: none"> • Set the idle rpm in gear to the specified idle speed. If still no good, adjust the engine and transmission mounts. • Check the stall speed.
Shift lever does not operate smoothly	<ol style="list-style-type: none"> 1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Transmission does not shift into P	<ol style="list-style-type: none"> 1. Shift cable broken or out of adjustment 2. Connection between shift cable and transmission or body worn 3. Park mechanism defective 	<ul style="list-style-type: none"> • Check for a loose shift cable at the shift lever and the transmission control lever. • Check the park pawl, selector control shaft, and park lever link for wear and damage. Check if the selector control shaft lever pin is disengage from the manual valve guide.
Torque converter clutch does not disengage	<ol style="list-style-type: none"> 1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve C defective 3. Torque converter clutch piston defective 4. Lock-up shift valve defective 5. Lock-up control valve defective 6. Lock-up timing valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If the A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.

(cont'd)

Automatic Transmission

Symptom Troubleshooting Index (cont'd)

Symptom	Probable cause(s)	Notes
Torque converter clutch does not operate smoothly	<ol style="list-style-type: none"> 1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve C defective 3. Lock-up clutch piston defective 4. Torque converter check valve defective 5. Lock-up shift valve defective 6. Lock-up control valve defective 7. Lock-up timing valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If the A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.
Torque converter clutch does not engage	<ol style="list-style-type: none"> 1. Shift solenoid valve D defective 2. A/T clutch pressure control solenoid valve C defective 3. Input shaft (mainshaft) speed sensor defective 4. Output shaft (countershaft) speed sensor defective 5. Torque converter clutch piston defective 6. Torque converter check valve defective 7. Lock-up shift valve defective 8. Lock-up control valve defective 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the A/T clutch pressure control solenoid valve C body gasket for wear and damage. If the A/T clutch pressure control solenoid valve C is stuck, inspect the CPC valves.
A/T gear position indicator does not indicate shift lever positions	<ol style="list-style-type: none"> 1. Transmission range switch defective or out of adjustment 2. Shift cable broken or out of adjustment 3. Connection between shift cable and transmission or body worn 	<ul style="list-style-type: none"> • Check for a stored DTC, and check for loose connectors. • Inspect the transmission range switch. If the transmission range switch is faulty, replace it. If the transmission range switch is out of adjustment, adjust it and the shift cable. • Check for a loose shift cable at the shift lever and the transmission control lever.
Speedometer and odometer do not work	Output shaft (countershaft) speed sensor defective	Check for a stored DTC, and check for loose connectors.
Engine does not rev to high rpm, and the transmission upshifts at low rpm (engine at normal operating temperature)	VCM system malfunction	<ul style="list-style-type: none"> • Check the engine rocker arms. • Check the VCM system for proper operation (see page 11-267).



System Description

General Operation

The automatic transmission is a combination of a 3-element torque converter and four-shaft electronically controlled unit which provides 5 speeds and 1 reverse. The entire unit is positioned in line with the engine.

Torque Converter, Shafts, Gears, and Clutches

The torque converter consists of a pump, turbine, and stator assembly in a single unit. The converter housing (pump) is connected to the IMA motor rotor through the drive plate and torque converter supporting hub. The IMA motor rotor is connected to the end of the engine crankshaft. Around the outside of the torque converter is a ring gear. When an IMA motor control system malfunction occurs, the engine doesn't crank with the IMA motor, the ring gear meshes with the starter pinion and the engine cranks with the starter. The entire torque converter assembly serves as a flywheel, transmitting power to the transmission mainshaft. The transmission has four parallel shafts: the mainshaft, the countershaft, the secondary shaft, and the intermediary shaft. The mainshaft includes the 4th and 5th clutches, and gears for 3rd, 4th, 5th and reverse (reverse gear is integral with the 5th gear). The countershaft includes gears for the final drive, 2nd, idler, 1st, 4th, 5th, and reverse (the final drive gear is integral with the countershaft). The secondary shaft includes the 1st, 1st-hold, and 2nd clutches, and gears for park, 2nd, idler, and 1st. The intermediary shaft includes the 3rd clutch, and gears for 3rd and 4th. The countershaft 5th gear and the countershaft reverse gear can be locked to the countershaft at its left end, providing 5th gear or reverse, depending with which way the selector is moved. The gears on the mainshaft, secondary shaft, and intermediary shaft are in constant mesh with those on the countershaft. When certain conditions of gears in the transmission are engaged by the clutches, power is transmitted through the mainshaft, and/or to the secondary shaft, intermediary shaft, then to the countershaft to provide drive.

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions. The PCM is located below the dashboard, under the front lower panel behind the center console.

Hydraulic Control

The valve bodies include the main valve body, the regulator valve body, the secondary valve body, and the accumulator body. The main valve body contains the manual valve, the modulator valve, the shift valve A, the shift valve B, the shift valve E, the CPC valve A, the servo control valve, the lubrication check valve, the lubrication control valve, the torque converter check valve, the lock-up timing valve, the relief valve, the cooler check valve, the lock-up shift valve, and the ATF pump gears. The regulator valve body contains the regulator valve, the lock-up control valve, the servo valve, and the 3rd accumulator. The secondary valve body contains the shift valve C, the shift valve D, the CPC valve B, the CPC valve C, the reverse control valve, and the reverse CPC valve. The accumulator body contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators, shift solenoid valves A, B, C, and D. The auxiliary transmission fluid pump (ATFP) is mounted on the outside of the torque converter housing. When the vehicle comes to a stop in auto idle stop, the auxiliary transmission fluid pump starts to operate, and supply hydraulic pressure to the regulator valve. Fluid from the regulator passes through the manual valve to the various control valves. All the clutches receive fluid from the internal hydraulic circuit.

Shift Control Mechanism

To shift gears, the PCM controls shift solenoid valves A, B, and C, and automatic transmission (A/T) clutch pressure control solenoid valves A and B, while receiving input signals from various sensors and switches located throughout the vehicle. The shift solenoid valves shift the positions of the shift valves to switch the port to send hydraulic pressure to the clutches. The A/T clutch pressure control solenoid valves A and B control the CPC valves A and B to shift smoothly between lower and higher gear. This pressurizes a line to one of the clutches, engaging the clutch and its corresponding gear.

(cont'd)

Automatic Transmission

System Description (cont'd)

Lock-up Mechanism

The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th), and D3 position (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft (and the IMA motor rotor). Together with hydraulic control, the PCM optimizes the timing and volume of the lock-up mechanism. When the shift solenoid valve D turned on by the PCM, shift solenoid valve D pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve C, the lock-up control valve, and the lock-up timing valve control the amount of the lock-up conditions. The shift solenoid valve D is located on the accumulator body in the transmission, and A/T clutch pressure control solenoid valve C is mounted on the transmission housing.

Gear Selection

The shift lever has seven positions; P: PARK, R: REVERSE, N: NEUTRAL, D: DRIVE (1st through 5th gear ranges), D3: DRIVE (1st through 3rd ranges), 2: SECOND (2nd gear), and 1: FIRST (1st gear).

Position	Description
P: PARK	Front wheels locked; park pawl engaged with park gear on countershaft. All clutches are released.
R: REVERSE	Reverse; reverse selector engaged with countershaft reverse gear and 5th clutch engaged.
N: NEUTRAL	All clutches are released.
D: DRIVE (1st through 5th)	General driving; starts off in 1st, then 2nd in a few seconds when shifted the shift lever from N position, shifts automatically to 3rd, 4th, then 5th, depending on vehicle speed and throttle position. Downshifts through 4th, 3rd, and 2nd on deceleration to stop, and then starts off in 2nd. The lock-up mechanism operates in 2nd, 3rd, 4th, and 5th gears.
D3: DRIVE (1st through 3rd)	Used for rapid acceleration at highway speeds and general driving, up-hill and down-hill driving; starts off in 1st, then 2nd in a few seconds when shifted the shift lever from N position, shifts automatically to 3rd, depending on vehicle speed and throttle position. Downshifts to 2nd on deceleration to stop, and then starts off in 2nd. The lock-up mechanism operates in 2nd and 3rd gears.
2: SECOND	Used for engine braking or better traction starting off on loose or slippery surfaces; stays in 2nd gear; does not shift up and down.
1: FIRST	Used for engine braking; stays in 1st gear; does not shift up.

Starting is possible only in the P and N positions because of a slide-type neutral-safety switch.

Automatic Transmission (A/T) Gear Position Indicator

The A/T gear position indicator in the instrument panel shows which shift lever position has been selected without having look down at the shift lever.



Clutches

The five-speed automatic transmission uses hydraulically-actuated clutches to engage or disengage the transmission gears. When hydraulic pressure is introduced into the clutch drum, the clutch piston moves. This presses the friction discs and steel plates together, locking them so they don't slip. Power is then transmitted through the engaged clutch pack to its hub-mounted gear. Likewise, when the hydraulic pressure is bled from the clutch pack, the piston releases the friction discs and the steel plates, and they are free to slide past each other. This allows the gear to spin independently on its shaft, transmitting no power.

1st Clutch

The 1st clutch engages/disengages 1st gear, and is located at the left end of the secondary shaft. The 1st clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

1st-hold Clutch

The 1st-hold clutch engages/disengages 1st-hold in 1 position, and is located in the 1st clutch drum. The 1st-hold clutch is supplied hydraulic pressure by its ATF feed pipe within the secondary shaft.

2nd Clutch

The 2nd clutch engages/disengages 2nd gear, and is located at the right end of the secondary shaft. The 2nd clutch is supplied hydraulic pressure through the secondary shaft by a circuit connected to the internal hydraulic circuit.

3rd Clutch

The 3rd clutch engages/disengages 3rd gear, and is located at the end of the intermediary shaft. The 3rd clutch is supplied hydraulic pressure through the intermediary shaft by a circuit connected to the internal hydraulic circuit.

4th Clutch

The 4th clutch engages/disengages 4th gear, and is located at the middle of the mainshaft. The 4th clutch is joined back-to-back to the 5th clutch. The 4th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

5th Clutch

The 5th clutch engages/disengages 5th gear, as well as reverse gear, and is located at the middle of the mainshaft. The 5th clutch is joined back-to-back to the 4th clutch. The 5th clutch is supplied hydraulic pressure through the mainshaft by a circuit connected to the internal hydraulic circuit.

One-way Clutch

The one-way clutch is positioned between the 1st clutch hub and the secondary shaft 1st gear. The secondary shaft 1st gear is splined to the 1st-hold clutch hub, with the 1st-hold clutch hub splined to the secondary shaft. The secondary shaft 1st gear provides the outer race surface, and the 1st clutch hub provides the inner race surface. The one-way clutch locks when power is transmitted from the secondary shaft 1st gear to the countershaft 1st gear. The 1st clutch and gears remain engaged in the 1st, 2nd, 3rd, 4th, and 5th gear ranges in the D, D3, 2, or 1 position. However, the one-way clutch disengages when the 2nd, 3rd, 4th, or 5th clutches and gears are applied in the D, D3, 2, or 1 position. This is because the increased rotational speed of the gears on the secondary shaft causes the one-way clutch to free-wheel with the 1st clutch still engaged.

Automatic Transmission

System Description (cont'd)

Power Flow

Gear Operation

Gears on the mainshaft:

- 4th gear is engaged/disengaged with the mainshaft by the 4th clutch.
- 5th gear is engaged/disengages with the mainshaft by the 5th clutch.
- Reverse gear is engaged/disengaged with the mainshaft by the 5th clutch.
- 3rd gear is splined with the mainshaft and rotates with the mainshaft.

Gears on the countershaft:

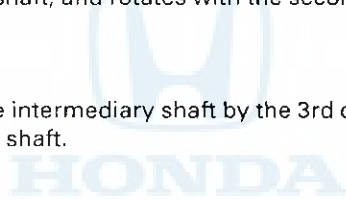
- Final gear is integral with the countershaft.
- 1st gear, 2nd gear, and 4th gear are splined with the countershaft, and rotate with the countershaft.
- 5th gear and reverse gear rotate freely from the countershaft. The reverse selector engages 5th gear and reverse gear with the reverse selector hub. The reverse selector hub is splined to the countershaft so 5th gear and reverse gear engage with the countershaft.
- Idler gear is located over the 2nd gear, and rotates freely from the countershaft.

Gears on the secondary shaft:

- 1st gear is engaged with the secondary shaft by the 1st clutch and the one-way clutch when accelerating, and 1st gear is disengaged from the 1st clutch at the one-way clutch when decelerating. 1st gear is engaged with the secondary shaft by the 1st-hold clutch when decelerating for engine braking.
- 2nd gear is engaged/disengaged with the secondary shaft by the 2nd clutch.
- Idler gear is splined with the secondary shaft, and rotates with the secondary shaft.
- Park gear is integral with the 2nd gear.

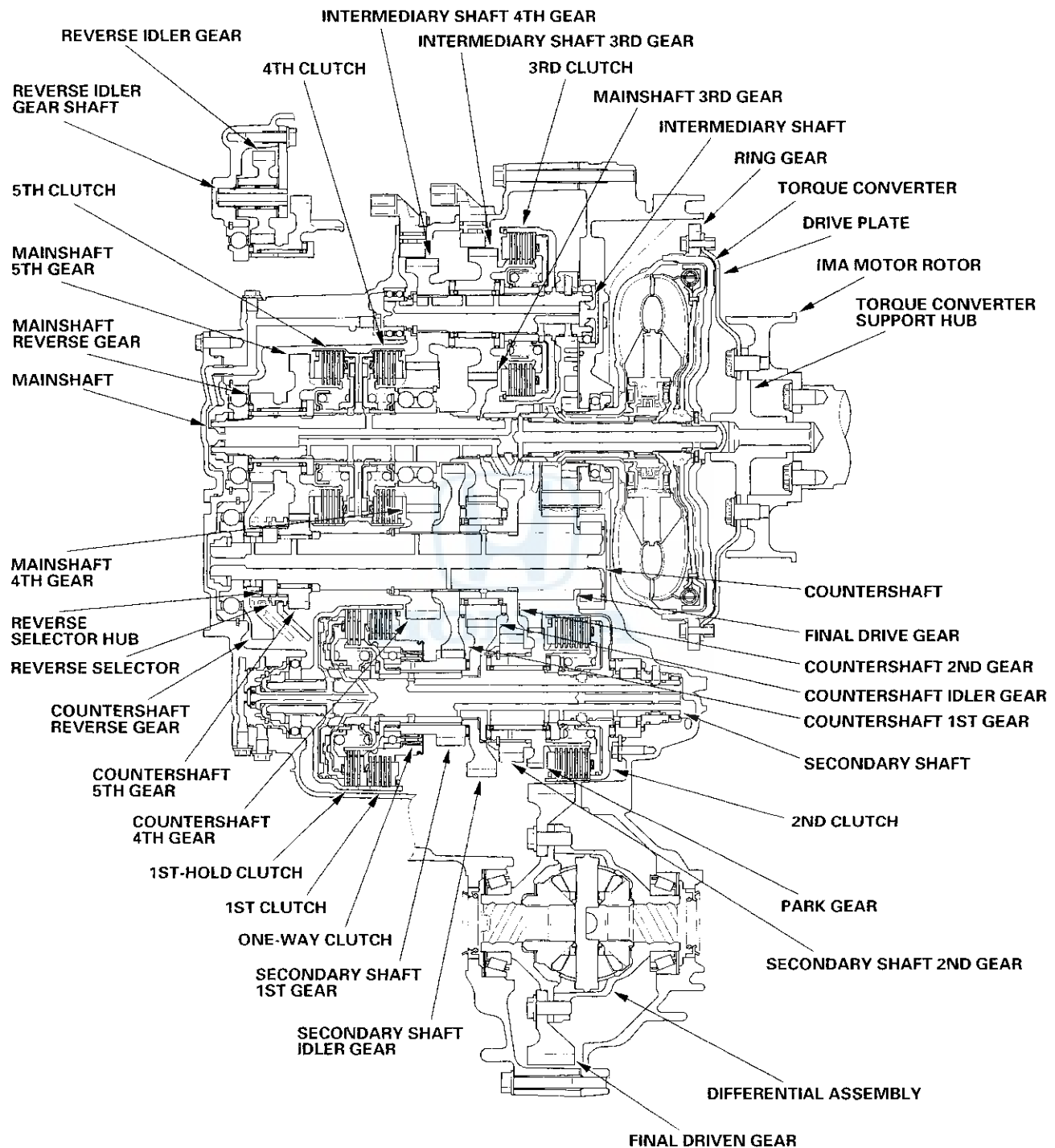
Gears on the intermediary shaft:

- 3rd gear is engaged/disengaged with the intermediary shaft by the 3rd clutch.
- 4th gear is splined with the intermediary shaft.





Transmission Cutaway View



(cont'd)

Automatic Transmission

System Description (cont'd)

Power Flow (cont'd)

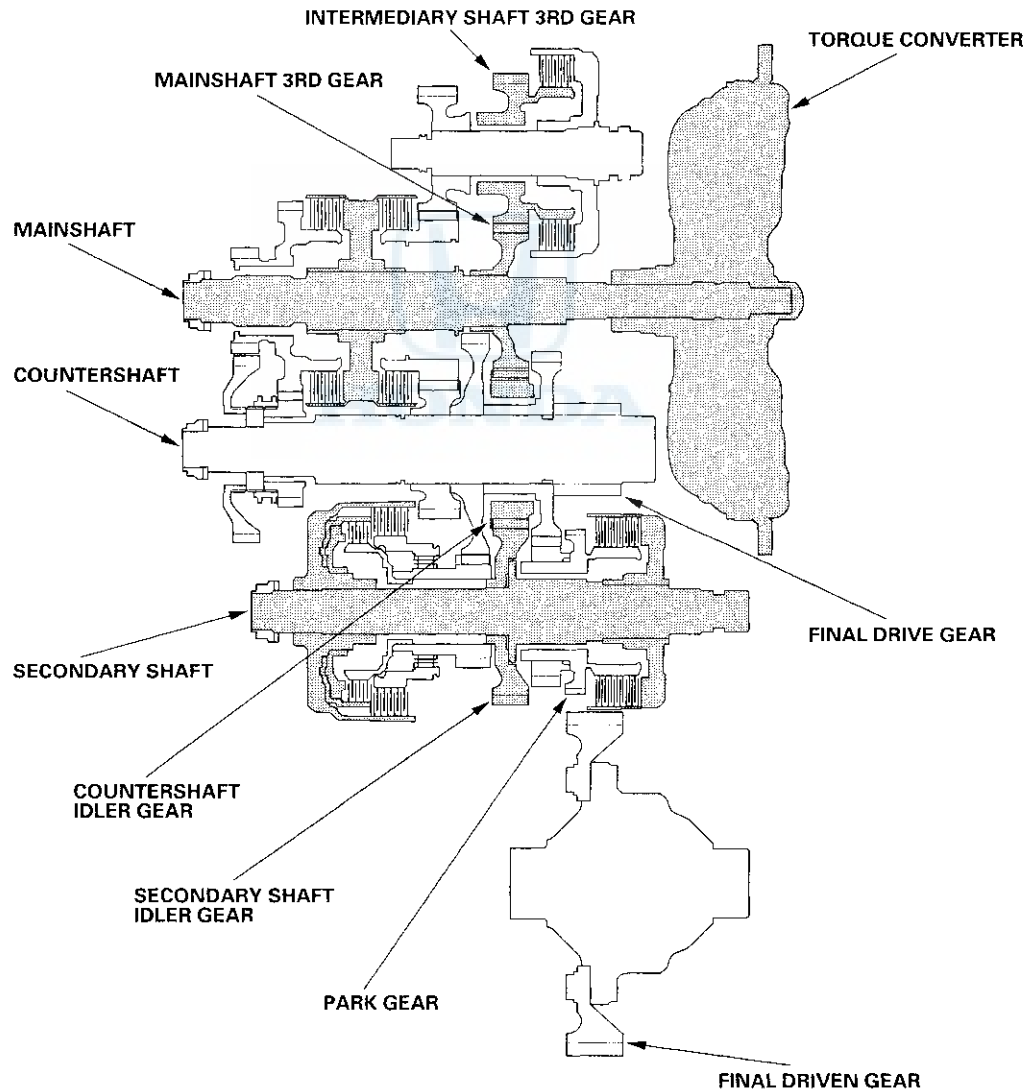
P Position

Hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. The countershaft is locked by the park pawl interlocking the park gear.

N Position

Engine power transmitted from the mainshaft drives the mainshaft 3rd gear, the intermediary shaft 3rd gear, but hydraulic pressure is not applied to the clutches. Power is not transmitted to the countershaft. In this position, the position of the reverse selector differs according to whether the shift lever shafted from the D or R position:

- When shifted from the D position, the reverse selector engages with the countershaft 5th gear and the reverse selector hub, and the 5th gear engages with the countershaft.
- When shifted from the R position, the reverse selector engages with the countershaft reverse gear and the reverse selector hub, and the reverse gear engages with the countershaft.

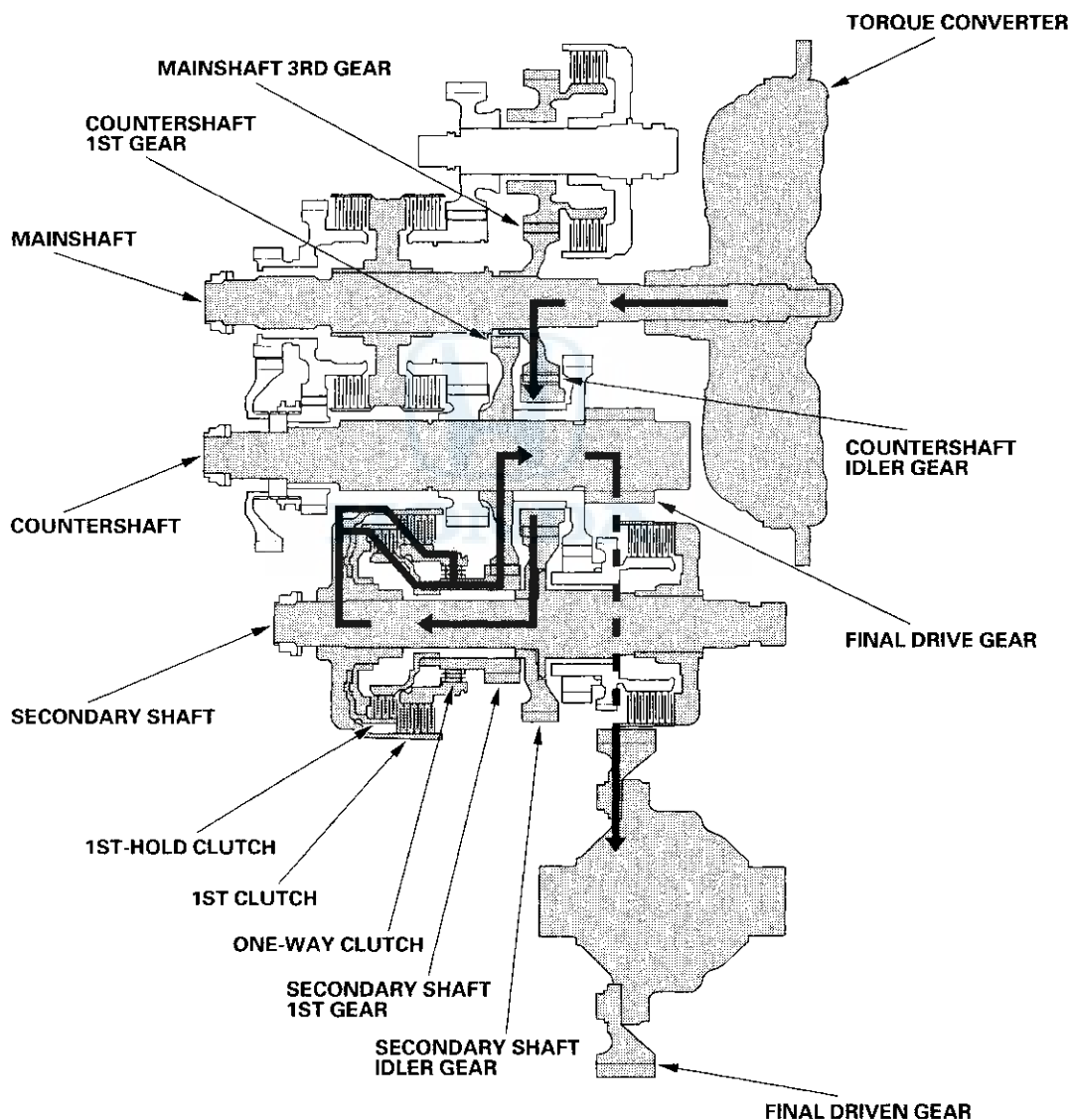




1 Position (Acceleration)

In the 1 position under an acceleration, hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch. The power flow when accelerating is as follows:

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Hydraulic pressure is also applied to the 1st-hold clutch, and the 1st-hold clutch engages the secondary shaft 1st gear with the secondary shaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



(cont'd)

Automatic Transmission

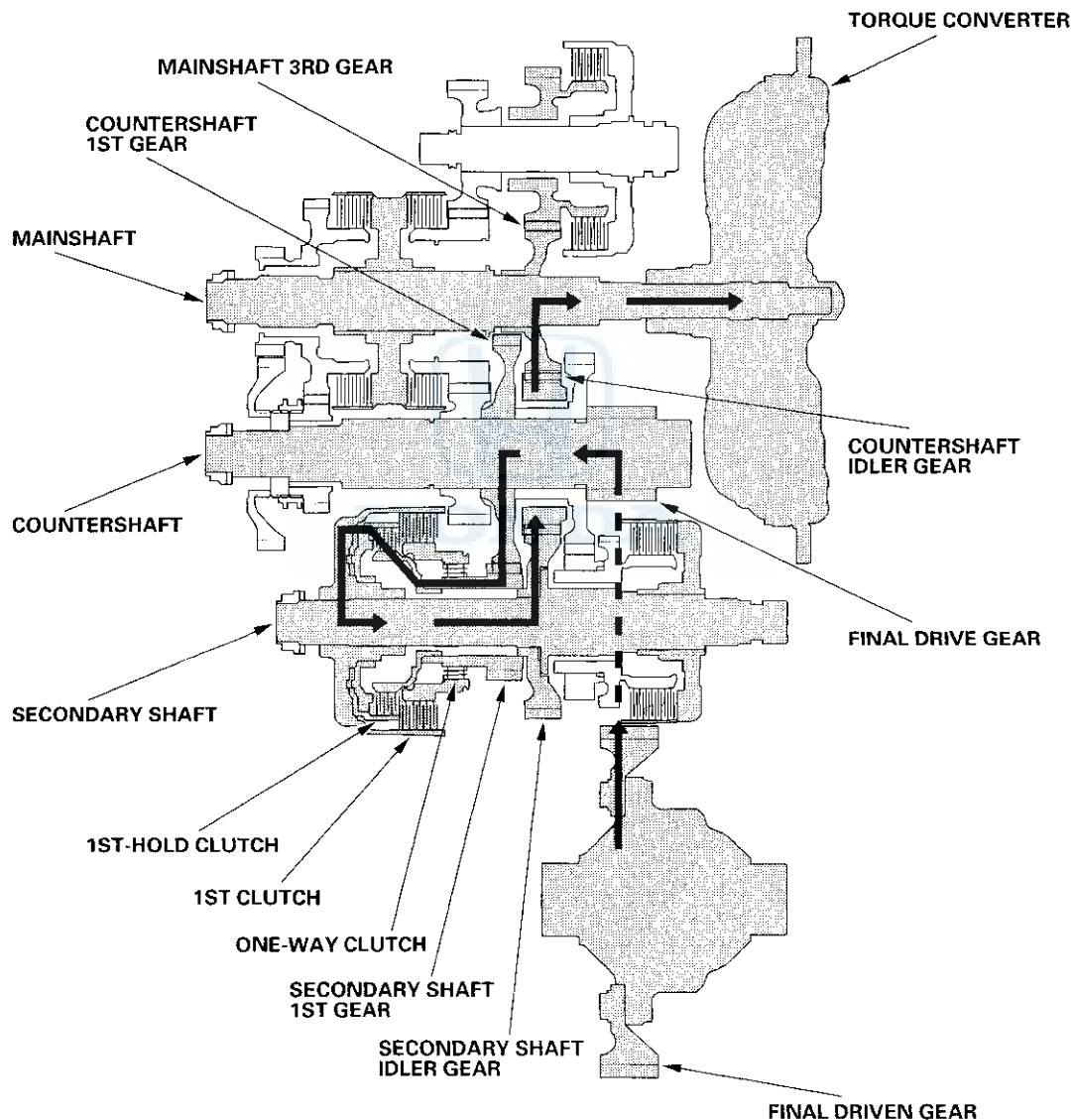
System Description (cont'd)

Power Flow (cont'd)

1 Position (Deceleration)

The power flow in the 1 position under a deceleration is as follows:

- Hydraulic pressure is applied to the 1st clutch and the 1st-hold clutch.
- Rolling resistance from the road surface goes through the front wheels to the final driven gear, then to the countershaft idler gear via the secondary shaft 1st gear.
- The one-way clutch disengages because the application of torque is reversed.
- The force conveyed to the secondary shaft idler gear turns the mainshaft 3rd gear via the countershaft idler gear. As a result, engine braking can be obtained with 1st gear.



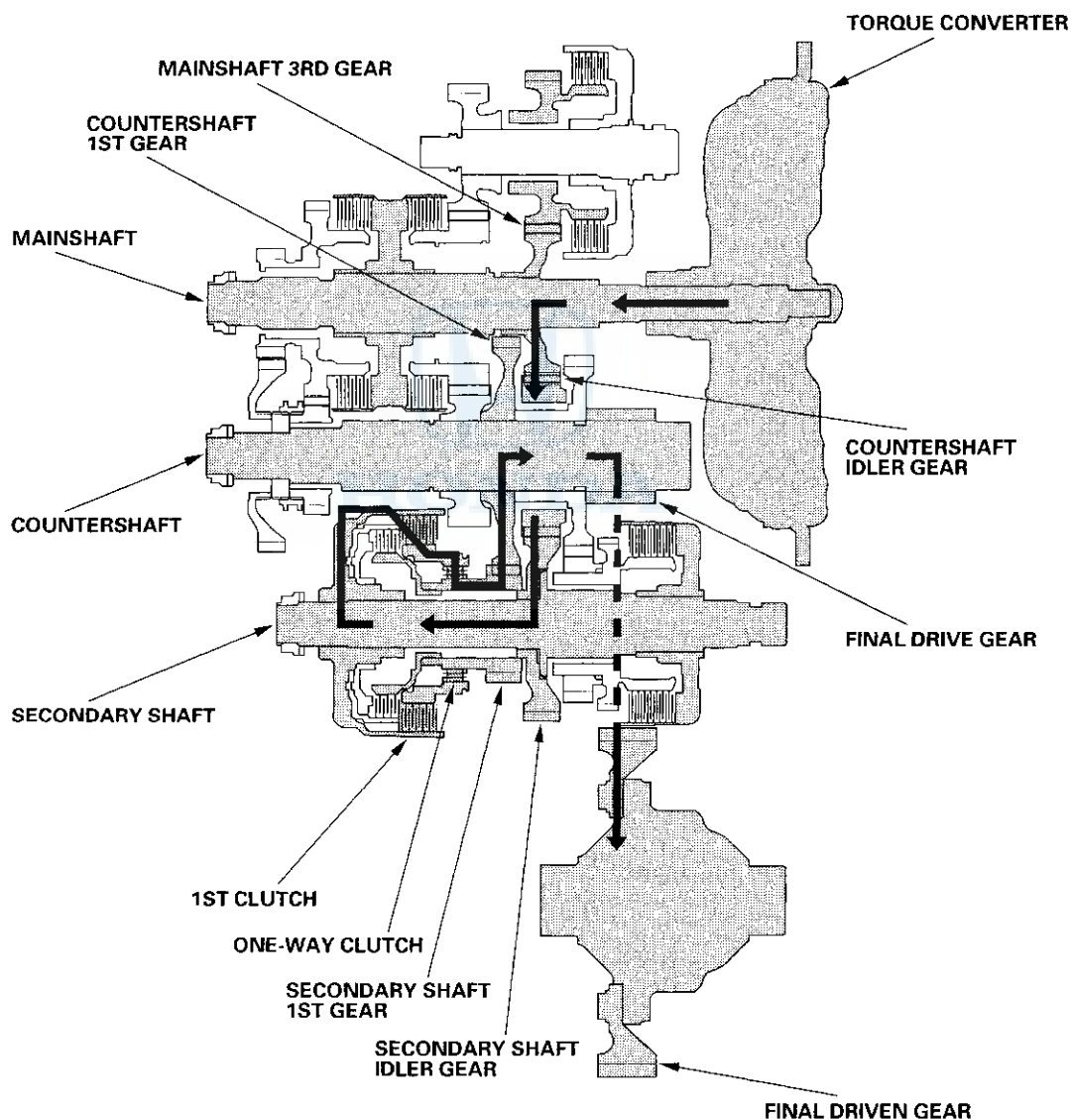


D and D3 Positions

In the D and D3 positions, the optimum gear is automatically selected from the 1st, 2nd, 3rd, 4th, and 5th gears (in the D position); 1st, 2nd, and 3rd gears (in the D3 position) according to conditions such as the balance the throttle opening (engine loading) and vehicle speed.

D and D3 Positions in 1st gear

- Hydraulic pressure is applied to the 1st clutch, then the 1st clutch engages the secondary shaft 1st gear with the secondary shaft by the one-way clutch.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 1st gear drives the countershaft 1st gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



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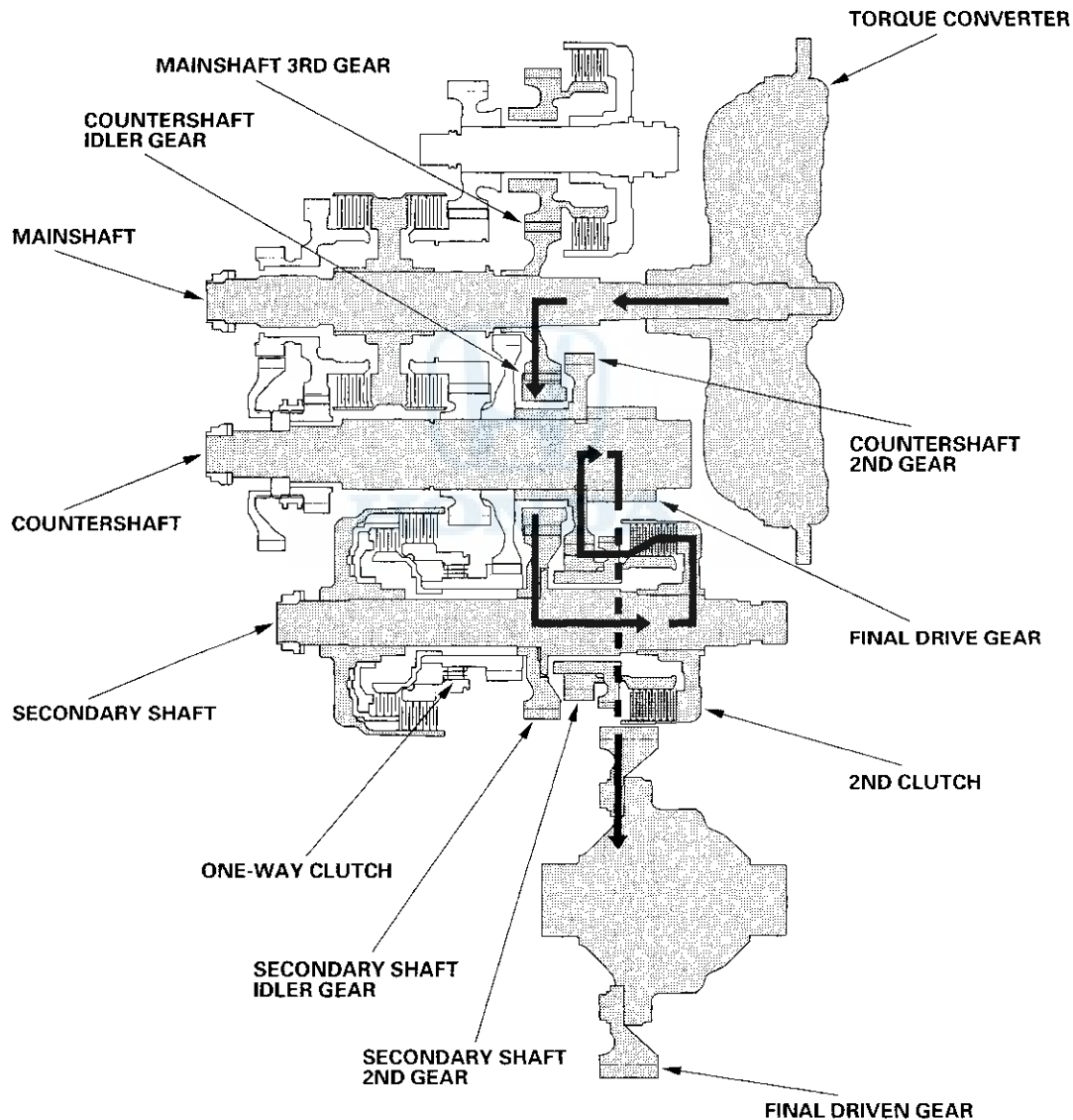
Automatic Transmission

System Description (cont'd)

Power Flow (cont'd)

D and D3 Positions in 2nd gear and 2 Position

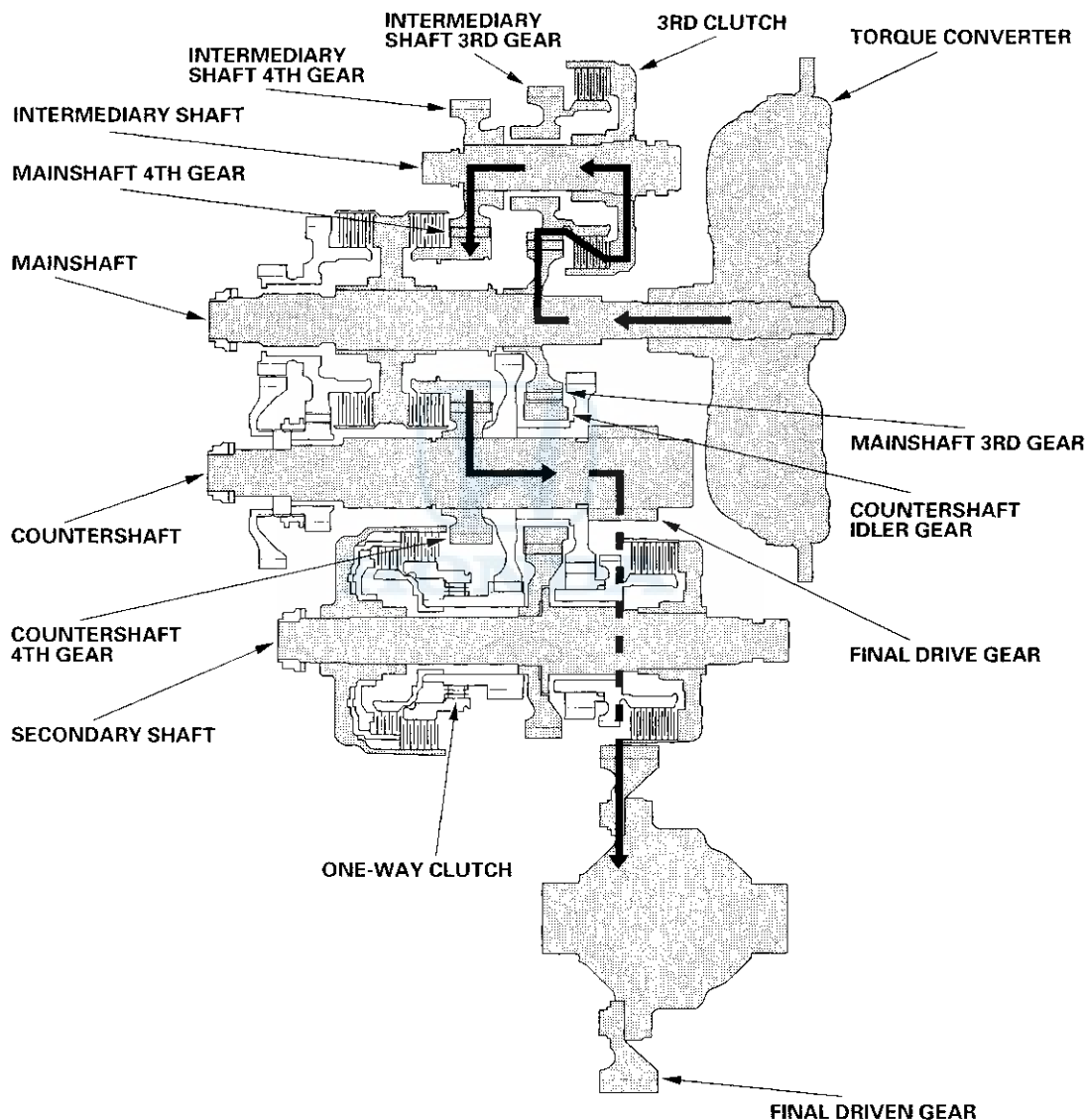
- Hydraulic pressure is applied to the 2nd clutch, then the 2nd clutch engages the secondary shaft 2nd gear with the secondary shaft.
- The mainshaft 3rd gear drives the secondary shaft via the countershaft idler gear and secondary shaft idler gear.
- The secondary shaft 2nd gear drives the countershaft 2nd gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 2nd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.





D and D3 Positions in 3rd gear

- Hydraulic pressure is applied to the 3rd clutch, then the 3rd clutch engages the intermediary shaft 3rd gear with the intermediary shaft.
- The mainshaft 3rd gear drives the intermediary shaft 4th gear via the intermediary shaft 3rd gear and the 3rd clutch.
- The intermediary shaft 4th gear drives the countershaft 4th gear and the countershaft via the mainshaft 4th gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 3rd gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



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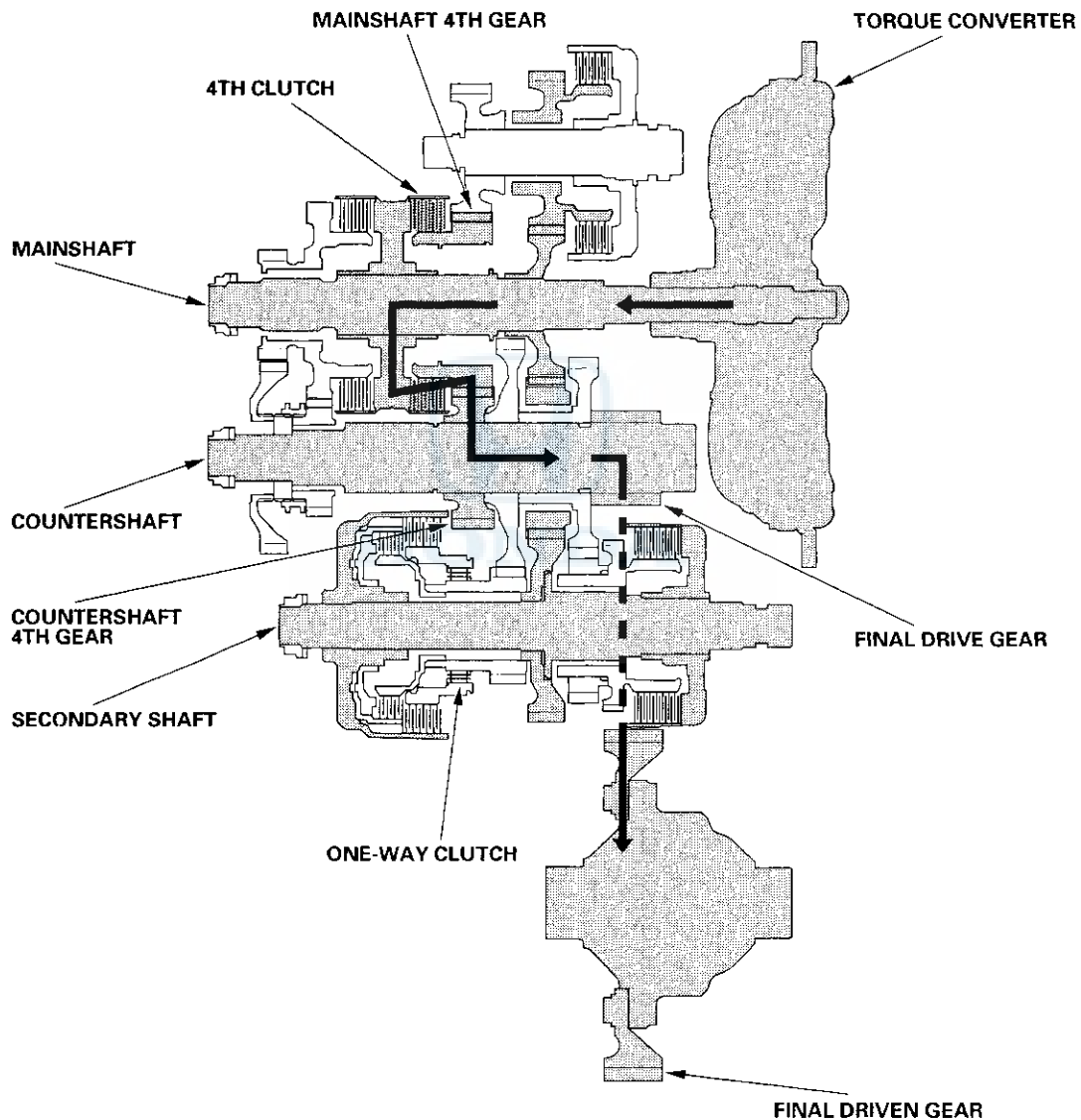
Automatic Transmission

System Description (cont'd)

Power Flow (cont'd)

D Position in 4th gear

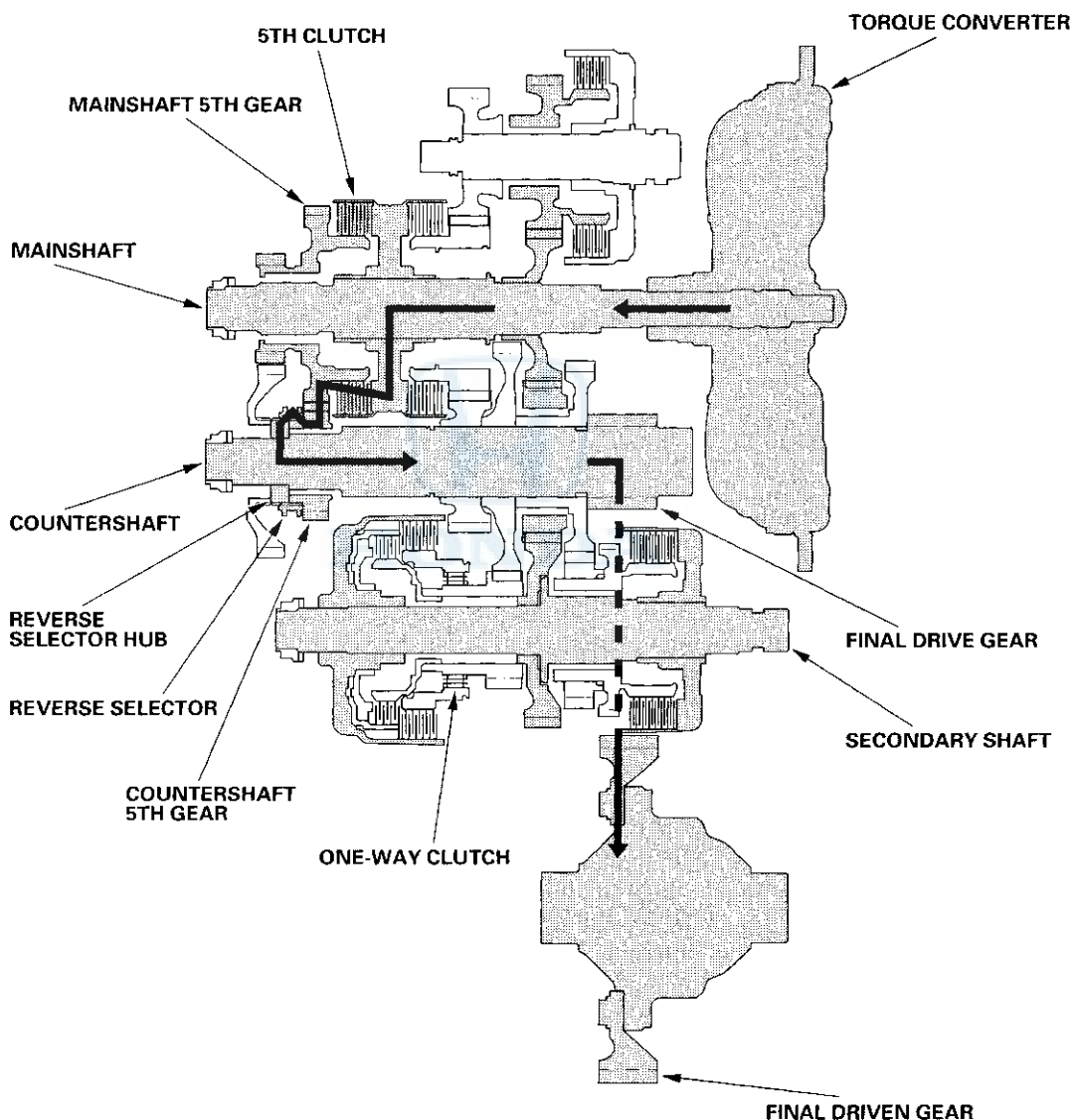
- Hydraulic pressure is applied to the 4th clutch, then the 4th clutch engages the mainshaft 4th gear with the mainshaft.
- The mainshaft 4th gear drives the countershaft 4th gear and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 4th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.





D Position in 5th gear

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft 5th gear while the shift lever is in the forward range (D, D3, 2, and 1 positions).
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft 5th gear with the mainshaft.
- The mainshaft 5th gear drives the countershaft 5th gear, which drives the reverse selector hub and the countershaft.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.
- Hydraulic pressure is also applied to the 1st clutch, but since the rotation speed of 5th gear exceeds that of 1st gear, power from 1st gear is cut off at the one-way clutch.



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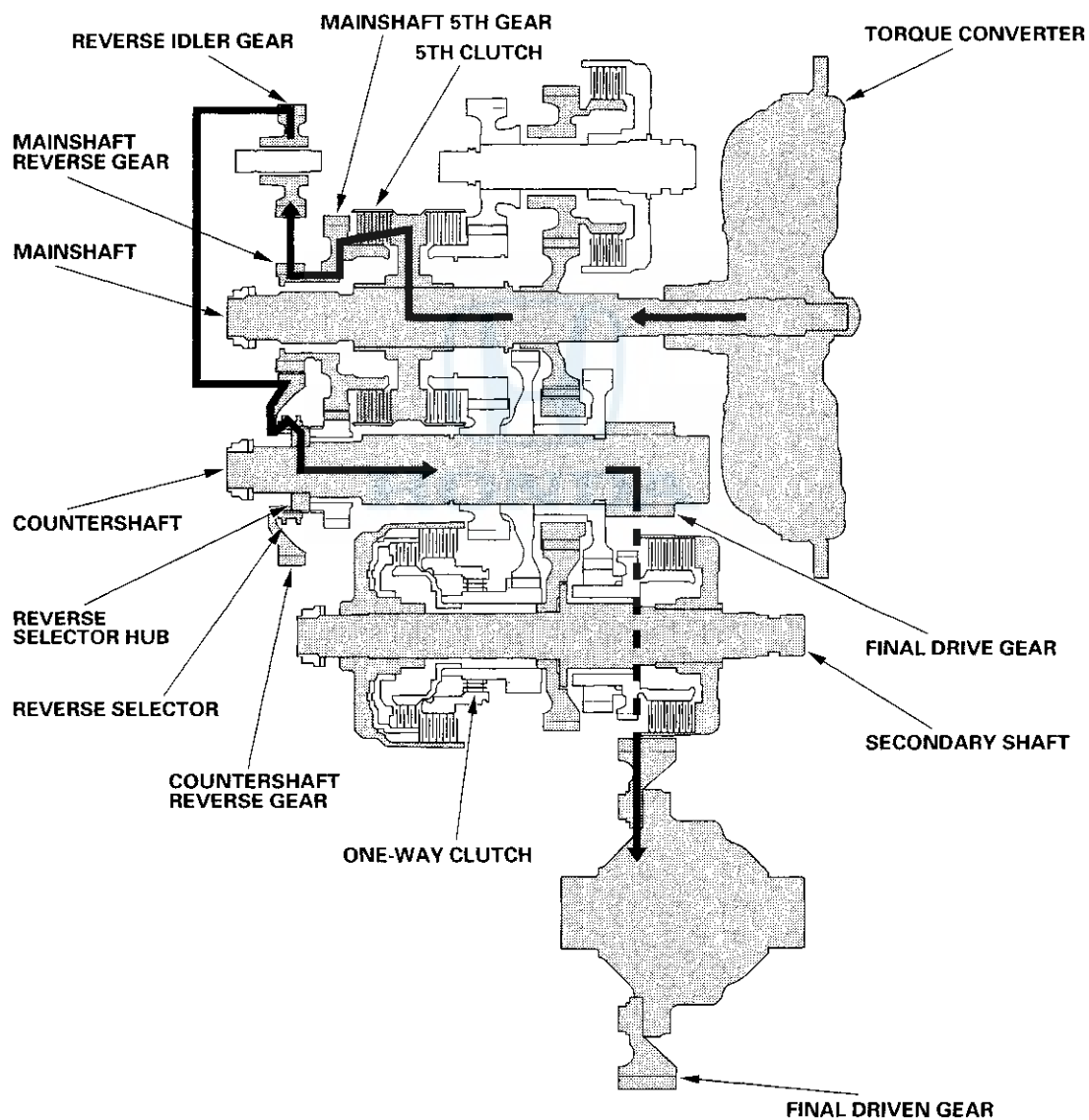
Automatic Transmission

System Description (cont'd)

Power Flow (cont'd)

R Position

- Hydraulic pressure is applied to the servo valve to engage the reverse selector with the countershaft reverse gear while the shift lever in the R position.
- Hydraulic pressure is applied to the 5th clutch, then the 5th clutch engages the mainshaft reverse gear with the mainshaft.
- The mainshaft reverse gear drives the countershaft reverse gear via the reverse idler gear.
- The countershaft reverse gear drives the countershaft via the reverse selector which drives the reverse selector hub.
- The rotation direction of the countershaft is changed by the reverse idler gear.
- Power is transmitted to the final drive gear, which in turn drives the final driven gear.



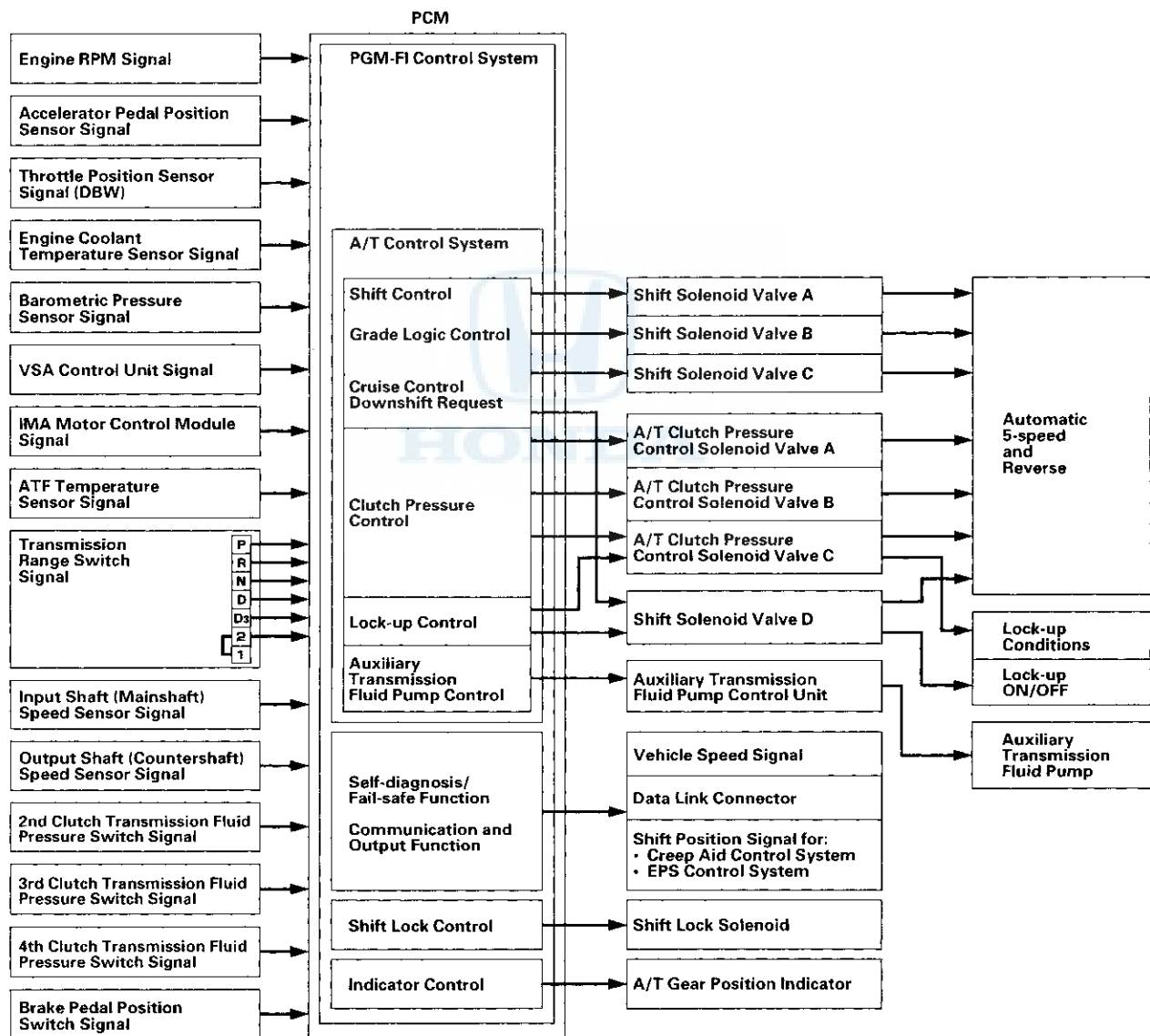


Electronic Control System

Electronic Control

The electronic control system consists of the powertrain control module (PCM), sensors, and seven solenoid valves. Shifting and lock-up are electronically controlled for comfortable driving under all conditions.

The PCM receives input signals from the sensors, switches, and other control units, processes data, and outputs signals for the engine control system and A/T control system. The A/T control system includes shift control, grade logic control, clutch pressure control, lock-up control, and auxiliary transmission fluid pump control. The PCM switches the shift solenoid valves and the A/T clutch pressure control solenoid valves to control shifting transmission gears and lock-up torque converter clutch.



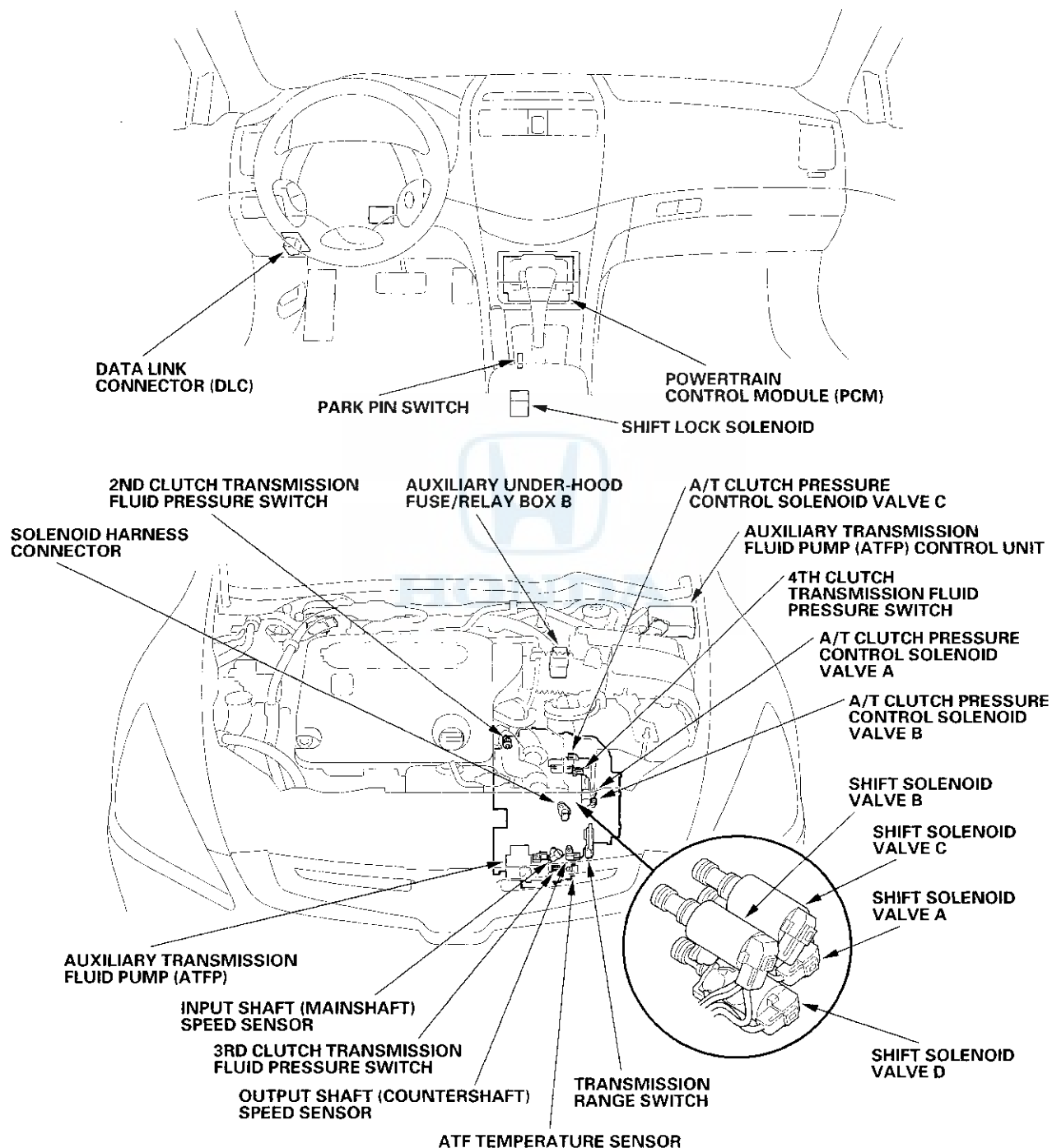
(cont'd)

Automatic Transmission

System Description (cont'd)

Electronic Control System (cont'd)

Electronic Controls Locations





Shift Control

The PCM instantly determines which gear should be selected by various signals sent from sensors and switches, and it actuates the shift solenoid valves A, B, C, and D to control shifting transmission gear.

The shift solenoid valves have two types:

- Shift solenoid valves A and D use ON-OPEN/OFF-CLOSE type; shift solenoid valve opens the port of shift solenoid valve pressure while shift solenoid valve is turned ON by the PCM, and closes the port when shift solenoid valve is OFF.
- Shift solenoid valves B and C use ON-CLOSE/OFF-OPEN type; shift solenoid valve closes the port of shift solenoid valve pressure while shift solenoid valve is turned ON by the PCM, and opens the port when shift solenoid valve is OFF.

The combination of driving signals to shift solenoid valves A, B, C, and D are shown in the table.

Position	Gear Position	Shift Solenoid Valve			
		A	B	C	D
D and D3	Shifting from the N position	OFF	ON	OFF	OFF
	Stays in 1st	OFF	ON	ON	OFF or ON
	Shifting gears between 1st and 2nd	ON	ON	ON	OFF or ON
	Stays in 2nd	ON	ON	OFF	OFF or ON
	Shifting gears between 2nd and 3rd	ON	ON	ON	OFF or ON
	Stays in 3rd	ON	OFF	ON	OFF or ON
D	Shifting gears between 3rd and 4th	ON	OFF	OFF	OFF or ON
	Stays in 4th	OFF	OFF	OFF	OFF or ON
	Shifting gears between 4th and 5th	OFF	OFF	ON	OFF or ON
	Stays in 5th	OFF	ON	ON	OFF or ON
2	2nd	ON	ON	OFF	OFF or ON
1	1st	OFF	ON	ON	OFF
N	Neutral	OFF	ON	OFF	OFF
R	Shifting from the P and N positions	OFF	ON	OFF	ON
	Stays in reverse	ON	ON	OFF	ON
	Reverse inhibit control	OFF	ON	OFF	OFF
P	Park	OFF	ON	OFF	ON

The vehicle starts off in 1st, then 2nd in a few seconds when the shift lever is shifted into the D or D3 position from the N, shifts automatically to 3rd, 4th, and 5th, and downshifts through 4th, 3rd, and 2nd in the D position; shifts automatically to 3rd, and downshifts to 2nd in the D3 position. The vehicle usually restarts off in 2nd in the D or D3 position. The vehicle can start in 1st gear in the D or D3 position, when you accelerate the vehicle from a stop at half throttle and more, and when you accelerate the vehicle at the instant of shifting the shift lever into the D or D3 position from the N.

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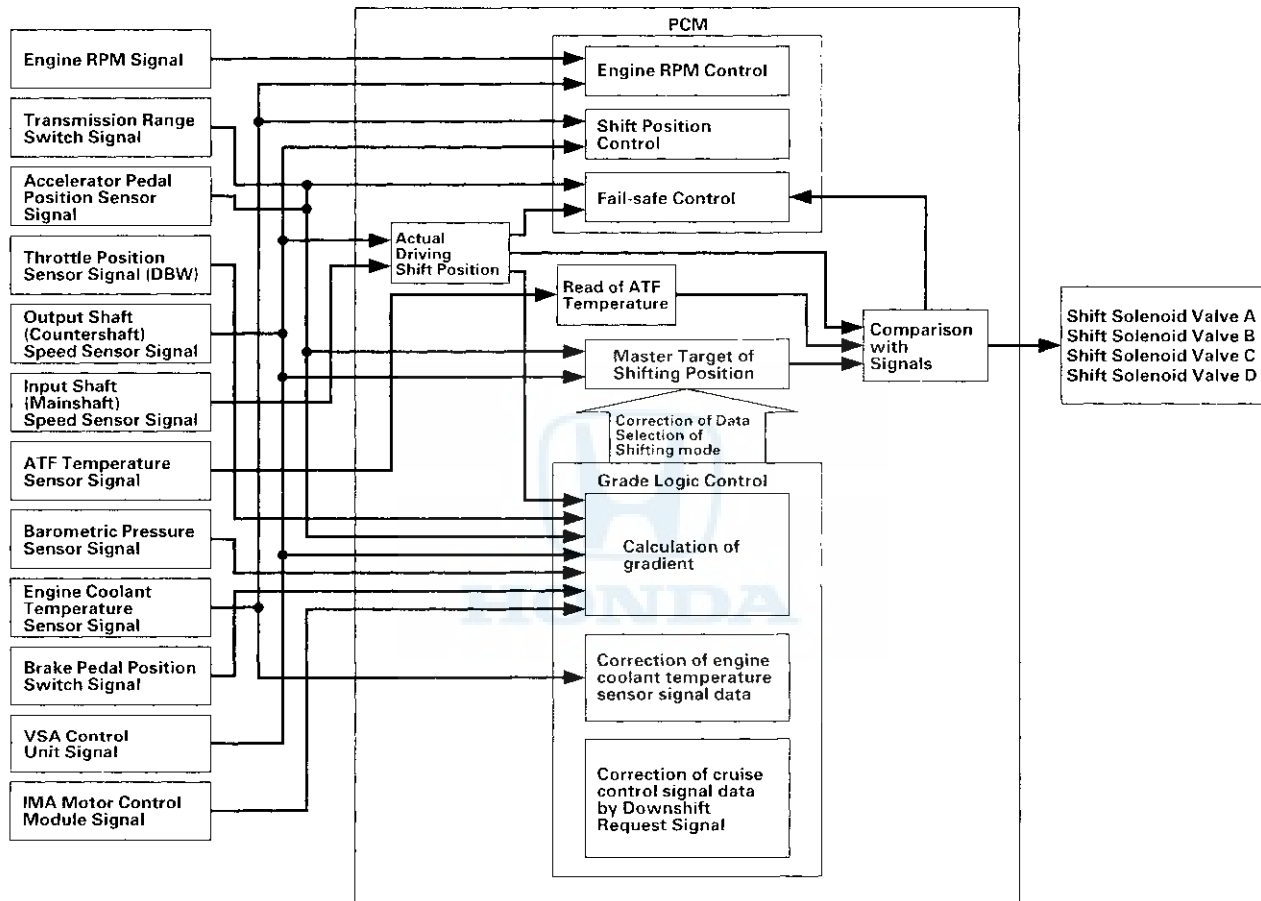
Automatic Transmission

System Description (cont'd)

Electronic Control System (cont'd)

Shift Control - Grade Logic Control

Also, the grade logic control system has been adopted to control shifting in the D and D3 positions. The PCM compares actual driving conditions with memorized driving conditions, based on the input from the throttle position sensor, the engine coolant temperature sensor, the barometric pressure sensor, the brake pedal position switch signal, and the shift lever position signal, to control shifting while the vehicle is ascending or descending a slope.

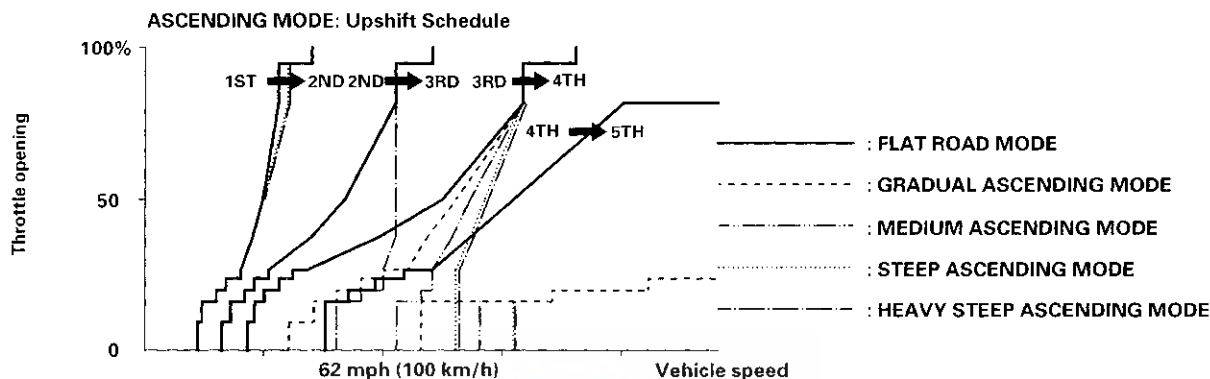




Grade Logic Control: Ascending Control

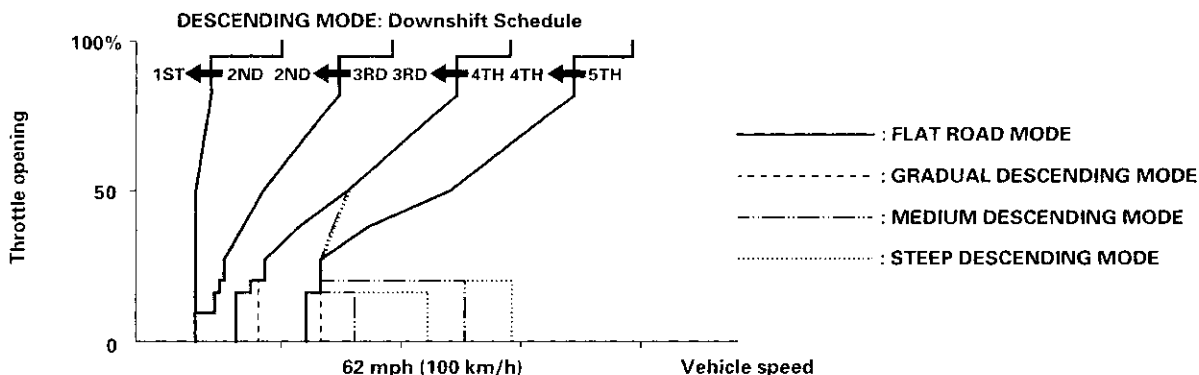
When the PCM determines that the vehicle is climbing a hill in the D and D3 positions, the system extends the engagement area of 2nd gear, 3rd gear, and 4th gear to prevent the transmission from frequently shifting between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, so the vehicle can run smooth and have more power when needed.

NOTE: Shift commands stored in the PCM between 2nd and 3rd gears, between 3rd and 4th gears, and between 4th and 5th gears, enable the PCM to automatically select the most suitable gear according to the magnitude of a gradient.



Grade Logic Control: Descending Control

When the PCM determines that the vehicle is going down a hill in the D and D3 positions, the shift-up speed from 4th to 5th gear, 3rd to 4th gear, and from 2nd to 3rd (when the throttle is closed) becomes faster than the set speed for flat road driving to widen the 4th gear, 3rd gear, and 2nd gear driving areas. This, in combination with engine braking from the deceleration lock-up, achieves smooth driving when the vehicle is descending. There are three descending modes with different 4th gear driving areas, 3rd gear driving areas and 2nd gear driving areas according to the magnitude of a gradient stored in the PCM. When the vehicle is in 5th or 4th gear and you are decelerating while applying the brakes on a steep hill, the transmission will downshift to a lower gear. When you accelerate, the transmission will then return to a higher gear.



Deceleration Control

When the vehicle goes around a corner and needs to decelerate first and then accelerate, the PCM sets the data for deceleration control to reduce the number of times the transmission shifts. When the vehicle is decelerating from speeds above 27 mph (43 km/h), the PCM shifts the transmission from 5th or 4th to 2nd earlier than normal to cope with upcoming acceleration.

(cont'd)

Automatic Transmission

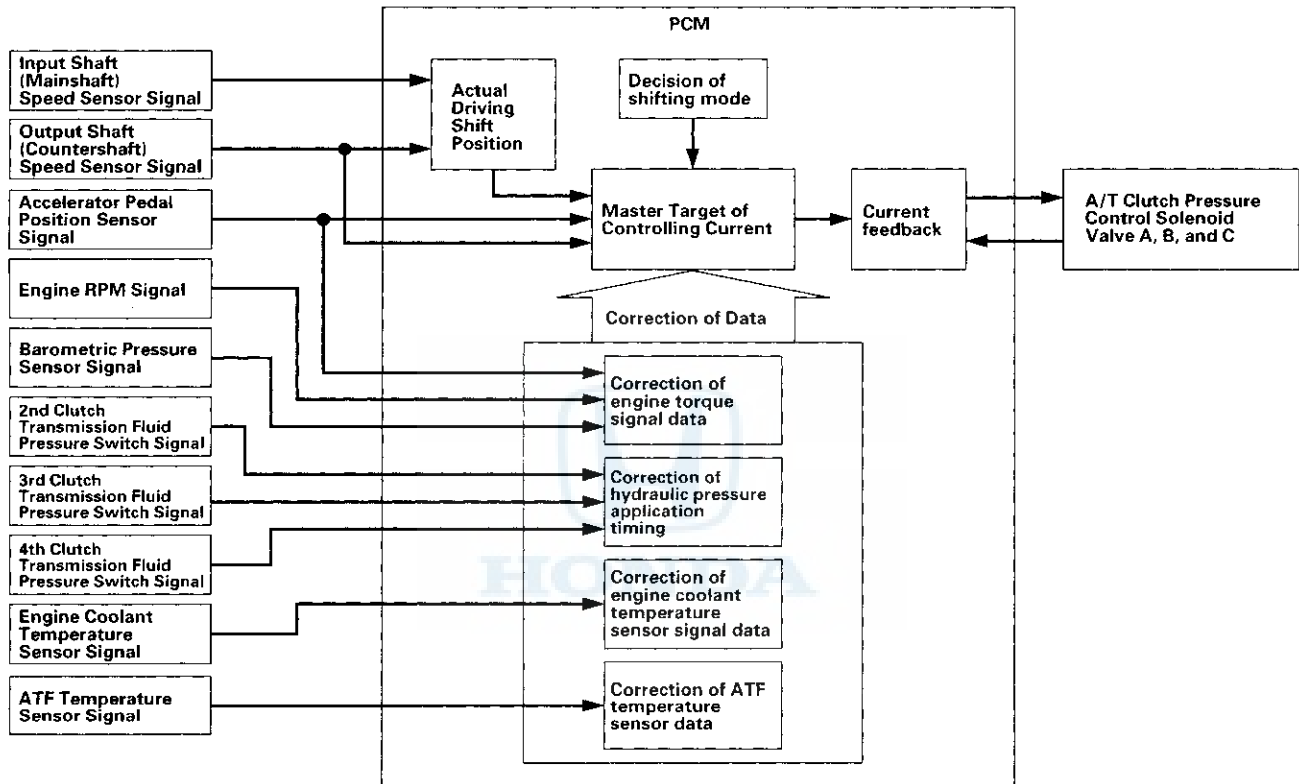
System Description (cont'd)

Electronic Control System (cont'd)

Clutch Pressure Control

The PCM actuates the A/T clutch pressure control solenoid valves A, B, and C to control the clutch pressure. When shifting between gears, the clutch pressure regulated by the A/T clutch pressure control solenoid valves A, B, and C engages and disengages the clutch smoothly.

The PCM receives input signals from the various sensors and switches, performs processing data, and outputs current to the A/T clutch pressure control solenoid valves A, B, and C.

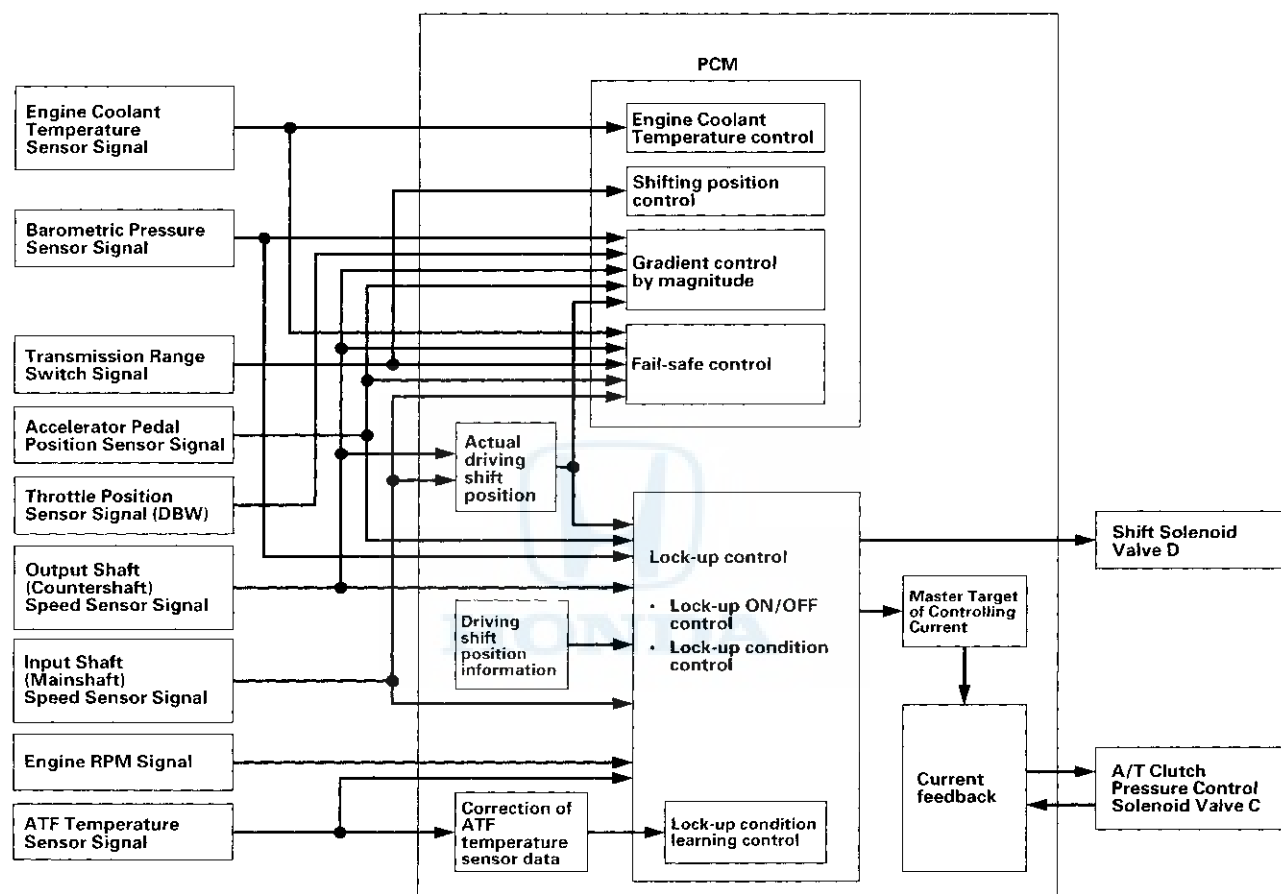




Lock-up Control

The shift solenoid valve D controls the hydraulic pressure to switch the lock-up shift valve and lock-up ON and OFF. The PCM actuates the shift solenoid valve D and the A/T clutch pressure control solenoid valve C to start lock-up. The A/T clutch pressure control solenoid valve C regulates hydraulic pressure to the lock-up control valve to control the volume of the lock-up.

The lock-up mechanism operates in the D position (2nd, 3rd, 4th, and 5th), and in the D3 position (2nd and 3rd).



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Automatic Transmission

System Description (cont'd)

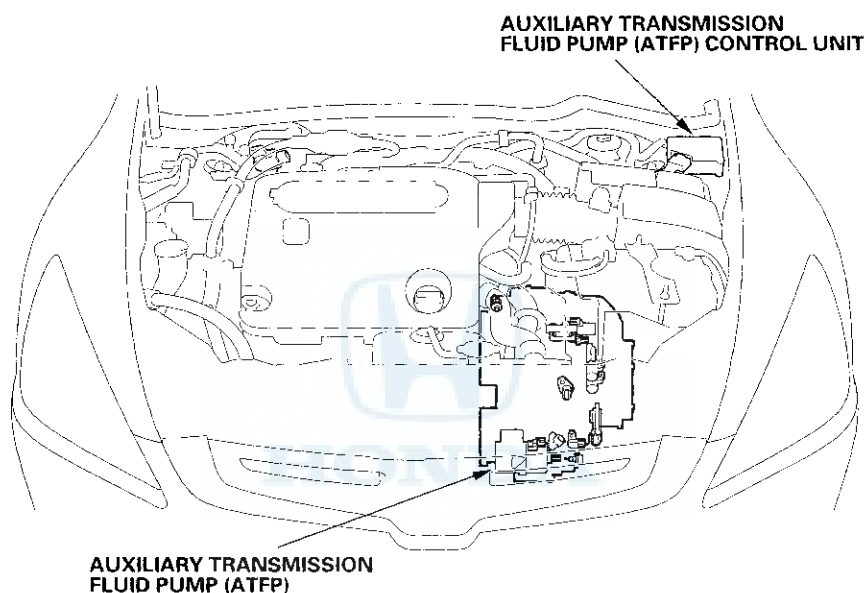
Electronic Control System (cont'd)

Auxiliary Transmission Fluid Pump (ATFP) Control

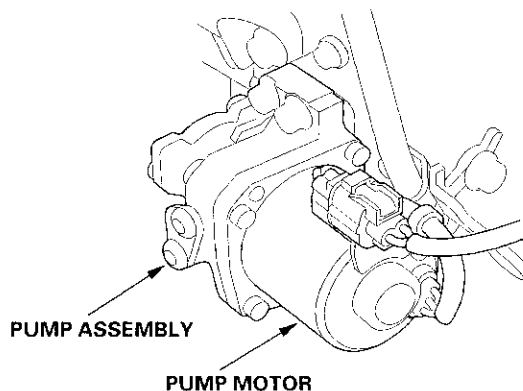
The auxiliary transmission fluid pump supplies hydraulic pressure to the hydraulic circuit during auto idle stop.

When the vehicle comes to a stop in auto idle stop mode, the ATF pump in the main valve body also stops, then the PCM and auxiliary transmission fluid pump (ATFP) control unit start the auxiliary transmission fluid pump to supply hydraulic pressure to the hydraulic circuit. The auxiliary transmission fluid pump continues to supply enough hydraulic pressure for the clutch to engage until the engine auto-starts. When the engine auto-starts, the ATFP control unit stops the auxiliary transmission fluid pump.

The PCM outputs the required amount of motor torque to the ATFP control unit. The ATFP control unit processes data, drives the auxiliary transmission fluid pump motor, and sends a feedback signal of motor torque to the PCM.

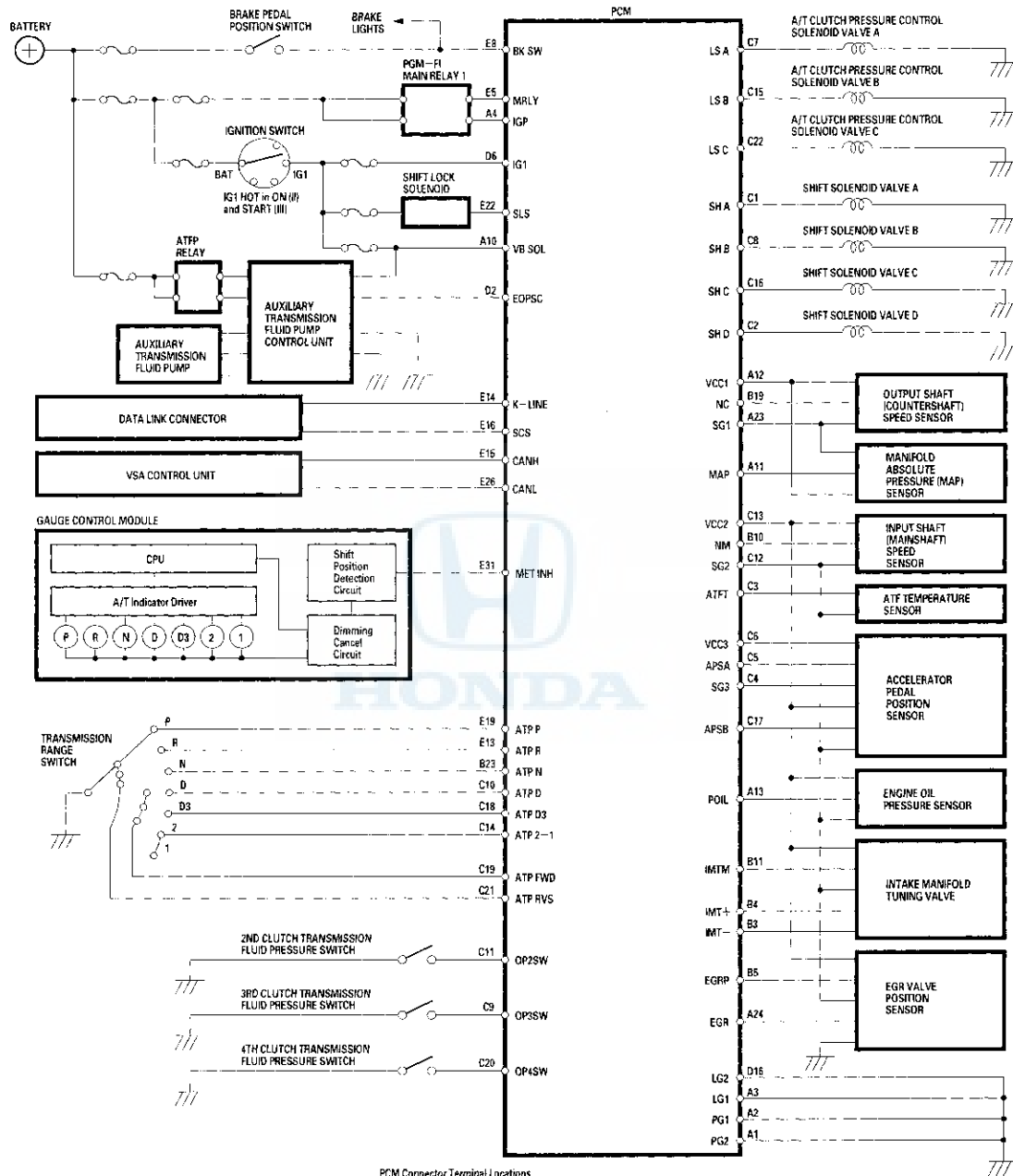


The auxiliary transmission fluid pump is bolted on the torque converter housing. The ATFP consists of the trochoid pump assembly and the 3-phase brushless DC motor.

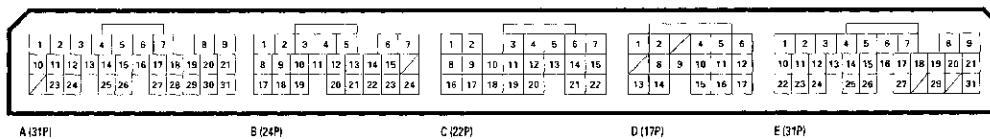




PCM A/T Control System Electrical Connections



PCM Connector Terminal Locations



(cont'd)

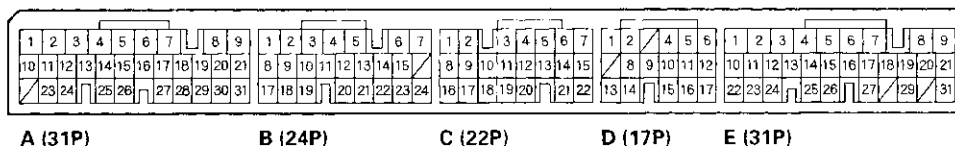
Automatic Transmission

System Description (cont'd)

Electronic Control System (cont'd)

PCM A/T Control System Inputs and Outputs

PCM Connector Terminal Locations



PCM CONNECTOR A (31P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
A1	BLK	PG2	Ground	Less than 1.0 V at all times
A2	BLK	PG1	Ground	Less than 1.0 V at all times
A3	BRN/YEL	LG1	Ground	Less than 1.0 V at all times
A4	YEL/BLK	IGP	Power supply circuit	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A10	BLK/YEL	VB SOL	Power supply circuit for solenoid valves	With ignition switch ON (II): Battery voltage With ignition switch OFF: 0 V
A12	YEL/RED	VCC1	Power supply circuit	With ignition switch ON (II): About 5 V
A23	GRN/WHT	SG1	Sensor ground	Less than 1.0 V at all times

PCM CONNECTOR B (24P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
B10	RED	NM	Input shaft (mainshaft) speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With engine at idle in the N position: About 2.5 V
B19	BLU	NC	Output shaft (countershaft) speed sensor signal input	With ignition switch ON (II): 0 V or about 5 V With driving: Pulsing signal (0--5 V)
B23	RED/BLK	ATP N	Transmission range switch N position signal input	In the N position: 0 V In other than the N position: Battery voltage

PCM CONNECTOR C (22P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
C1	BLU/YEL	SH A	Shift solenoid valve A control	In the R position, 2nd and 3rd gears in the D and D3 positions: Battery voltage In the P and N positions, 1st, 4th, and 5th gears in the D and D3 positions: 0 V
C2	GRN/RED	SH D	Shift solenoid valve D control	In the N position, and in the D and D3 positions during no lock-up condition: 0 V In the P and R positions, and in the D and D3 positions during lock-up condition: Battery voltage



PCM CONNECTOR C (22P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
C3	BLU/YEL	ATFT	ATF temperature sensor signal input	With ignition switch ON (II): 0.2–4.0 V With ignition switch OFF: 0 V
C7	RED	LS A	A/T clutch pressure control solenoid valve A control	With ignition switch ON (II): Pulsing signal
C8	GRN/WHT	SH B	Shift solenoid valve B control	In the P, R, and N positions, 1st, 2nd, and 5th gears in the D and D3 positions: Battery voltage In 3rd and 4th gears in the D and D3 positions: 0 V
C9	BLU/WHT	OP3SW	3rd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): • Without 3rd clutch pressure: About 5 V • With 3rd clutch pressure: About 0 V
C10	YEL/GRN	ATP D	Transmission range switch D position signal input	In the D position: 0 V In other than the D position: Battery voltage
C11	BLU/BLK	OP2SW	2nd clutch transmission fluid pressure switch signal input	With ignition switch ON (II): • Without 2nd clutch pressure: About 5 V • With 2nd clutch pressure: About 0 V
C12	GRN/YEL	SG2	Sensor ground	Less than 1.0 V at all times
C13	YEL/BLU	VCC2	Power supply circuit	With ignition switch ON (II): About 5 V
C14	BLU	ATP 2-1	Transmission range switch 2 and 1 position signals input	In the 2 and 1 positions: 0 V In other than the 2 and 1 positions: Battery voltage
C15	BRN/WHT	LS B	A/T clutch pressure control solenoid valve B control	With ignition switch ON (II): Pulsing signal
C16	GRN	SH C	Shift solenoid valve C control	In 1st, 3rd, and 5th gears in the D and D3 positions: Battery voltage In the P, R, and N positions, in 2nd and 4th gears in the D and D3 positions: 0 V
C18	RED	ATP D3	Transmission range switch D3 position signal input	In the D3 position: 0 V In other than the D3 position: Battery voltage
C19	BLU/YEL	ATP FWD	Transmission range switch D, D3 and 2 position signals input	In the D, D3, and 2 positions: 0 V In other than the D, D3, and 2 positions: Battery voltage
C20	BLU/YEL	OP4SW	4th clutch transmission fluid pressure switch signal input	With ignition switch ON (II): • Without 4th clutch pressure: About 5 V • With 4th clutch pressure: About 0 V
C21	RED/WHT	ATP RVS	Transmission range switch RVS (P, R, and N positions) signal input	In the P, R, and N positions: 0 V In other than the P, R, and N positions: Battery voltage
C22	GRN/RED	LS C	A/T clutch pressure control solenoid valve C control	With ignition switch ON (II): Pulsing signal

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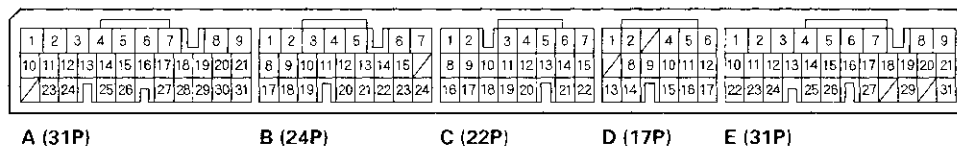
Automatic Transmission

System Description (cont'd)

Electronic Control System (cont'd)

PCM Inputs and Outputs

PCM Connector Terminal Locations



PCM CONNECTOR D (17P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
D2	ORN	EOPSC	Auxiliary transmission fluid pump driver signal output and input	With ignition switch ON (II): Pulsing signal
D6	BLK/YEL	IG1	Power supply circuit	With ignition switch ON (II): Battery voltage
D16	BRN	LG2	Ground	With ignition switch OFF: 0 V Less than 1.0 V at all times

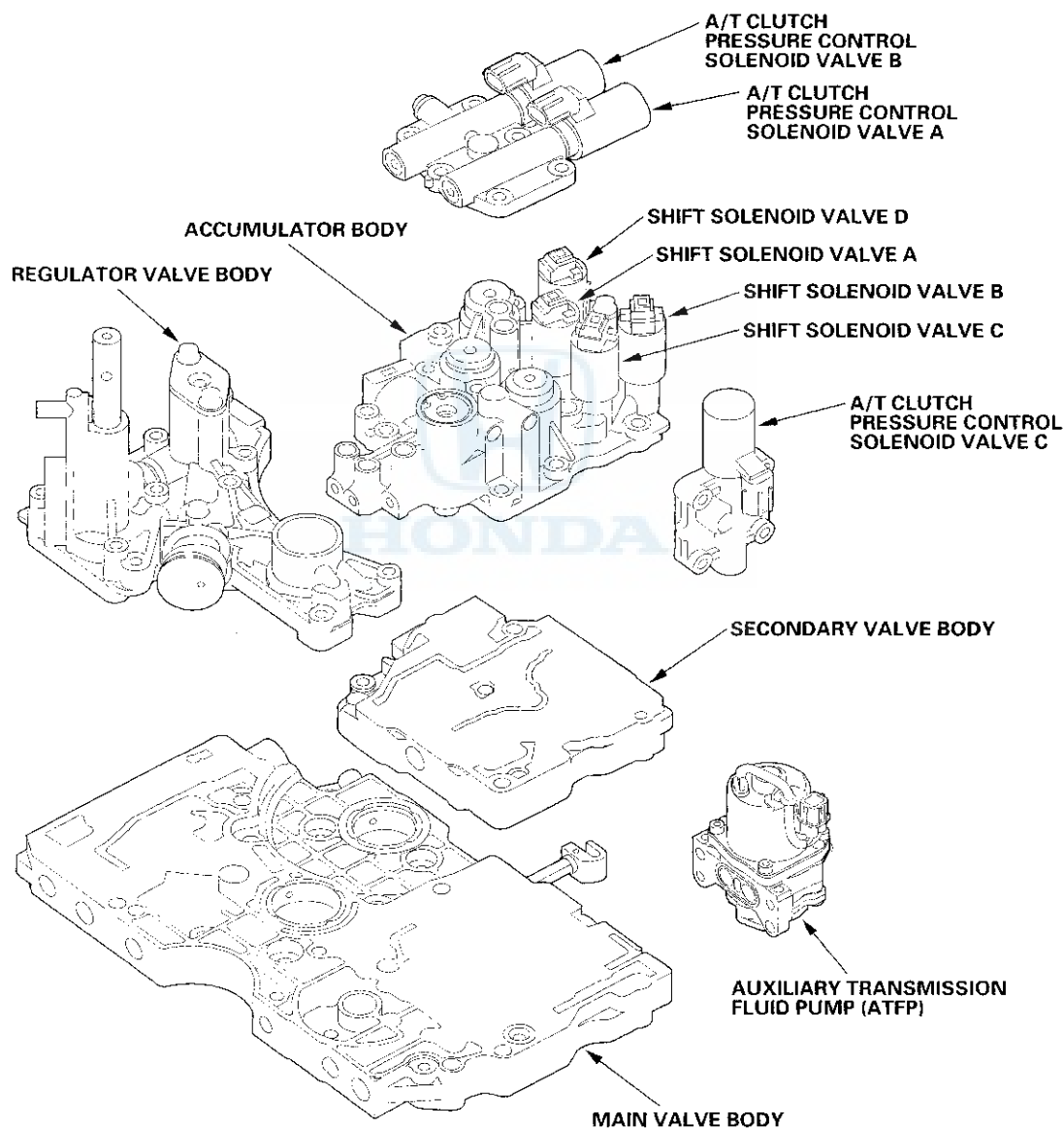
PCM CONNECTOR E (31P)

Terminal Number	Wire Color	Signal	Description	Measuring Conditions/Terminal Voltage
E8	LT GRN	BK SW	Brake pedal position switch signal input	Brake pedal pressed: Battery voltage Brake pedal released: 0 V
E13	GRY	ATP R	Transmission range switch R position signal input	In the R position: 0 V In other than the R position: Battery voltage
E14	BLU	K-LINE	Communication line PCM-to-DLC	With ignition switch ON (II): About 10 V
E15	WHT	CAN H	Communication signal outputs	With ignition switch ON (II): Pulsing signal
E16	BRN	SCS	Detects service check signal	With the SCS shorted with the HDS: About 0 V With the SCS open: About 5 V
E19	GRN	ATP P	Transmission range switch P position signal input	In the P position: 0 V In other than the P position: Battery voltage
E22	LT BLU	SLS	Shift lock solenoid signal input	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: 0 V
E26	BLK	CAN L	Communication signal outputs	With ignition switch ON (II): Pulsing signal
E31	ORN	MET INH	A/T gear position indicator and shift indicator control signal output	With ignition switch ON (II): About 10 V



Hydraulic Controls

The valve body includes the main valve body, the regulator valve body, the secondary valve body, and the accumulator body. The ATF pump is driven by splines on the end of the torque converter which is attached to the engine through the IMA motor rotor. Fluid flows through the regulator valve to maintain specified pressure through the main valve body to the manual valve, directing pressure to each of the clutches. The shift solenoid valves A, B, C, and D are mounted on the accumulator body. The A/T clutch pressure control solenoid valves A, B, and C are mounted on the transmission housing. The auxiliary transmission fluid pump (ATFP) is mounted on the outside of the torque converter housing.



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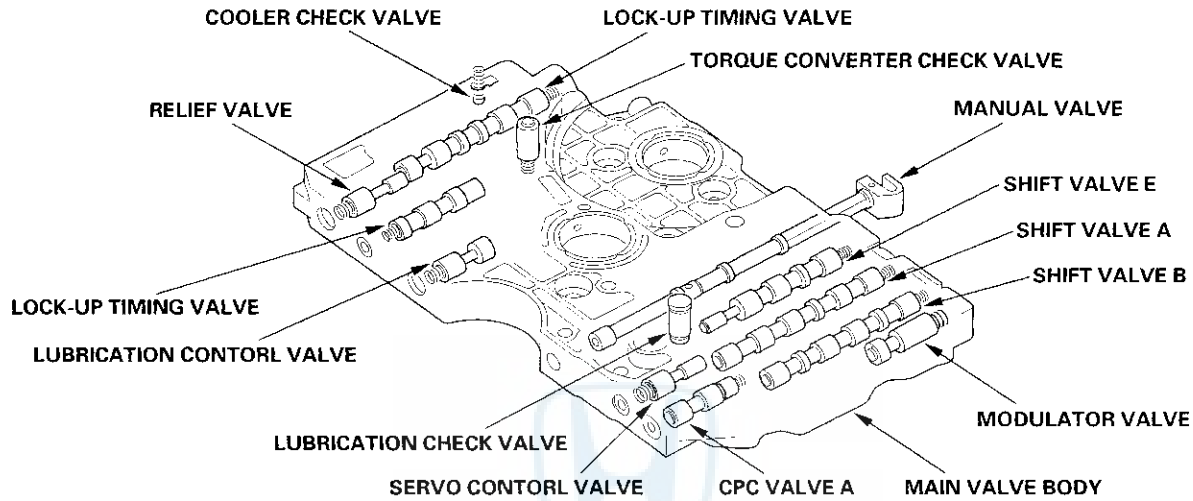
Automatic Transmission

System Description (cont'd)

Hydraulic Controls (cont'd)

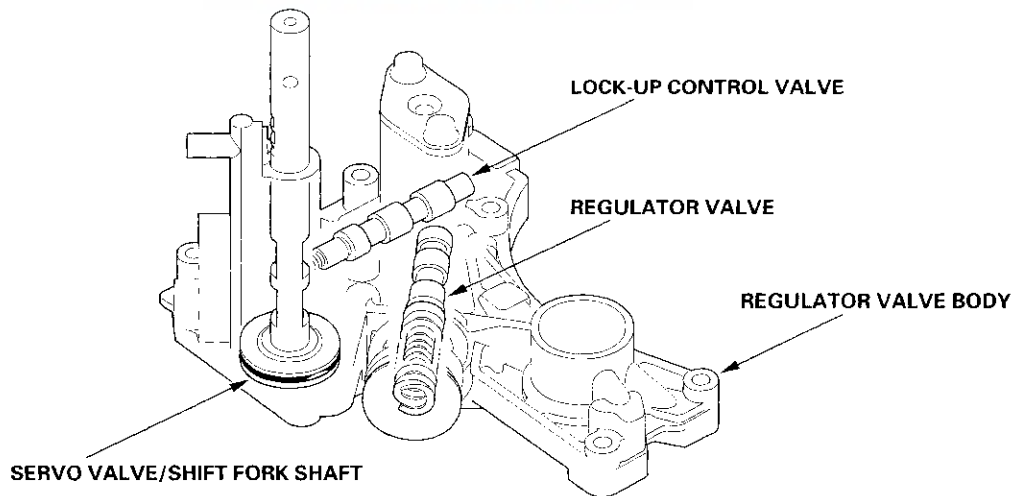
Main Valve Body

The main valve body contains the manual valve, the modulator valve, the shift valve A, the shift valve B, the shift valve E, the CPC valve A, the servo control valve, the lubrication check valve, the lubrication control valve, the torque converter check valve, the lock-up timing valve, the relief valve, the cooler check valve, the lock-up shift valve, and the ATF pump gears. The primary function of the main valve body is to switch fluid pressure on and off to control hydraulic pressure going to the hydraulic control system.



Regulator Valve Body

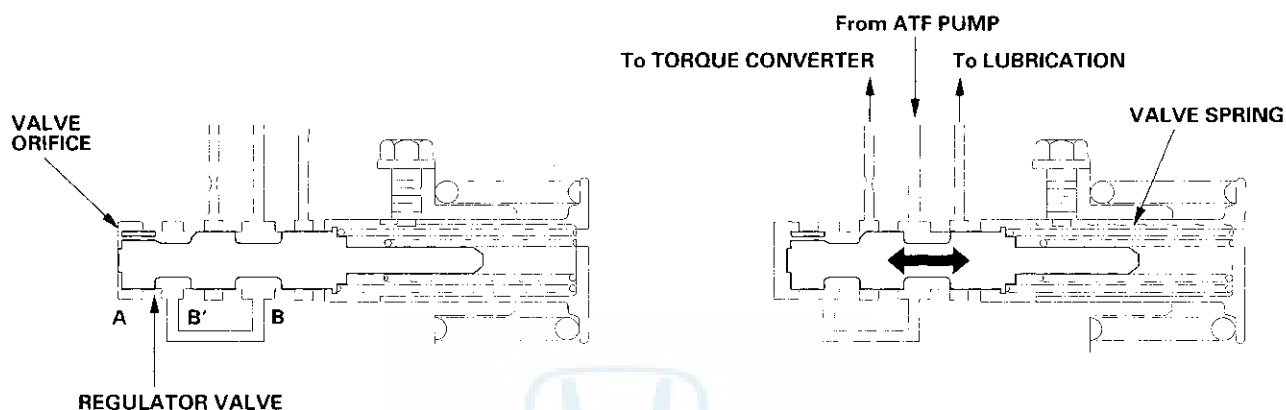
The regulator valve body is located on the main valve body. The regulator valve body contains the regulator valve, the lock-up control valve, the servo valve, and the 3rd accumulator.



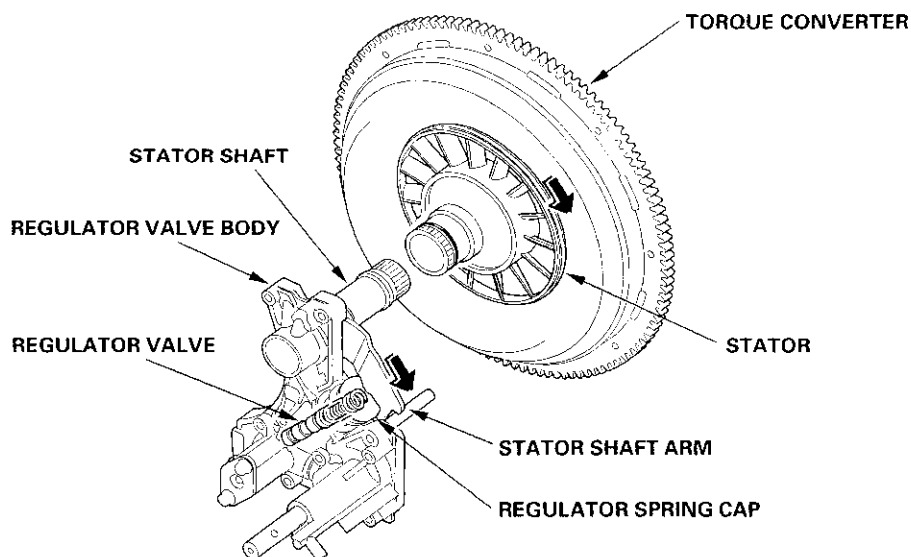


Regulator Valve

The regulator valve maintains constant hydraulic pressure from the ATF pump to the hydraulic control system, while also furnishing fluid to the lubricating system and torque converter. Fluid from the ATF pump flows through B and B'. Fluid entering from B flows through the valve orifice to the A cavity. This pressure of the A cavity pushes the regulator valve to the spring side, and this movement of the regulator valve uncovers the fluid port to the torque converter and the relief valve. The fluid flows out to the torque converter and the relief valve, and the regulator valve returns under spring force. According to the level of the hydraulic pressure through B, the position of the regulator valve changes, and the amount of fluid from B' through the torque converter changes. This operation is continued, maintaining the line pressure.



Increases in hydraulic pressure according to torque are performed by the regulator valve using stator torque reaction. The stator shaft is splined to the stator in the torque converter, and its arm end contacts the regulator spring cap. When the vehicle is accelerating or climbing (torque converter range), stator torque reaction acts on the stator shaft, and the stator arm pushes the regulator spring cap in the direction of the arrow in proportion to the reaction. The stator reaction spring compresses, and the regulator valve moves to increase the line pressure which is regulated by the regulator valve. The line pressure reaches its maximum when the stator torque reaction reaches its maximum.



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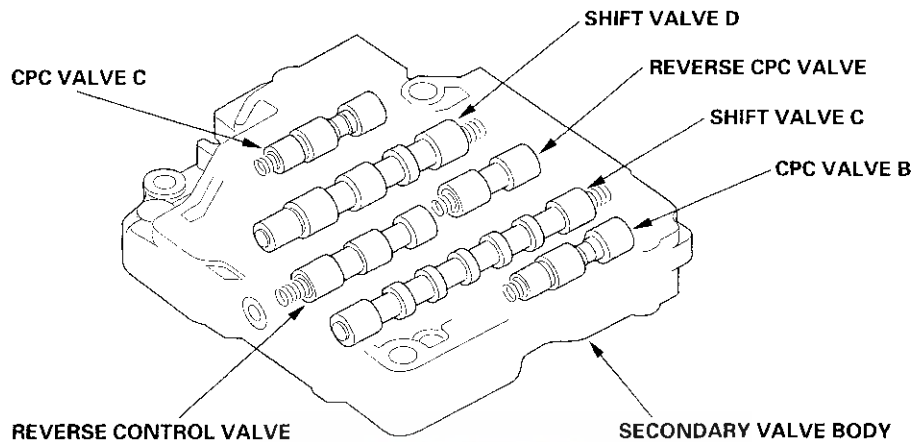
Automatic Transmission

System Description (cont'd)

Hydraulic Controls (cont'd)

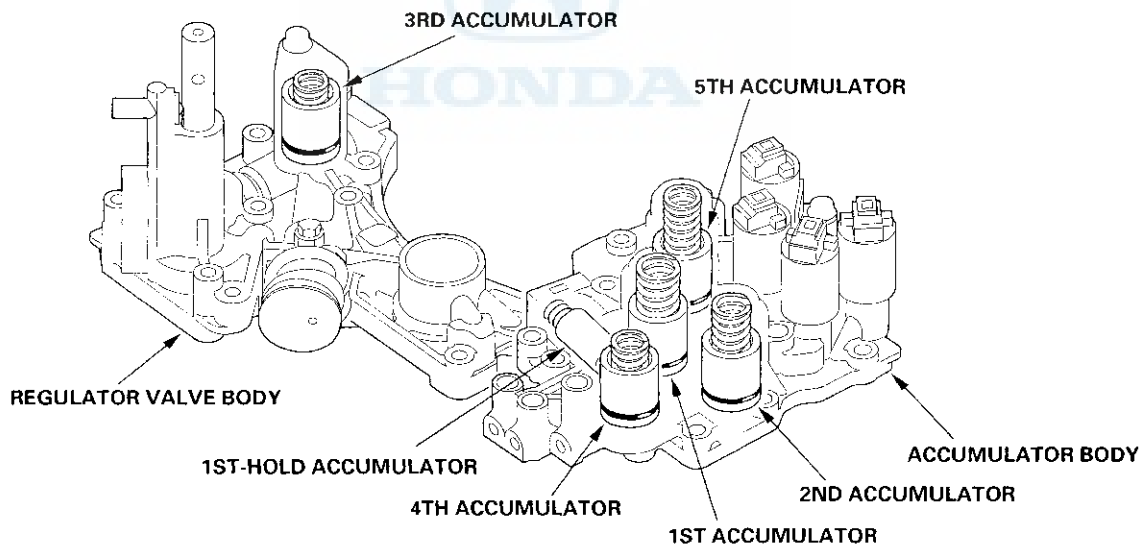
Secondary Valve Body

The secondary valve body is on the main valve body. The secondary valve body contains the shift valve C, the shift valve D, the CPC valve B, the CPC valve C, the reverse control valve, and the reverse CPC valve.



Accumulator Body

The accumulator body is on the secondary valve body, and contains the 1st, 1st-hold, 2nd, 4th, and 5th accumulators. The 3rd accumulator is in the regulator valve body.





Hydraulic Flow

Distribution of Hydraulic Pressure

As the engine turns, the ATF pump starts to operate, and the auxiliary transmission fluid pump operates during auto idle stop. Automatic transmission fluid (ATF) is drawn through the ATF strainer (filter) and discharged into the hydraulic circuit. Then, ATF flowing from the ATF pump becomes line pressure that's regulated by the regulator valve. Torque converter pressure from the regulator valve enters the torque converter through the lock-up shift valve and lock-up control valve, and it is discharged from the torque converter. The torque converter check valve prevents torque converter pressure from rising.

The PCM controls the shift solenoid valves A, B, C, and D ON and OFF, and the shift solenoid valves control shift solenoid pressure to the shift valves. Applying shift solenoid pressure to the shift valves moves the position of the shift valve, and switches the port of hydraulic pressure. The PCM also controls A/T clutch pressure control solenoid valves A, B, and C. The A/T clutch pressure control solenoid valves regulate the A/T clutch pressure control solenoid valve pressure and apply A/T clutch pressure control solenoid valve pressure to CPC valves A, B, and C.

When shifting between gears, the clutch is engaged by pressure from the CPC pressure mode. The PCM controls one of the shift solenoid valves to move the position of the shift valve. This movement switches the port of CPC pressure and line pressure. Line pressure is then applied to the clutch, and CPC pressure is released. Engaging the clutch with line pressure mode happens when shifting is completed.

Hydraulic pressure at the ports:

Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure	Port No.	Hydraulic Pressure
1	LINE	5G	CPC C	51	5TH CLUTCH
2	LINE	5H	CPC B or LINE	56	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A
3	LINE	5J	CPC B or LINE	57	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
3'	LINE	5K	CPC A or LINE	5R	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B
3''	REVERSE CPC or LINE	5L	CPC A or LINE	58	A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C
3A	LINE	5M	LINE	90	TORQUE CONVERTER
3B	REVERSE CPC	5N	CPC C	90'	TORQUE CONVERTER
4	LINE	6	MODULATOR	91	TORQUE CONVERTER
4'	LINE	SA	SHIFT SOLENOID VALVE A	91'	TORQUE CONVERTER
4''	LINE	SB	SHIFT SOLENOID VALVE B	92	TORQUE CONVERTER
4A	CPC A	SC	SHIFT SOLENOID VALVE C	93	ATF COOLER
4B	CPC B	SC'	SHIFT SOLENOID VALVE C	94	TORQUE CONVERTER
4C	CPC C	SD	SHIFT SOLENOID VALVE D	95	LUBRICATION
5A	CPC A	10	1ST CLUTCH	95'	LUBRICATION
5B	CPC A or LINE	15	1ST-HOLD CLUTCH	96	TORQUE CONVERTER
5C	CPC B or LINE	20	2ND CLUTCH	99	SUCTION
5D	CPC B	30	3RD CLUTCH	X	DRAIN
5E	CPC C	40	4TH CLUTCH	HX	HIGH POSITION DRAIN
5F	CPC C	50	5TH CLUTCH	AX	AIR DRAIN

(cont'd)

Automatic Transmission

System Description (cont'd)

Hydraulic Flow (cont'd)

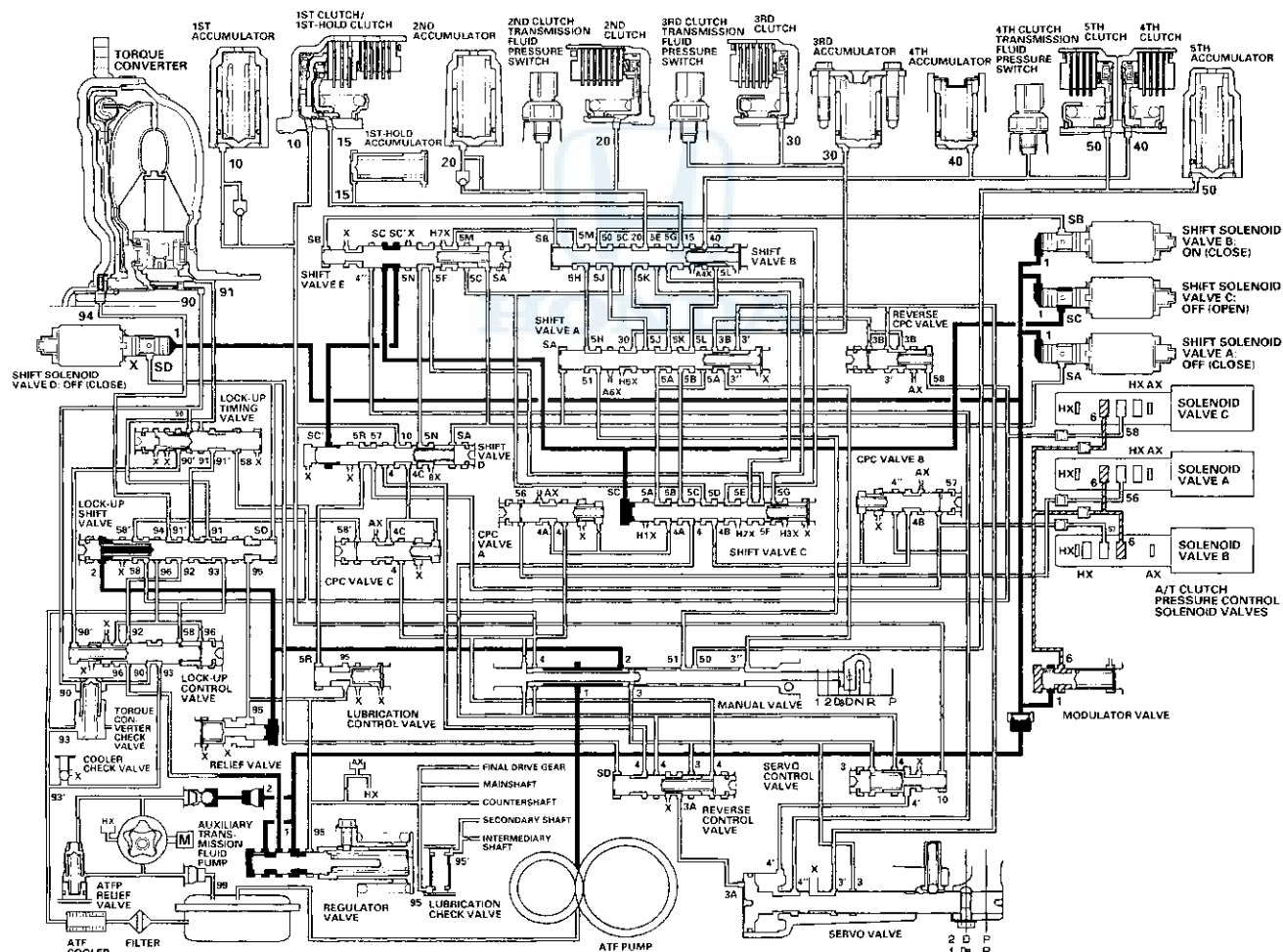
N Position

Line pressure (1) regulated by the regulator valve flows to shift solenoid valves. The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- The shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- The shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- The shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D move to the right side.
- The shift solenoid valve D is OFF, and closes the port of shift solenoid valve D pressure (SD).

Line pressure (1) also flows to the modulator valve and becomes modulator pressure (6). Modulator pressure (6) flows to the A/T clutch pressure control solenoid valves. The manual valve covers the port leading pressure to the clutches, and hydraulic pressure is not applied to the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

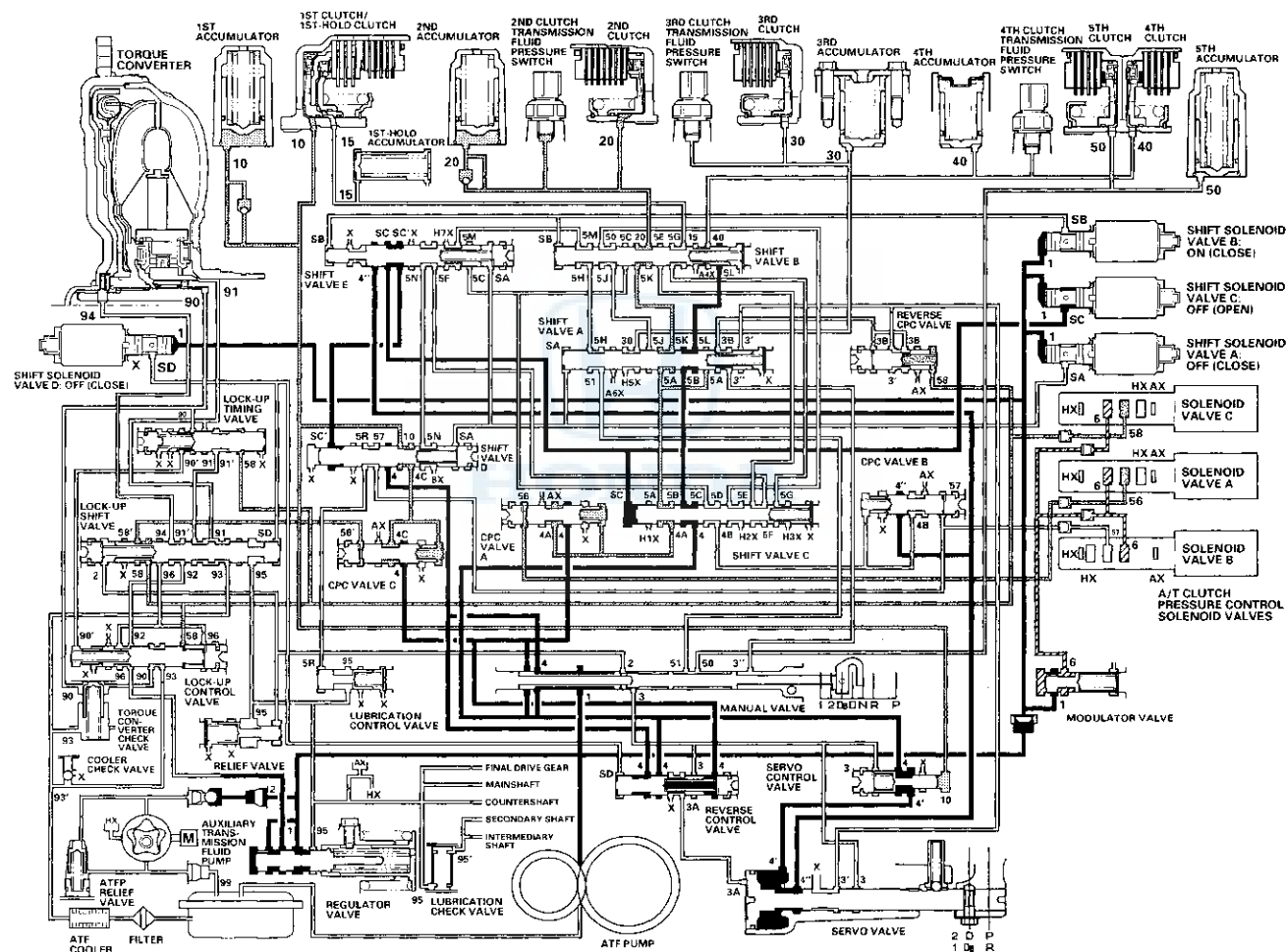




D and D3 Positions: 1st gear shifting from the N position

Shift solenoid valves remain the same as in the N position when shifting to the D position from the N position. The manual valve is moved to the D position, and uncovers the port of line pressure (4) leading to CPC valves A and C. The PCM controls the A/T clutch pressure control solenoid valves A and C, A/T clutch pressure control solenoid valve A pressure (56) flows to the CPC valve A, and A/T clutch pressure control solenoid valve C pressure (58) flows to the CPC valve C. The CPC valves A and C regulate line pressure (4), line pressure (4) becomes CPC C pressure (4C) at the CPC valve C, and becomes CPC A pressure at the CPC valve A. CPC C pressure (4C) becomes 1st clutch pressure (10) at the shift valve D, and 1st clutch pressure flows to the 1st clutch. CPC A pressure (4A) becomes 2nd clutch pressure (20) at the shift valve B via the shift valve A. The 1st clutch and 2nd clutch engage gently with the CPC pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

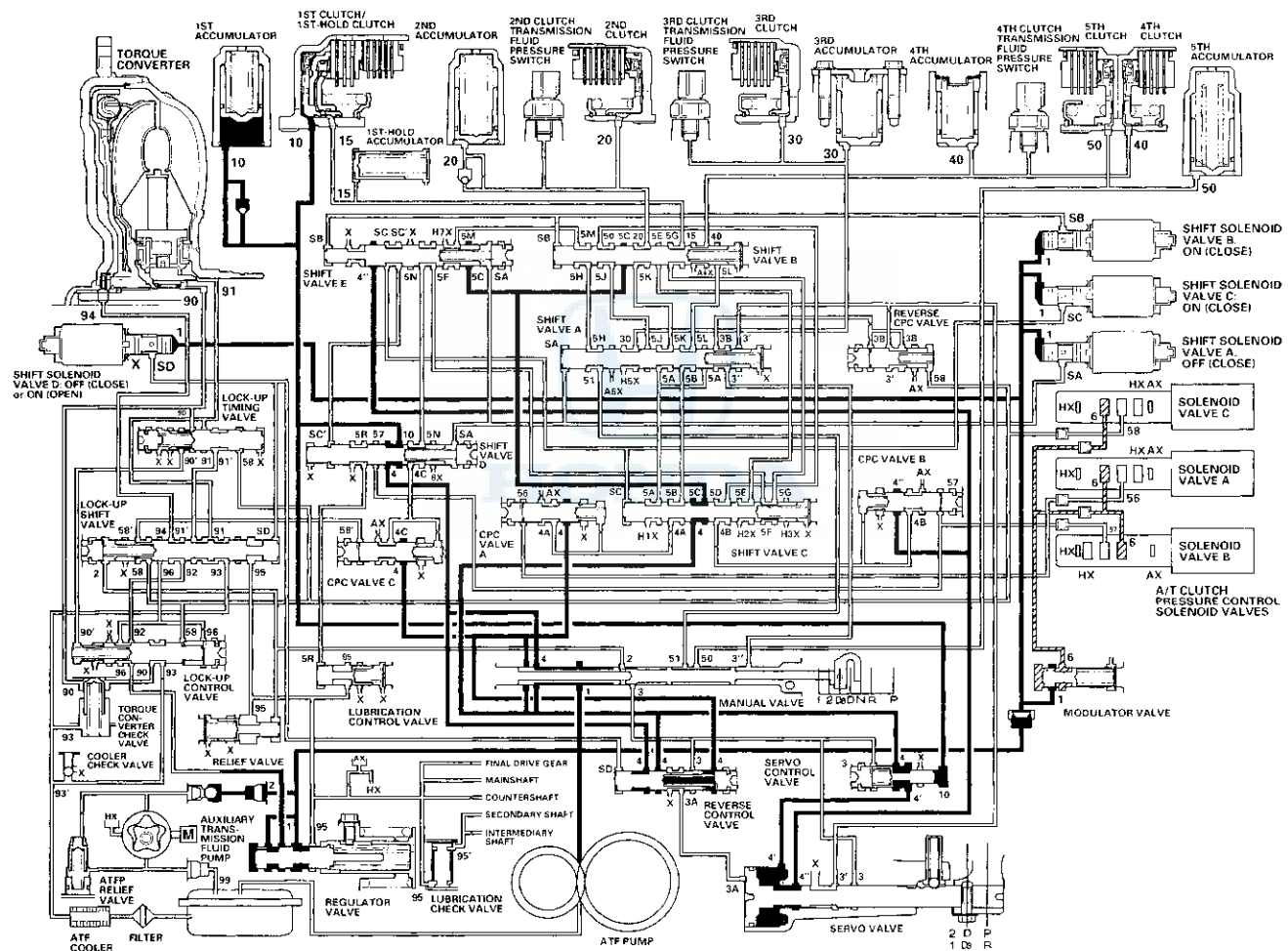
System Description (cont'd)

Hydraulic Flow (cont'd)

D and D3 Positions: Driving in 1st gear

The PCM turns shift solenoid valve C ON, and shift solenoid valve C covers the port of shift solenoid valve C pressure (SC) to the shift valves C and D. Shift solenoid valve A keeps OFF, and shift solenoid valve B keeps ON. The shift valves C and D are moved to the left side, the shift valve D switches the port of line pressure (4) and CPC C pressure (4C) leading to the 1st clutch, and the shift valve C switches the port of CPC A pressure (5A) releasing 2nd clutch pressure. Line pressure (4) becomes 1st clutch pressure (10) at the shift valve D, and flows to the 1st clutch. The 1st clutch is engaged securely with the line pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

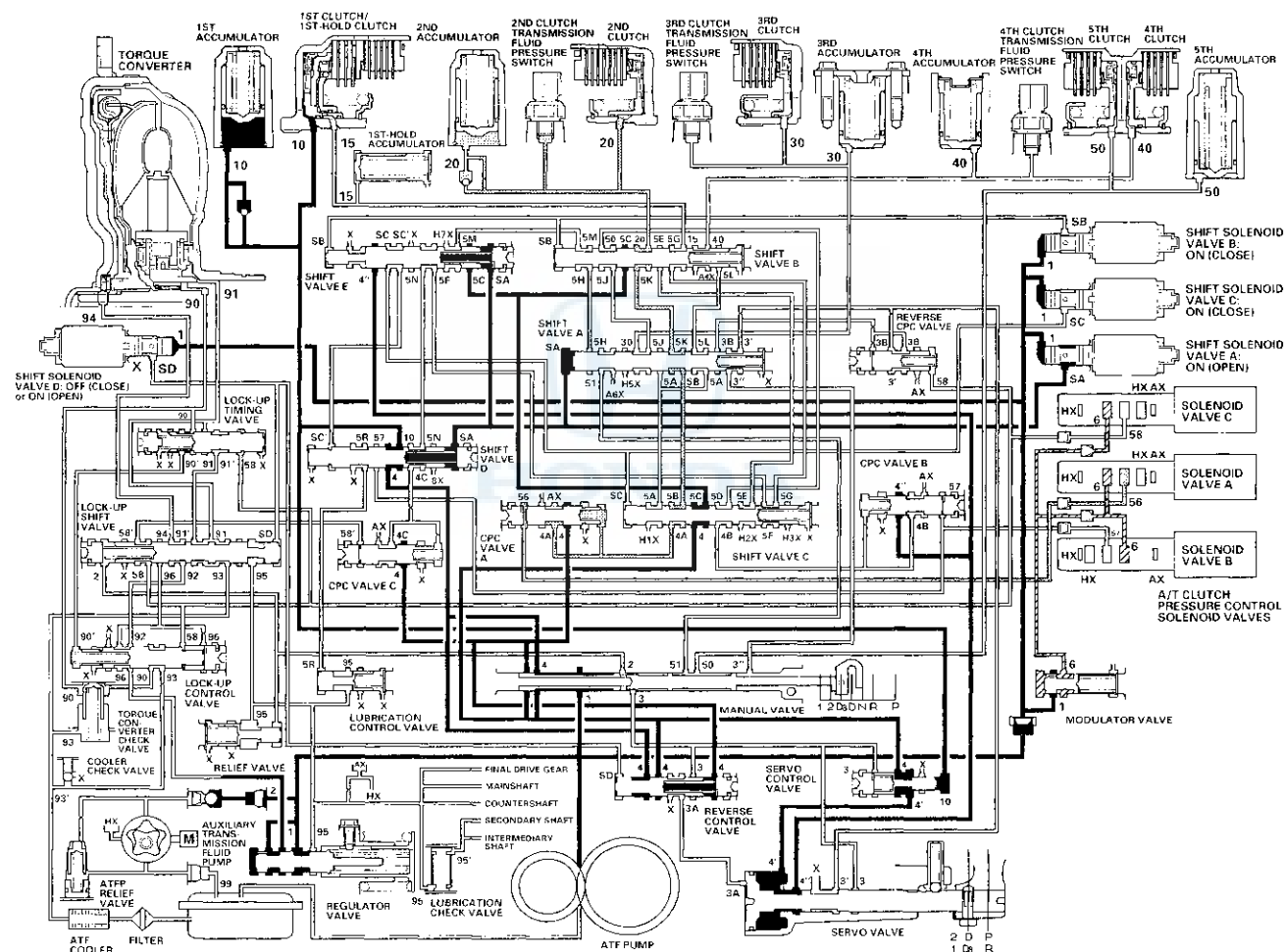




D and D3 Positions: Shifting between 1st gear and 2nd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON, and shift solenoid valve A uncovers the port of shift solenoid valve A pressure (SA) to the shift valve A. Shift solenoid valves B and C keep ON. The shift valve A is moved to the right side to uncover the port of CPC A pressure (4A) leading to the 2nd clutch. The PCM controls A/T clutch pressure control solenoid valve A, and A/T clutch pressure control solenoid valve A pressure (56) is applied to the CPC valve A. The CPC valve A regulates line pressure (4), and line pressure (4) becomes CPC A pressure (4A). CPC A pressure (4A) flows to the shift valve B via the shift valves C and A, and becomes 2nd clutch pressure (20) at the shift valve B. The 2nd clutch is engaged with the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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Automatic Transmission

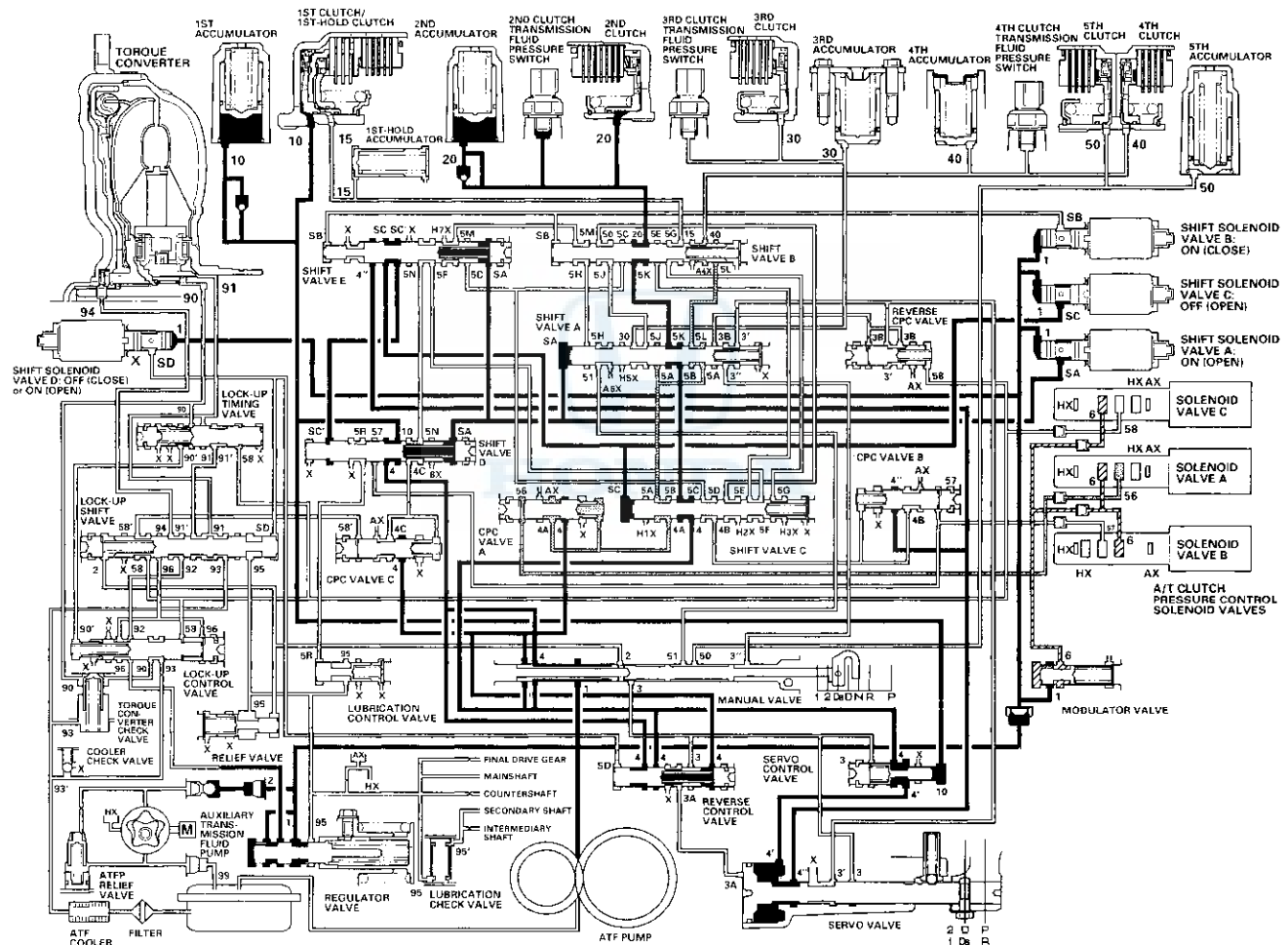
System Description (cont'd)

Hydraulic Flow (cont'd)

D and D3 Positions: Driving in 2nd gear

The PCM turns shift solenoid valve C OFF, and shift solenoid valve C uncovers the port of shift solenoid valve C pressure (SC) to the shift valve C. Shift solenoid valves A and B keep ON. The shift valve C is moved to the right side to switch the port of line pressure (4) and CPC A pressure (4A) leading to the 2nd clutch. CPC A pressure (5B) (5K) changes to line pressure (5B) (5K) and 2nd clutch pressure (20) is changed to line pressure mode, and the 2nd clutch is engaged with the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

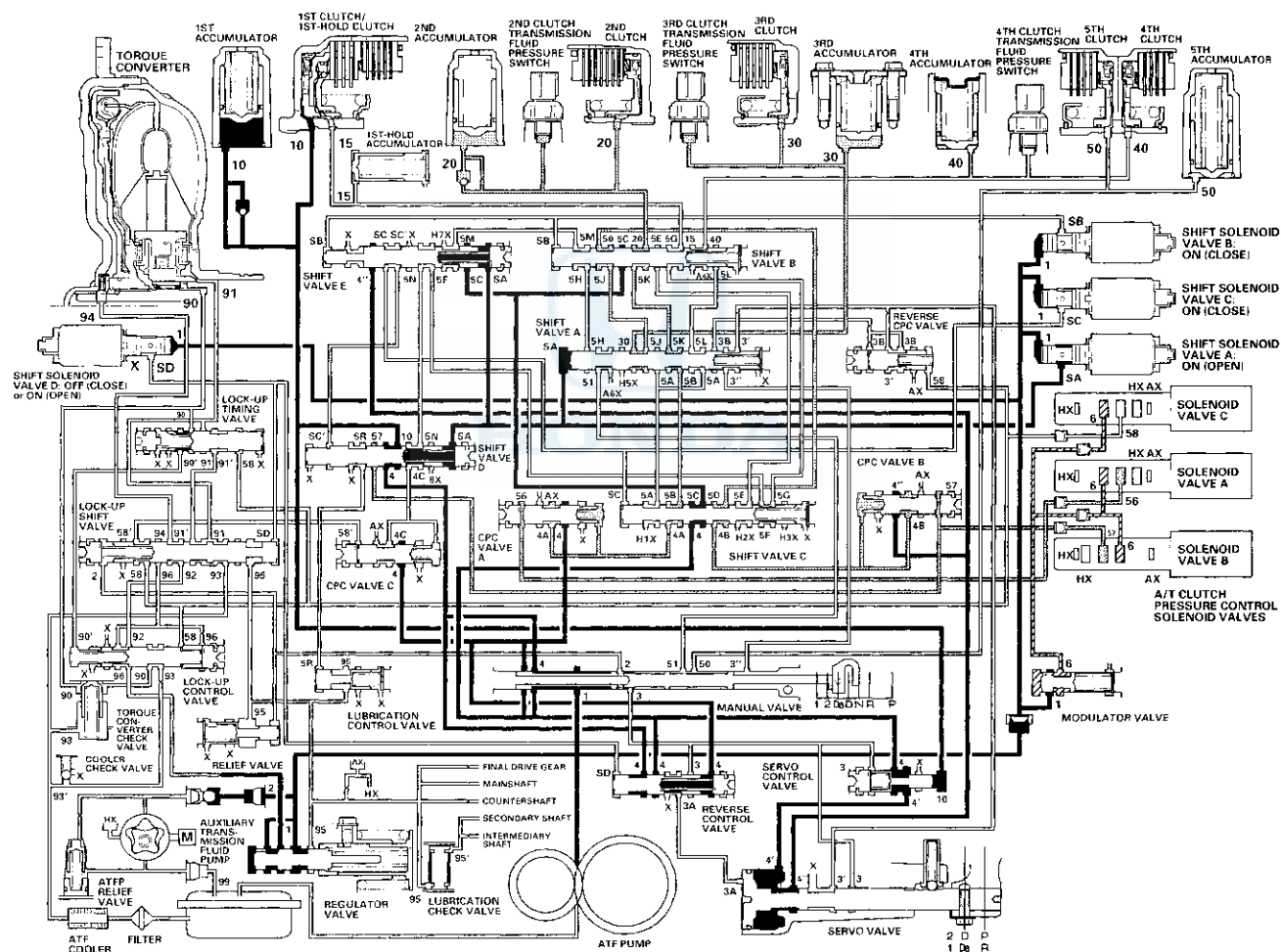




D and D3 Positions: Shifting between 2nd gear and 3rd gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, and shift solenoid valve C covers the port of shift solenoid valve C pressure (SC) to the shift valve C. Shift solenoid valves A and B keep ON. The shift valve C is moved to the left side to switch the port of line pressure (4) and CPC A pressure (4A) leading to the 2nd clutch. The shift valve C also uncovers the port of CPC B pressure (4B) leading to the 3rd clutch. The PCM controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valve A pressure (56) is applied to the CPC valve A, and A/T clutch pressure control solenoid valve B pressure (57) is applied to the CPC valve B. The CPC valve B regulates line pressure (4''), and line pressure (4'') becomes CPC B pressure (4B). CPC B pressure flows to the shift valve A via the shift valves C and B, and becomes 3rd clutch pressure (30) at the shift valve A. The 2nd clutch pressure (20) is changed to CPC pressure mode, and the 3rd clutch is engaged with the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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Automatic Transmission

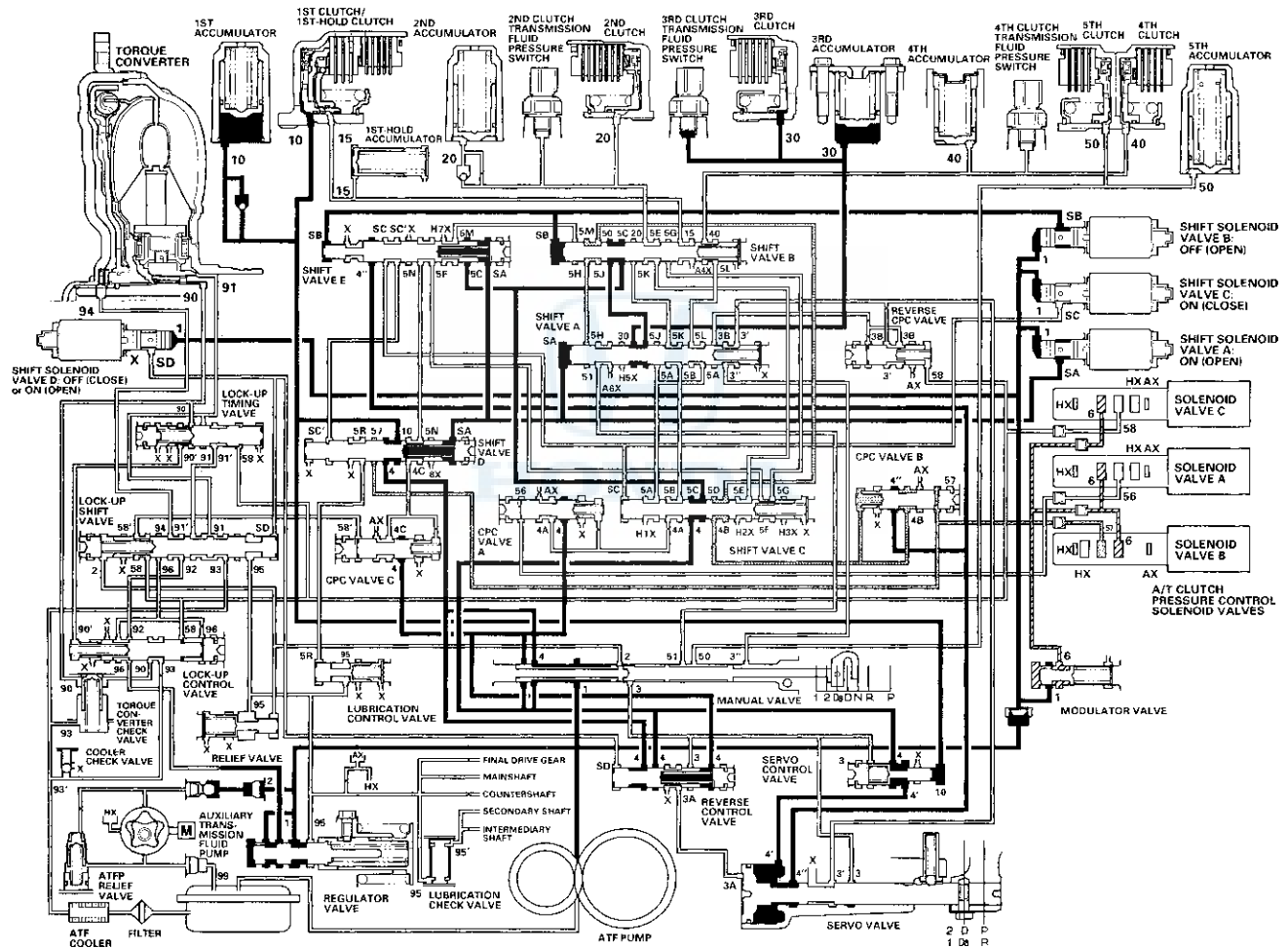
System Description (cont'd)

Hydraulic Flow (cont'd)

D and D3 Positions: Driving in 3rd gear

The PCM turns shift solenoid valve B OFF, and shift solenoid valve B uncovers the port of shift solenoid valve B pressure (SB) to the shift valve B. Shift solenoid valves A and C keep ON. The shift valve B is moved to the right side to switch the port of line pressure (5C), CPC B pressure (5J) leading to the 3rd clutch, and 2nd clutch pressure (20) releasing 2nd clutch pressure. CPC B pressure (5J) changes to line pressure (5J) and 3rd clutch pressure (30) is changed to line pressure mode, and the 3rd clutch is engaged with the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

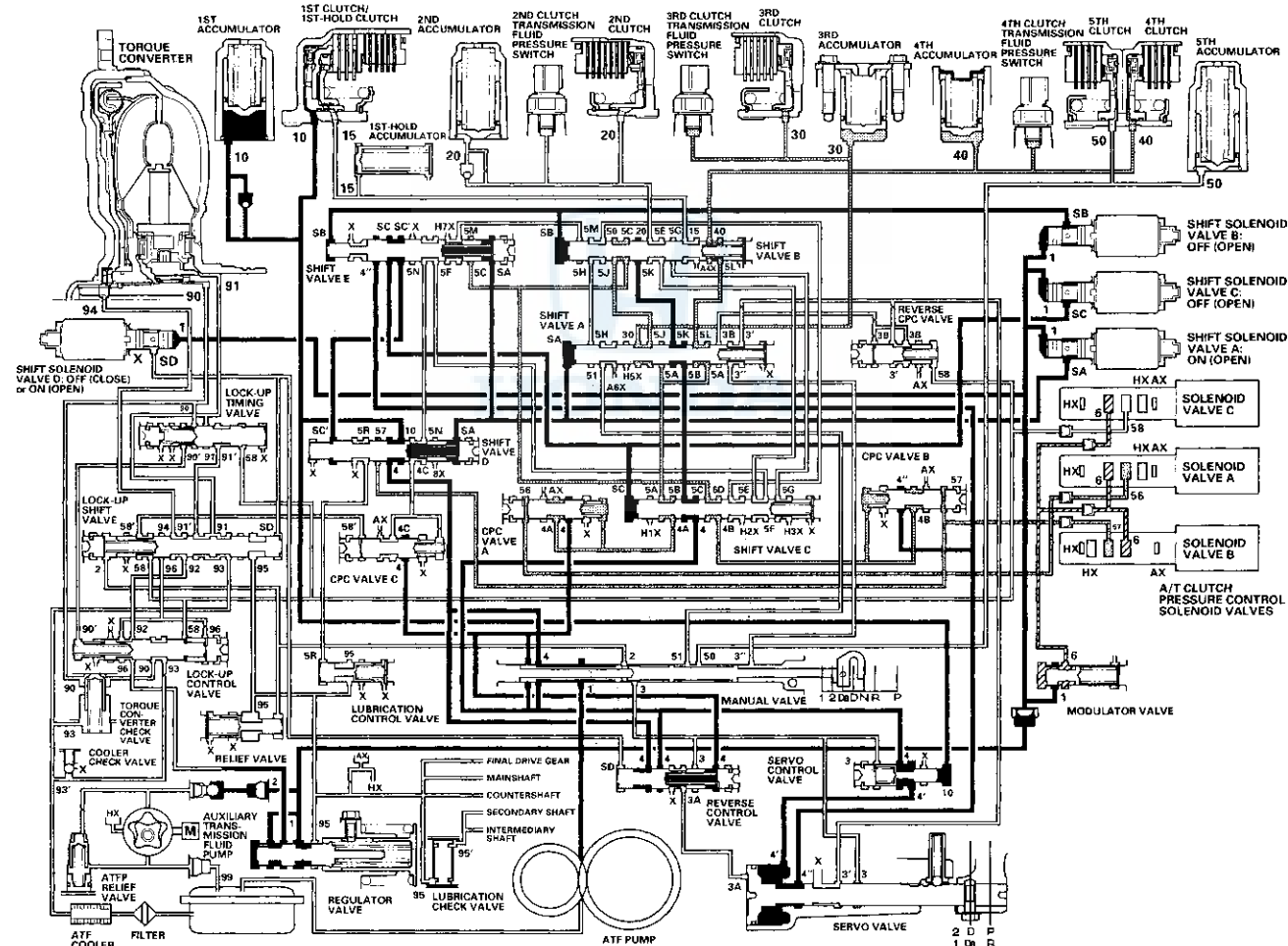




D Position: Shifting between 3rd gear and 4th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C OFF, and shift solenoid valve A uncovers the port of shift solenoid valve C pressure (SC) to the shift valve C. Shift solenoid valve A keeps ON, and shift solenoid valve B keeps OFF. The shift valve C is moved to the right side to switch the port of line pressure (4) and CPC B pressure (4B) leading to the 3rd clutch. The shift valve C also uncovers the port of CPC A pressure (4A) leading to the 4th clutch. The PCM controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valve A pressure (56) is applied to the CPC valve A, and A/T clutch pressure control solenoid valve B pressure (57) is applied to the CPC valve B. The CPC valve A regulates line pressure (4), and line pressure (4) becomes CPC A pressure (4A). CPC A pressure (4A) flows to the shift valve B via the shift valves C and A, and becomes 4th clutch pressure (40) at the shift valve B. The 3rd clutch pressure (30) is changed to CPC pressure mode, and the 4th clutch is engaged with the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

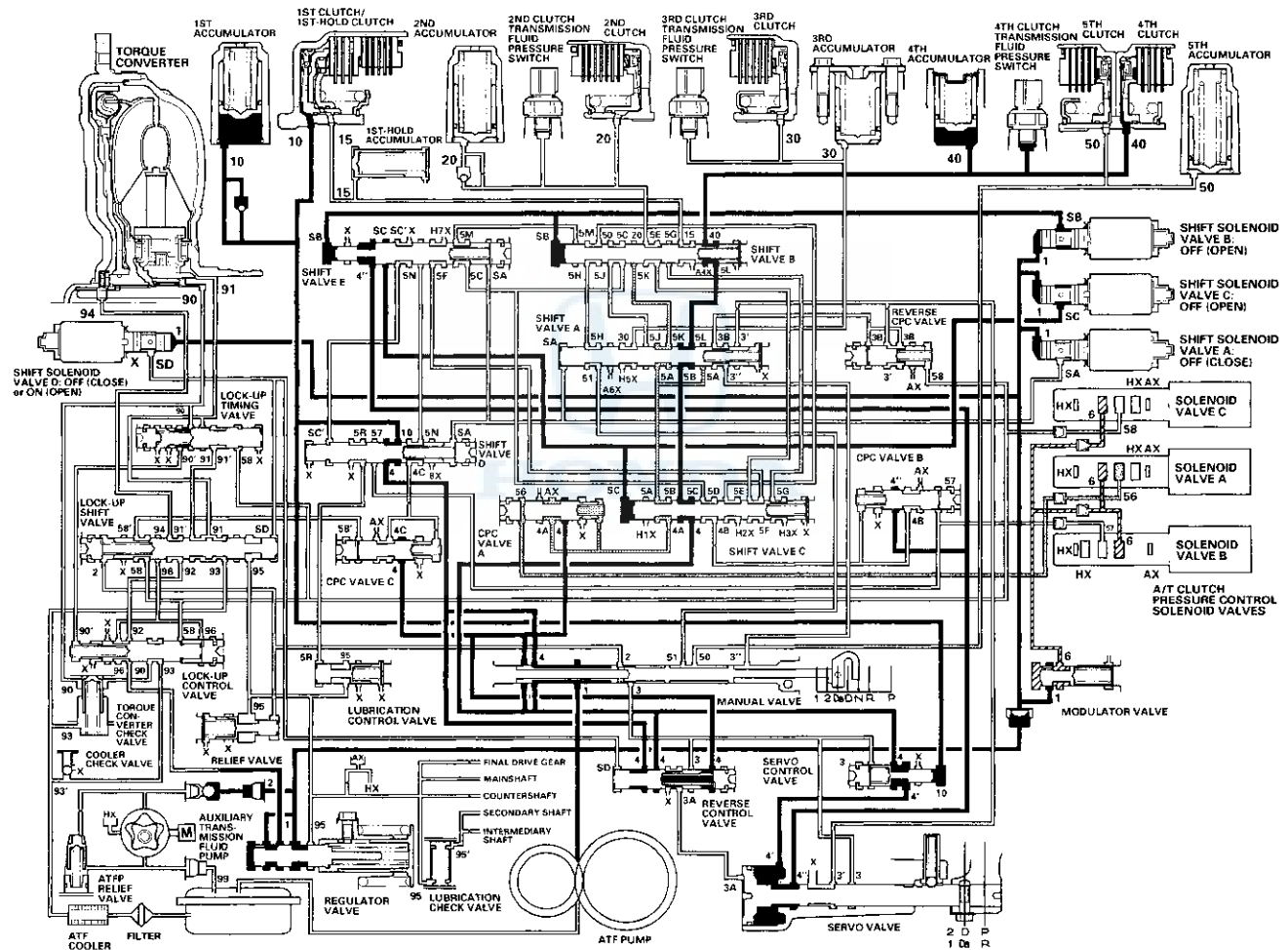
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 4th gear

The PCM turns shift solenoid valve A OFF, and shift solenoid valve A covers the port of shift solenoid valve A pressure (SA) to the shift valve A. Shift solenoid valves B and C keep OFF. The shift valve A is moved to the left side to switch the port of line pressure (5B), CPC A pressure (5A) (5L) leading to the 4th clutch, and 3rd clutch pressure (30) releasing 3rd clutch pressure. CPC A pressure (5L) changes to line pressure (5L) and 4th clutch pressure (40) is changed to line pressure mode, and the 4th clutch is engaged with the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

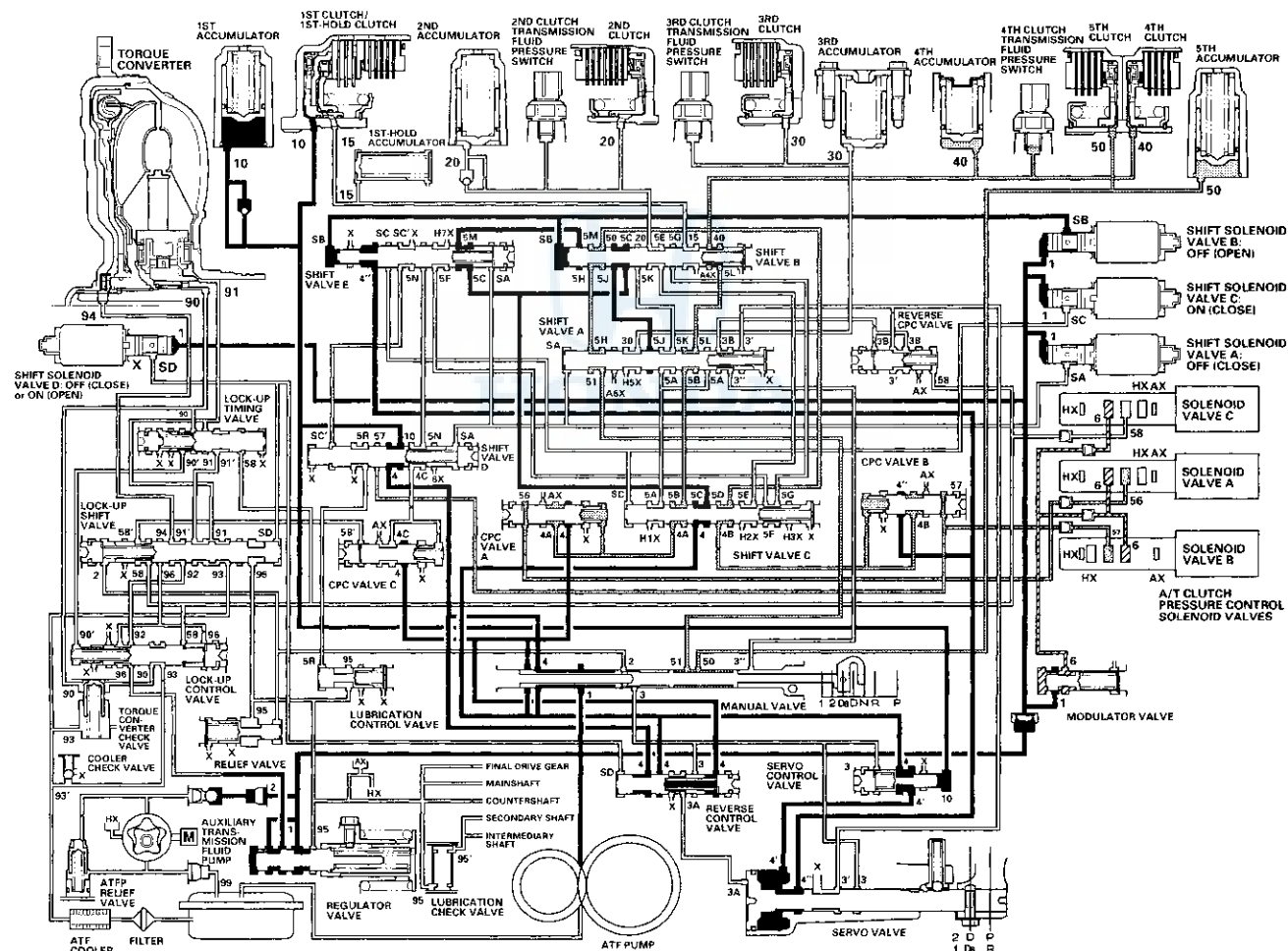




D Position: Shifting between 4th gear and 5th gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve C ON, and shift solenoid valve C covers the port of shift solenoid valve C pressure (SC) to the shift valve C. Shift solenoid valve A keeps OFF, and shift solenoid valve C keeps ON. The shift valve C is moved to the left side to switch the port of line pressure (4) and CPC A pressure (4A) leading to the 4th clutch. The shift valve C also uncovers the port of CPC B pressure (4B) leading to the 5th clutch. The PCM controls A/T clutch pressure control solenoid valves A and B. A/T clutch pressure control solenoid valve A pressure (56) is applied to the CPC valve A, and A/T clutch pressure control solenoid valve B pressure (57) is applied to the CPC valve B. The CPC valve B regulates line pressure (4''), and line pressure (4'') becomes CPC B pressure (4B). CPC B pressure (4B) flows to the shift valve A via the shift valves C and B, and becomes 5th clutch pressure (51) at the shift valve A. The 4th clutch pressure (40) is changed to CPC pressure mode, and the 5th clutch is engaged with the CPC pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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Automatic Transmission

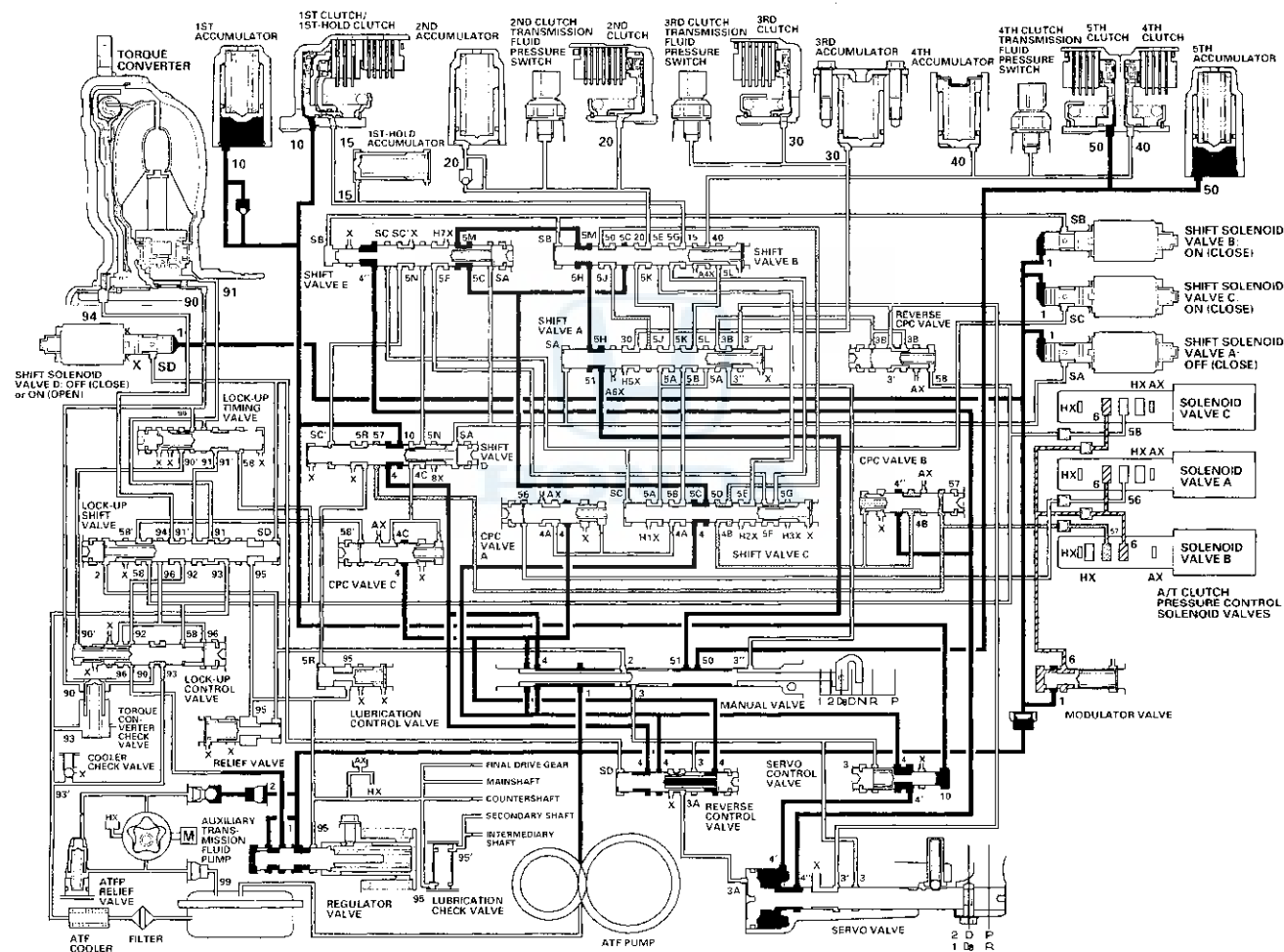
System Description (cont'd)

Hydraulic Flow (cont'd)

D Position: Driving in 5th gear

The PCM turns shift solenoid valve B ON, and shift solenoid valve B covers the port of shift solenoid valve B pressure (SB) to the shift valve B. Shift solenoid valve A keeps OFF, and shift solenoid valve C keeps ON. The shift valve B is moved to the left side to switch the port of line pressure (5H), CPC B pressure (5D) leading to the 5th clutch, and 4th clutch pressure (40) releasing 4th clutch pressure. CPC B pressure (5H) changes to line pressure (5H) and 5th clutch pressure (51) (50) is changed to line pressure mode, and the 5th clutch is engaged with the line pressure mode. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.





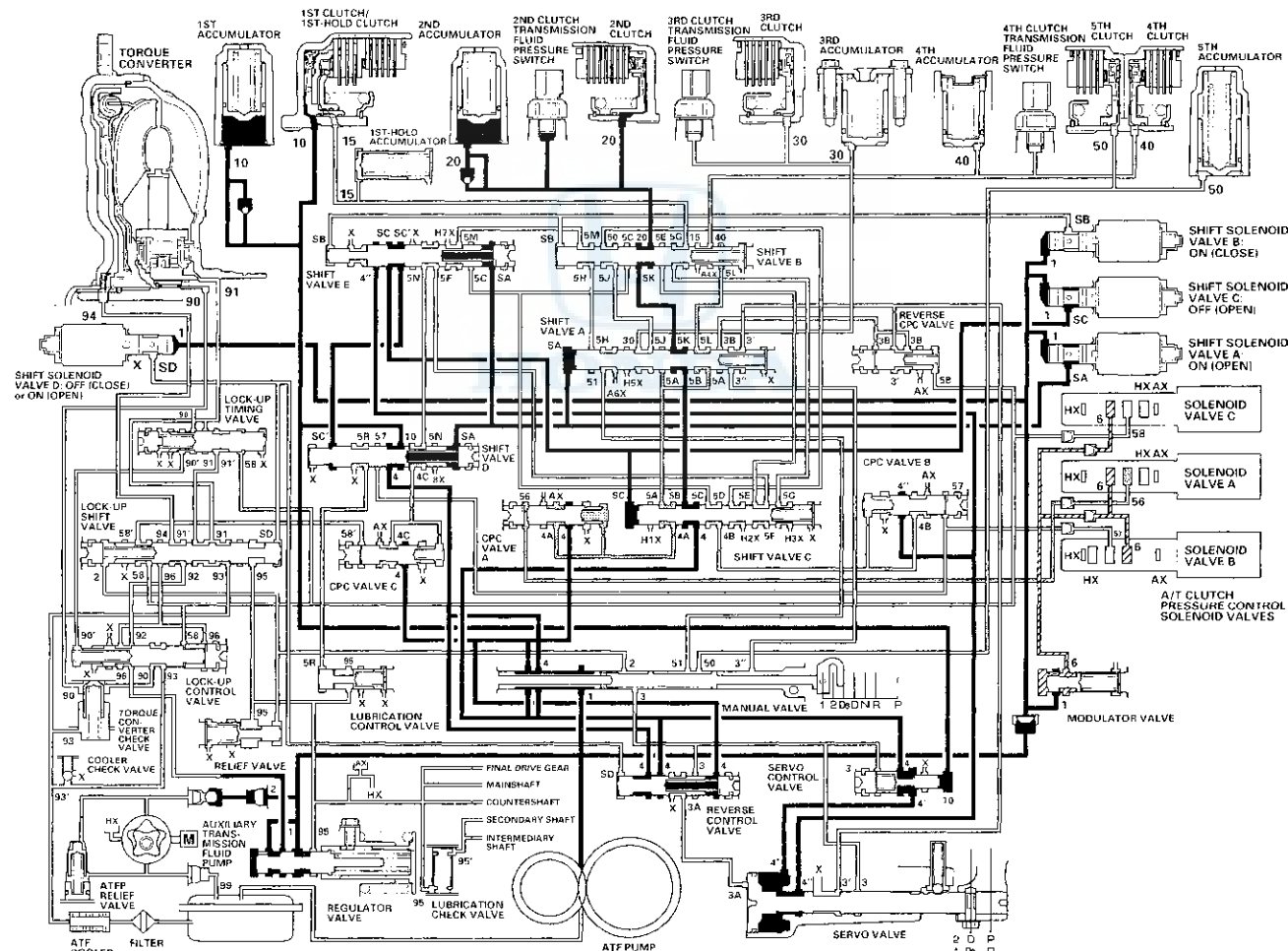
2 Position

Line pressure (1) regulated by the regulator valve flows to shift solenoid valves. The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- The shift solenoid valve A is turned ON, and opens the port of shift solenoid valve A pressure (SA); shift valve A moves to the right side.
- The shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- The shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C moves to the right side and shift valve D stays on the left side.
- The shift solenoid valve D is OFF or ON, and closes or opens the port of shift solenoid valve D pressure (SD).

Line pressure (4) becomes 2nd clutch pressure (20) at the shift valve B via the shift valves C and A, and flows to the 2nd clutch. The 2nd clutch is engaged. The 1st clutch is also engaged, but no power is transmitted because of the one-way clutch.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

System Description (cont'd)

Hydraulic Flow (cont'd)

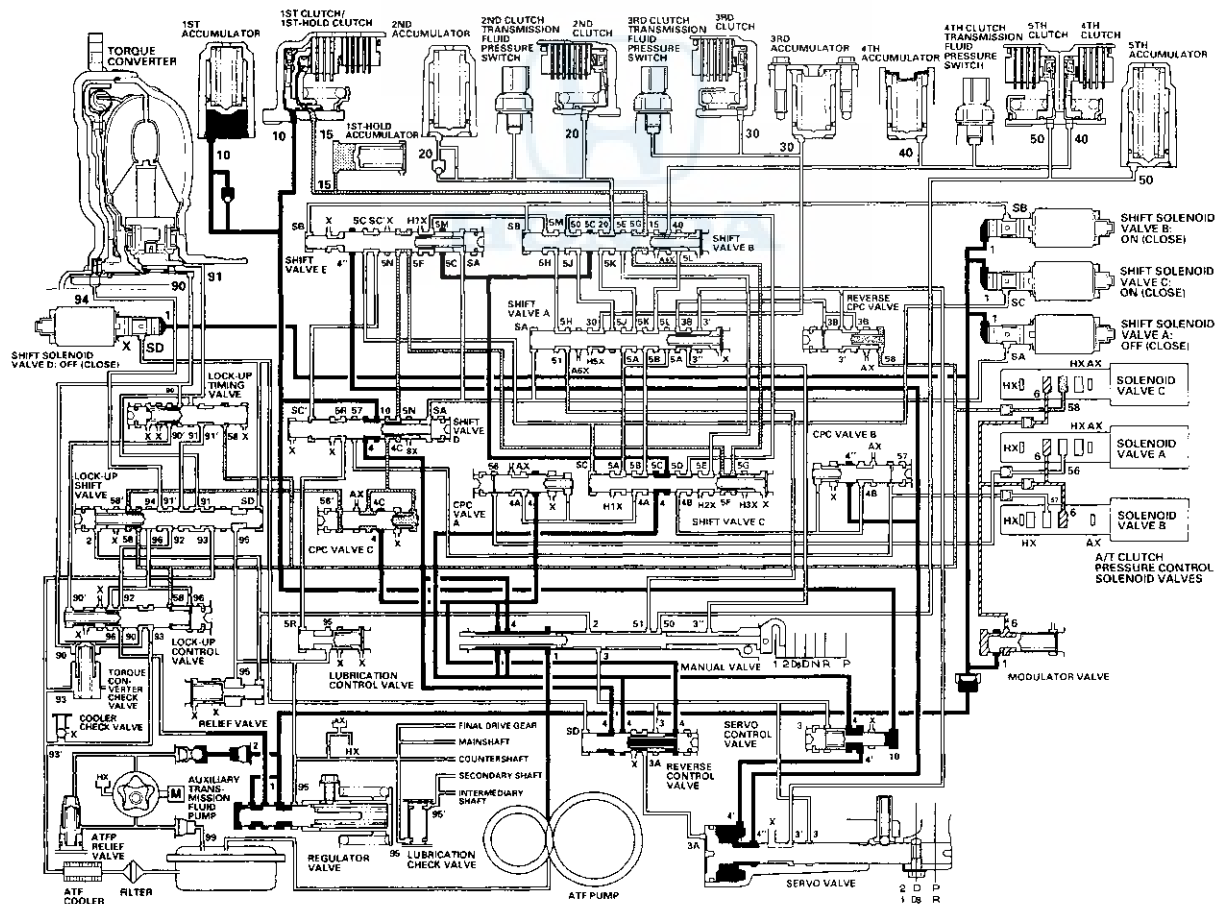
1 Position

Line pressure (1) regulated by the regulator valve flows to shift solenoid valves. The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- The shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- The shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- The shift solenoid valve C is turned ON, and closes the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D stay on the left side.
- The shift solenoid valve D is OFF, and closes the port of shift solenoid valve D pressure (SD).

Line pressure (4) becomes 1st clutch pressure (10) at the shift valve D, and flows to the 1st clutch. The 1st clutch is engaged. The PCM controls the A/T clutch pressure control solenoid valve C, and A/T clutch pressure control solenoid valve C pressure (58) is applied to the CPC valve C via the lock-up shift valve. The CPC valve C regulates line pressure (4), and line pressure (4) becomes CPC C pressure (4C). CPC C pressure (4C) flows to the shift valve B via the shift valves D, E, and C, and becomes 1st-hold clutch pressure (15) at the shift valve B. 1st-hold clutch pressure (15) is applied to the 1st-hold clutch, and the 1st-hold clutch is engaged.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.





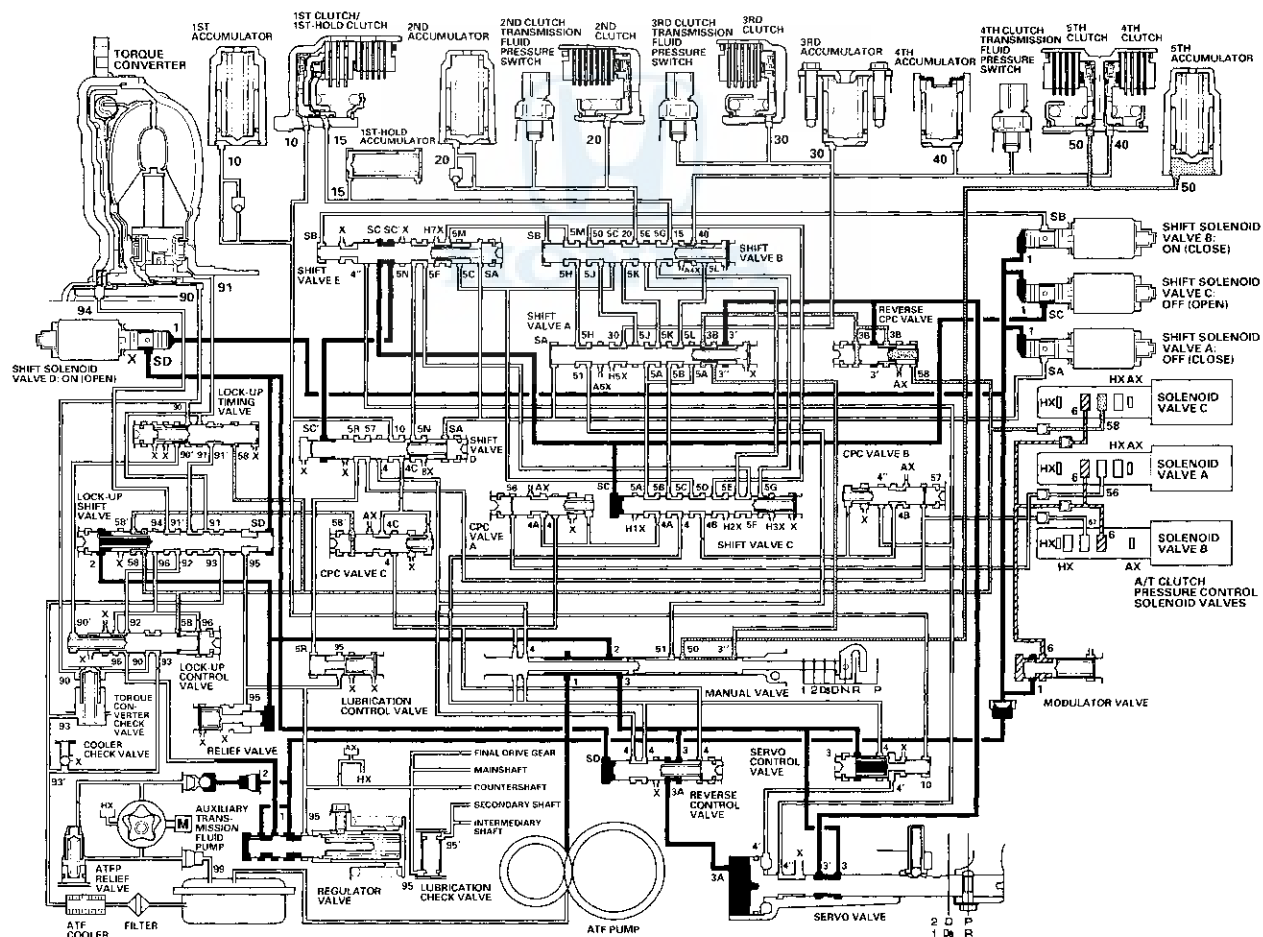
R Position: Shifting to the R position from the P or N position

The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- The shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- The shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- The shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D move to the right side.
- The shift solenoid valve D is turned ON, and opens the port of shift solenoid valve D pressure (SD); reverse control valve moves to the right side.

The manual valve is moved to the R position, and line pressure (1) becomes line pressure (3) at the manual valve. Line pressure (3) passes through the reverse control valve, and becomes line pressure (3A), then flows to the servo valve. Line pressure (3A) pushes the servo valve to the reverse position. Line pressure (3) also flows to the reverse CPC valve, and becomes reverse CPC pressure (3B) (3''). Reverse CPC pressure (3'') becomes 5th clutch pressure (50) at the manual valve, and 5th clutch pressure (50) flows to the 5th clutch. The 5th clutch is engaged with reverse CPC pressure mode.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



(cont'd)

Automatic Transmission

System Description (cont'd)

Hydraulic Flow (cont'd)

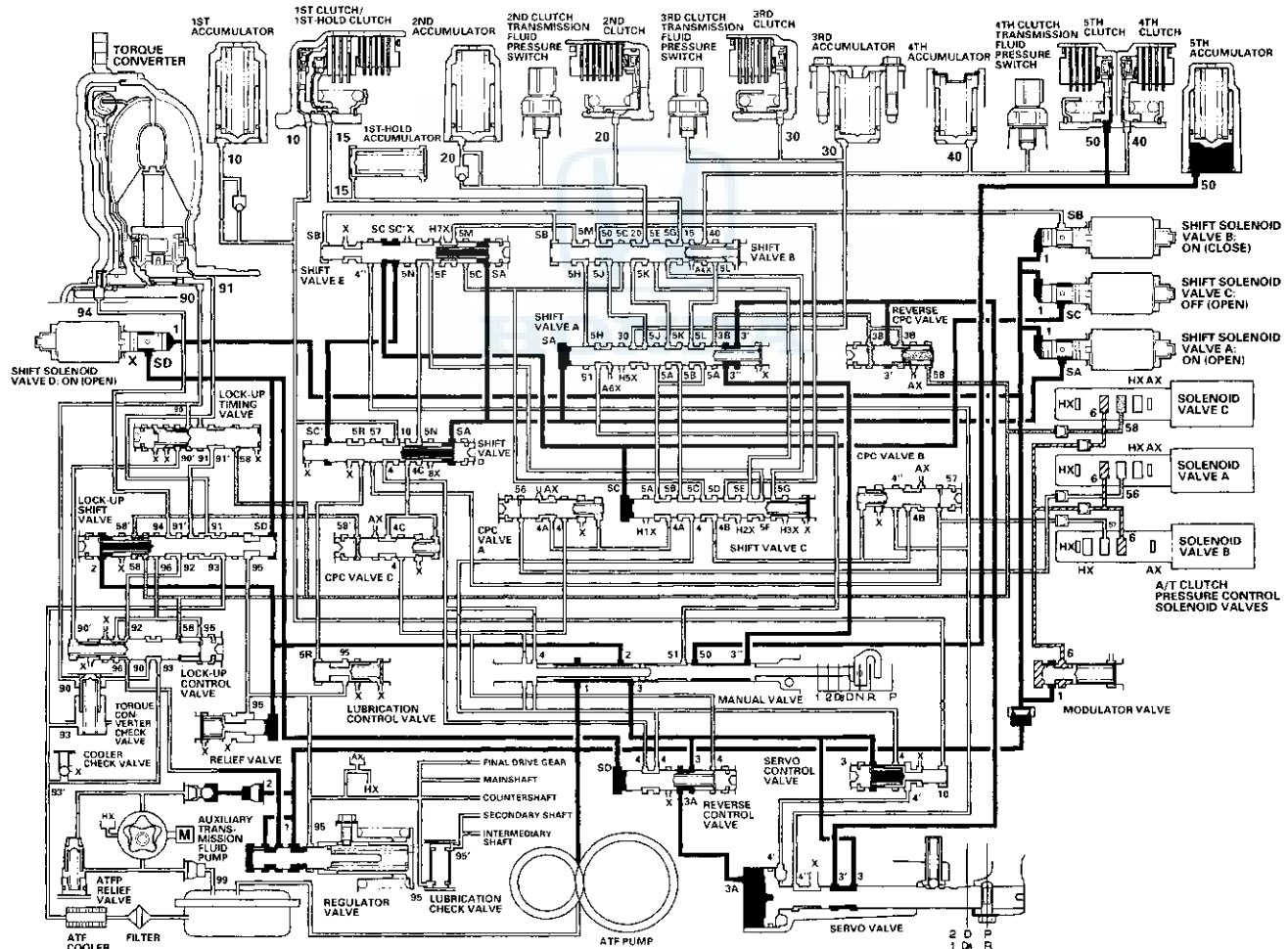
R Position: Driving in reverse gear

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve A ON, and shift solenoid valve A uncovers the port of shift solenoid valve A pressure (SA) to the shift valve A. The shift valve A is moved to the right side to switch the port of line pressure (3') and reverse CPC pressure (3B) leading to the 5th clutch. Line pressure (3) flows to the manual valve via the servo valve and shift valve A, and becomes 5th clutch pressure (50) at the manual valve. The 5th clutch pressure (50) flows to the 5th clutch, and the 5th clutch is engaged with the line pressure mode.

Reverse Inhibitor Control

When the R position is selected while the vehicle is moving forward, the PCM outputs to keep shift solenoid valve D OFF so that shift solenoid valve D pressure (SD) is not applied to the reverse control valve. Line pressure (3) stops at the reverse control valve, and is not applied to the servo valve. No power is transmitted to the reverse direction.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.





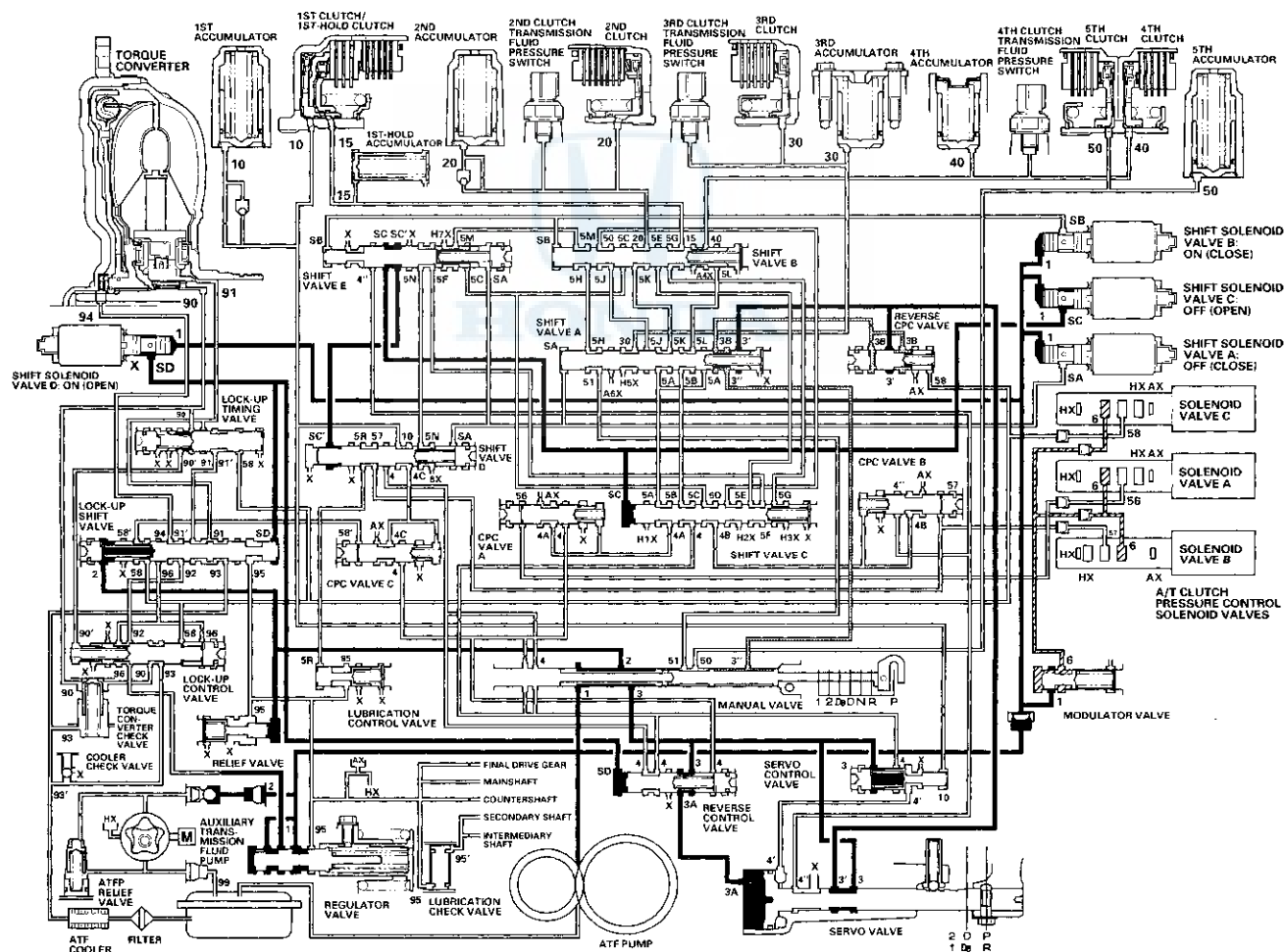
P Position

The PCM controls the shift solenoid valves ON and OFF. The conditions of the shift solenoid valves and positions of the shift valve are as follows:

- The shift solenoid valve A is OFF, and closes the port of shift solenoid valve A pressure (SA); shift valve A stays on the left side.
- The shift solenoid valve B is turned ON, and closes the port of shift solenoid valve B pressure (SB); shift valve B and shift valve E stay on the left side.
- The shift solenoid valve C is OFF, and opens the port of shift solenoid valve C pressure (SC); shift valve C and shift valve D move to the right side.
- The shift solenoid valve D is turned ON, and opens the port of shift solenoid valve D pressure (SD); reverse control valve moves to the right side.

The manual valve is moved to the P position, and line pressure (1) becomes line pressure (3) at the manual valve. Line pressure (3) passes through the reverse control valve, and becomes line pressure (3A), then flows to the servo valve. Line pressure (3A) pushes the servo valve to the reverse position. Line pressure (3) flows to the manual valve via the reverse CPC valve and shift valve A, and stops at the manual valve. Hydraulic pressure is not applied the clutches.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



Automatic Transmission

System Description (cont'd)

Lock-up System

The lock-up mechanism of the torque converter clutch operates in the D position (2nd, 3rd, 4th, and 5th), and D3 position (2nd and 3rd). The pressurized fluid is drained from the back of the torque converter through a fluid passage, causing the torque converter clutch piston to be held against the torque converter cover. As this takes place, the mainshaft rotates at the same speed as the engine crankshaft. Together with the hydraulic control, the PCM optimizes the timing and amount of the lock-up mechanism. When shift solenoid valve D is turned on by the PCM, shift solenoid valve D pressure switches the lock-up shift valve lock-up on and off. The A/T clutch pressure control solenoid valve C, the lock-up control valve, and lock-up timing valve control the amount of lock-up.

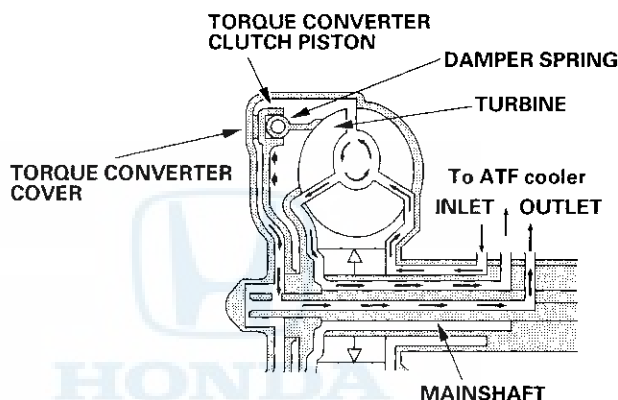
Torque Converter Clutch Lock-up ON (Engaging Torque Converter Clutch)

Fluid in the chamber between the torque converter cover and the torque converter clutch piston is drained off, and fluid entering from the chamber between the pump and stator exerts pressure through the torque converter clutch piston against the torque converter cover. The torque converter clutch piston engages with the torque converter cover; torque converter clutch lock-up ON, and the mainshaft rotates at the same as the engine.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Torque converter clutch piston
↓
Damper spring
↓
Turbine
↓
Mainshaft



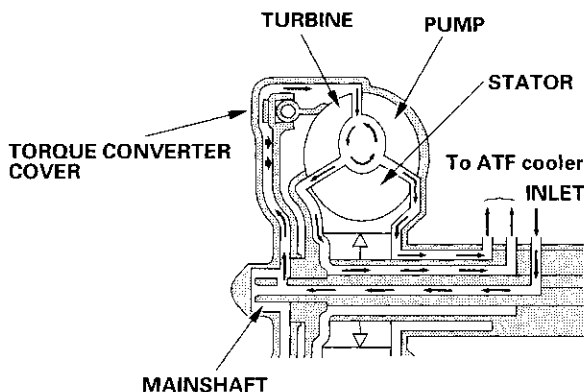
Torque Converter Clutch Lock-up OFF (Disengaging Torque Converter Clutch)

Fluid entered from the chamber between the torque converter cover and the torque converter clutch piston passes through the torque converter and goes out from the chambers between the turbine and the stator, and between the pump and the stator. As a result, the torque converter clutch piston moves away from the torque converter cover, and the torque converter clutch lock-up is released; torque converter clutch lock-up OFF.

Power flow

The power flows by way of:

Engine
↓
Drive plate
↓
Torque converter cover
↓
Pump
↓
Turbine
↓
Mainshaft

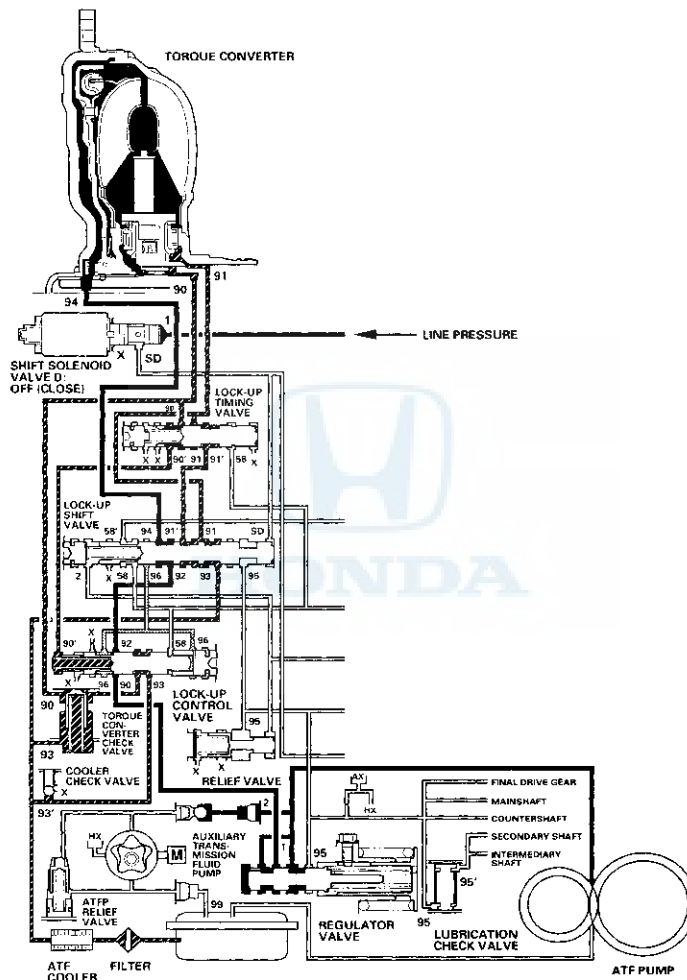




No Lock-up

The PCM outputs shift solenoid valve D to keep OFF, and shift solenoid valve D covers the port of shift solenoid valve D pressure (SD) to the lock-up shift valve. The lock-up shift valve is in the right side, and uncovers the port leading torque converter pressure (92) to the left side of the torque converter. Torque converter pressure (92) from regulator valve becomes torque converter pressure (94) at the lock-up shift valve, and enters into the left side of the torque converter to disengage the torque converter clutch. The torque converter clutch is OFF.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.



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Automatic Transmission

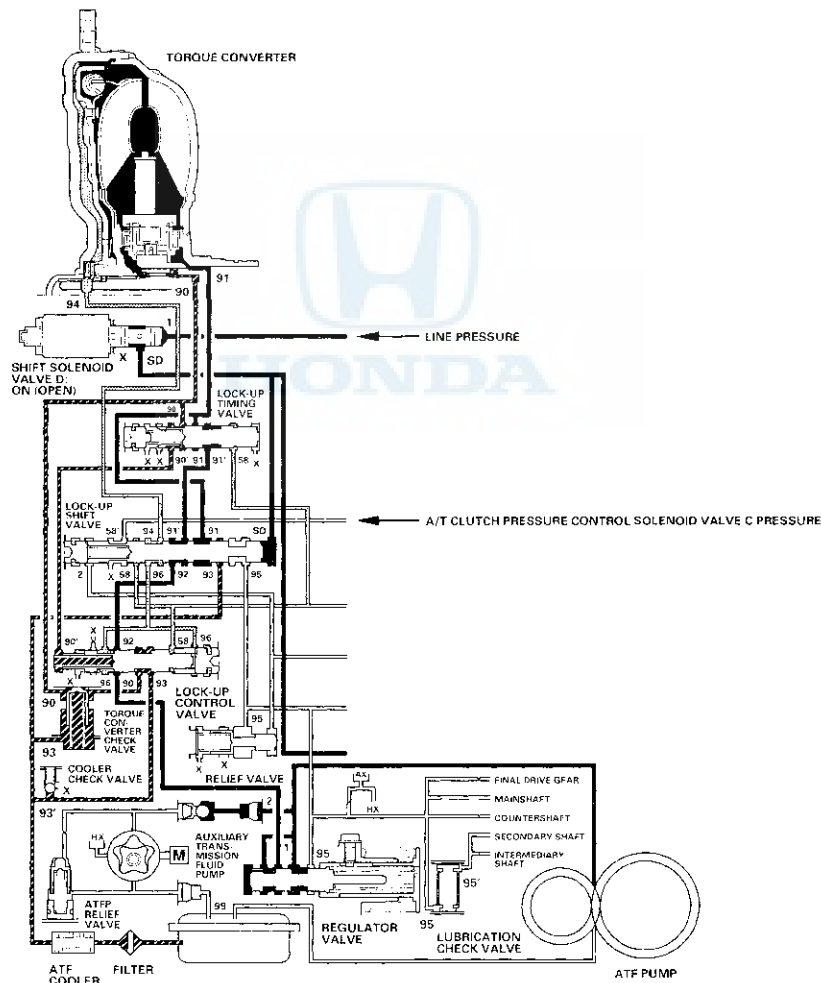
System Description (cont'd)

Lock-up System (cont'd)

Partial Lock-up

As the speed of the vehicle reaches the programmed value, the PCM turns shift solenoid valve D ON, and shift solenoid valve D uncovers the port of shift solenoid valve D pressure (SD) to the lock-up shift valve. The lock-up shift valve is moved to the left side to uncover the port of torque converter pressure (91) leading to the right side of the torque converter to engage the torque converter clutch. The PCM also controls A/T clutch pressure control solenoid valve C, and A/T clutch pressure control solenoid valve C pressure (58) is applied to the lock-up control valve and lock-up timing valve. When A/T clutch pressure control solenoid valve C pressure (58) is lower, torque converter pressure (91) from the lock-up timing valve is lower. The torque converter clutch is engaged partially. A/T clutch pressure control solenoid valve C pressure (58) increases, and the lock-up timing valve is moved to the left side to uncover the port leading torque converter pressure to high. Under this condition, the torque converter clutch is engaged by pressure from the right side of the torque converter; this condition is partial lock-up.

NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

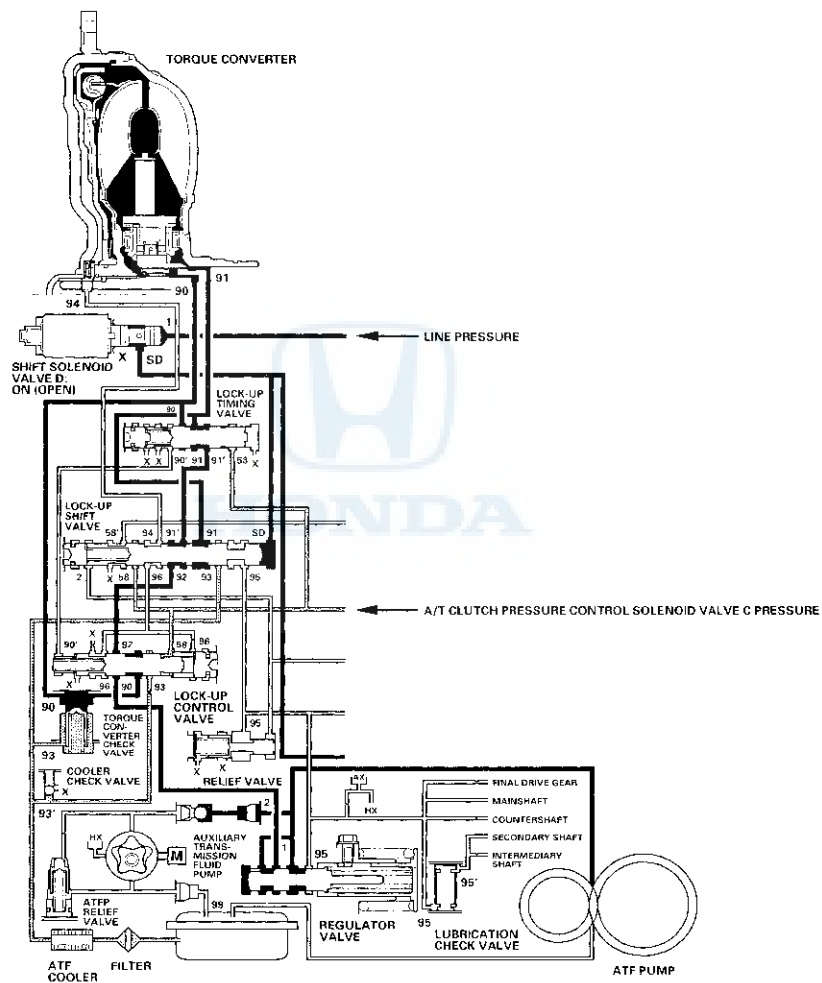




Full Lock-up

When the vehicle speed further increases, the PCM controls A/T clutch pressure control solenoid valve C to increase A/T clutch pressure control solenoid valve C pressure (58). A/T clutch pressure control solenoid valve C pressure (58) is applied to the lock-up control valve and lock-up timing valve, and the lock-up control valve and lock-up timing valve are moved to the left side. Torque converter pressure (94) from the left side of the torque converter releases at the lock-up control valve, and lock-up timing valve uncovers the port of torque converter pressure (91) leading to the right side of the torque converter. Torque converter back pressure is released fully, and torque converter clutch is engaged fully.

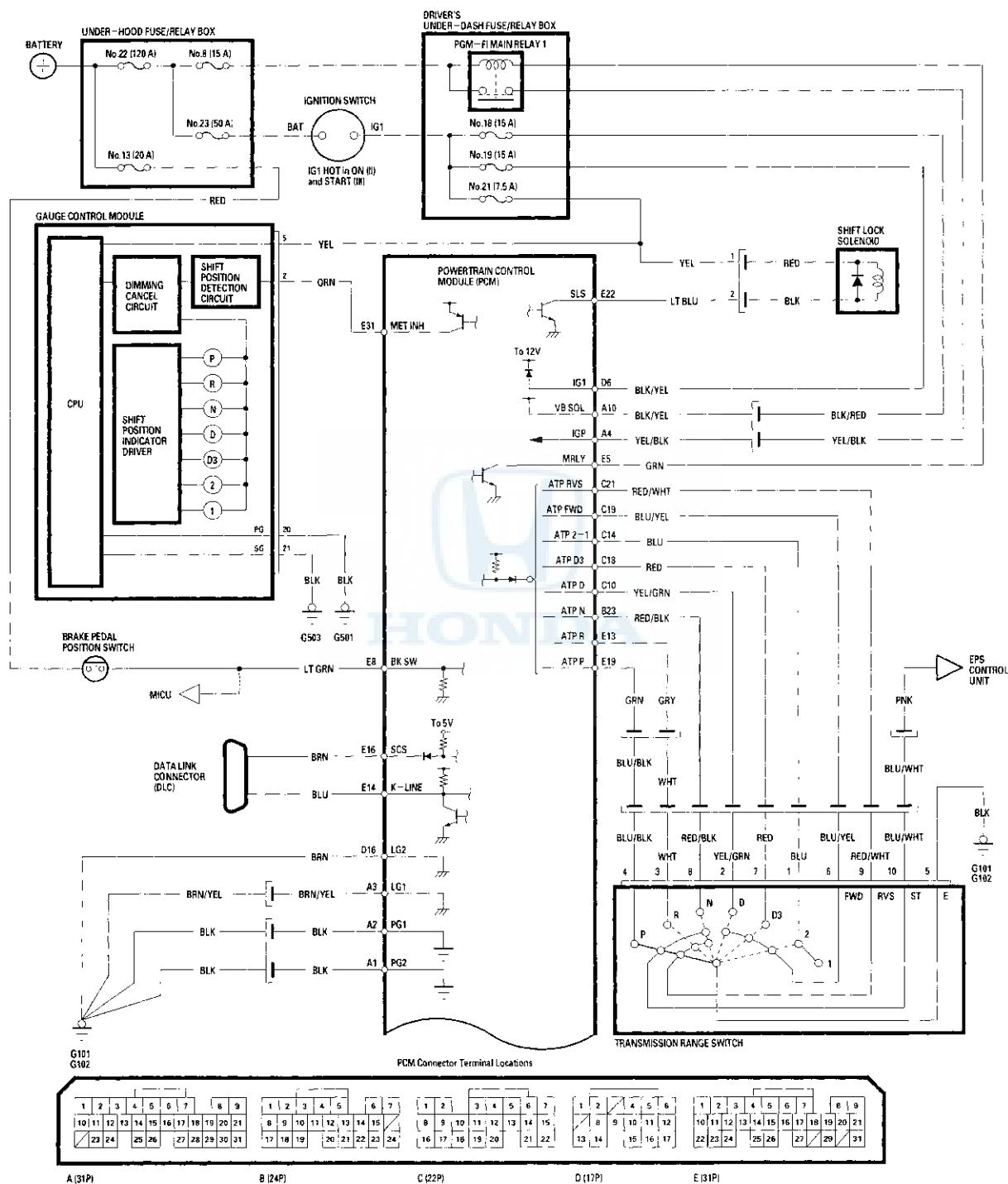
NOTE: When used, "left" or "right" indicates direction on the hydraulic circuit.

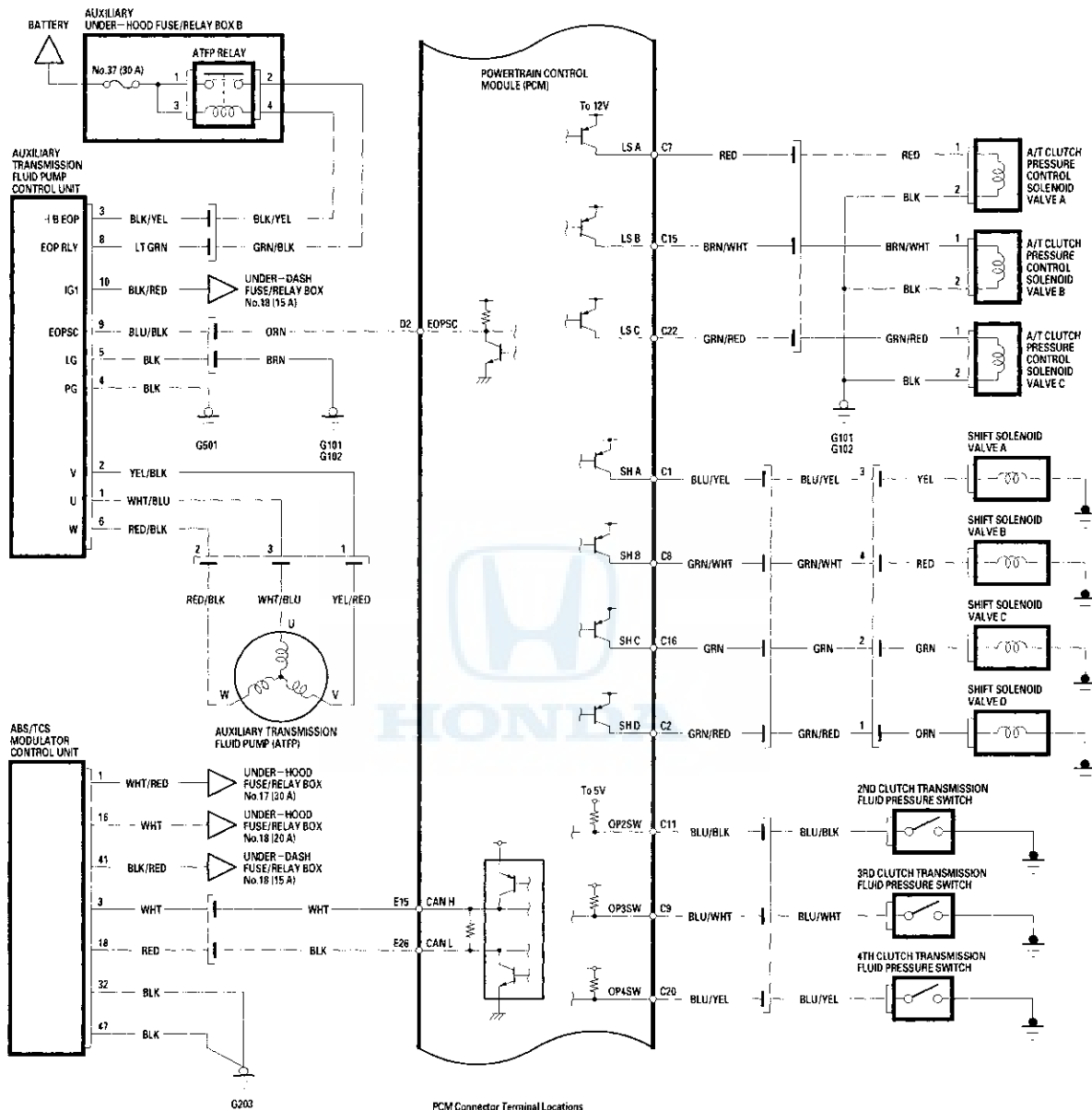


Automatic Transmission

System Description (cont'd)

Circuit Diagram - PCM A/T Control System





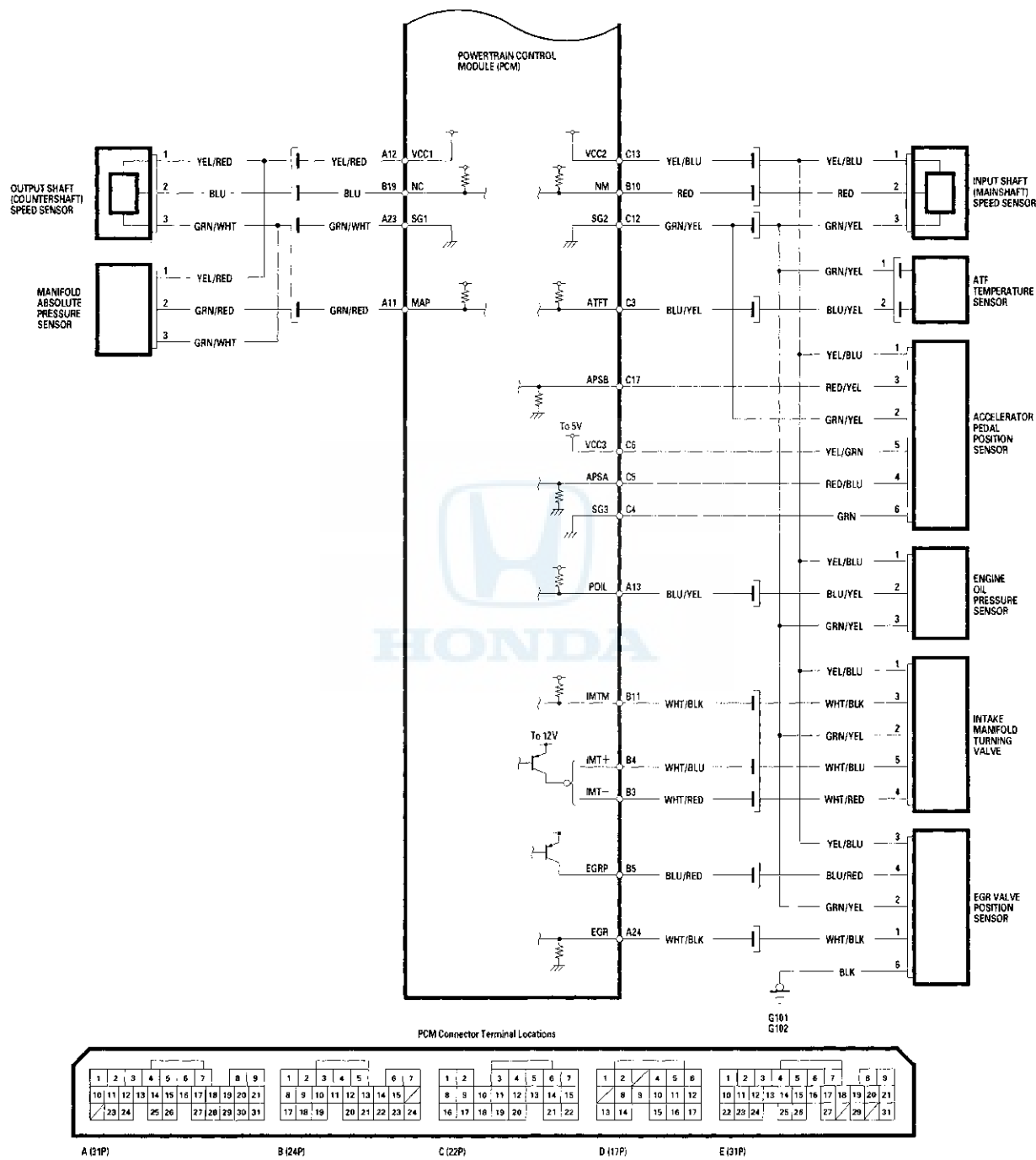
A (31P)										B (24P)										C (22P)										D (17P)										E (31P)																													
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31								
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
23	24	25	26	27	28	29	30	31	17	18	19	20	21	22	23	24	16	17	18	19	20	21	22	13	14	15	16	17	22	23	24	25	26	27	28	29	30	31	13	14	15	16	17	22	23	24	25	26	27	28	29	30	31																

(cont'd)

Automatic Transmission

System Description (cont'd)

Circuit Diagram - PCM A/T Control System (cont'd)





DTC Troubleshooting

DTC P0705: Short in Transmission Range Switch Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Start the engine.
- Move the shift lever through all positions. Stop for at least 1 second in each position, and monitor the OBD status for P0705 in the DTCs/Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for an intermittent short in the wire between the transmission range switch and the PCM. If the tester indicates NOT COMPLETE, return to step 2 and recheck. ■

- Inspect the transmission range switch (see page 14-270).

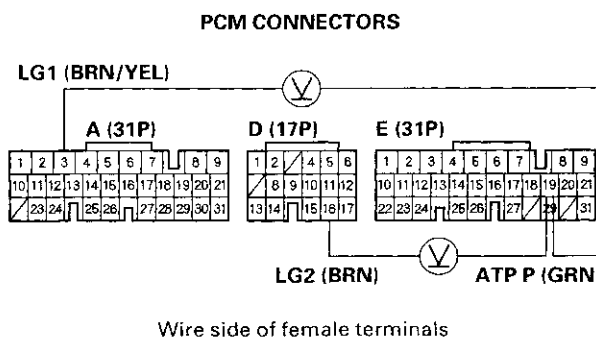
Is the switch OK?

YES—Reconnect the switch connector, then go to step 5.

NO—Replace the transmission range switch (see page 14-271), then go to step 56.

- Turn the ignition switch ON (II).

- Measure the voltage between PCM connector terminals E19 and A3 or D16, in all positions other than P.



Is there battery voltage?

YES—Go to step 14.

NO—Go to step 7.

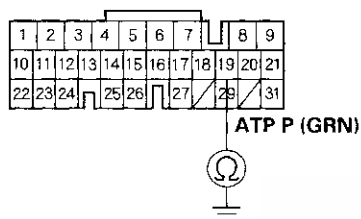
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector E (31P).
10. Disconnect the transmission range switch connector.
11. Check for continuity between PCM connector terminal E19 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

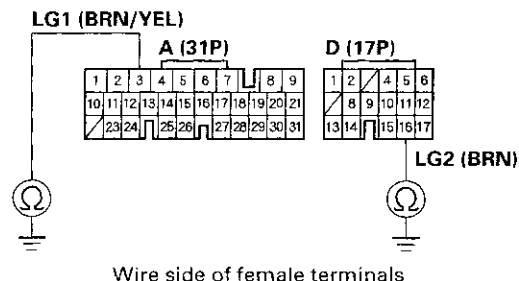
Is there continuity?

YES—Repair a short in the wire between PCM connector terminal E19 and the transmission range switch, then go to step 56.

NO—Go to step 12.

12. Disconnect PCM connectors A (31P) and D (17P).
13. Check for continuity between PCM connector terminals A3 and body ground, and between D16 and body ground.

PCM CONNECTORS



Wire side of female terminals

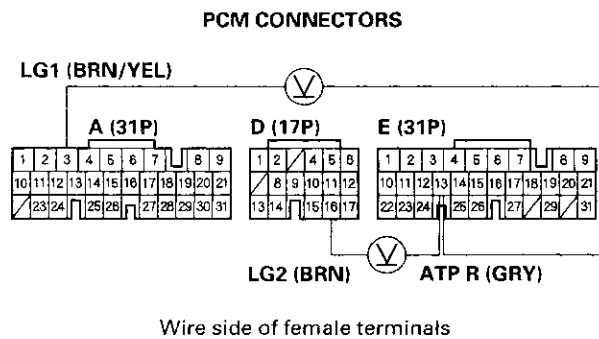
Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between PCM connector terminals A3, D16, and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 56.



14. Measure the voltage between PCM connector terminals E13 and A3 or D16, in all positions other than R.

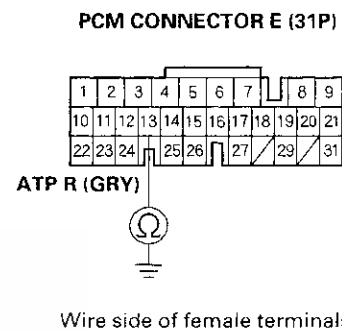


Is there battery voltage?

YES—Go to step 20.

NO—Go to step 15.

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector E (31P).
18. Disconnect the transmission range switch connector.
19. Check for continuity between PCM connector terminal E13 and body ground.



Is there continuity?

YES—Repair a short in the wire between PCM connector terminal E13 and the transmission range switch, then go to step 56.

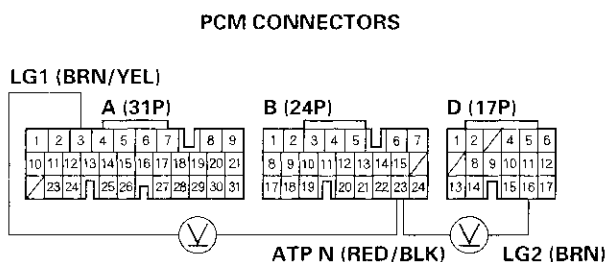
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

20. Measure the voltage between PCM connector terminals B23 and A3 or D16, in all positions other than N.



Wire side of female terminals

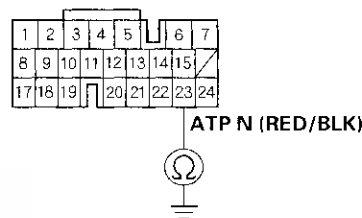
Is there battery voltage?

YES—Go to step 26.

NO—Go to step 21.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector B (24P).
24. Disconnect the transmission range switch connector.
25. Check for continuity between PCM connector terminal B23 and body ground.

PCM CONNECTOR B (24P)



Wire side of female terminals

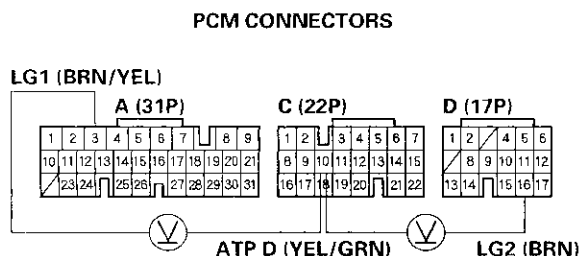
Is there continuity?

YES—Repair a short in the wire between PCM connector terminal B23 and the transmission range switch, then go to step 56.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■



26. Measure the voltage between PCM connector terminals C10 and A3 or D16 in all positions other than D.



Wire side of female terminals

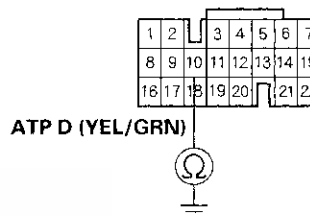
Is there battery voltage?

YES—Go to step 32.

NO—Go to step 27.

27. Turn the ignition switch OFF.
28. Jump the SCS line with the HDS.
29. Disconnect PCM connector C (22P).
30. Disconnect the transmission range switch connector.
31. Check for continuity between PCM connector terminal C10 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal C10 and the transmission range switch, then go to step 56.

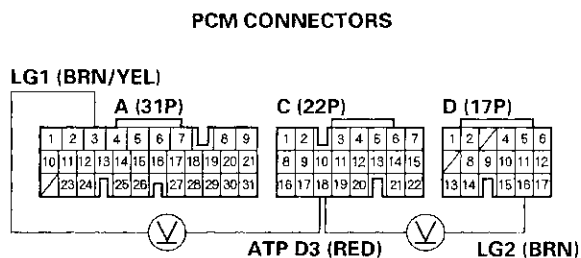
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

32. Measure the voltage between PCM connector terminals C18 and A3 or D16 in all positions other than D3.



Wire side of female terminals

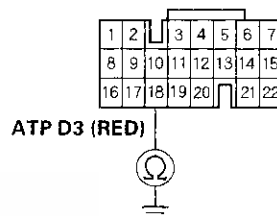
Is there battery voltage?

YES—Go to step 38.

NO—Go to step 33.

33. Turn the ignition switch OFF.
34. Jump the SCS line with the HDS.
35. Disconnect PCM connector C (22P).
36. Disconnect the transmission range switch connector.
37. Check for continuity between PCM connector terminal C18 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

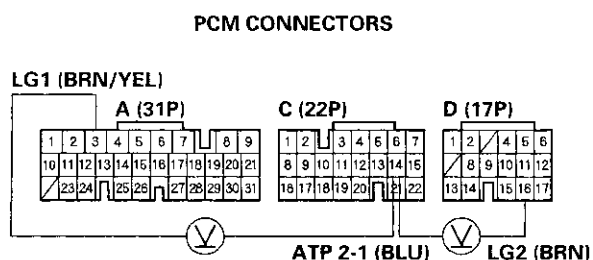
Is there continuity?

YES—Repair a short in the wire between PCM connector terminal C18 and the transmission range switch, then go to step 56.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■



38. Measure the voltage between PCM connector terminals C14 and A3 or D16, in all positions other than 2 and 1.



Wire side of female terminals

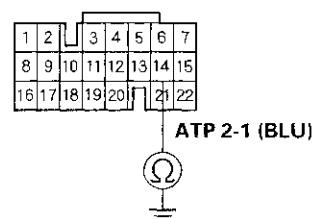
Is there battery voltage?

YES—Go to step 44.

NO—Go to step 39.

39. Turn the ignition switch OFF.
40. Jump the SCS line with the HDS.
41. Disconnect PCM connector C (22P).
42. Disconnect the transmission range switch connector.
43. Check for continuity between PCM connector terminal C14 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal C14 and the transmission range switch, then go to step 56.

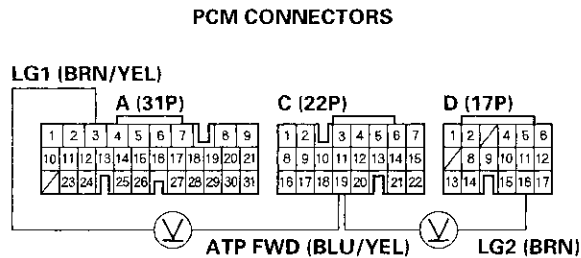
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

44. Measure the voltage between PCM connector terminals C19 and A3 or D16 in all positions other than D, D3, and 2.



Wire side of female terminals

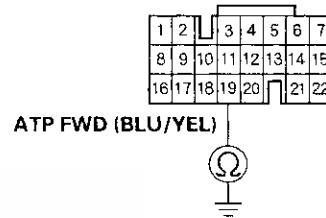
Is there battery voltage?

YES—Go to step 50.

NO—Go to step 45.

45. Turn the ignition switch OFF.
46. Jump the SCS line with the HDS.
47. Disconnect PCM connector C (22P).
48. Disconnect the transmission range switch connector.
49. Check for continuity between PCM connector terminal C19 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

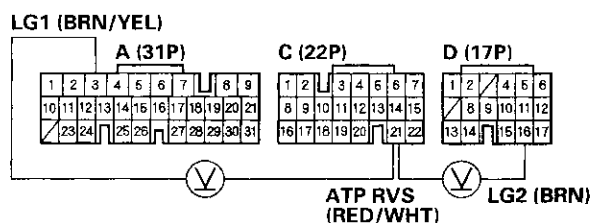
YES—Repair a short in the wire between PCM connector terminal C19 and the transmission range switch, then go to step 56.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■



50. Measure the voltage between PCM connector terminals C21 and A3 or D16 in all positions other than P, R, and N.

PCM CONNECTORS



Wire side of female terminals

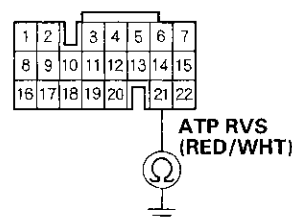
Is there battery voltage?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 51.

51. Turn the ignition switch OFF.
52. Jump the SCS line with the HDS.
53. Disconnect PCM connector C (22P).
54. Disconnect the transmission range switch connector.
55. Check for continuity between PCM connector terminal C21 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal C21 and the transmission range switch, then go to step 56.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

56. Clear the DTC with the HDS.
57. Move the shift lever through all positions. Stop for at least 1 second in each position.
58. Monitor the OBD status for P0705 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 4 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0706: Open in Transmission Range Switch Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
3. Start the engine, test-drive the vehicle in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.
4. Turn the ignition switch OFF, and retest-drive the vehicle in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.
5. Monitor the OBD status for P0706 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■
6. Inspect the transmission range switch (see page 14-270).

Is the switch OK?

YES—Go to step 7.

NO—Replace the transmission range switch (see page 14-271), then go to step 21.
7. Install the transmission range switch correctly, and adjust the shift cable (see page 14-265).

8. Clear the DTC with the HDS.
9. Shift the shift lever into the D position, and verify the ATP FWD and ATP D inputs with the HDS in the A/T data list.

Is ATP FWD and ATP D ON?

YES—Go to step 10.

NO—Go to step 18.
10. Shift to the D3 position, and verify the ATP FWD and ATP D3 inputs with the HDS in the A/T data list.

Is ATP FWD and ATP D3 ON?

YES—Go to step 11.

NO—Go to step 18.
11. Shift to the 2 position, and verify the ATP FWD and ATP 2 inputs with the HDS in the A/T data list.

Is ATP FWD and ATP 2 ON?

YES—Go to step 12.

NO—Go to step 18.
12. Clear the DTC with the HDS.
13. Turn the ignition switch OFF.
14. Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
15. Start the engine, test-drive the vehicle in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.
16. Turn the ignition switch OFF, restart the engine and retest-drive the vehicle in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.



17. Monitor the OBD status for P0706 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

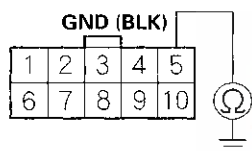
Does the result indicate a fail?

YES—Go to step 18.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the transmission range switch and the PCM. If the tester indicates NOT COMPLETE, return to step 15 and recheck. ■

18. Turn the ignition switch OFF.
19. Disconnect the transmission range switch connector.
20. Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

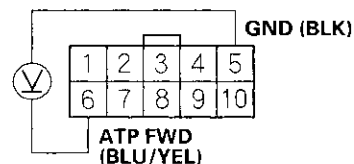
Is there continuity?

YES—Go to step 21.

NO—Repair an open in the wire between the transmission range switch and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 26.

21. Turn the ignition switch ON (II).
22. Measure the voltage between transmission range switch connector terminals No. 5 and No. 6.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

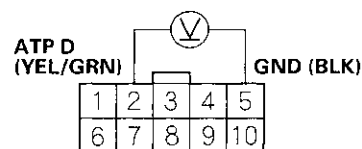
Is there voltage?

YES—Go to step 23.

NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C19, then go to step 26.

23. Measure the voltage between transmission range switch connector terminals No. 2 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 24.

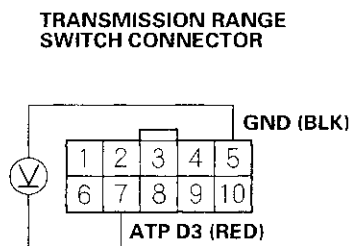
NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C10, then go to step 26.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

24. Measure the voltage between transmission range switch connector terminals No. 5 and No. 7.

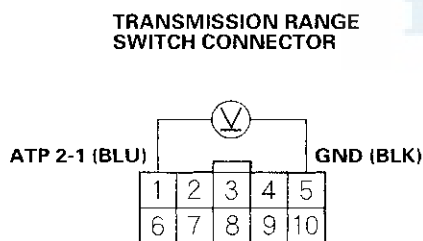


Is there voltage?

YES—Go to step 25.

NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C18, then go to step 26.

25. Measure the voltage between transmission range switch connector terminals No. 1 and No. 5.



Is there voltage?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between the transmission range switch and PCM connector terminal C14, then go to step 26.

26. Clear the DTC with the HDS.

27. Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.

28. Start the engine, drive the vehicle in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.

29. Turn the ignition switch OFF, restart the engine and retest-drive the vehicle in the D position until the vehicle speed reaches 25 mph (40 km/h), then slow down and stop the wheels.

30. Monitor the OBD status for P0706 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0711: Problem in ATF Temperature Sensor Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF temperature with the HDS in the A/T data list.

Does the ATF temperature exceed the ambient-air temperature?

YES—Record the ATF temperature. Leave the engine off for more than 30 minutes, and go to step 2.

NO—Record the ATF temperature. Test the stall speed RPM (see page 14-201) three times. Go to step 2 after stall speed testing.

2. Check the ATF temperature with the HDS.

Does the ATF temperature change?

YES—Leave the engine off for more than 30 minutes, and go to step 3.

NO—Replace the ATF temperature sensor (see page 14-227), then go to step 5.

3. Check the ECT SENSOR (1) with the HDS.

Is the ECT SENSOR (1) equal to the ambient-air temperature?

YES—Go to step 4.

NO—Leave the engine off until the ECT sensor (1) equals the ambient-air temperature, then go to step 4.

4. Check the ATF temperature with the HDS.

Is the ATF temperature almost equal to the ECT SENSOR (1)?

YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and PCM. ■

NO—Replace the ATF temperature sensor (see page 14-227), then go to step 5.

5. Clear the DTC with the HDS.

6. Test-drive the vehicle for several minutes in the D position in all five gears.

7. Monitor the OBD status for P0711 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0712: Short in ATF Temperature Sensor Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF temperature sensor voltage with the HDS in the A/T data list.

Is the ATF temperature sensor voltage 0.07 V or less?

YES—Go to step 2.

NO—Intermittent failure, the system is OK at this time. Check for an intermittent short in the ATFT (BLU/YEL) wire between the ATF temperature sensor and PCM. ■

2. Disconnect the ATF temperature sensor connector at the transmission end cover.
3. Check the ATF temperature sensor voltage with the HDS.

Is the ATF temperature sensor voltage 0.07 V or less?

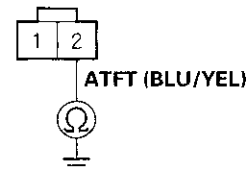
YES—Go to step 4.

NO—Replace the ATF temperature sensor (see page 14-227), then go to step 8.

4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect PCM connector C (44P).

7. Check for continuity between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C3 and the ATF temperature sensor connector terminal No. 2, then go to step 8.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

8. Clear the DTC with the HDS.
9. Test-drive the vehicle for several minutes in the D position in all five gears.
10. Monitor the OBD status for P0712 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck.



DTC P0713: Open in ATF Temperature Sensor Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Check the ATF temperature sensor voltage with the HDS in the A/T data list.

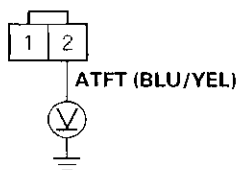
Does the ATF temperature sensor voltage exceed 4.93 V?

YES—Go to step 2.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATF temperature sensor and the PCM. ■

2. Turn the ignition switch OFF.
3. Disconnect the ATF temperature sensor connector at the transmission end cover.
4. Turn the ignition switch ON (II).
5. Measure the voltage between ATF temperature sensor connector terminal No. 2 and body ground.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

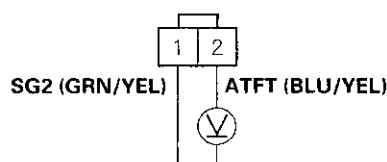
Is there about 5 V?

YES—Go to step 6.

NO—Go to step 7.

6. Measure the voltage between ATF temperature sensor connector terminals No. 1 and No. 2.

ATF TEMPERATURE SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the ATF temperature sensor (see page 14-227), then go to step 8.

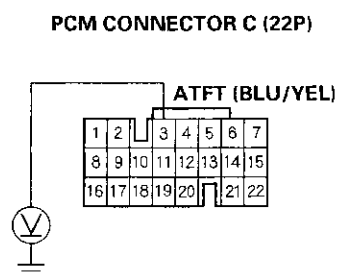
NO—Repair open in the wire between PCM connector terminal C12 and the ATF temperature sensor connector, then go to step 8.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

7. Measure the voltage between PCM connector terminal C3 and body ground.



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal C3 and the ATF temperature sensor connector, then go to step 8.

NO—Check for loose or poor connections at PCM connector terminal C3. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

8. Clear the DTC with the HDS.

9. Test-drive the vehicle for several minutes in the D position in all five gears.

10. Monitor the OBD status for P0713 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck.



DTC P0716: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Record all freeze data, and clear the DTC with the HDS.
- Check for proper input shaft (mainshaft) speed sensor installation (see page 14-223).
- Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
- Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.
- Monitor the OBD status for P0716 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

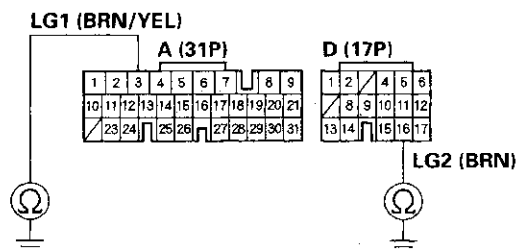
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and the input shaft (mainshaft) speed sensor connectors. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P) and D (17P), and the input shaft (mainshaft) speed sensor connector.

- Check for continuity between PCM connector terminals A3 and body ground, and between D16 and body ground.

PCM CONNECTORS



Wire side of female terminals

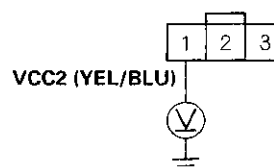
Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wires between PCM connector terminals A3, D16, and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 31.

- Connect PCM connectors A (31P) and D (17P).
- Turn the ignition switch ON (II).
- Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 13.

NO—Go to step 25.

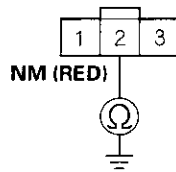
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Turn the ignition switch OFF.
14. Disconnect PCM connector B (24P).
15. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

Is there continuity?

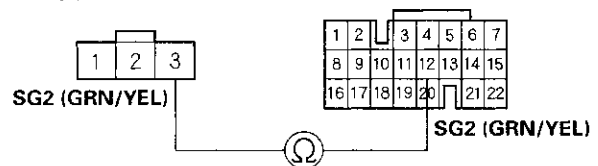
YES—Repair a short to ground in the wire between PCM connector terminal B10 and the input shaft (mainshaft) speed sensor connector, then go to step 31.

NO—Go to step 16.

16. Disconnect PCM connector C (22P).

17. Check for continuity between PCM connector terminal C12 and input shaft (mainshaft) speed sensor connector terminal No. 3.

**INPUT SHAFT
(MAINSHAFT)
SPEED SENSOR
CONNECTOR**



Wire side of female terminals

Is there continuity?

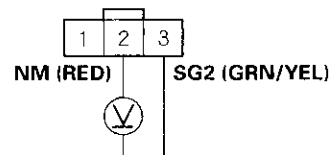
YES—Go to step 18.

NO—Repair an open in the wire between the input shaft (mainshaft) speed sensor connector and PCM connector terminal C12, then go to step 31.

18. Connect PCM connectors B (24P) and C (22P).
19. Turn the ignition switch ON (II).

20. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

Is there about 5 V?

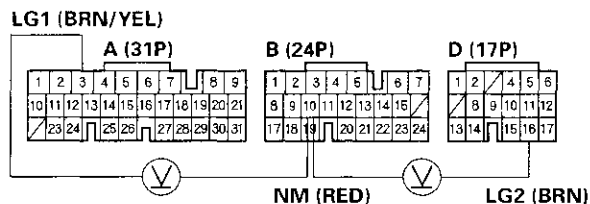
YES—Go to step 21.

NO—Go to step 30.



21. Connect the input shaft (mainshaft) speed sensor connector.
22. Measure the voltage between PCM connector terminals B10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

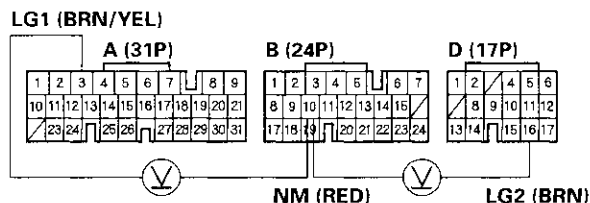
Is the voltage 0 V or about 5 V?

YES—Go to step 23.

NO—Replace the input shaft (mainshaft) speed sensor (see page 14-223), then go to step 31.

23. Shift to the P position. Start the engine, and let it idle.
24. With the engine idling, measure the voltage between PCM connector terminals B10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there 1.5–3.5 V?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

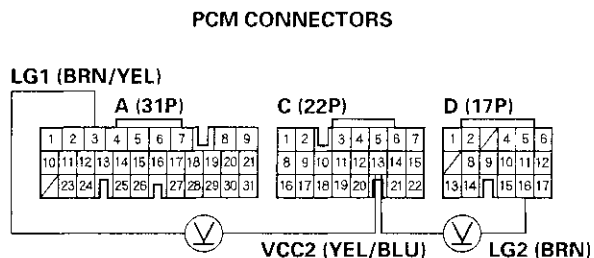
NO—Replace the input shaft (mainshaft) speed sensor (see page 14-223), then go to step 31.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

25. Measure the voltage between PCM connector terminals C13 and A3 or D16.



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 31.

NO—Go to step 26.

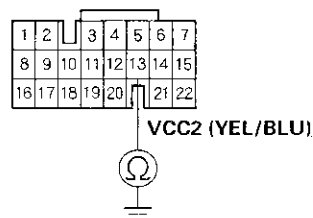
26. Turn the ignition switch OFF.

27. Jump the SCS line with the HDS.

28. Disconnect PCM connector C (22P).

29. Check for continuity between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

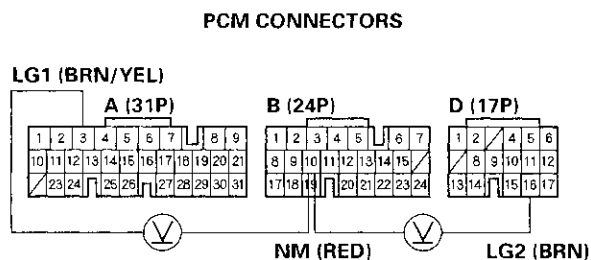
Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 31.

NO—Check for loose or poor connections at PCM connector terminal C13. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■



30. Measure the voltage between PCM connector terminals B10 and A3 or D16.



Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal D8 and the input shaft (mainshaft) speed sensor, then go to step 31.

NO—Check for loose or poor connections at PCM connector terminal B10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

31. Clear the DTC with the HDS.

32. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

33. Monitor the OBD status for P0716 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0717: Problem in Input Shaft (Mainshaft) Speed Sensor Circuit (No Signal Input)

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Record all freeze data, and clear the DTC with the HDS.
- Check for proper input shaft (mainshaft) speed sensor installation (see page 14-223).
- Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
- Start the engine, run the vehicle in the D position, and hold the vehicle at speeds over 30 mph (48 km/h) for more than 10 seconds. Slow down and stop the wheels.

- Monitor the OBD status for P0717 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

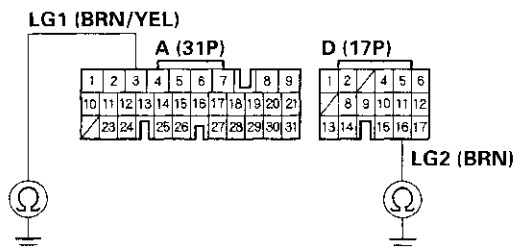
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and the input shaft (mainshaft) speed sensor connectors. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P) and D (17P), and the input shaft (mainshaft) speed sensor connector.

- Check for continuity between PCM connector terminals A3 and body ground, and between D16 and body ground.

PCM CONNECTORS



Wire side of female terminals

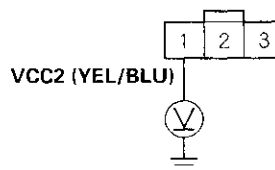
Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wires between PCM connector terminals A3, D16, and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 31.

- Connect PCM connectors A (31P) and D (17P).
- Turn the ignition switch ON (II).
- Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 1 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

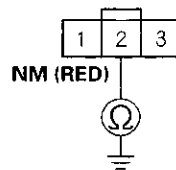
YES—Go to step 13.

NO—Go to step 25.



13. Turn the ignition switch OFF.
14. Disconnect PCM connector B (24P).
15. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

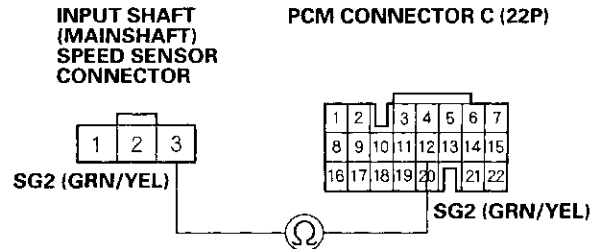
Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B10 and the input shaft (mainshaft) speed sensor connector, then go to step 31.

NO—Go to step 16.

16. Disconnect PCM connector C (22P).

17. Check for continuity between PCM connector terminal C12 and input shaft (mainshaft) speed sensor connector terminal No. 3.



Wire side of female terminals

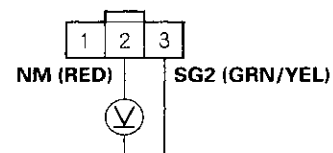
Is there continuity?

YES—Go to step 18.

NO—Repair an open in the wire between the input shaft (mainshaft) speed sensor connector and PCM connector terminal C12, then go to step 31.

18. Connect PCM connectors B (24P) and C (22P).
19. Turn the ignition switch ON (III).
20. Measure the voltage between input shaft (mainshaft) speed sensor connector terminals No. 2 and No. 3.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

Is there about 5 V?

YES—Go to step 21.

NO—Go to step 30.

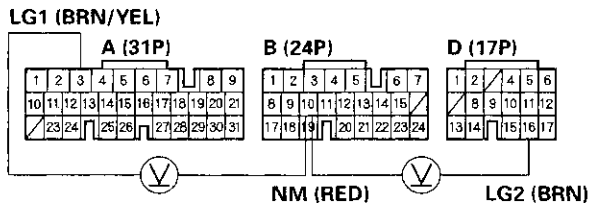
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

21. Connect the input shaft (mainshaft) speed sensor connector.
22. Measure the voltage between PCM connector terminals B10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

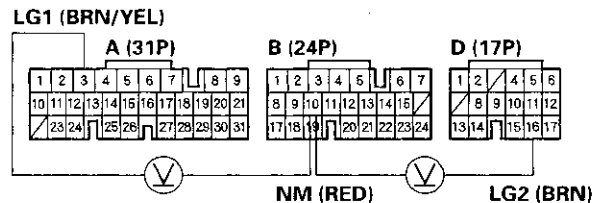
Is the voltage 0 V or about 5 V?

YES—Go to step 23.

NO—Replace the input shaft (mainshaft) speed sensor (see page 14-223), then go to step 31.

23. Shift to the P position. Start the engine, and let it idle.
24. With the engine idling, measure the voltage between PCM connector terminals B10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

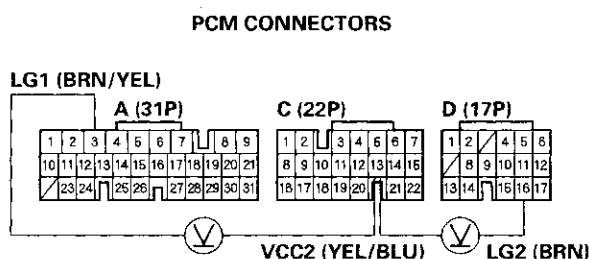
Is there 1.5 – 3.5 V?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Replace the input shaft (mainshaft) speed sensor (see page 14-223), then go to step 31.



25. Measure the voltage between PCM connector terminals C13 and A3 or D16.



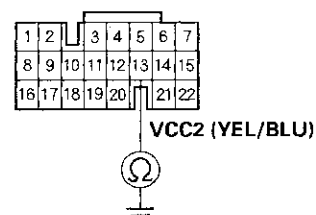
Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 31.

NO—Go to step 26.

26. Turn the ignition switch OFF.
27. Jump the SCS line with the HDS.
28. Disconnect PCM connector C (22P).
29. Check for continuity between PCM connector terminal C13 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal C13 and the input shaft (mainshaft) speed sensor, then go to step 31.

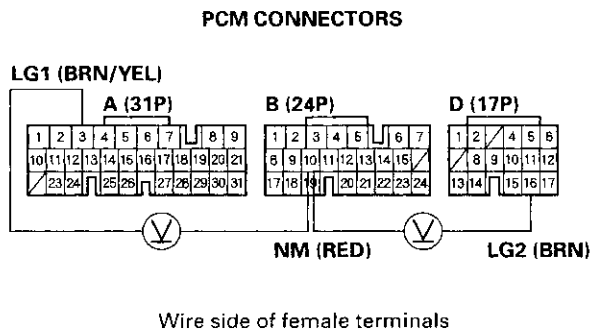
NO—Check for loose or poor connections at PCM connector terminal C13. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

30. Measure the voltage between PCM connector terminals B10 and A3 or D16.



Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal B10 and the input shaft (mainshaft) speed sensor, then go to step 31.

NO—Check for loose or poor connections at PCM connector terminal B10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

31. Clear the DTC with the HDS.

32. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

33. Monitor the OBD status for P0717 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0718: Input Shaft (Mainshaft) Speed Sensor Intermittent Failure

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in the D position in all five gears.
3. Monitor the OBD status for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the input shaft (mainshaft) speed sensor and the PCM. If the tester indicates NOT COMPLETE, return to step 2 and recheck. ■

4. Turn the ignition switch OFF.
5. Disconnect the input shaft (mainshaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

Are the connector terminals OK?

YES—Go to step 6.

NO—Repair the connector terminals, then go to step 6.
6. Connect the input shaft (mainshaft) speed sensor connector.

7. Test-drive the vehicle for several minutes, and monitor the OBD status for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

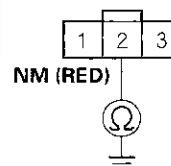
Does the result indicate a fail?

YES—Go to step 8.

NO—The problem has been corrected. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (24P).
11. Disconnect the input shaft (mainshaft) speed sensor connector.
12. Check for continuity between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

INPUT SHAFT (MAINSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B10 and the input shaft (mainshaft) speed sensor connector, then go to step 19.

NO—Go to step 13.

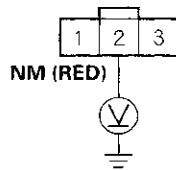
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Connect PCM connector B (24P).
14. Turn the ignition switch ON (II).
15. Measure the voltage between input shaft (mainshaft) speed sensor connector terminal No. 2 and body ground.

**INPUT SHAFT (MAINSHAFT)
SPEED SENSOR CONNECTOR**



Wire side of female terminals

Is there about 5 V?

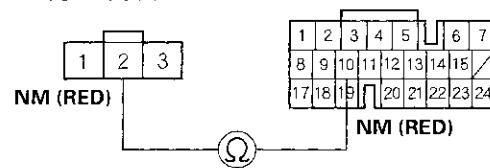
YES—Replace the input shaft (mainshaft) speed sensor (see page 14-223), then go to step 19.

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect PCM connector B (24P).
18. Check for continuity between PCM connector terminal B10 and input shaft (mainshaft) speed sensor connector terminal No. 2.

**INPUT SHAFT
(MAINSHAFT)
SPEED SENSOR
CONNECTOR**

PCM CONNECTOR B (24P)



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between PCM connector terminal B10 and the input shaft (mainshaft) speed sensor, then go to step 19.

19. Clear the DTC with the HDS.
20. Test-drive the vehicle for several minutes in the D position in all five gears.
21. Monitor the OBD status for P0718 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck.



DTC P0721: Problem in Output Shaft (Countershaft) Speed Sensor Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Record all freeze data, and clear the DTC with the HDS.
- Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
- Start the engine, and run it in the D position at engine speeds over 2,000 rpm for more than 10 seconds. Slow down and stop the wheels.
- Monitor the OBD status for P0721 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

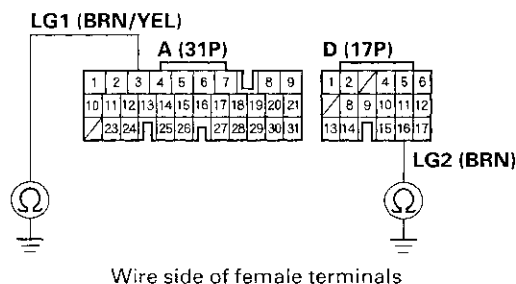
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and the output shaft (countershaft) speed sensor connectors. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P) and D (17P), and the output shaft (countershaft) speed sensor connector.

- Check for continuity between PCM connector terminals A3 and body ground, and between D16 and body ground.

PCM CONNECTORS



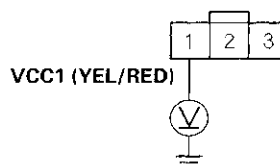
Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wires between PCM connector terminals A3, D16, and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 31.

- Connect PCM connectors A (31P) and D (17P).
- Turn the ignition switch ON (II).
- Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Is there about 5 V?

YES—Go to step 12.

NO—Go to step 25.

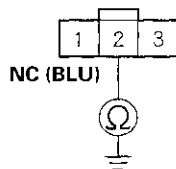
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Disconnect PCM connector B (24P).
14. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

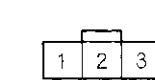
YES—Repair a short to ground in the wire between PCM connector terminal B19 and the output shaft (countershaft) speed sensor connector, then go to step 31.

NO—Go to step 15.

15. Disconnect PCM connector A (31P).

16. Check for continuity between PCM connector terminal A23 and output shaft (countershaft) speed sensor connector terminal No. 3.

OUTPUT SHAFT
(COUNTERSHAFT)
SPEED SENSOR
CONNECTOR



PCM CONNECTOR A (31P)



Wire side of female terminals

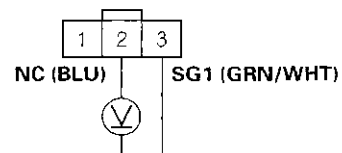
Is there continuity?

YES—Go to step 17.

NO—Repair an open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal A23, then go to step 31.

17. Connect PCM connectors A (31P) and B (24P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

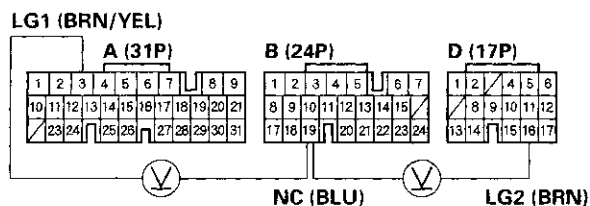
YES—Go to step 20.

NO—Go to step 30.



20. Connect the output shaft (countershaft) speed sensor connector.
21. Measure the voltage between PCM connector terminals B19 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

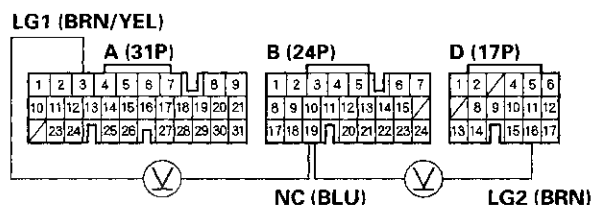
Is the voltage 0 V or about 5 V?

YES—Go to step 22.

NO—Replace the output shaft (countershaft) speed sensor (see page 14-223), then go to step 31.

22. Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
23. Start the engine, and run it at 2,000 rpm in the D position.
24. Measure the voltage between PCM connector terminals B19 and A3 or D16 while holding the engine speed at 2,000 rpm.

PCM CONNECTORS



Wire side of female terminals

Is there 1.5–3.5 V?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

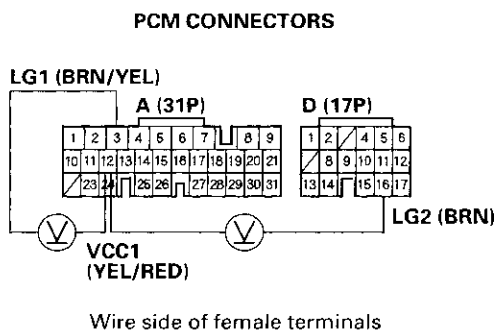
NO—Replace the output shaft (countershaft) speed sensor (see page 14-223), then go to step 31.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

25. Measure the voltage between PCM connector terminals A12 and A3 or D16.

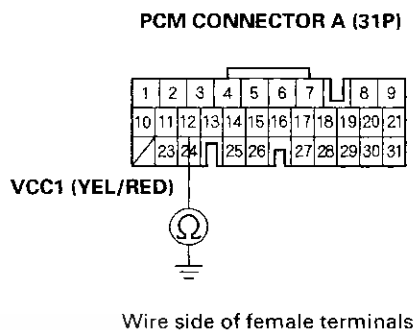


Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal A12 and the output shaft (countershaft) speed sensor, then go to step 31.

NO—Go to step 26.

26. Turn the ignition switch OFF.
27. Jump the SCS line with the HDS.
28. Disconnect PCM connector A (31P).
29. Check for continuity between PCM connector terminal A12 and body ground.



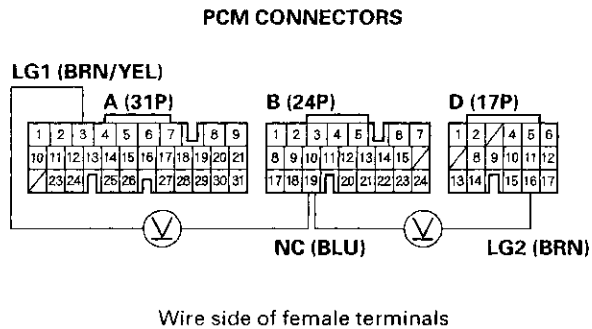
Is there continuity?

YES—Repair a short in the wire between PCM connector terminal A12 and the output shaft (countershaft) speed sensor, then go to step 31.

NO—Check for loose or poor connections at PCM connector terminal A12. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■



30. Measure the voltage between PCM connector terminals B19 and A3 or D16.



Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal B19 and the output shaft (countershaft) speed sensor, then go to step 31.

NO—Check for loose or poor connections at PCM connector terminal B19. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

31. Clear the DTC with the HDS.

32. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

33. Monitor the OBD status for P0721 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 5 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0722: Problem in Output Shaft (Countershaft) Speed Sensor Circuit (No Signal Input)

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Record all freeze data, and clear the DTC with the HDS.
- Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
- Start the engine, and run it in the D position at engine speeds over 2,000 rpm for more than 10 seconds. Slow down and stop the wheels.
- Monitor the OBD status for P0722 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

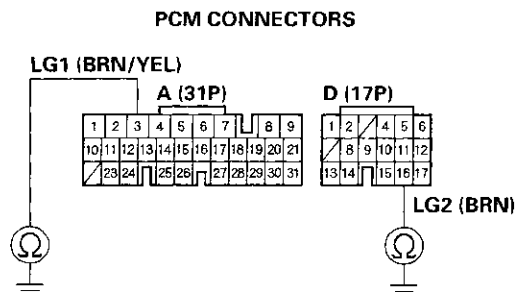
Does the result indicate a fail?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections at the PCM and the output shaft (countershaft) speed sensor connectors. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P) and D (17P), and the output shaft (countershaft) speed sensor connector.

- Check for continuity between PCM connector terminals A3 and body ground, and between D16 and body ground.



Wire side of female terminals

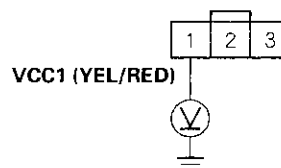
Is there continuity?

YES—Go to step 9.

NO—Repair an open in the wires between PCM connector terminals A3, D16, and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 31.

- Connect PCM connectors A (31P) and D (17P).
- Turn the ignition switch ON (II).
- Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

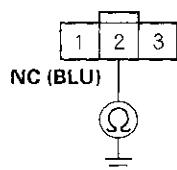
YES—Go to step 12.

NO—Go to step 25.



12. Turn the ignition switch OFF.
13. Disconnect PCM connector B (24P).
14. Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

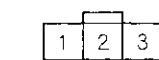
YES—Repair a short to ground in the wire between PCM connector terminal B19 and the output shaft (countershaft) speed sensor connector, then go to step 31.

NO—Go to step 15.

15. Disconnect PCM connector A (31P).

16. Check for continuity between PCM connector terminal A23 and output shaft (countershaft) speed sensor connector terminal No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



SG1 (GRN/WHT)

PCM CONNECTOR A (31P)



SG1 (GRN/WHT)

Wire side of female terminals

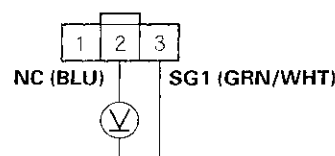
Is there continuity?

YES—Go to step 17.

NO—Repair an open in the wire between the output shaft (countershaft) speed sensor connector and PCM connector terminal A23, then go to step 31.

17. Connect PCM connectors A (31P) and B (24P).
18. Turn the ignition switch ON (II).
19. Measure the voltage between output shaft (countershaft) speed sensor connector terminals No. 2 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 20.

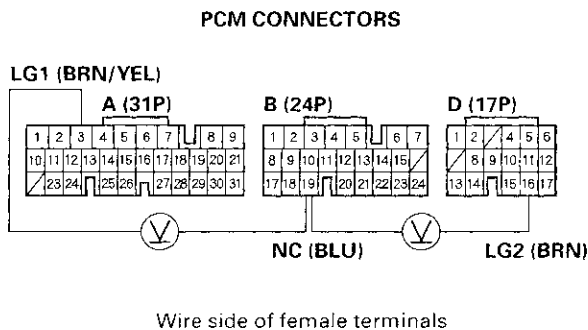
NO—Go to step 30.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

20. Connect the output shaft (countershaft) speed sensor connector.
21. Measure the voltage between PCM connector terminals B19 and A3 or D16.

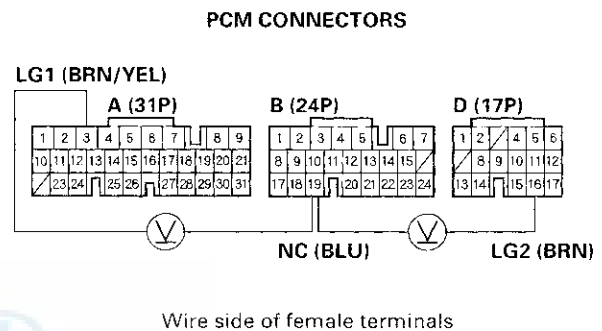


Is the voltage 0 V or about 5 V?

YES—Go to step 22.

NO—Replace the output shaft (countershaft) speed sensor (see page 14-223), then go to step 31.

22. Raise the front of the vehicle, or lift the vehicle up, make sure it is securely supported, and allow the front wheels to rotate freely.
23. Start the engine, and run it at 2,000 rpm in the D position.
24. Measure the voltage between PCM connector terminals B19 and A3 or D16 while holding the engine speed at 2,000 rpm.



Is there 1.5—3.5 V?

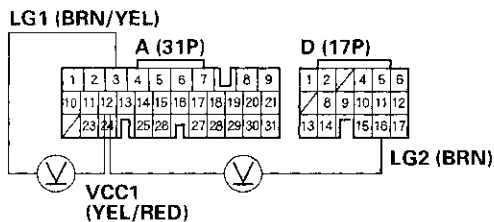
YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Replace the output shaft (countershaft) speed sensor (see page 14-223), then go to step 31.



25. Measure the voltage between PCM connector terminals A12 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal A12 and the output shaft (countershaft) speed sensor, then go to step 31.

NO—Go to step 26.

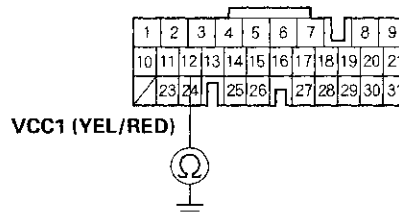
26. Turn the ignition switch OFF.

27. Jump the SCS line with the HDS.

28. Disconnect PCM connector C (22P).

29. Check for continuity between PCM connector terminal A12 and body ground.

PCM CONNECTOR A (31P)



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal A12 and the output shaft (countershaft) speed sensor, then go to step 31.

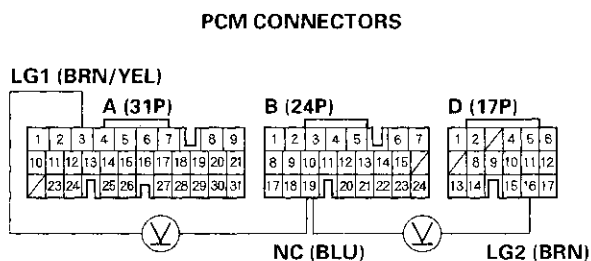
NO—Check for loose or poor connections at PCM connector terminal A12. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

30. Measure the voltage between PCM connector terminals B19 and A3 or D16.



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal B19 and the output shaft (countershaft) speed sensor, then go to step 31.

NO—Check for loose or poor connections at PCM connector terminal B19. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

31. Clear the DTC with the HDS.

32. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

33. Monitor the OBD status for P0722 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 5 and recheck.



DTC P0723: Output Shaft (Countershaft) Speed Sensor Intermittent Failure

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Record all freeze data, and clear the DTC with the HDS.
- Test-drive the vehicle for more than 10 minutes under the same conditions as those indicated by the freeze data. Slow down and stop the wheels.
- Monitor the OBD status for P0723 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. Check for poor connections and loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the tester indicates NOT COMPLETE, return to step 2 and recheck. ■

- Turn the ignition switch OFF.
- Disconnect the output shaft (countershaft) speed sensor connector, and inspect the connector and connector terminals to be sure they are making good contact.

Are the connector terminals OK?

YES—Go to step 6.

NO—Repair the connector terminals, then go to step 6.

- Connect the output shaft (countershaft) speed sensor connector.

- Test-drive the vehicle for several minutes, and monitor the OBD status for P0723 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

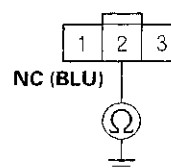
Does the result indicate a fail?

YES—Go to step 8.

NO—The problem has been corrected. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connector B (24P).
- Disconnect the output shaft (countershaft) speed sensor connector.
- Check for continuity between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal B19 and the output shaft (countershaft) speed sensor connector, then go to step 19.

NO—Go to step 13.

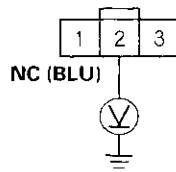
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

13. Connect PCM connector B (24P).
14. Turn the ignition switch ON (II).
15. Measure the voltage between output shaft (countershaft) speed sensor connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR CONNECTOR



Wire side of female terminals

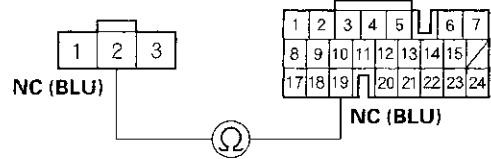
Is there about 5 V?

YES—Replace the output shaft (countershaft) speed sensor (see page 14-223), then go to step 19.

NO—Go to step 16.

16. Turn the ignition switch OFF.
17. Disconnect PCM connector B (24P).
18. Check for continuity between PCM connector terminal B19 and output shaft (countershaft) speed sensor connector terminal No. 2.

OUTPUT SHAFT (COUNTERSHAFT)
SPEED SENSOR
CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between PCM connector terminal B19 and the output shaft (countershaft) speed sensor, then go to step 19.

19. Clear the DTC with the HDS.
20. Test-drive the vehicle for several minutes in the D position in all five gears.
21. Monitor the OBD status for P0723 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 4 and recheck.



DTC P0731: Problem in 1st Clutch and 1st Clutch Hydraulic Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Measure the line pressure (see page 14-202).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and regulator valve, or replace the transmission. ■

5. Measure the 1st clutch pressure (see page 14-202).

Is the 1st clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves B and C are stuck. Repair the shift valves and hydraulic circuit, or replace the transmission. ■

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 1st gear in the D position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD status for P0731 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the 1st clutch, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0732: Problem in 2nd Clutch and 2nd Clutch Hydraulic Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Measure the line pressure (see page 14-202).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and regulator valve, or replace the transmission. ■

5. Measure the 2nd clutch pressure (see page 14-202).

Is the 2nd clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves A, B, and C are stuck. Repair the shift valves and hydraulic circuit, or replace the transmission. ■

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 2nd gear in the D position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD status for P0732 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the 2nd clutch, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■



DTC P0733: Problem in 3rd Clutch and 3rd Clutch Hydraulic Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Measure the line pressure (see page 14-202).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and regulator valve, or replace the transmission. ■

5. Measure the 3rd clutch pressure (see page 14-202).

Is the 3rd clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves A, B, and C are stuck. Repair the shift valves and hydraulic circuit, or replace the transmission. ■

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 3rd gear in the D position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD status for P0733 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the 3rd clutch, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0734: Problem in 4th Clutch and 4th Clutch Hydraulic Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Measure the line pressure (see page 14-202).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and regulator valve, or replace the transmission. ■

5. Measure the 4th clutch pressure (see page 14-202).

Is the 4th clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves A, B, C, and D are stuck. Repair the shift valves and hydraulic circuit, or replace the transmission. ■

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 4th gear in the D position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD status for P0734 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the 4th clutch, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■



DTC P0735: Problem in 5th Clutch and 5th Clutch Hydraulic Circuit

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Measure the line pressure (see page 14-202).

Is the line pressure within the service limit?

YES—Go to step 5.

NO—Repair the ATF pump and regulator valve, or replace the transmission. ■

5. Measure the 5th clutch pressure (see page 14-202).

Is the 5th clutch pressure within the service limit?

YES—Go to step 6.

NO—Shift valves A, B, C, and D are stuck. Repair the shift valves and hydraulic circuit, replace the transmission. ■

6. Clear the DTC with the HDS.
7. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data, or drive in 5th gear in the D position at speeds over 10 mph (16 km/h) for 20 seconds. Slow down and stop the wheels.

8. Monitor the OBD status for P0735 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the 5th clutch, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 7 and recheck. ■

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0741: Torque Converter Clutch Hydraulic Circuit Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Choose Shift Solenoid D in Miscellaneous Test Menu, and check that the shift solenoid valve D operates with the HDS.

Is a clicking sound heard?

YES—Go to step 6.

NO—Replace shift solenoid valve D (see page 14-206), then go to step 10.
6. Choose Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve C with the HDS.

Is the system OK?

YES—Go to step 7.

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 10 if any part is replaced.
7. Run the engine until the engine coolant temperature reaches 176 °F (80 °C).

8. Test-drive the vehicle at 55 mph (88 km/h) for 2 minutes while monitoring the vehicle speed with the HDS.

9. Monitor the OBD status for P0741 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the faulty torque converter clutch mechanism, torque converter clutch hydraulic circuit, lock-up shift valve, or lock-up control valve, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 8 and recheck. ■

10. Clear the DTC with the HDS.

11. Test-drive the vehicle for several minutes under the same conditions as those indicated by the freeze data.

12. Monitor the OBD status for P0741 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 5 and recheck.



DTC P0746: A/T Clutch Pressure Control Solenoid Valve A Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0746 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve A with the HDS.

Is the system OK?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 10 if any part is replaced.

10. Clear the DTC with the HDS.

11. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Monitor the OBD status for P0746 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0747: A/T Clutch Pressure Control Solenoid Valve A Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0747 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve A with the HDS.

Is the system OK?

YES—Go to step 10.

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 13 if any part is replaced.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0747 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Replace A/T clutch pressure control solenoid valve A (see page 14-216), then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0747 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0751: Shift Solenoid Valve A Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0751 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid A in Miscellaneous Test Menu, and check that the shift solenoid valve A operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve A (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0751 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valves A and E, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0751 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0752: Shift Solenoid Valve A Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0752 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid A in Miscellaneous Test Menu, and check that the shift solenoid valve A operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve A (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0752 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valves A and E, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0752 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0756: Shift Solenoid Valve B Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0756 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid B in Miscellaneous Test Menu, and check that the shift solenoid valve B operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve B (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0756 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valve B, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0756 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0757: Shift Solenoid Valve B Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0757 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid B in Miscellaneous Test Menu, and check that the shift solenoid valve B operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve B (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0757 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valve B, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0757 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0761: Shift Solenoid Valve C Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0761 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid C in Miscellaneous Test Menu, and check that the shift solenoid valve C operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve C (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0761 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valves C and E, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0761 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0762: Shift Solenoid Valve C Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0762 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid C in Miscellaneous Test Menu, and check that the shift solenoid valve C operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve C (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0762 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valves C and E, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0762 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0766: Shift Solenoid Valve D Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0766 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid D in Miscellaneous Test Menu, and check that the shift solenoid valve D operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve D (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0766 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the lock-up shift valve, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0766 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0767: Shift Solenoid Valve D Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0767 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Shift Solenoid D in Miscellaneous Test Menu, and check that the shift solenoid valve D operates with the HDS.

Is a clicking sound heard?

YES—Go to step 10.

NO—Replace shift solenoid valve D (see page 14-206), then go to step 13.

10. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
11. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Monitor the OBD status for P0767 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the lock-up shift valve, or replace the transmission, then go to step 13.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 10 and recheck. ■

13. Clear the DTC with the HDS.
14. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
15. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
16. Monitor the OBD status for P0767 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0776: A/T Clutch Pressure Control Solenoid Valve B Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0776 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Clutch Pressure Control (Linear) Solenoid B in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve B with the HDS.

Is the system OK?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 10 if any part is replaced.

10. Clear the DTC with the HDS.

11. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
12. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
13. Monitor the OBD status for P0776 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0777: A/T Clutch Pressure Control Solenoid Valve B Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0777 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Clutch Pressure Control (Linear) Solenoid B in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve B with the HDS.

Is the system OK?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 10 if any part is replaced.

10. Clear the DTC with the HDS.

11. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

12. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

13. Monitor the OBD status for P0777 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0796: A/T Clutch Pressure Control Solenoid Valve C Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D, D3, or R position, and slow down to a stop.
6. Retest-drive the vehicle in the D, D3, or R position, and slow down to a stop.
7. Monitor the OBD status for P0796 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve C with the HDS.

Is the system OK?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 10 if any part is replaced.

10. Clear the DTC with the HDS.

11. Test-drive the vehicle in the D, D3, or R position, and slow down to a stop.
12. Retest-drive the vehicle in the D, D3, or R position, and slow down to a stop.
13. Monitor the OBD status for P0796 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P0797: A/T Clutch Pressure Control Solenoid Valve C Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
6. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.
7. Monitor the OBD status for P0797 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 8.

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

8. Clear the DTC with the HDS.

9. Choose Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve C with the HDS.

Is the system OK?

YES—Intermittent failure, the system is OK at this time. ■

NO—Follow the instructions indicated on the HDS by the tester result. Go to step 10 if any part is replaced.

10. Clear the DTC with the HDS.

11. Test-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

12. Retest-drive the vehicle in the D position in all five gears at speeds over 12 mph (20 km/h) for more than 20 seconds, then slow down to a stop.

13. Monitor the OBD status for P0797 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 8 and recheck.



DTC P0812: Open in Transmission Range Switch ATP R Switch Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

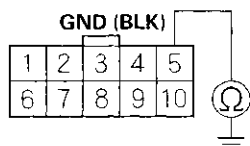
- Turn the ignition switch ON (II).
- Shift the shift lever into the R position, and verify the A/T R SWITCH signal with the HDS in the A/T data list.

Is the A/T R SWITCH ON?

YES—Intermittent failure, the system is OK at this time. ■

NO—Go to step 3.
- Turn the ignition switch OFF.
- Disconnect the transmission range switch connector.
- Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

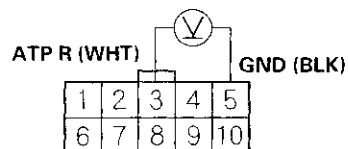
Is there continuity?

YES—Go to step 6.

NO—Repair an open in the wire between the transmission range switch and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 10.

- Turn the ignition switch ON (II).
- Measure the voltage between transmission range switch connector terminals No. 3 and No. 5.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 8.

NO—Go to step 9.

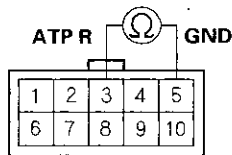
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

8. Check for continuity between the No. 3 and No. 5 terminals at the transmission range switch.

TRANSMISSION RANGE SWITCH CONNECTOR



Terminal side of male terminals

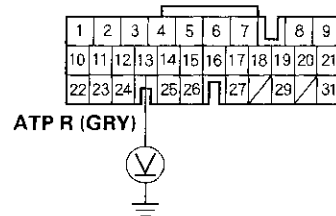
Is there continuity when the shift lever is in the R position, and no continuity when the shift lever is in any position other than R?

YES—Check for loose or poor connections at PCM connector terminal E13. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Replace the transmission range switch (see page 14-271), then go to step 10.

9. Measure the voltage between PCM connector terminal E13 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there battery voltage?

YES—Repair an open in the wire between the transmission range switch and PCM connector terminal E13, then go to step 10.

NO—Check for loose or poor connections at PCM connector terminal E13. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

10. Clear the DTC with the HDS.
11. Test-drive the vehicle in the R position at speeds below 3 mph (5 km/h) for more than 2 seconds, then increase the speed and test-drive at speeds over 3 mph (5 km/h) for more than 2 seconds. Slow down and stop the wheels.
12. Monitor the OBD status for P0812 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck.



DTC P0842: Short in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Check the 2nd PRES SWITCH signal with the HDS in the A/T data list when not in 2nd gear.

Is the 2nd PRES SWITCH OFF?

YES—Go to step 3.

NO—Go to step 6.

- Start the engine and warm it up to normal operating temperature (the radiator fan comes on).
- Drive the vehicle in the 2 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
- Monitor the OBD status for P0842 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check the OP2SW (BLU/BLK) wire for an intermittent short to ground between the 2nd clutch transmission fluid pressure switch and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

- Turn the ignition switch OFF.
- Disconnect the 2nd clutch transmission fluid pressure switch connector.
- Turn the ignition switch ON (II).
- Check the 2nd PRES SWITCH signal with the HDS in the A/T data list.

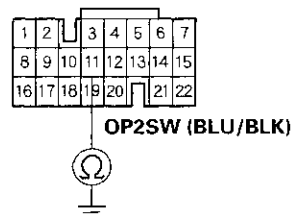
Is the 2nd PRES SWITCH OFF?

YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-224), then go to step 14.

NO—Go to step 10.

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connector C (22P).
- Check for continuity between PCM connector terminal C11 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C11 and the 2nd clutch transmission fluid pressure switch, then go to step 14.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

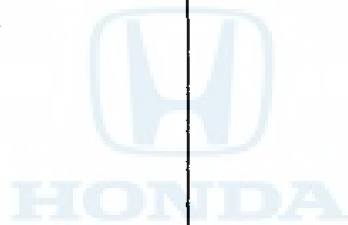
DTC Troubleshooting (cont'd)

14. Clear the DTC with the HDS.
15. Start the engine and warm it up to normal operating temperature (the radiator fan comes on).
16. Drive the vehicle in the 2 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
17. Monitor the OBD status for P0842 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.





DTC P0843: Open in 2nd Clutch Transmission Fluid Pressure Switch Circuit, or 2nd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Shift into the 2 position while pressing the brake pedal, and verify with the HDS in the A/T data list that the SHIFT MAP NUMBER indicates 2nd.
4. Check the 2nd PRES SWITCH signal with the HDS in the A/T data list.

Is the 2nd PRES SWITCH ON?

YES—Go to step 5.

NO—Go to step 7.

5. Drive the vehicle in the 2 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
6. Monitor the OBD status for P0843 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

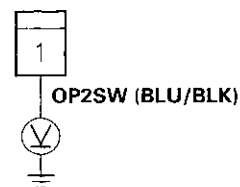
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 2nd clutch transmission fluid pressure switch and the PCM. If the tester indicates NOT COMPLETE, return to step 5. and recheck. ■

7. Turn the ignition switch OFF.
8. Disconnect the 2nd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch ON (II).
10. Measure the voltage between the 2nd clutch transmission fluid pressure switch connector terminal and body ground.

2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 2nd clutch transmission fluid pressure switch (see page 14-224), then go to step 12.

NO—Go to step 11.

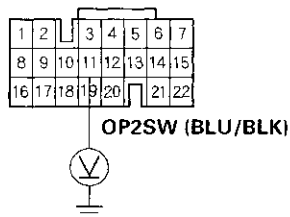
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Measure the voltage between PCM connector terminal C11 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal C11 and the 2nd clutch transmission fluid pressure switch, then go to step 12.

NO—Check for loose or poor connections at PCM connector terminal C11. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

12. Clear the DTC with the HDS.
13. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
14. Drive the vehicle in the 2 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
15. Monitor the OBD status for P0843 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0847: Short in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list when not in 3rd gear.

Is the 3rd PRES SWITCH OFF?

YES—Go to step 3.

NO—Go to step 6.

3. Start the engine and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 3rd gear in the D3 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
5. Monitor the OBD status for P0847 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check the OP3SW (BLU/WHT) wire for an intermittent short to ground between the 3rd clutch transmission fluid pressure switch and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the 3rd clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list.

Is the 3rd PRES SWITCH OFF?

YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-225), then go to step 14.

NO—Go to step 10.

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (22P).
13. Check for continuity between PCM connector terminal C9 and body ground.

PCM CONNECTOR C (22P)



OP3SW (BLU/WHT)



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C9 and the 3rd clutch transmission fluid pressure switch, then go to step 14.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

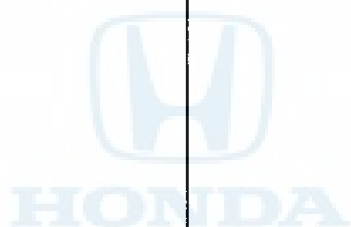
DTC Troubleshooting (cont'd)

14. Clear the DTC with the HDS.
15. Start the engine and warm it up to normal operating temperature (the radiator fan comes on).
16. Drive the vehicle in 3rd gear in the D3 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
17. Monitor the OBD status for P0847 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.





DTC P0848: Open in 3rd Clutch Transmission Fluid Pressure Switch Circuit, or 3rd Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Drive the vehicle in 3rd gear in the D3 position, and verify with the HDS in the A/T data list that the SHIFT MAP NUMBER indicates 3rd.
4. Check the 3rd PRES SWITCH signal with the HDS in the A/T data list.

Is the 3rd PRES SWITCH ON?

YES—Go to step 5.

NO—Go to step 7.

5. Drive the vehicle in 3rd gear in the D3 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
6. Monitor the OBD status for P0848 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

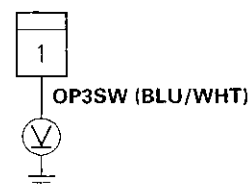
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 3rd clutch transmission fluid pressure switch and the PCM. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

7. Turn the ignition switch OFF.
8. Disconnect the 3rd clutch transmission fluid pressure switch connector.
9. Turn the ignition switch ON (II).
10. Measure the voltage between the 3rd clutch transmission fluid pressure switch connector terminal and body ground.

3RD CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 3rd clutch transmission fluid pressure switch (see page 14-225), then go to step 12.

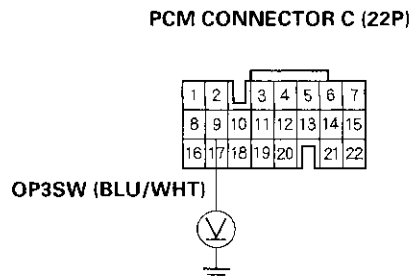
NO—Go to step 11.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Measure the voltage between PCM connector terminal C9 and body ground.



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal C9 and the 3rd clutch transmission fluid pressure switch, then go to step 12.

NO—Check for loose or poor connections at PCM connector terminal C9. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

12. Clear the DTC with the HDS.
13. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
14. Drive the vehicle in 3rd gear in the D3 position for more than 5 seconds, then shift the shift lever into the D position, and drive in 4th gear for more than 5 seconds. Slow down and stop the wheels.
15. Monitor the OBD status for P0848 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0872: Short in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck ON

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check the 4th PRES SWITCH signal with the HDS in the A/T data list when not in 4th gear.

Is the 4th PRES SWITCH OFF?

YES—Go to step 3.

NO—Go to step 6.

3. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
4. Drive the vehicle in 4th gear in the D position for more than 5 seconds. Slow down and stop the wheels.
5. Monitor the OBD status for P0872 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check the OP4SW (BLU/YEL) wire for an intermittent short to ground between the 4th clutch transmission fluid pressure switch and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the 4th clutch transmission fluid pressure switch connector.
8. Turn the ignition switch ON (II).
9. Check the 4th PRES SWITCH signal with the HDS in the A/T data list.

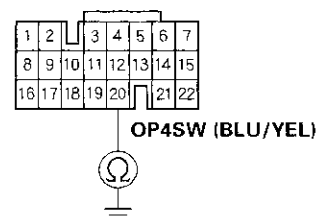
Is the 4th PRES SWITCH OFF?

YES—Replace the 4th clutch transmission fluid pressure switch (see page 14-226), then go to step 11.

NO—Go to step 10.

10. Check for continuity between PCM connector terminal C20 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C20 and the 4th clutch transmission fluid pressure switch, then go to step 11.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

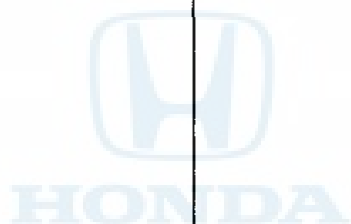
DTC Troubleshooting (cont'd)

11. Clear the DTC with the HDS.
12. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
13. Drive the vehicle in 4th gear in the D position for more than 5 seconds. Slow down and stop the wheels.
14. Monitor the OBD status for P0872 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.





DTC P0873: Open in 4th Clutch Transmission Fluid Pressure Switch Circuit, or 4th Clutch Transmission Fluid Pressure Switch Stuck OFF

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
3. Drive the vehicle in 4th gear in the D position for more than 5 seconds. Slow down and stop the wheels.
4. Check the 4th PRES SWITCH signal with the HDS in the A/T data list.

Is the 4th PRES SWITCH ON?

YES—Go to step 5.

NO—Go to step 7.

5. Drive the vehicle in 4th gear in the D position for more than 5 seconds. Slow down and stop the wheels.
6. Monitor the OBD status for P0873 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

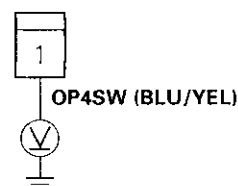
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 4th clutch transmission fluid pressure switch and the PCM. If the tester indicates NOT COMPLETE, return to step 5 and recheck. ■

7. Turn the ignition switch OFF.
8. Disconnect the 4th clutch transmission fluid pressure switch connector.
9. Turn the ignition switch ON (II).
10. Measure the voltage between the 4th clutch transmission fluid pressure switch connector terminal and body ground.

4TH CLUTCH TRANSMISSION FLUID PRESSURE SWITCH CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the 4th clutch transmission fluid pressure switch (see page 14-226), then go to step 12.

NO—Go to step 11.

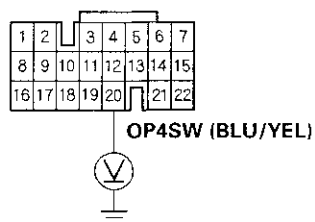
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Measure the voltage between PCM connector terminal C20 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there about 5 V?

YES—Repair an open in the wire between PCM connector terminal C20 and the 4th clutch transmission fluid pressure switch, then go to step 12.

NO—Check for loose or poor connections at PCM connector terminal C20. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

12. Clear the DTC with the HDS.
13. Start the engine, and warm it up to normal operating temperature (the radiator fan comes on).
14. Drive the vehicle in 4th gear in the D position for more than 5 seconds. Slow down and stop the wheels.
15. Monitor the OBD status for P0873 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0962: Problem in A/T Clutch Pressure Control Solenoid Valve A Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Check that DTC P0962 recurs.

Is DTC P0962 indicated?

YES—Go to step 6.

NO—Go to step 3.

- Choose Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve A with the HDS.

Is the system normal?

YES—Go to step 4.

NO—Go to step 6.

- Drive with the A/T clutch pressure control solenoid valve A at 1.0 A in Clutch Pressure Control Solenoid Control menu.
- Monitor the OBD status for P0962 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

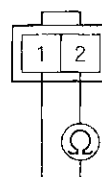
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve A and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

- Turn the ignition switch OFF.
- Disconnect the A/T clutch pressure control solenoid valve A connector.

- Measure the A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

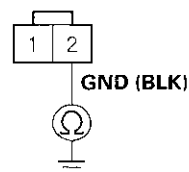
Is there 3–10 Ω ?

YES—Go to step 9.

NO—Replace the A/T clutch pressure control solenoid valve A (see page 14-216), then go to step 13.

- Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between the A/T clutch pressure control solenoid valve A and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 13.

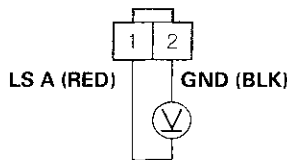
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve A connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL
SOLENOID VALVE A CONNECTOR



Wire side of female terminals

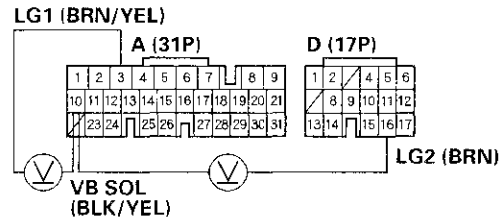
Is there battery voltage?

YES—Go to step 12.

NO—Repair an open or a short in the wire between PCM connector terminal C7 and A/T clutch pressure control solenoid valve A, then go to step 13.

12. Measure the voltage between PCM connector terminals A10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal A10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal A10 and the under-dash fuse/relay box, then go to step 13.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle for several minutes in the D position in all five gears.
15. Monitor the OBD status for P0962 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0963: Problem in A/T Clutch Pressure Control Solenoid Valve A

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check that DTC P0963 recurs.

Is DTC P0963 indicated?

YES—Go to step 6.

NO—Go to step 3.

3. Choose Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve A with the HDS.

Is the system normal?

YES—Go to step 4.

NO—Go to step 6.

4. Drive with the A/T clutch pressure control solenoid valve A at 0.2 A in Clutch Pressure Control Solenoid Control menu.
5. Monitor the OBD status for P0963 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

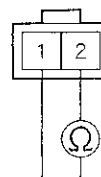
Does the result indicate a fail?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve A and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve A connector.
8. Measure the A/T clutch pressure control solenoid valve A resistance at the solenoid connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Terminal side of male terminals

Is there 3–10 Ω?

YES—Go to step 9.

NO—Replace the A/T clutch pressure control solenoid valve A (see page 14-216), then go to step 10.

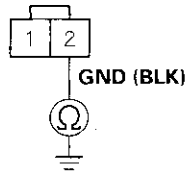
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

9. Check for continuity between A/T clutch pressure control solenoid valve A connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between the A/T clutch pressure control solenoid valve A and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 10.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the D position in all five gears.
12. Monitor the OBD status for P0963 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0966: Problem in A/T Clutch Pressure Control Solenoid Valve B Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check that DTC P0966 recurs.

Is DTC P0966 indicated?

YES—Go to step 6.

NO—Go to step 3.

3. Choose Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve B with the HDS.

Is the system normal?

YES—Go to step 4.

NO—Go to step 6.

4. Drive with the A/T clutch pressure control solenoid valve B at 1.0 A in Clutch Pressure Control Solenoid Control menu.
5. Monitor the OBD status for P0966 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

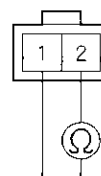
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve B and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve B connector.

8. Measure the A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

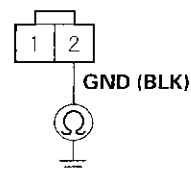
Is there 3–10 Ω?

YES—Go to step 9.

NO—Replace the A/T clutch pressure control solenoid valve B (see page 14-216), then go to step 13.

9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between the A/T clutch pressure control solenoid valve B and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 13.

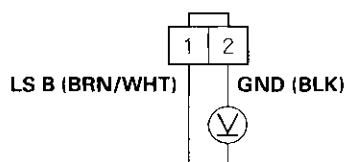
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve B connector terminals No. 1 and No. 2.

**A/T CLUTCH PRESSURE CONTROL
SOLENOID VALVE B CONNECTOR**



Wire side of female terminals

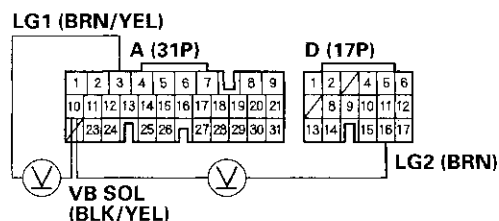
Is there battery voltage?

YES—Go to step 12.

NO—Repair an open or a short in the wire between PCM connector terminal C15 and A/T clutch pressure control solenoid valve B, then go to step 13.

12. Measure the voltage between PCM connector terminals A10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal A10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal A10 and the under-dash fuse/relay box, then go to step 13.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle for several minutes in the D position in all five gears.
15. Monitor the OBD status for P0966 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0967: Problem in A/T Clutch Pressure Control Solenoid Valve B

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check that DTC P0967 recurs.

Is DTC P0967 indicated?

YES—Go to step 6.

NO—Go to step 3.

3. Choose Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve B with the HDS.

Is the system normal?

YES—Go to step 4.

NO—Go to step 6.

4. Drive with the A/T clutch pressure control solenoid valve B at 0.2 A in Clutch Pressure Control Solenoid Control menu.
5. Monitor the OBD status for P0967 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 6.

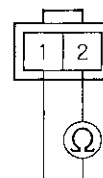
NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve B and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.

7. Disconnect the A/T clutch pressure control solenoid valve B connector.

8. Measure the A/T clutch pressure control solenoid valve B resistance at the solenoid connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Terminal side of male terminals

Is there 3—10 Ω ?

YES—Go to step 9.

NO—Replace the A/T clutch pressure control solenoid valve B (see page 14-216), then go to step 10.

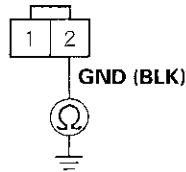
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

9. Check for continuity between A/T clutch pressure control solenoid valve B connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE B CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between the A/T clutch pressure control solenoid valve B and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 10.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the D position in all five gears.
12. Monitor the OBD status for P0967 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0970: Problem in A/T Clutch Pressure Control Solenoid Valve C Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Check that DTC P0970 recurs.

Is DTC P0970 indicated?

YES—Go to step 6.

NO—Go to step 3.

- Choose Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve C with the HDS.

Is the system normal?

YES—Go to step 4.

NO—Go to step 6.

- Drive with the A/T clutch pressure control solenoid valve C at 1.0 A in Clutch Pressure Control Solenoid Control menu.
- Monitor the OBD status for P0970 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

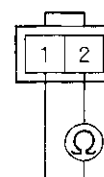
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve C and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

- Turn the ignition switch OFF.
- Disconnect the A/T clutch pressure control solenoid valve C connector.

- Measure the A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

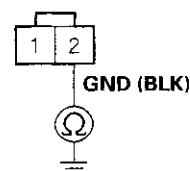
Is there 3—10 Ω ?

YES—Go to step 9.

NO—Replace the A/T clutch pressure control solenoid valve C (see page 14-221), then go to step 13.

- Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between the A/T clutch pressure control solenoid valve C and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 13.

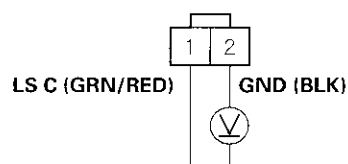
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

10. Turn the ignition switch ON (II).
11. Measure the voltage between A/T clutch pressure control solenoid valve C connector terminals No. 1 and No. 2.

A/T CLUTCH PRESSURE CONTROL
SOLENOID VALVE C CONNECTOR



Wire side of female terminals

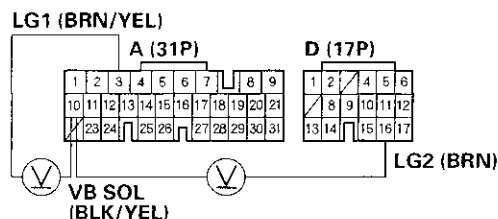
Is there battery voltage?

YES—Go to step 12.

NO—Repair an open or a short in the wire between PCM connector terminal C22 and A/T clutch pressure control solenoid valve C, then go to step 13.

12. Measure the voltage between PCM connector terminals A10 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal A10. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for a blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal A10 and the under-dash fuse/relay box, then go to step 13.

13. Clear the DTC with the HDS.
14. Test-drive the vehicle for several minutes in the D position in all gears.
15. Monitor the OBD status for P0970 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0971: Short in A/T Clutch Pressure Control Solenoid Valve C

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Check that DTC P0971 recurs.

Is DTC P0971 indicated?

YES—Go to step 6.

NO—Go to step 3.

3. Choose Clutch Pressure Control Solenoid Control in Miscellaneous Test Menu, and test the A/T clutch pressure control solenoid valve C with the HDS.

Is the system normal?

YES—Go to step 4.

NO—Go to step 6.

4. Drive with the A/T clutch pressure control solenoid valve C at 0.2 A in Clutch Pressure Control Solenoid Control menu.
5. Monitor the OBD status for P0971 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

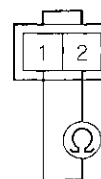
Does the result indicate a fail?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/T clutch pressure control solenoid valve C and the PCM. If the tester indicates NOT COMPLETE, return to step 3 and recheck. ■

6. Turn the ignition switch OFF.
7. Disconnect the A/T clutch pressure control solenoid valve C connector.
8. Measure the A/T clutch pressure control solenoid valve C resistance at the solenoid connector.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Terminal side of male terminals

Is there 3–10 Ω?

YES—Go to step 9.

NO—Replace the A/T clutch pressure control solenoid valve C (see page 14-221), then go to step 10.

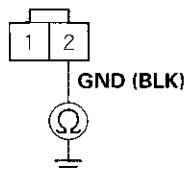
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

9. Check for continuity between A/T clutch pressure control solenoid valve C connector terminal No. 2 and body ground.

A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE C CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Repair an open in the wire between the A/T clutch pressure control solenoid valve C and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 10.

10. Clear the DTC with the HDS.
11. Test-drive the vehicle for several minutes in the D position in all five gears.
12. Monitor the OBD status for P0971 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.



DTC P0973: Short in Shift Solenoid Valve A Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0973 recurs.

Is DTC P0973 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid A in Miscellaneous Test Menu, and test the shift solenoid valve A with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0973 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check the SH A (BLU/YEL) wire for an intermittent short to ground between shift solenoid valve A and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

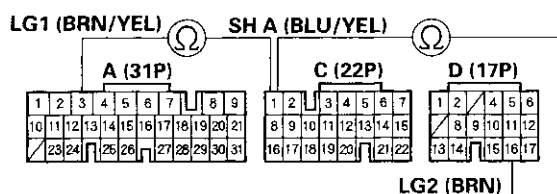
- Turn the ignition switch OFF.

- Jump the SCS line with the HDS.

- Disconnect PCM connectors A (31P), C (22P), and D (17P).

- Measure the resistance between PCM connector terminals C1 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

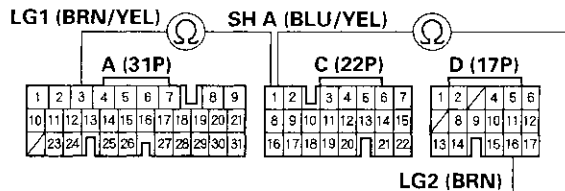
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C1 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C1 and the solenoid harness connector, then go to step 16.

NO—Go to step 13.

13. Inspect shift solenoid valve A (see page 14-206).

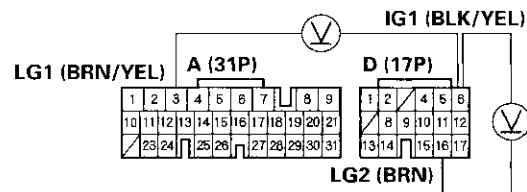
Is the shift solenoid valve A OK?

YES—Go to step 14.

NO—Replace shift solenoid valve A (see page 14-206), then go to step 16.

14. Turn the ignition switch ON (II).
15. Measure the voltage between PCM connector terminals D6 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal D6. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for a blown No. 19 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal D6 and the under-dash fuse/relay box, then go to step 16.

16. Clear the DTC with the HDS.
17. Test-drive the vehicle for several minutes in the D position in all five gears.
18. Monitor the OBD status for P0973 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0974: Open in Shift Solenoid Valve A Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0974 recurs.

Is DTC P0974 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid A in Miscellaneous Test Menu, and test the shift solenoid valve A with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0974 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

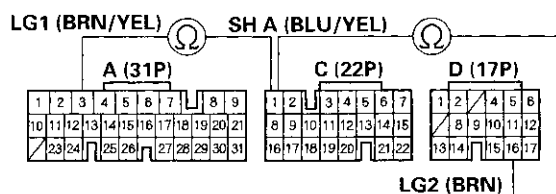
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve A and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P), C (22P), and D (17P).
- Measure the resistance between PCM connector terminals C1 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there 12–25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C1. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

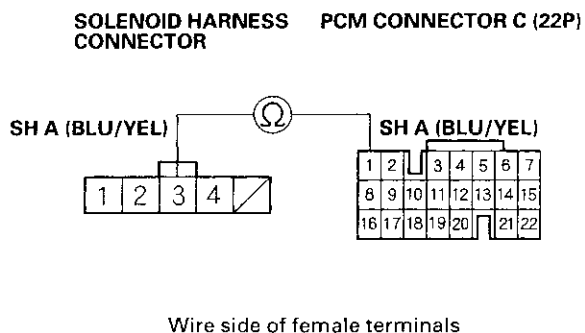
NO—Go to step 11.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector.
12. Check for continuity between PCM connector terminal C1 and solenoid harness connector terminal No. 3.

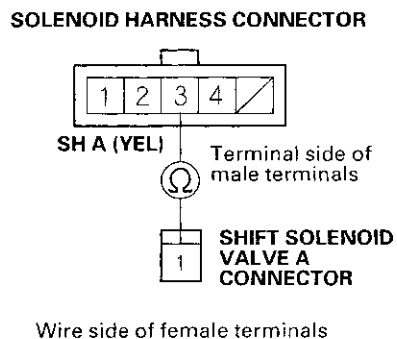


Is there continuity?

YES—Go to step 13.

NO—Repair an open in the wire between PCM connector terminal C1 and the solenoid harness connector, then go to step 15.

13. Replace the solenoid harness connector (see page 14-206).
14. Check for continuity between solenoid harness connector terminal No. 3 and shift solenoid valve A connector terminal.



Is there continuity?

YES—Replace shift solenoid valve A (see page 14-206), then go to step 15.

NO—Replace the solenoid harness (see page 14-206), then go to step 15.

15. Clear the DTC with the HDS.
16. Test-drive the vehicle for several minutes in the D position in all five gears.
17. Monitor the OBD status for P0974 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0976: Short in Shift Solenoid Valve B Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0976 recurs.

Is DTC P0976 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid B in Miscellaneous Test Menu, and test the shift solenoid valve B with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0976 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check the SH B (GRN/WHT) wire for an intermittent short to ground between shift solenoid valve B and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

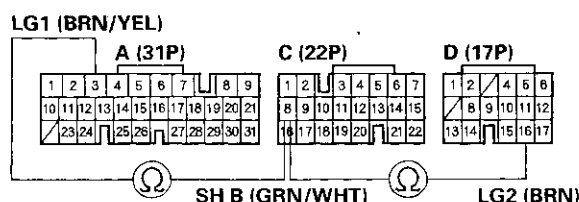
7. Turn the ignition switch OFF.

8. Jump the SCS line with the HDS.

9. Disconnect PCM connectors A (31P), C (22P), and D (17P).

10. Measure the resistance between PCM connector terminals C8 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there less than 12 Ω?

YES—Go to step 11.

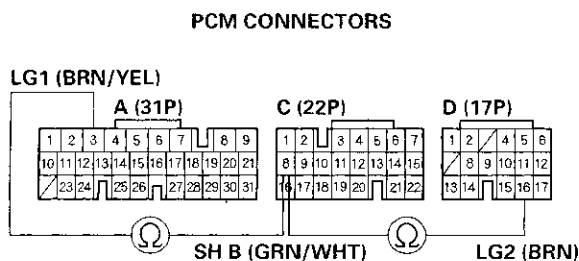
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C8 and A3 or D16.



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C8 and the solenoid harness connector, then go to step 16.

NO—Go to step 13.

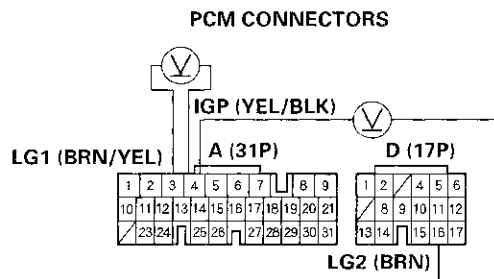
13. Inspect shift solenoid valve B (see page 14-206).

Is shift solenoid valve B OK?

YES—Go to step 14.

NO—Replace shift solenoid valve B (see page 14-206), then go to step 16.

14. Turn the ignition switch ON (II).
15. Measure the voltage between PCM connector terminals A4 and A3 or D16.



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal A4. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for a blown No. 8 fuse in the under-hood fuse/relay box, and check the PGM-FI main relay. If the fuse and the relay are OK, repair an open in the wire between PCM connector terminal A4 and the under-hood fuse/relay box, then go to step 16.

16. Clear the DTC with the HDS.
17. Test-drive the vehicle for several minutes in the D position in all five gears.
18. Monitor the OBD status for P0976 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0977: Open in Shift Solenoid Valve B Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0977 recurs.

Is DTC P0977 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid B in Miscellaneous Test Menu, and test the shift solenoid valve B with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0977 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

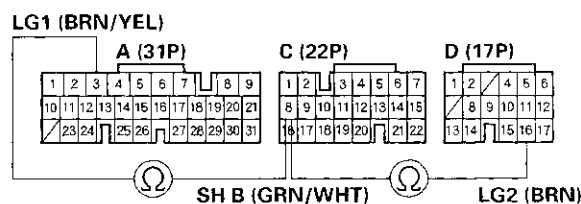
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve B and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P), C (22P), and D (17P).
- Measure the resistance between PCM connector terminals C8 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there 12–25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C8. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

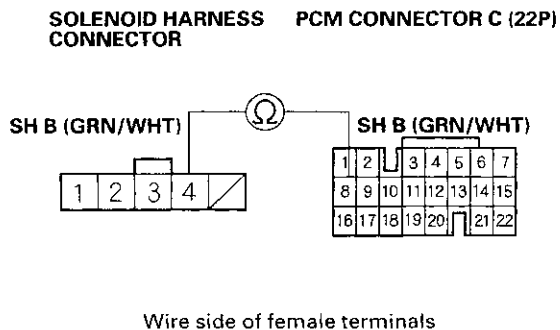
NO—Go to step 11.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector.
12. Check for continuity between PCM connector terminal C8 and solenoid harness connector terminal No. 4.

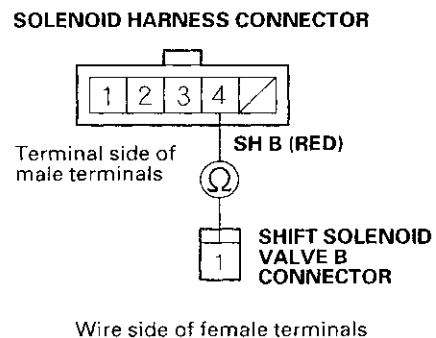


Is there continuity?

YES—Go to step 13.

NO—Repair an open in the wire between PCM connector terminal C8 and the solenoid harness connector, then go to step 15.

13. Remove the solenoid harness connector (see page 14-206).
14. Check for continuity between solenoid harness connector terminal No. 4 and shift solenoid valve B connector terminal.



Is there continuity?

YES—Replace shift solenoid valve B (see page 14-206), then go to step 15.

NO—Replace the solenoid harness (see page 14-206), then go to step 15.

15. Clear the DTC with the HDS.
16. Test-drive the vehicle for several minutes in the D position in all five gears.
17. Monitor the OBD status for P0977 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0979: Short in Shift Solenoid Valve C Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0979 recurs.

Is DTC P0979 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid C in Miscellaneous Test Menu, and test the shift solenoid valve C with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0979 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check the SH C (GRN) wire for an intermittent short to ground between shift solenoid valve C and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

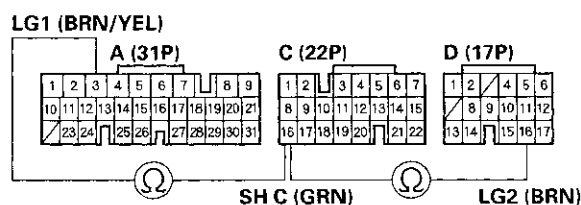
7. Turn the ignition switch OFF.

8. Jump the SCS line with the HDS.

9. Disconnect PCM connectors A (31P), C (22P), and D (17P).

10. Measure the resistance between PCM connector terminals C16 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

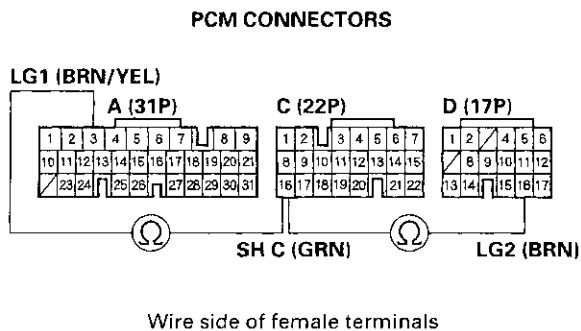
NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C16 and A3 or D16.



Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C16 and the solenoid harness connector, then go to step 16.

NO—Go to step 13.

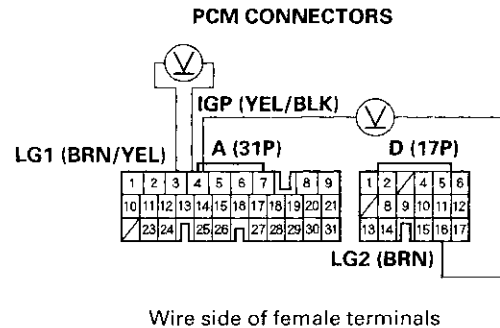
13. Inspect shift solenoid valve C (see page 14-206).

Is shift solenoid valve C OK?

YES—Go to step 14.

NO—Replace shift solenoid valve C (see page 14-206), then go to step 16.

14. Turn the ignition switch ON (II).
15. Measure the voltage between PCM connector terminals A4 and A3 or D16.



Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal A4. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for a blown No. 8 fuse in the under-hood fuse/relay box, and check the PGM-FI main relay. If the fuse and the relay are OK, repair an open in the wire between PCM connector terminal A4 and the under-hood fuse/relay box, then go to step 16.

16. Clear the DTC with the HDS.
17. Test-drive the vehicle for several minutes in the D position in all five gears.
18. Monitor the OBD status for P0979 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0980: Open in Shift Solenoid Valve C Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0980 recurs.

Is DTC P0980 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid C in Miscellaneous Test Menu, and test the shift solenoid valve C with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0980 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

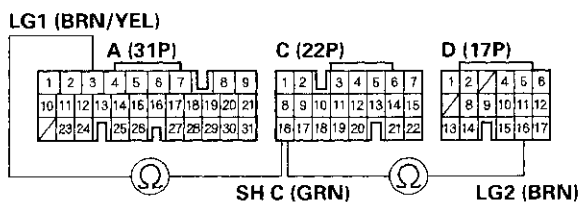
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve C and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P), C (22P), and D (17P).
- Measure the resistance between PCM connector terminals C16 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there 12–25 Ω ?

YES—Check for loose or poor connections at PCM connector terminal C16. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

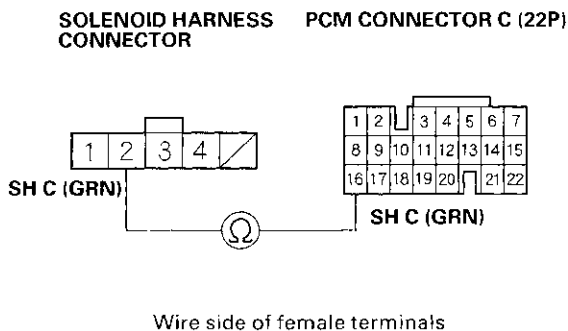
NO—Go to step 11.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector.
12. Check for continuity between PCM connector terminal C16 and solenoid harness connector terminal No. 2.

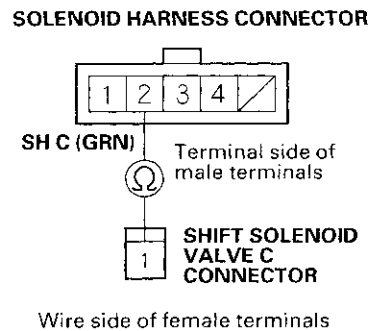


Is there continuity?

YES—Go to step 13.

NO—Repair an open in the wire between PCM connector terminal C16 and the solenoid harness connector, then go to step 15.

13. Remove the solenoid harness connector (see page 14-206).
14. Check for continuity between solenoid harness connector terminal No. 2 and shift solenoid valve C connector terminal.



Is there continuity?

YES—Replace shift solenoid valve C (see page 14-206), then go to step 15.

NO—Replace the solenoid harness (see page 14-206), then go to step 15.

15. Clear the DTC with the HDS.
16. Test-drive the vehicle for several minutes in the D position in all five gears.
17. Monitor the OBD status for P0980 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0982: Short in Shift Solenoid Valve D Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0982 recurs.

Is DTC P0982 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid D in Miscellaneous Test Menu, and test the shift solenoid valve D with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0982 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check the SH D (GRN/RED) wire for an intermittent short to ground between shift solenoid valve C and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

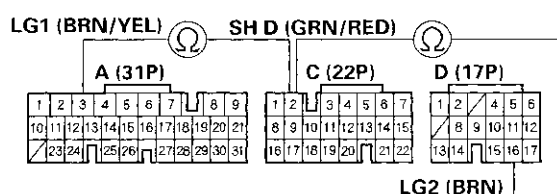
- Turn the ignition switch OFF.

- Jump the SCS line with the HDS.

- Disconnect PCM connectors A (31P), C (22P), and D (17P).

- Measure the resistance between PCM connector terminals C2 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there less than 12 Ω ?

YES—Go to step 11.

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

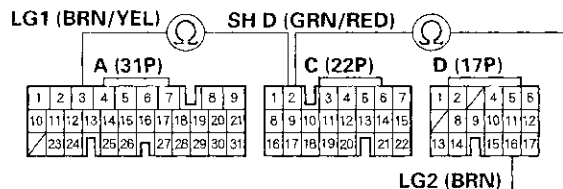
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector at the transmission housing.
12. Check for continuity between PCM connector terminals C2 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there continuity?

YES—Repair a short to ground in the wire between PCM connector terminal C2 and the solenoid harness connector, then go to step 16.

NO—Go to step 13.

13. Inspect shift solenoid valve D (see page 14-206).

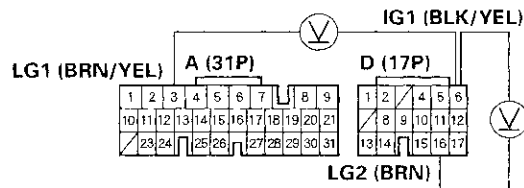
Is shift solenoid valve D OK?

YES—Go to step 14.

NO—Replace shift solenoid valve D (see page 14-206), then go to step 16.

14. Turn the ignition switch ON (II).
15. Measure the voltage between PCM connector terminals D6 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there battery voltage?

YES—Check for loose or poor connections at PCM connector terminal D6. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Check for a blown No. 19 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between PCM connector terminal D6 and the under-dash fuse/relay box, then go to step 16.

16. Clear the DTC with the HDS.
17. Test-drive the vehicle for several minutes in the D position in all five gears.
18. Monitor the OBD status for P0982 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P0983: Open in Shift Solenoid Valve D Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Test-drive the vehicle for several minutes in the D position in all five gears.
- Check that DTC P0983 recurs.

Is DTC P0983 indicated?

YES—Go to step 7.

NO—Go to step 4.

- Choose Shift Solenoid D in Miscellaneous Test Menu, and test the shift solenoid valve D with the HDS.

Is the system normal?

YES—Go to step 5.

NO—Go to step 7.

- Test-drive the vehicle for several minutes in the D position in all five gears.
- Monitor the OBD status for P0983 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

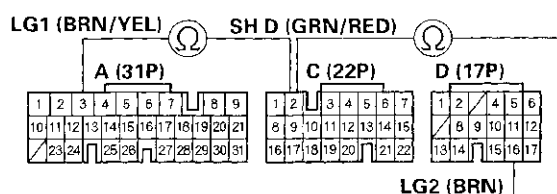
Does the result indicate a fail?

YES—Go to step 7.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at shift solenoid valve D and the PCM. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

- Turn the ignition switch OFF.
- Jump the SCS line with the HDS.
- Disconnect PCM connectors A (31P), C (22P), and D (17P).
- Measure the resistance between PCM connector terminals C2 and A3 or D16.

PCM CONNECTORS



Wire side of female terminals

Is there 12–25 Ω?

YES—Check for loose or poor connections at PCM connector terminal C2. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/ indication goes away with a known-good PCM, replace the original PCM. ■

NO—Go to step 11.

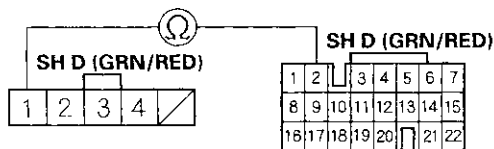
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

11. Disconnect the solenoid harness connector.
12. Check for continuity between PCM connector terminal C2 and solenoid harness connector terminal No. 1.

SOLENOID HARNESS CONNECTOR PCM CONNECTOR C (22P)



Wire side of female terminals

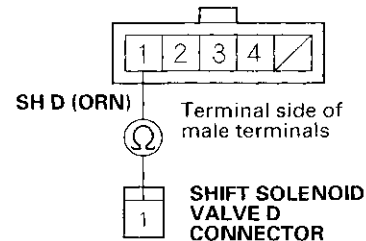
Is there continuity?

YES—Go to step 13.

NO—Repair an open in the wire between PCM connector terminal C2 and the solenoid harness connector, then go to step 15.

13. Remove the solenoid harness connector (see page 14-206).
14. Check for continuity between solenoid harness connector terminal No. 1 and shift solenoid valve D connector terminal.

SOLENOID HARNESS CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace shift solenoid valve D (see page 14-206), then go to step 15.

NO—Replace the solenoid harness (see page 14-206), then go to step 15.

15. Clear the DTC with the HDS.
16. Test-drive the vehicle for several minutes in the D position in all five gears.
17. Monitor the OBD status for P0983 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 7 and recheck.



DTC P1717: Open in Transmission Range Switch ATP RVS Switch Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Turn the ignition switch ON (II).
- Shift the shift lever into the R position, and verify the A/T R SWITCH signal with the HDS in the A/T data list.

Is the A/T R SWITCH ON?

YES—Go to step 3.

NO—Check the transmission range switch installation, and adjust the shift cable (see page 14-265), then recheck. ■

- Check the REVERSE SWITCH with the HDS.

Is the REVERSE SWITCH ON?

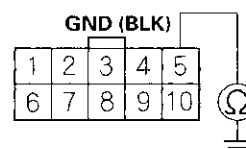
YES—Intermittent failure, the system is OK at this time. ■

NO—Go to step 4.

- Turn the ignition switch OFF.
- Disconnect the transmission range switch connector.

- Check for continuity between transmission range switch connector terminal No. 5 and body ground.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there continuity?

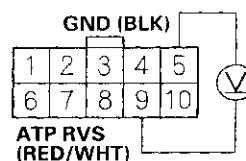
YES—Go to step 7.

NO—Repair an open in the wire between the transmission range switch and ground (G101, G102), or repair a poor ground (G101, G102), then go to step 11.

- Turn the ignition switch ON (II).

- Measure the voltage between transmission range switch connector terminals No. 5 and No. 9.

TRANSMISSION RANGE SWITCH CONNECTOR



Wire side of female terminals

Is there voltage?

YES—Go to step 9.

NO—Go to step 10

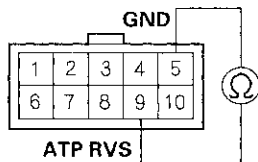
(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

9. Check for continuity between the No. 5 and No. 9 terminals at the transmission range switch.

TRANSMISSION RANGE
SWITCH CONNECTOR



Terminal side of male terminals

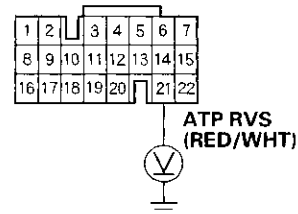
Is there continuity when the shift lever is in the P, R, and N positions, and no continuity when the shift lever is in the D, D3, 2, and 1 positions?

YES—Check for loose or poor connections at PCM connector terminal C21. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

NO—Replace the transmission range switch (see page 14-271), then go to step 11.

10. Measure the voltage between PCM connector terminal C21 and body ground.

PCM CONNECTOR C (22P)



Wire side of female terminals

Is there battery voltage?

YES—Repair an open in the wire between the transmission range switch and PCM connector terminal C21, then go to step 11.

NO—Check for loose or poor connections at PCM connector terminal C21. If the connection is OK, update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■

11. Clear the DTC with the HDS.
12. Start the engine in the P position. Shift the shift lever into the R position and stop for at least 2 seconds, then shift into the N position.
13. Monitor the OBD status for P1717 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 4 and recheck.



DTC P1743: Problem in Shift Control System; Shift Valve E Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
6. Retest-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
7. Monitor the OBD status for P1743 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valve E in the main valve body (see page 14-296), or replace the main valve body, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P1744: Problem in Shift Control System; Shift Valve E Stuck ON

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
6. Retest-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
7. Monitor the OBD status for P1744 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair shift valve E in the main valve body (see page 14-296), replace the main valve body. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■



DTC P1745: Problem in Shift Control System; Servo Control Valve Stuck OFF or Servo Valve Stuck OFF

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Make sure that the transmission is filled to the proper level, and check for fluid leaks.
3. Drain the ATF (see step 3 on page 14-231) through a strainer. Inspect the strainer for metal debris or excessive clutch material.

Does the strainer have metal debris or excessive clutch material?

YES—Replace the transmission. ■

NO—Replace the ATF (see step 5 on page 14-231), then go to step 4.

4. Clear the DTC with the HDS.
5. Test-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
6. Retest-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
7. Monitor the OBD status for P1745 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a fail?

YES—Repair the servo control valve in the main valve body (see page 14-296), servo valve in the regulator valve body (see page 14-299), or replace the main valve body, regulator valve body, or replace the transmission. ■

NO—Intermittent failure, the system is OK at this time. If the tester indicates NOT COMPLETE, return to step 4 and recheck. ■

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P1780: Problem in Shift Control System

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Clear the DTC with the HDS.
2. Test-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
3. Retest-drive the vehicle for several minutes in the D position in all five gears. Slow down and stop the wheels.
4. Check for other DTCs indicated simultaneous with the code P1780.

NOTE: DTC P1780 means there is one or more A/T DTCs about the shift control system.

Are there other DTCs?

YES—Perform the troubleshooting for the indicated code(s). ■

NO—Update the PCM if it does not have the latest software, or substitute a known-good PCM (see page 14-7), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM. ■





DTC P1900: Short in Auxiliary Transmission Fluid Pump (ATFP) Relay Circuit or ATFP Relay Stuck ON

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II), wait for more than 10 seconds, then check that DTC P1900 recurs.

Is DTC P1900 indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Turn the ignition switch OFF.
4. Remove the ATFP relay from the auxiliary under-hood fuse/relay box B, and check for continuity between relay terminals (see page 22-72).

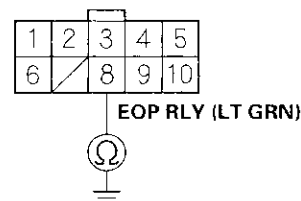
Is the relay OK?

YES—Go to step 5.

NO—Replace the ATFP relay, then go to step 7.

5. Disconnect the ATFP control unit connector.
6. Check for continuity between ATFP control unit connector terminal No. 8 and body ground.

ATFP CONTROL UNIT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between ATFP control unit connector terminal No. 8 and the auxiliary under-hood fuse/relay box B, then go to step 7.

NO—Replace the ATFP control unit (see page 14-229), then go to step 7.

7. Clear the DTC with the HDS.
8. Turn the ignition switch ON (II), and wait for more than 10 seconds.
9. Monitor the OBD status for P1900 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 3 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P1901: Open in Auxiliary Transmission Fluid Pump (ATFP) Relay Circuit or ATFP Relay Stuck OFF

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II), wait for more than 10 seconds, then check that DTC P1901 recurs.

Is DTC P1901 indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATFP control unit, the PCM, and the ATFP relay. ■

3. Turn the ignition switch OFF.
4. Check for a blown No. 37 (30 A) fuse in the auxiliary under-hood fuse/relay box B.

Is the fuse OK?

YES—Go to step 5.

NO—Replace the No. 37 (30 A) fuse in the auxiliary under-hood fuse/relay box B, and check for a short in the wire between the positive battery terminal and the auxiliary under-hood fuse/relay box B, and between the auxiliary under-hood fuse/relay box B and the ATFP control unit, then go to step 13.

5. Remove the ATFP relay from the auxiliary under-hood fuse/relay box B, and check for continuity between relay terminals (see page 22-72).

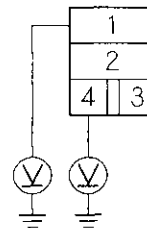
Is the relay OK?

YES—Go to step 6.

NO—Replace the ATFP relay, then go to step 13.

6. Turn the ignition switch ON (II).
7. Measure the voltage between ATFP relay socket terminal No. 1 and body ground, and between terminal No. 4 and body ground.

ATFP RELAY SOCKET
(in auxiliary under-hood fuse/relay box B)



Terminal side of female terminals

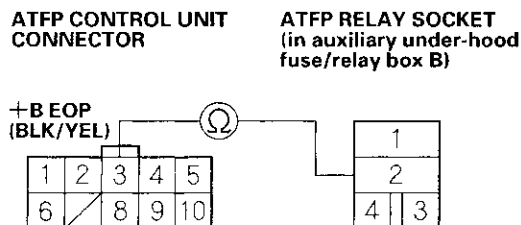
Is there battery voltage?

YES—Go to step 8.

NO—Replace the auxiliary under-hood fuse/relay box B and the wire harness between the battery and the fuse/relay box, then go to step 13.



8. Turn the ignition switch OFF.
9. Disconnect the AFTP control unit connector.
10. Check for continuity between AFTP control unit connector terminal No. 3 and AFTP relay socket terminal No. 2.



Wire side of female terminals

Terminal side of female terminals

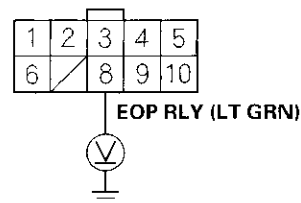
Is there continuity?

YES—Go to step 11.

NO—Repair an open in the wire between AFTP control unit terminal No. 3 and the auxiliary under-hood fuse/relay box B, then go to step 13.

11. Install the AFTP relay in the auxiliary under-hood fuse/relay box B.
12. Measure the voltage between AFTP control unit connector terminal No. 8 and body ground.

AFTP CONTROL UNIT CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the AFTP control unit (see page 14-229), then go to step 13.

NO—Repair an open in the wire between AFTP control unit connector terminal No. 8 and the auxiliary under-hood fuse/relay box B, then go to step 13.

13. Clear the DTC with the HDS.
14. Turn the ignition switch ON (II), and wait for more than 10 seconds.
15. Monitor the OBD status for P1901 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 3 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P1902: Open in Auxiliary Transmission Fluid Pump (ATFP) Motor U-phase Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Choose ATFP Motor Test in Miscellaneous Test Menu, and check that the DTC indicates.

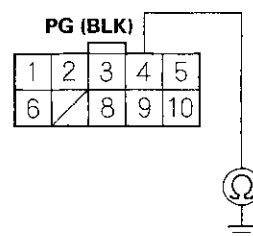
Are DTC P1902, P1903, and P1904 indicated simultaneously?

YES—Go to step 3.

NO—Only DTC P1902 is indicated, go to step 6. If no DTCs recur, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATFP control unit and the ATFP motor.

- Turn the ignition switch OFF.
- Disconnect the ATFP control unit connector.
- Check for continuity between ATFP control unit connector terminal No. 4 and body ground.

ATFP CONTROL UNIT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the ATFP control unit (see page 14-229), then go to step 11.

NO—Repair an open in the wire between ATFP control unit connector terminal No. 4 and ground (G501), or repair poor ground (G501), then go to step 11.

- Turn the ignition switch OFF.
- Disconnect the ATFP control unit connector and ATFP motor connector.
- Inspect the connectors and connector terminals to be sure they are making good contact.

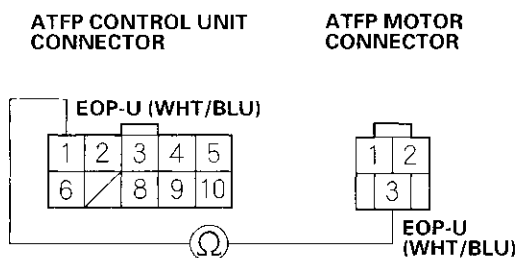
Are the connector terminals OK?

YES—Go to step 9.

NO—Repair the connector terminals, then go to step 9.



9. Check for continuity between ATFP control unit connector terminal No. 1 and ATFP motor connector terminal No. 3.



Wire side of female terminals

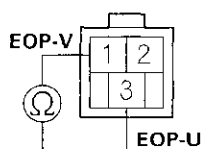
Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between ATFP control unit connector terminal No. 1 and the ATFP motor connector, then go to step 11.

10. Check for continuity between ATFP motor connector terminals No. 1 and No. 3.

ATFP MOTOR CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the ATFP control unit (see page 14-229), then go to step 11.

NO—Replace the ATFP (see page 14-228), then go to step 11.

11. Clear the DTC with the HDS.

12. Warm up the engine to normal operating temperature (the radiator fan comes on).

13. Drive the vehicle in the D position. Slow down and stop the wheels in auto idle stop.

14. Monitor the OBD status for P1902 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P1903: Open in Auxiliary Transmission Fluid Pump (ATFP) Motor V-phase Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Choose ATFP Motor Test in Miscellaneous Test Menu, and check that the DTC indicates.

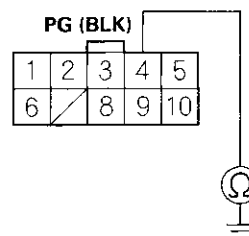
Are DTC P1902, P1903, and P1904 indicated simultaneously?

YES—Go to step 3.

NO—Only DTC P1903 is indicated, go to step 6. If no DTCs recur, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATFP control unit and the ATFP motor.

- Turn the ignition switch OFF.
- Disconnect the ATFP control unit connector.
- Check for continuity between ATFP control unit connector terminal No. 4 and body ground.

ATFP CONTROL UNIT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the ATFP control unit (see page 14-229), then go to step 11.

NO—Repair an open in the wire between ATFP control unit connector terminal No. 4 and ground (G501), or repair poor ground (G501), then go to step 11.

- Turn the ignition switch OFF.
- Disconnect the ATFP control unit connector and ATFP motor connector.
- Inspect the connectors and connector terminals to be sure they are making good contact.

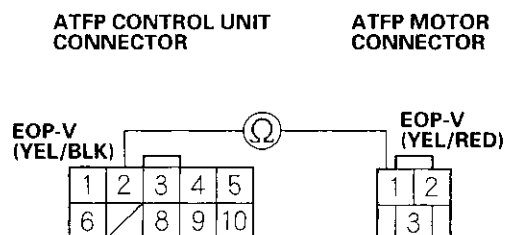
Are the connector terminals OK?

YES—Go to step 9.

NO—Repair the connector terminals, then go to step 9.



9. Check for continuity between ATFP control unit connector terminal No. 2 and ATFP motor connector terminal No. 1.



Wire side of female terminals

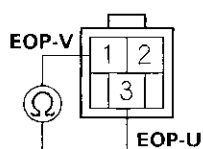
Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between ATFP control unit connector terminal No. 2 and the ATFP motor connector, then go to step 11.

10. Check for continuity between ATFP motor connector terminals No. 1 and No. 3.

ATFP MOTOR CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the ATFP control unit (see page 14-229), then go to step 11.

NO—Replace the ATFP (see page 14-228), then go to step 11.

11. Clear the DTC with the HDS.

12. Warm up the engine to normal operating temperature (the radiator fan comes on).

13. Drive the vehicle in the D position. Slow down and stop the wheels in auto idle stop.

14. Monitor the OBD status for P1903 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P1904: Open in Auxiliary Transmission Fluid Pump (ATFP) Motor W-phase Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Choose ATFP Motor Test in Miscellaneous Test Menu, and check that the DTC indicates.

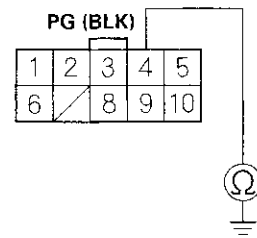
Are DTC P1902, P1903, and P1904 indicated simultaneously?

YES—Go to step 3.

NO—Only DTC P1904 is indicated, go to step 6. If no DTCs recur, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ATFP control unit and the ATFP motor.

3. Turn the ignition switch OFF.
4. Disconnect the ATFP control unit connector.
5. Check for continuity between ATFP control unit connector terminal No. 4 and body ground.

ATFP CONTROL UNIT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the ATFP control unit (see page 14-229), then go to step 11.

NO—Repair an open in the wire between ATFP control unit connector terminal No. 4 and ground (G501), or repair poor ground (G501), then go to step 11.

6. Turn the ignition switch OFF.
7. Disconnect the ATFP control unit connector and ATFP motor connector.
8. Inspect the connectors and connector terminals to be sure they are making good contact.

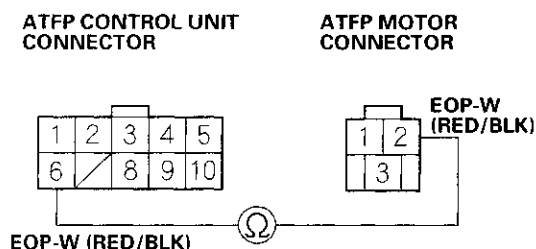
Are the connector terminals OK?

YES—Go to step 9.

NO—Repair the connector terminals, then go to step 9.



9. Check for continuity between ATFP control unit connector terminal No. 6 and ATFP motor connector terminal No. 2.



Wire side of female terminals

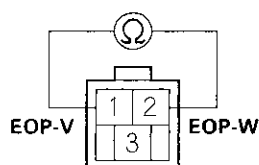
Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between ATFP control unit connector terminal No. 6 and the ATFP motor connector, then go to step 11.

10. Check for continuity between ATFP motor connector terminals No. 1 and No. 2.

ATFP MOTOR CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the ATFP control unit (see page 14-229), then go to step 11.

NO—Replace the ATFP (see page 14-228), then go to step 11.

11. Clear the DTC with the HDS.

12. Warm up the engine to normal operating temperature (the radiator fan comes on).

13. Drive the vehicle in the D position. Slow down and stop the wheels in auto idle stop.

14. Monitor the OBD status for P1904 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.

Automatic Transmission

DTC Troubleshooting (cont'd)

DTC P2797: Auxiliary Transmission Fluid Pump (ATFP) Motor Rotor or Auxiliary Transmission Fluid Pump Stuck

NOTE: Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.

1. Clear the DTC with the HDS.
2. Choose ATFP Motor Test in Miscellaneous Test Menu, and check that DTC P2797 recurs.

Is DTC P2797 indicated?

YES—Replace the ATFP (see page 14-228), then go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Clear the DTC with the HDS.
4. Warm up the engine to normal operating temperature (the radiator fan comes on).
5. Drive the vehicle in the D position. Slow down, and stop the wheels in auto idle stop for more than 10 seconds.
6. Monitor the OBD status for P2797 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 1 and recheck.



DTC P2798: Short in Auxiliary Transmission Fluid Pump (ATFP) Motor U-phase Circuit, V-phase Circuit, or W-phase Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

- Clear the DTC with the HDS.
- Choose ATFP Motor Test in Miscellaneous Test Menu, and do the test.
- Do the ATFP Motor Test again in about 10 seconds after finishing the preceding test.
- Do the ATFP Motor Test again in about 10 seconds after finishing the preceding test.
- Check that DTC2798 recurs.

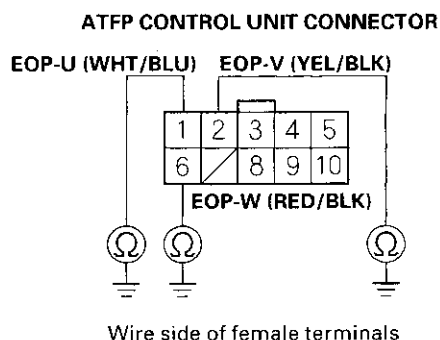
Is DTC P2798 indicated?

YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. ■

- Turn the ignition switch OFF.
- Disconnect ATFP control unit connector and ATFP motor connector.

- Check for continuity between ATFP control unit connector terminals No. 1 and body ground, between No. 2 and body ground, and between No. 6 and body ground.

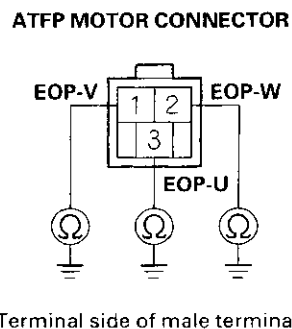


Is there continuity?

YES—Repair a short to ground in the wire(s) between ATFP control unit connector terminals No. 1, No. 2, and No. 6, and the ATFP motor, then go to step 10.

NO—Go to step 9.

- Check for continuity between ATFP motor connector terminals No. 1 and body ground, between No. 2 and body ground, and between No. 3 and body ground.



Is there continuity?

YES—Replace the ATFP (see page 14-228), then go to step 10.

NO—Replace the ATFP control unit (see page 14-229), then go to step 10.

(cont'd)

Automatic Transmission

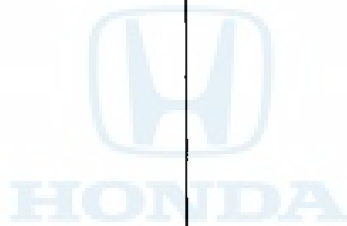
DTC Troubleshooting (cont'd)

10. Clear the DTC with the HDS.
11. Warm up the engine to normal operating temperature (the radiator fan comes on).
12. Choose ATFP Motor Test in Miscellaneous Test Menu, and do the test.
13. Do the ATFP Motor Test again in about 10 seconds after finishing the preceding test.
14. Do the ATFP Motor Test again in about 10 seconds after finishing the preceding test.
15. Monitor the OBD status for P2798 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

YES—The problem has been corrected. ■

NO—Return to step 6 and recheck.





DTC U1260: Problem in PCM-to-ATFP Control Unit Communication Circuit

NOTE:

- Record all freeze data and review General Troubleshooting Information (see page 14-4) before you troubleshoot.
- This code is caused by an electrical circuit problem and cannot be caused by a mechanical problem in the transmission.

1. Clear the DTC with the HDS.
2. Turn the ignition switch ON (II), wait for more than 10 seconds, then check that DTC U1260 recurs.

Is DTC U1260 indicated?

YES—Go to step 3.

NO—Intermittent failure, the system is OK at this time. ■

3. Turn the ignition switch OFF.
4. Check for loose or poor connections at PCM connector terminal D2 and ATFP control unit connector terminal No. 9.

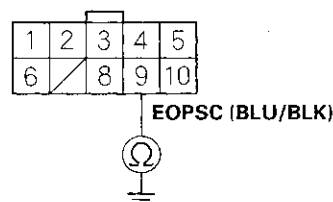
Is the connection OK?

YES—Go to step 5.

NO—Connect the connectors securely, return to step 1 then recheck.

5. Jump the SCS line with the HDS.
6. Disconnect PCM connector D (17P).
7. Disconnect ATFP control unit connector.
8. Check for continuity between ATFP control unit connector terminal No. 9 and body ground.

ATFP CONTROL UNIT CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire between PCM connector terminal D2 and the ATFP control unit, then go to step 18.

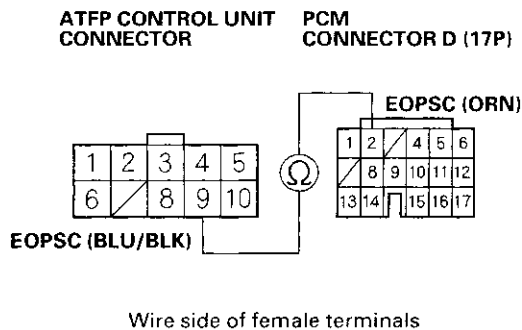
NO—Go to step 9.

(cont'd)

Automatic Transmission

DTC Troubleshooting (cont'd)

9. Check for continuity between PCM connector terminal D2 and ATFP control unit connector terminal No. 9.



Is there continuity?

YES—Go to step 10.

NO—Repair an open in the wire between PCM connector terminal D2 and the ATFP control unit, then go to step 18.

10. Remove the ATFP control unit, and substitute a known-good ATFP control unit.
11. Connect ATFP control unit connector, and PCM connector D (17P).
12. Clear the DTC with the HDS.
13. Turn the ignition switch ON (II), wait for more than 10 seconds, then check that DTC U1260 recurs.

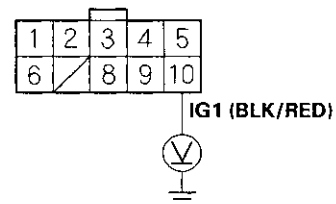
Is DTC U1260 indicated?

YES—Go to step 14.

NO—Replace the original ATFP control unit (see page 14-229), then go to step 18.

14. Turn the ignition switch OFF.
15. Disconnect ATFP control unit connector.
16. Turn the ignition switch ON (II).
17. Measure the voltage between ATFP connector terminal No. 10 and body ground.

ATFP CONTROL UNIT CONNECTOR



Is there battery voltage?

YES—Replace the PCM, go to step 18.

NO—Check for a blown No. 18 fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open in the wire between ATFP control unit connector terminal No. 10 and the under-dash fuse/relay box, then go to step 18.

18. Clear the DTC with the HDS.
19. Turn the ignition switch ON (II), and wait for more than 10 seconds.
20. Monitor the OBD status for U1260 in the DTCs/ Freeze Data in A/T Mode Menu for a pass/fail.

Does the result indicate a pass?

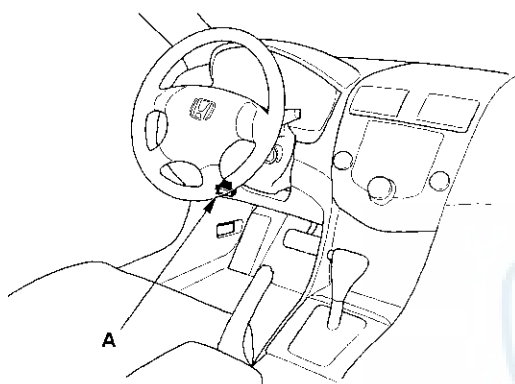
YES—The problem has been corrected. ■

NO—Return to step 4 and recheck.



Road Test

1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Apply the parking brake, and block both rear wheels. Start the engine, then shift to the D position while pressing the brake pedal. Press the accelerator pedal, and release it suddenly. The engine should not stall.
3. Repeat step 2 in all shift lever positions.
4. Connect the HDS to the DLC (A), and go to the A/T data list.



5. Test-drive the vehicle on a flat road in the D position. Check for abnormal noise and clutch slippage. While driving, check that the shift points occur at the proper speeds by monitoring the throttle position sensor voltage with the HDS and comparing your shift point speeds and voltage to those in the table. (The accelerator pedal position sensor voltage represents the throttle opening.)

Upshift: D Position

Accelerator pedal position sensor voltage:

1.02 V

2nd → 3rd	15—18 mph (24—29 km/h)
-----------	------------------------

3rd → 4th	24—28 mph (39—45 km/h)
-----------	------------------------

4th → 5th	40—44 mph (64—71 km/h)
-----------	------------------------

Lock-up ON	40—44 mph (64—71 km/h)
------------	------------------------

Accelerator pedal position sensor voltage:

2.58 V

1st → 2nd	22—25 mph (35—40 km/h)
-----------	------------------------

2nd → 3rd	39—43 mph (63—69 km/h)
-----------	------------------------

3rd → 4th	64—68 mph (103—109 km/h)
-----------	--------------------------

4th → 5th	94—98 mph (151—158 km/h)
-----------	--------------------------

Lock-up ON	94—98 mph (151—158 km/h)
------------	--------------------------

Fully-opened throttle

Accelerator pedal position sensor voltage:

4.65 V

1st → 2nd	36—39 mph (58—63 km/h)
-----------	------------------------

2nd → 3rd	63—66 mph (101—106 km/h)
-----------	--------------------------

3rd → 4th	97—101 mph (156—163 km/h)
-----------	---------------------------

4th → 5th	—
-----------	---

Lock-up ON	121—124 mph (195—200 km/h)
------------	----------------------------

(cont'd)

Automatic Transmission

Road Test (cont'd)

Downshift: D Position

Accelerator pedal position sensor voltage: 1.02 V	
Lock-up OFF	39—42 mph (63—68 km/h)
5th → 4th	34—37 mph (55—60 km/h)
4th → 3rd	23—25 mph (37—40 km/h)
3rd → 2nd	11—12 mph (18—19 km/h)
Fully-opened throttle	
Accelerator pedal position sensor voltage: 4.65 V	
Lock-up OFF	115—119 mph (185—192 km/h)
5th → 4th	123—127 mph (198—204 km/h)
4th → 3rd	82—86 mph (132—138 km/h)
3rd → 2nd	51—55 mph (82—89 km/h)
2nd → 1st	27—29 mph (43—47 km/h)

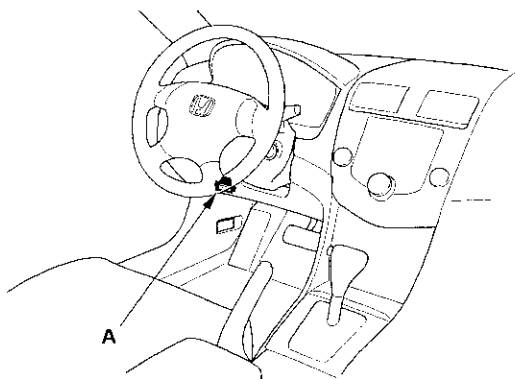
6. Drive the vehicle in 4th or 5th gear in the D position, then shift to the 2 position. The vehicle should immediately begin to slow down from engine braking.
7. Shift to the 1 position, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Also check that upshifts should not occur.
8. Shift to the 2 position, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage. Also check that upshifts and downshifts should not occur.
9. Shift to the R position, accelerate from a stop at full throttle, and check for abnormal noise and clutch slippage.
10. Park the vehicle on a slope (about 16 °), apply the brake, and shift into the P position. Release the brake; the vehicle should not move.

NOTE: Always use the brake to hold the vehicle when stopped on an incline in gear. Depending on the grade of the incline, the vehicle could roll backwards if the brake is released.



Stall Speed Test

1. Apply the parking brake, and block all four wheels.
2. Connect the HDS to the DLC (A), and go to the A/T data list.



3. Make sure the A/C switch is OFF.
4. After the engine has warmed up to normal operating temperature (the radiator fan comes on), shift to the 2 position.
5. Firmly press the brake pedal and accelerator pedal for 6 to 8 seconds, and note the engine speed. Do not move the shift lever while raising the engine speed.
6. Allow 2 minutes for cooling, then repeat the test in the D, 1, and R positions.

NOTE:

- Do not test stall speed for more than 10 seconds at a time.
- Stall speed tests should be used for diagnostic purposes only.
- Stall speed should be the same in the D, 2, 1, and R positions.
- Do not test stall speed with the A/T pressure gauges installed.

Stall Speed rpm

Specification: 1,900 rpm

Service Limit: 1,750—2,050 rpm

7. If the measurements are out of the service limit, problems and probable causes are listed in the table.

Problem	Probable causes
Stall speed rpm high in the D, 2, 1, and R positions	<ul style="list-style-type: none">• Low fluid level• ATF pump output low• Clogged ATF strainer• Regulator valve stuck• Slipping clutch
Stall speed rpm high in the 1 position	Slippage of 1st clutch or 1st gear one-way clutch
Stall speed rpm high in the 2 position	Slippage of 2nd clutch
Stall speed rpm high in the R position	Slippage of 5th clutch
Stall speed rpm low in the D, 2, 1, and R positions	<ul style="list-style-type: none">• Engine output low• Engine throttle valve closed• Torque converter one-way clutch slipping

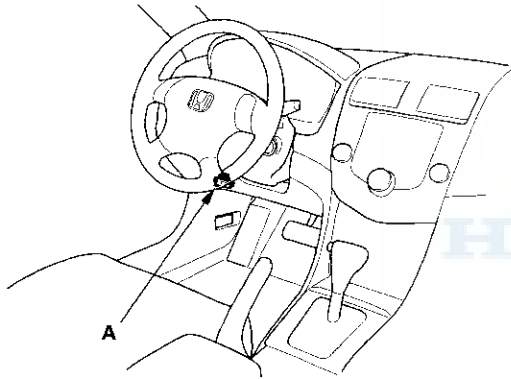
Automatic Transmission

Pressure Test

Special Tools Required

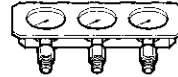
- A/T clutch pressure gauge set
07406-0020400 or 07406-0020401
- A/T pressure hose, 2,210 mm 07MAJ-PY4011A
- A/T pressure hose adapter 07MAJ-PY40120

1. Before testing, be sure the transmission fluid is filled to the proper level.
2. Lift the vehicle up on a lift or apply the parking brake, block rear wheels, and raise the front of the vehicle. Make sure it is securely supported.
3. Allow the front wheels to rotate freely.
4. Remove the splash shield.
5. Warm up the engine (the radiator fan comes on). Turn off the engine, and connect the HDS to the DLC (A).

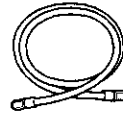


6. Connect the oil pressure gauge to the line pressure inspection hole (A). Do not allow dust or other foreign particles to enter the hole while connecting the gauge.

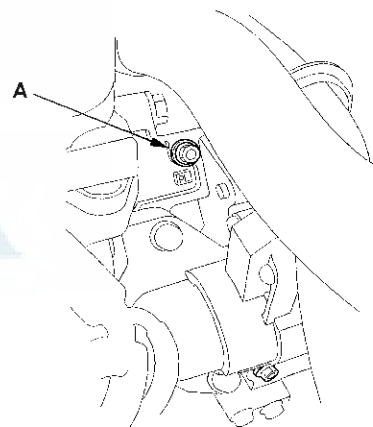
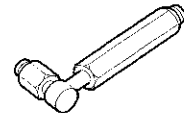
**A/T OIL PRESSURE
GAUGE SET W/PANEL**
07406-0020400 or
07406-0020401



**A/T PRESSURE
HOSE, 2,210 mm**
07MAJ-PY4011A
(4 required)



**A/T PRESSURE
HOSE ADAPTER**
07MAJ-PY40120
(4 required)



7. Start the engine, and run it at 2,000 rpm in the P or N position.
8. Measure the line pressure at the line pressure inspection hole (A).

NOTE: Higher pressure may be indicated if measurements are made in any shift lever position other than P or N.

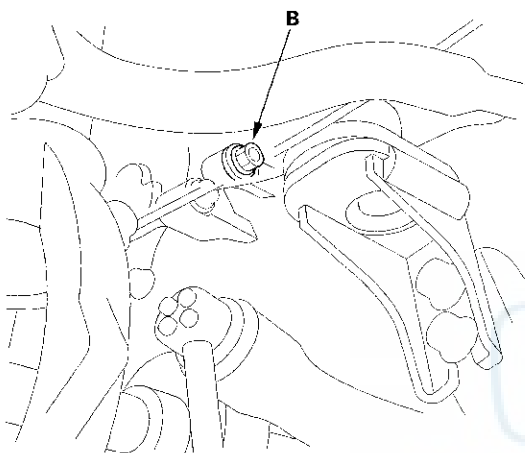
Pressure	Fluid Pressure	
	Standard	Service Limit
Line (A)	900—960 kPa (9.2— 9.8 kgf/cm ² , 130—140 psi)	850 kPa (8.7 kgf/cm ² , 120 psi)



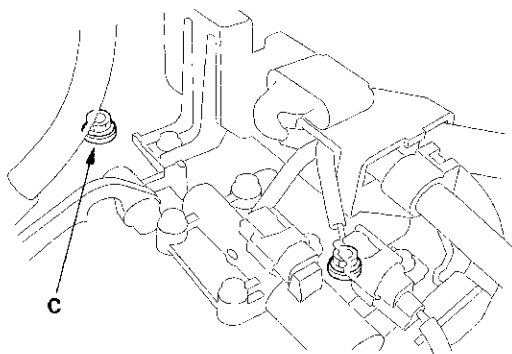
9. Turn the engine off, then disconnect the oil pressure gauge from the line pressure inspection hole.

10. Install the sealing bolt to the line pressure inspection hole with the new sealing washer, and tighten the bolt to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse the old sealing washer.

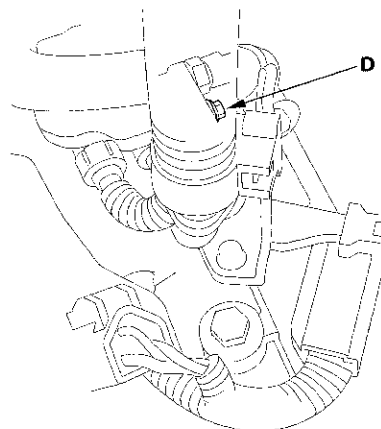
11. Connect the oil pressure gauge to the 1st clutch pressure inspection hole (B).



12. Remove the intake air duct and air cleaner housing, and connect the oil pressure gauge to the 1st-hold clutch pressure inspection hole (C).



13. Connect the oil pressure gauge to the 2nd clutch pressure inspection hole (D). Then temporarily install the air cleaner housing and intake air duct.



14. Start the engine, and shift to the 1 position. Measure the 1st clutch pressure at the 1st clutch pressure inspection hole (B) and the 1st-hold clutch pressure at the 1st-hold clutch pressure inspection hole (C) while holding the engine speed at 2,000 rpm.

15. Shift to the 2 position, and measure the 2nd clutch pressure at the 2nd clutch pressure inspection hole (D) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
1st clutch (B)	890—970 kPa (9.1—	840 kPa (8.6 kgf/cm ² ,
2nd clutch (D)	9.9 kgf/cm ² , 130—140 psi)	120 psi)
1st-hold clutch (C)	789—868 kPa (8.05— 8.85 kgf/cm ² , 114—126 psi)	740 kPa (7.55 kgf/cm ² , 107 psi)

16. Turn the engine off, then disconnect the oil pressure gauges from the 1st clutch pressure, 1st-hold clutch pressure, and 2nd clutch pressure inspection holes.

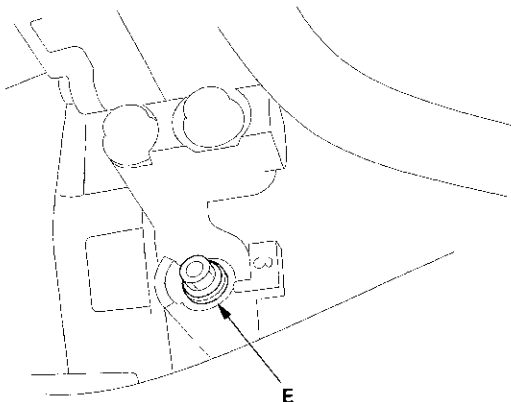
17. Install the sealing bolts in the 1st clutch pressure, 1st-hold clutch pressure, and 2nd clutch pressure inspection holes with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse old sealing washers.

(cont'd)

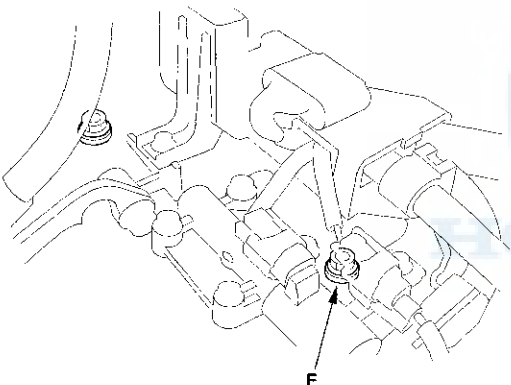
Automatic Transmission

Pressure Test (cont'd)

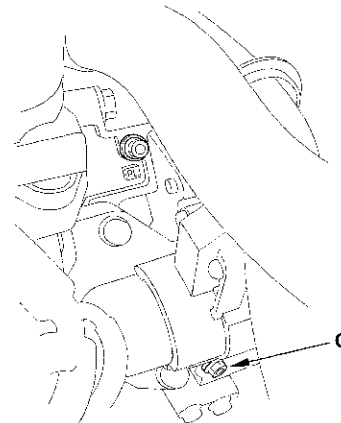
18. Connect the oil pressure gauge to the 3rd clutch pressure inspection hole (E).



19. Connect the oil pressure gauge to the 4th clutch pressure inspection hole (F).



20. Connect the oil pressure gauge to the 5th clutch pressure inspection hole (G).



21. Start the engine with the transmission in the P position while pressing the brake pedal.
22. Shift to the 2 position, and release the brake pedal; the transmission is in 2nd gear.
23. Press the accelerator pedal very slowly so that the engine speed increases to 2,000 rpm in 10 seconds, then hold the accelerator.
24. Hold in the 2 position at 2,000 rpm, shift into N for 1 second, then to the D3 position; the transmission will shift to 3rd gear, and measure the 3rd clutch pressure at the 3rd clutch pressure inspection hole (E) while holding the engine speed at 2,000 rpm.
25. Shift to the D position, and measure the 4th clutch pressure at the 4th clutch pressure inspection hole (F) while holding the engine speed at 2,000 rpm, then in about 15 seconds, the transmission will shift to the 5th gear.
26. Measure the 5th clutch pressure at the 5th clutch pressure inspection hole (G) while holding the engine speed at 2,000 rpm.

Pressure	Fluid Pressure	
	Standard	Service Limit
3rd clutch (E)	890—970 kPa (9.1—	840 kPa
4th clutch (F)	9.9 kgf/cm ² , 130—140 psi)	(8.6 kgf/cm ² , 120 psi)
5th clutch (G)		



27. Bring the engine back to an idle, then apply the brake pedal to stop the wheels from rotating.
28. Shift to the R position, then release the brake pedal. Raise the engine speed to 2,000 rpm, and measure the 5th clutch pressure at the 5th clutch pressure inspection hole (G).

Pressure	Fluid Pressure	
	Standard	Service Limit
5th clutch (G) in R	890—970 kPa (9.1—9.9 kgf/cm ² , 130—140 psi)	840 kPa (8.6 kgf/cm ² , 120 psi)

29. Turn the engine off, then disconnect the oil pressure gauges from the 3rd, 4th, and 5th clutch pressure inspection holes.
30. Install the sealing bolts in the 3rd, 4th, and 5th clutch pressure inspection holes with new sealing washers, and tighten the bolts to 18 N·m (1.8 kgf·m, 13 lbf·ft). Do not reuse old sealing washers.

31. If the measurements are out of the service limit, problems and probable causes are listed in the table.

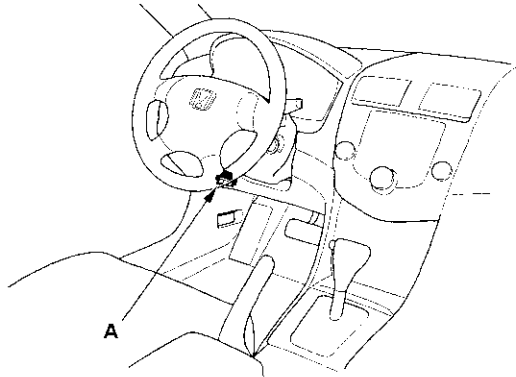
Problem	Probable causes
No or low line pressure	<ul style="list-style-type: none">• Torque converter• ATF pump• Regulator valve• Torque converter check valve• Low fluid level• Clogged ATF strainer
No or low 1st clutch pressure	<ul style="list-style-type: none">• 1st clutch• O-rings
No or low 2nd clutch pressure	<ul style="list-style-type: none">• 2nd clutch, or 1st clutch• O-rings
No or low 3rd clutch pressure	<ul style="list-style-type: none">• 3rd clutch, or 1st clutch• O-rings
No or low 4th clutch pressure	<ul style="list-style-type: none">• 4th clutch, or 1st clutch• O-rings
No or low 5th clutch pressure	<ul style="list-style-type: none">• 5th clutch, or 1st clutch• O-rings
No or low 5th clutch pressure in the R position	<ul style="list-style-type: none">• Servo valve• 5th clutch• O-rings
No or low 1st-hold clutch pressure	<ul style="list-style-type: none">• 1st-hold clutch, or 1st clutch• O-rings

32. Install the air cleaner housing and intake air duct.
33. Install the splash shield.

Automatic Transmission

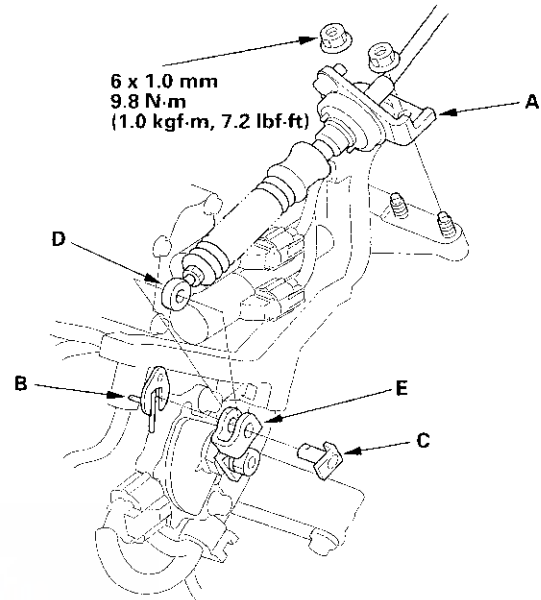
Shift Solenoid Valve Test and Replacement

1. Connect the HDS to the DLC (A).



2. Choose Shift Solenoid A, B, C, and D in Miscellaneous Test Menu on the HDS.
3. Check that the shift solenoid valve A, B, C, and D operate with the HDS. A clicking sound should be heard.
 - If a clicking sound is heard, the valves are OK.
 - If no clicking sound is heard, go to step 4.
4. Shift solenoid test has finished if the tests are OK. If no sound is heard, remove the shift solenoid valve, and test the solenoid valve.
5. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
6. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
7. Remove the battery hold-down bracket, and remove the battery and battery tray.
8. Remove the intake air duct and air cleaner housing.
9. Remove the battery base.

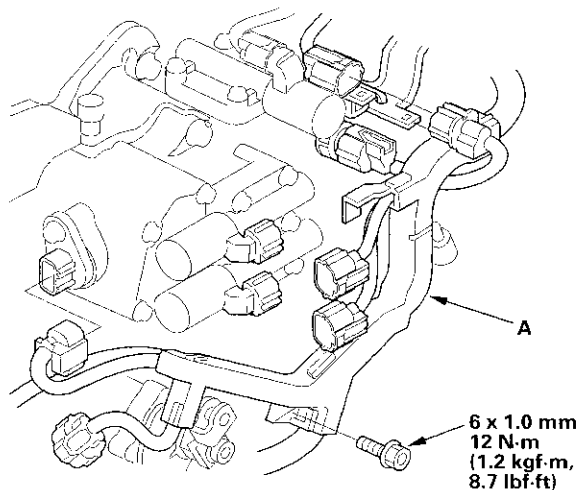
10. Remove the nuts securing the shift cable bracket (A).



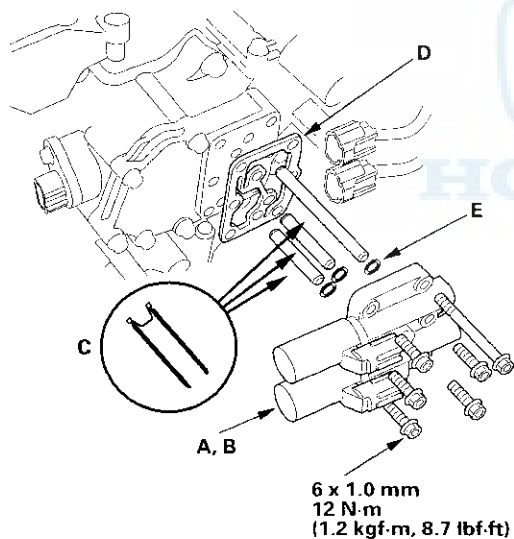
11. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
12. Disconnect the connectors from the A/T clutch pressure control solenoid valve A, B, solenoid harness, transmission range switch, ATF temperature sensor, output shaft (countershaft) speed sensor, input shaft (mainshaft) speed sensor, 3rd clutch transmission fluid pressure switch, and 4th clutch transmission fluid pressure switch.



13. Remove the bolt securing the harness cover (A).

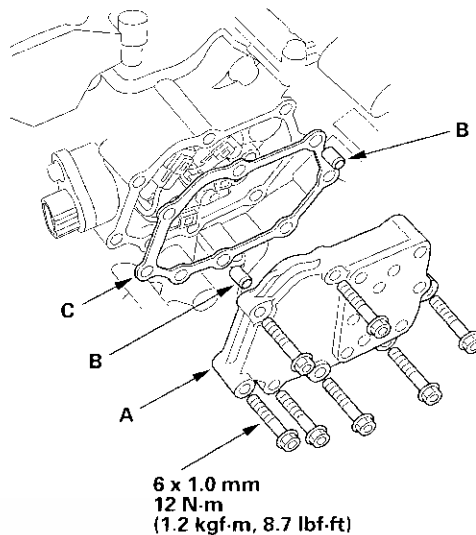


14. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), and gasket (D).



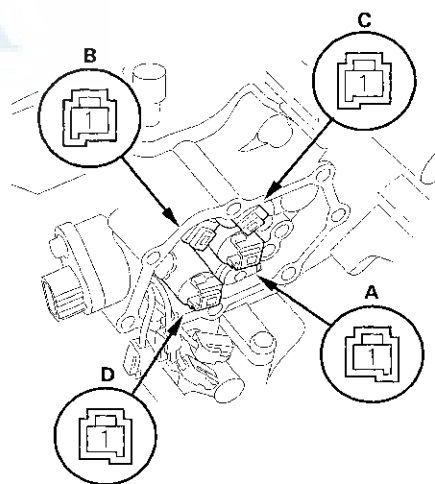
15. Replace the gasket and O-rings (E) with new ones when installing the A/T clutch pressure control solenoid valve A and B.

16. Remove the solenoid valve cover (A), dowel pins (B), and gasket (C).



17. Replace the gasket with a new one when installing the solenoid cover.

18. Disconnect each solenoid valve connector.



(cont'd)

Automatic Transmission

Shift Solenoid Valve Test and Replacement (cont'd)

19. Measure the resistance between each connector terminal of the shift solenoid valve and body ground.

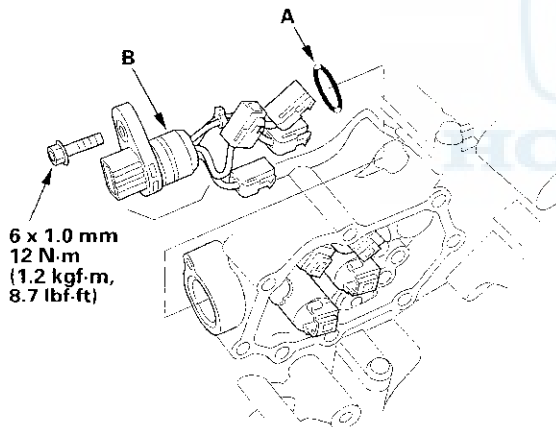
Standard: 12–25 Ω

- Replace the solenoid valve if the resistance is out of standard.
- If the resistance is within the standard, go to step 20.

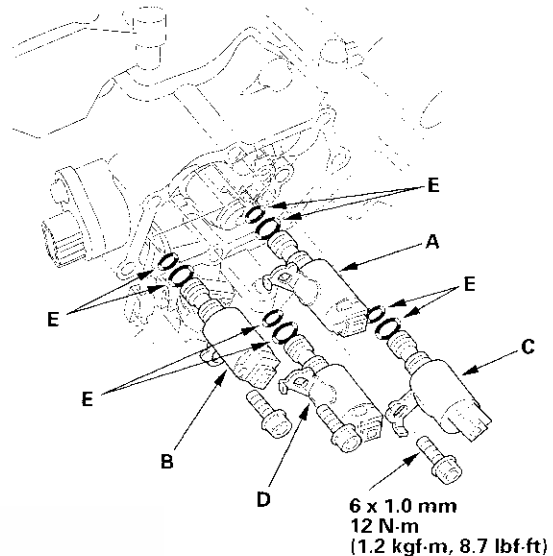
20. Connect the battery negative terminal to body ground, and connect the battery positive terminal to each solenoid terminal individually.

- If a clicking sound is heard, go to step 21 and replace the solenoid harness.
- If no clicking sound is heard, go to step 22 and replace the shift solenoid valve.

21. Remove the solenoid harness, and install a new O-ring (A) on the solenoid harness connector (B), and install the connector in the transmission housing.



22. Remove the mounting bolts, then remove the solenoid valves.



23. Install new O-rings (E) on each solenoid valve.

NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.

24. Install shift solenoid valve D (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

NOTE: Do not hold the solenoid valve connector to install the solenoid valve. Be sure to hold the solenoid valve body.

25. Install shift solenoid valve A (black connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.

26. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the bracket of shift solenoid valve A.

NOTE: Do not install shift solenoid valve C before installing shift solenoid valve A. If shift solenoid valve C is installed before installing shift solenoid valve A, it may damage the hydraulic control system.

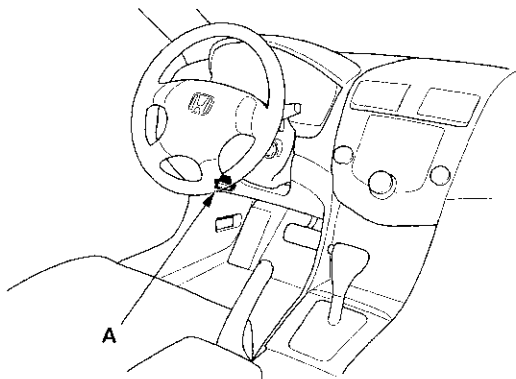


27. Install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; make sure the mounting bracket contacts the accumulator body.
28. Connect the YEL harness terminal to shift solenoid valve A, the GRN harness terminal to shift solenoid valve C, the RED harness terminal to shift solenoid valve B, and the ORN harness terminal to shift valve D.
29. Install the shift solenoid valve cover, dowel pins, and a new gasket.
30. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
31. Install A/T clutch pressure control solenoid valve A and B.
32. Secure the harness cover with the bolt.
33. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.
34. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
35. Secure the shift cable bracket.
36. Install the battery base.
37. Install the intake air duct and air cleaner housing.
38. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
39. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
40. Do the power window control unit reset procedure (see page 22-200).
41. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.

Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve A Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid A in Miscellaneous Test Menu on the HDS.

3. Test the A/T clutch pressure control solenoid valve A with the HDS.

- If the valve tests OK, the test is complete. Disconnect the HDS.
- If the valve does not test OK, follow the instructions on the HDS.
- If the valve does not test OK, and the HDS does not determine the cause, go to step 4.

4. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.

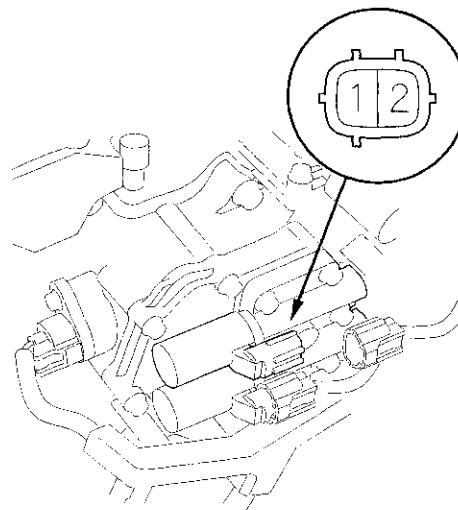
5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.

6. Remove the battery hold-down bracket, and remove the battery and battery tray.

7. Remove the intake air duct and air cleaner housing.

8. Remove the battery base.

9. Disconnect the A/T clutch pressure control solenoid valve A connector.



10. Measure the A/T clutch pressure control solenoid valve A resistance at the connector terminals.

Standard: 3—10 Ω

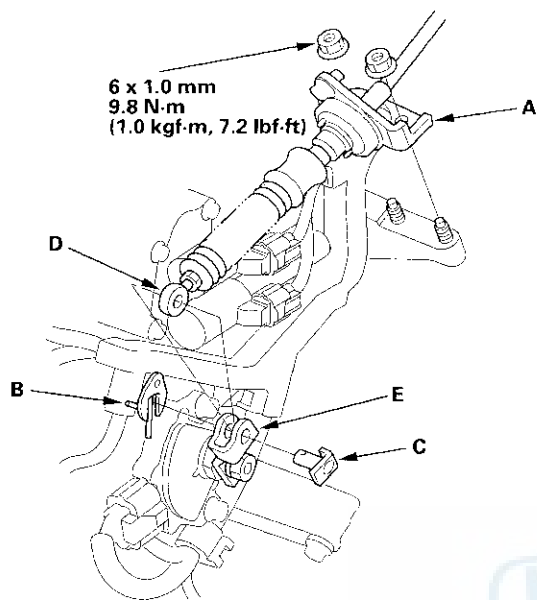
- If the resistance is out of standard, replace the A/T clutch pressure control solenoid valve A (see page 14-216).
- If the resistance is within the standard, go to step 11.

11. Connect the negative battery terminal to the solenoid valve A connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1.

- If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
- If no clicking sound is heard, go to step 12.

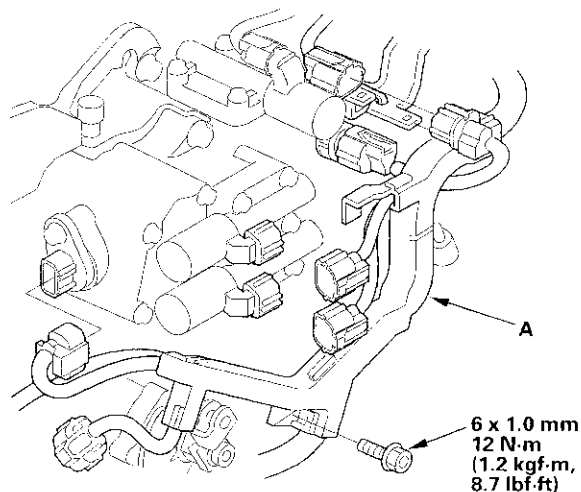


12. Remove the nuts securing the shift cable bracket (A).

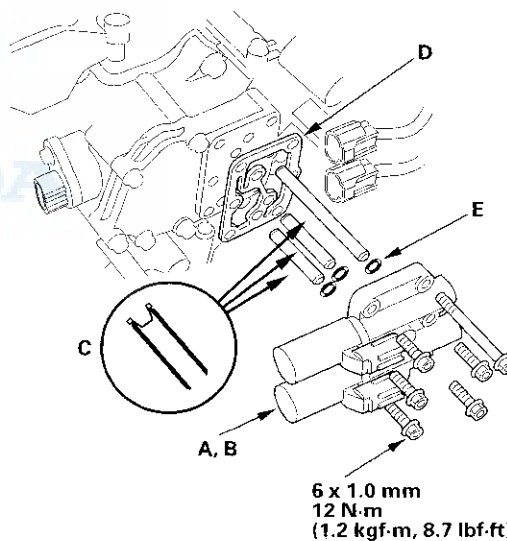


13. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
14. Disconnect the connectors from the A/T clutch pressure control solenoid valve A, B, solenoid harness, transmission range switch, ATF temperature sensor, output shaft (countershaft) speed sensor, input shaft (mainshaft) speed sensor, 3rd clutch transmission fluid pressure switch, and 4th clutch transmission fluid pressure switch.

15. Remove the bolt securing the harness cover (A).



16. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), and gasket (D).



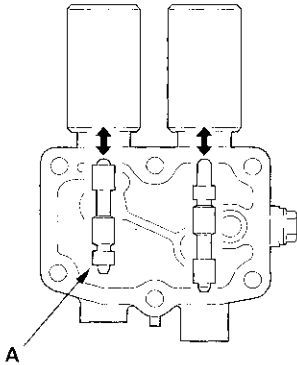
17. Check the fluid passage of the solenoid valve for contamination.

(cont'd)

Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve A Test (cont'd)

18. Connect the negative battery terminal to A/T clutch pressure control solenoid valve A connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1. Make sure the A/T clutch pressure control solenoid valve A moves.



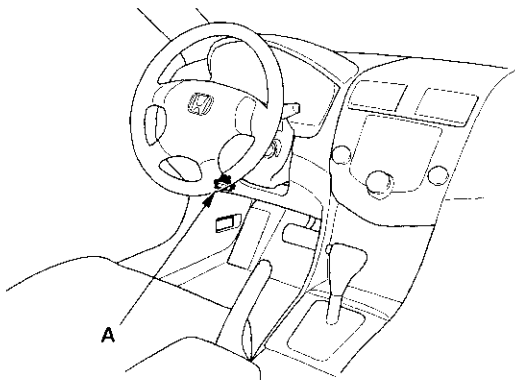
19. Disconnect one of the battery terminals and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valve A and B.
20. Clean the mounting surfaces and the fluid passages of the solenoid valve body and the solenoid valve cover.
21. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
22. Install the A/T clutch pressure control solenoid valve A and B.
23. Secure the harness cover with the bolt.
24. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.
25. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

26. Secure the shift cable bracket.
27. Install the battery base.
28. Install the intake air duct and air cleaner housing.
29. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
30. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
31. Do the power window control unit reset procedure (see page 22-200).
32. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.



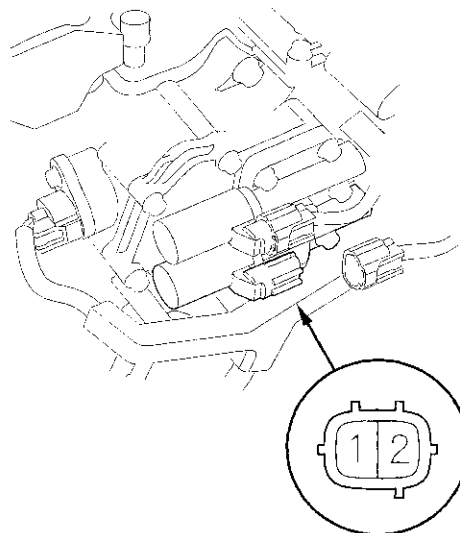
A/T Clutch Pressure Control Solenoid Valve B Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid B in Miscellaneous Test Menu on the HDS.
3. Test the A/T clutch pressure control solenoid valve B with the HDS.
 - If the valve tests OK, the test is complete. Disconnect the HDS.
 - If the valve does not test OK, follow the instructions on the HDS.
 - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.
4. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
5. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
6. Remove the battery hold-down bracket, and remove the battery and battery tray.
7. Remove the intake air duct and air cleaner housing.
8. Remove the battery base.

9. Disconnect the A/T clutch pressure control solenoid valve B connector.



10. Measure the A/T clutch pressure control solenoid valve B resistance at the connector terminals.

Standard: 3—10 Ω

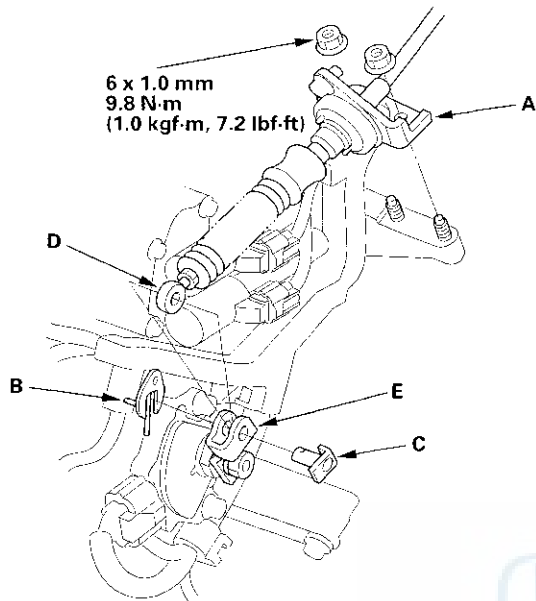
- If the resistance is out of standard, replace the A/T clutch pressure control solenoid valve B (see page 14-216).
 - If the resistance is within the standard, go to step 11.
11. Connect the negative battery terminal to the solenoid valve B connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1.
 - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
 - If no clicking sound is heard, go to step 12.

(cont'd)

Automatic Transmission

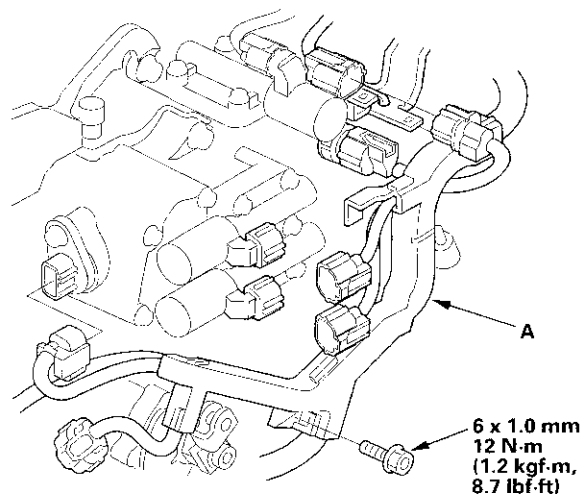
A/T Clutch Pressure Control Solenoid Valve B Test (cont'd)

12. Remove the nuts securing the shift cable bracket (A).

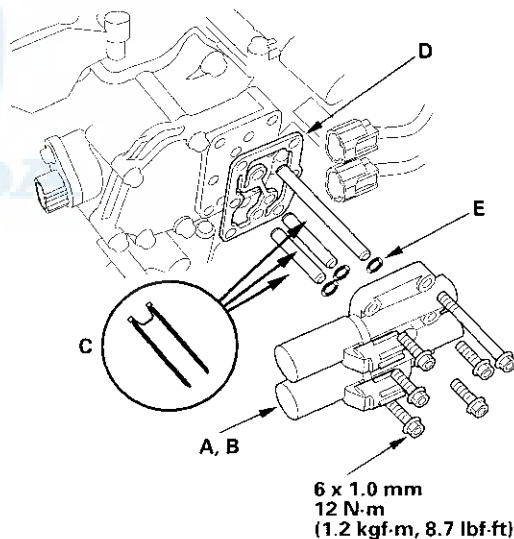


13. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
14. Disconnect the connectors from the A/T clutch pressure control solenoid valve A, B, solenoid harness, transmission range switch, ATF temperature sensor, output shaft (countershaft) speed sensor, input shaft (mainshaft) speed sensor, 3rd clutch transmission fluid pressure switch, and 4th clutch transmission fluid pressure switch.

15. Remove the bolt securing the harness cover (A).



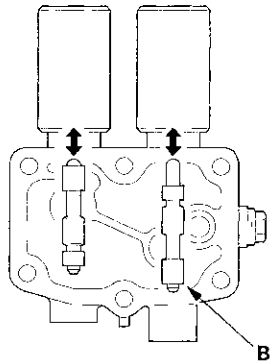
16. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), and gasket (D).



17. Check the fluid passage of the solenoid valve for contamination.



18. Connect the negative battery terminal to A/T clutch pressure control solenoid valve B connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1. Make sure the A/T clutch pressure control solenoid valve B moves.



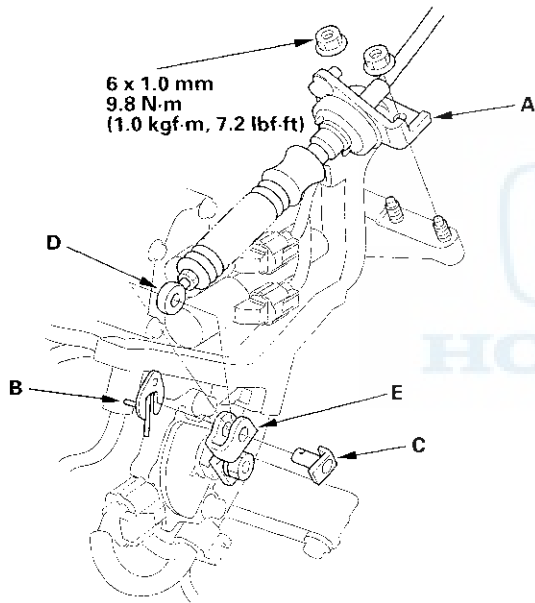
19. Disconnect one of the battery terminals and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valve A and B.
20. Clean the mounting surfaces and the fluid passages of the solenoid valve body and the solenoid valve cover.
21. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
22. Install the A/T clutch pressure control solenoid valve A and B.
23. Secure the harness cover with the bolt.
24. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.
25. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

26. Secure the shift cable bracket.
27. Install the battery base.
28. Install the intake air duct and air cleaner housing.
29. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
30. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
31. Do the power window control unit reset procedure (see page 22-200).
32. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.

Automatic Transmission

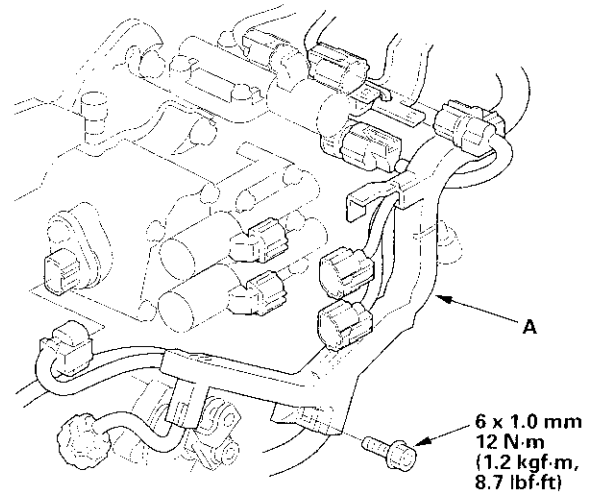
A/T Clutch Pressure Control Solenoid Valve A and B Replacement

1. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery and battery tray.
4. Remove the intake air duct and air cleaner housing.
5. Remove the battery base.
6. Remove the nuts securing the shift cable bracket (A).

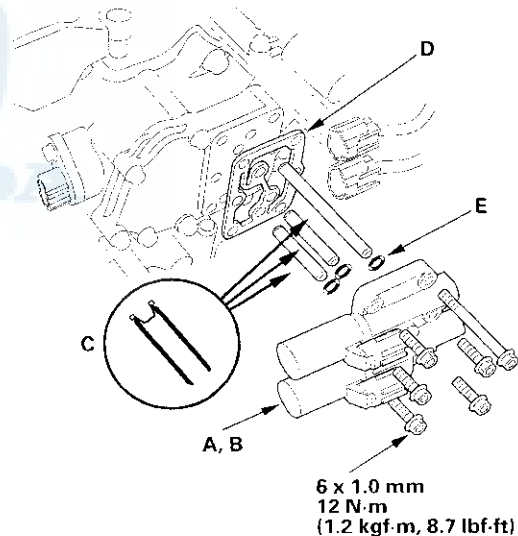


7. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
8. Disconnect the connectors from the A/T clutch pressure control solenoid valve A, B, solenoid harness, transmission range switch, ATF temperature sensor, output shaft (countershaft) speed sensor, input shaft (mainshaft) speed sensor, 3rd clutch transmission fluid pressure switch, and 4th clutch transmission fluid pressure switch.

9. Remove the bolt securing the harness cover (A).



10. Remove the A/T clutch pressure control solenoid valve A and B, ATF pipes (C), and gasket (D).



11. Check the fluid passage of the A/T clutch pressure control solenoid valve for dust and dirt, and clean the passage if necessary.

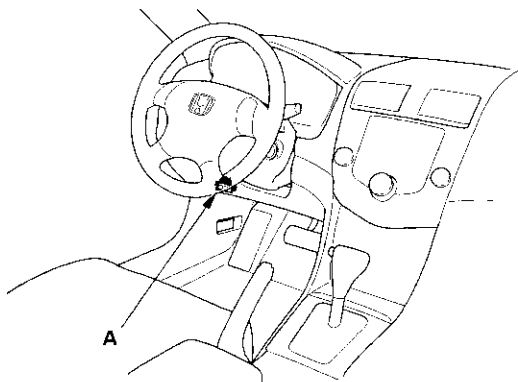


12. Install the new solenoid valve body gasket on the solenoid valve cover, and install the ATF pipes with the filter end in the transmission housing. Install new O-rings over the ATF pipes.
13. Install the A/T clutch pressure control solenoid valve A and B.
14. Secure the harness cover with the bolt.
15. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connectors securely.
16. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
17. Secure the shift cable bracket.
18. Install the battery base.
19. Install the intake air duct and air cleaner housing.
20. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
21. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
22. Do the power window control unit reset procedure (see page 22-200).
23. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.

Automatic Transmission

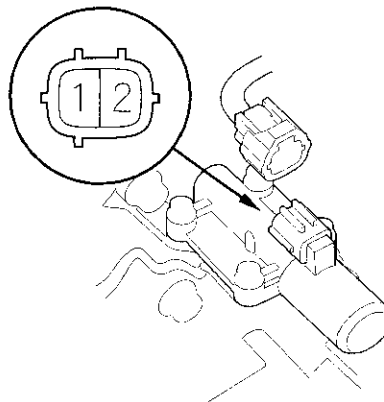
A/T Clutch Pressure Control Solenoid Valve C Test

1. Connect the HDS to the DLC (A).



2. Choose Clutch Pressure Control (Linear) Solenoid C in Miscellaneous Test Menu on the HDS.
3. Test the A/T clutch pressure control solenoid valve C with the HDS.
 - If the valve tests OK, the test is complete. Disconnect the HDS.
 - If the valve does not test OK, follow the instructions on the HDS.
 - If the valve does not test OK, and the HDS does not determine the cause, go to step 4.
4. Remove the intake air duct and air cleaner housing.

5. Disconnect the A/T clutch pressure control solenoid valve C connector.



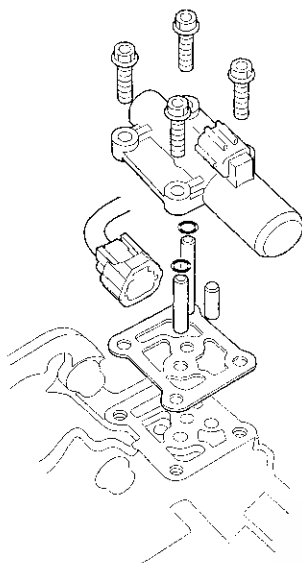
6. Measure the A/T clutch pressure control solenoid valve C resistance at the connector terminals.

Standard: 3—10 Ω

- If the resistance is out of standard, replace the A/T clutch pressure control solenoid valve C (see page 14-221).
 - If the resistance is within the standard, go to step 7.
7. Connect the negative battery terminal to the solenoid valve C connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1.
 - If a clicking sound is heard, the valve is OK. Reconnect the connector, and install all removed parts.
 - If no clicking sound is heard, go to step 8.

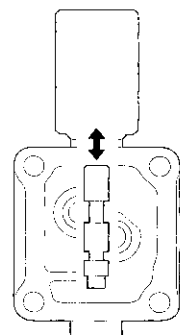


8. Remove the A/T clutch pressure control solenoid valve C.



9. Remove the ATF joint pipes, O-rings, ATF pipe, and gasket.
10. Check the fluid passage of the solenoid valve for contamination.

11. Connect the negative battery terminal to A/T clutch pressure control solenoid valve C connector terminal No. 2, and connect the positive battery terminal to the connector terminal No. 1. Make sure the A/T clutch pressure control solenoid valve C moves.



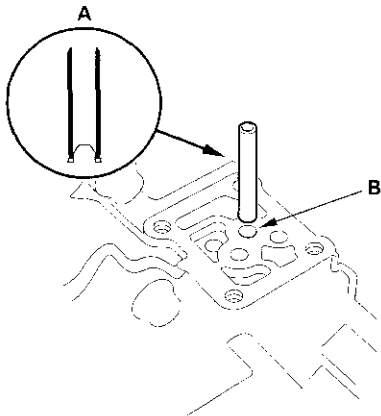
12. Disconnect one of the battery terminals and check the valve movement at the fluid passage in the valve body mounting surface. If the valve binds or moves sluggishly, or if the solenoid valve does not operate, replace the A/T clutch pressure control solenoid valve C.
13. Clean the mounting surfaces and the fluid passages of the solenoid valve body and the transmission housing.

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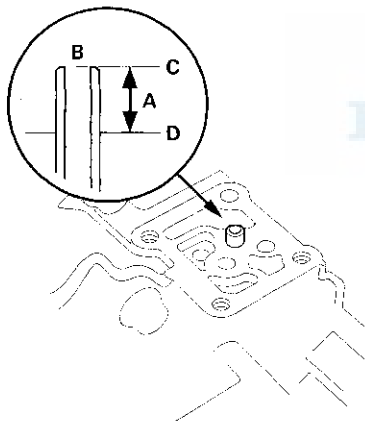
Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve C Test (cont'd)

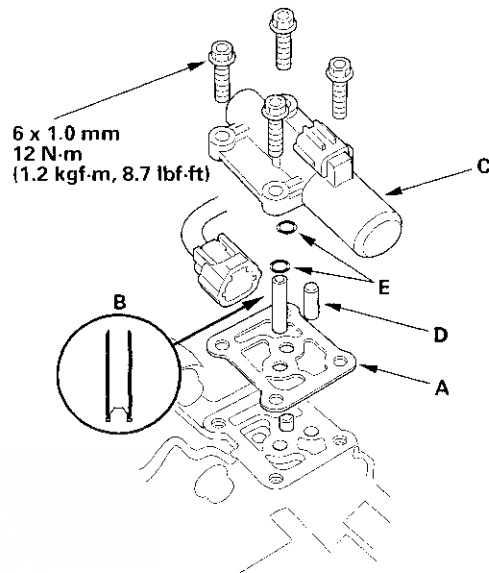
14. Install the 8 x 53 mm ATF joint pipe (A) with the filter side into its mounting hole (B).



15. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.



16. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter side into the transmission housing and 8 x 25.2 mm ATF pipe (D).

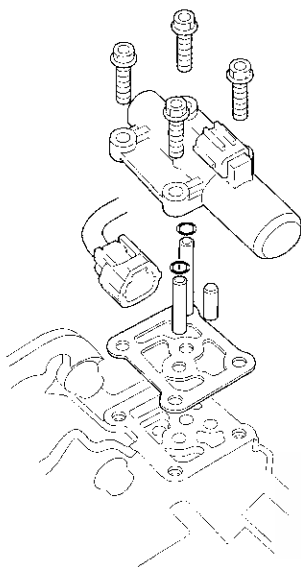


17. Install new O-rings (E) over the ATF joint pipes.
18. Install the A/T clutch pressure control solenoid valve C.
19. Install the intake air duct and air cleaner housing.



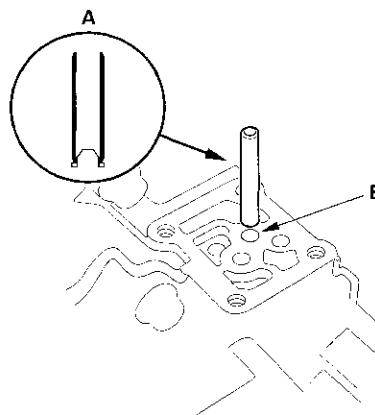
A/T Clutch Pressure Control Solenoid Valve C Replacement

1. Remove the intake air duct and air cleaner housing.
2. Disconnect the A/T clutch pressure control solenoid valve connector.

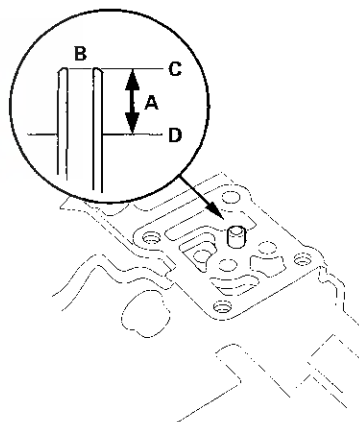


3. Remove the A/T clutch pressure control solenoid valve C.
4. Remove the ATF joint pipes, O-rings, ATF pipe, and gasket.
5. Clean the mounting surfaces and the fluid passages of the solenoid valve body and the transmission housing.

6. Install the 8 x 53 mm ATF joint pipe (A) with the filter side into its mounting hole (B).



7. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), push the pipe until it bottoms in the accumulator body.

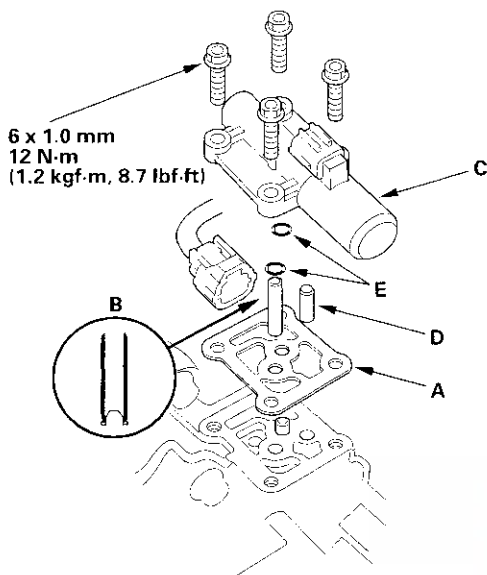


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Automatic Transmission

A/T Clutch Pressure Control Solenoid Valve C Replacement (cont'd)

8. Install the new gasket (A) on the transmission housing, and install the 8 x 34.5 mm ATF joint pipe (B) with the filter side into the transmission housing and 8 x 25.2 mm ATF pipe (D).

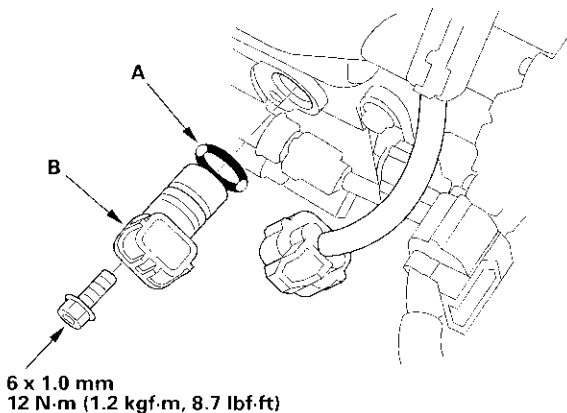


9. Install new O-rings (E) over the ATF joint pipes.
10. Install the A/T clutch pressure control solenoid valve C.
11. Install the intake air duct and air cleaner housing.



Input Shaft (Mainshaft) Speed Sensor Replacement

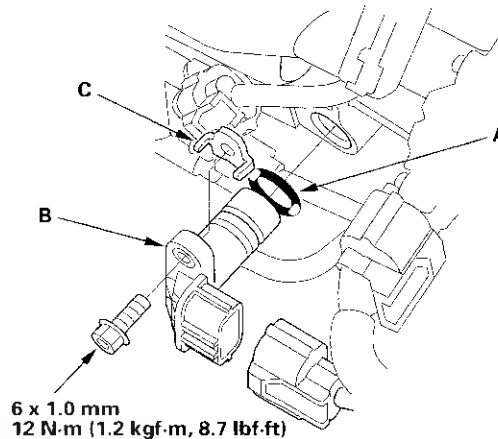
1. Disconnect the input shaft (mainshaft) speed sensor connector, and remove the input shaft (mainshaft) speed sensor.



2. Install the new O-ring (A) on the new input shaft (mainshaft) speed sensor (B), then install the input shaft (mainshaft) speed sensor in the transmission housing.
3. Check the connector for rust, dirt, or oil, then connect the connector securely.

Output Shaft (Countershaft) Speed Sensor Replacement

1. Disconnect the output shaft (countershaft) speed sensor connector, and remove the output shaft (countershaft) speed sensor.

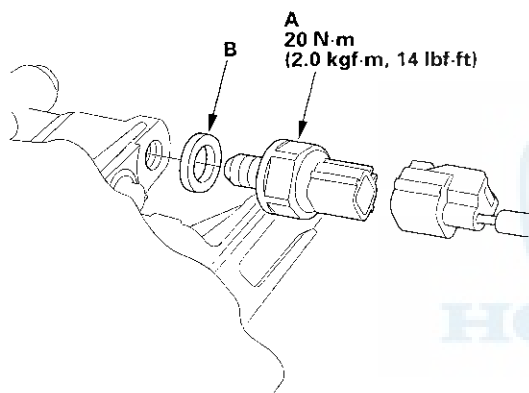


2. Install the new O-ring (A) on the new output shaft (countershaft) speed sensor (B), then install the output shaft (countershaft) speed sensor and sensor washer (C) in the transmission housing.
3. Check the connector for rust, dirt, or oil, then connect the connector securely.

Automatic Transmission

2nd Clutch Transmission Fluid Pressure Switch Replacement

1. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery and battery tray.
4. Remove the intake air duct and air cleaner housing.
5. Remove the bolts securing the under-hood fuse/relay box, and move the fuse/relay box.
6. Disconnect the 2nd clutch transmission fluid pressure switch connector, and remove the switch.



7. Make sure there is no water, oil, dust, or foreign particles inside the connector.
8. Install the new 2nd clutch transmission fluid pressure switch (A) and a new sealing washer (B), and tighten the switch.
9. Connect the connector securely.
10. Install the intake air duct and air cleaner housing.
11. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
12. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.

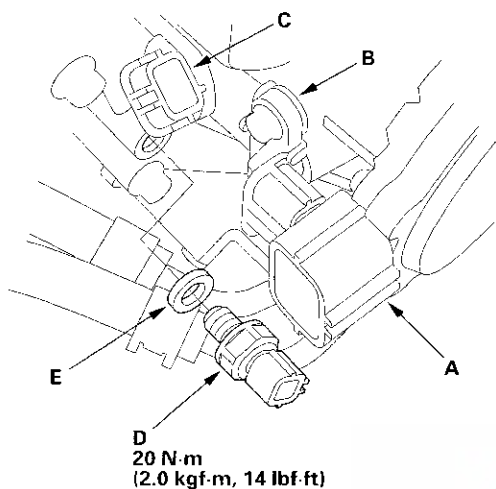
13. Do the power window control unit reset procedure (see page 22-200).

14. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.



3rd Clutch Transmission Fluid Pressure Switch Replacement

1. Disconnect the connectors from the transmission range switch (A), the output shaft (countershaft) speed sensor (B), the input shaft (mainshaft) speed sensor (C), and the 3rd clutch transmission fluid pressure switch (D).

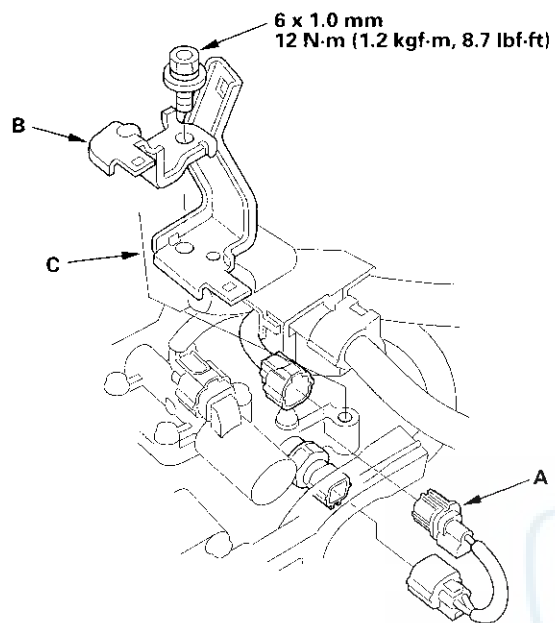


2. Remove the 3rd clutch transmission fluid pressure switch.
3. Make sure there is no water, oil, dust, or foreign particles inside the connector.
4. Install the new 3rd clutch transmission fluid pressure switch and a new sealing washer (E), and tighten the switch.
5. Connect the connectors securely.

Automatic Transmission

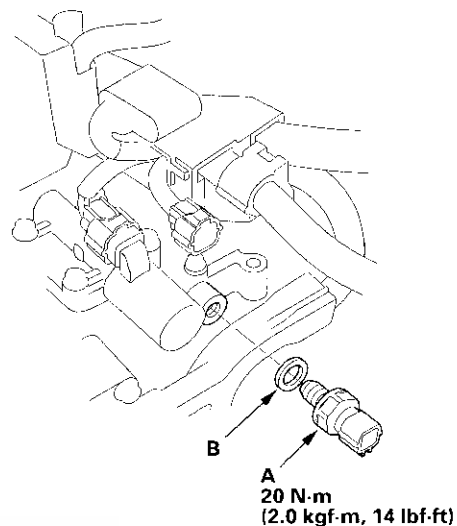
4th Clutch Transmission Fluid Pressure Switch Replacement

1. Remove the intake air duct and air cleaner housing.
2. Disconnect the 4th clutch transmission fluid pressure switch harness connectors (A).



3. Remove the bolt securing the connector bracket, and remove the connector bracket (B) and harness clamp bracket (C).
4. Remove the 4th clutch transmission fluid pressure switch.

5. Make sure there is no water, oil, dust, or foreign particles inside the connector.

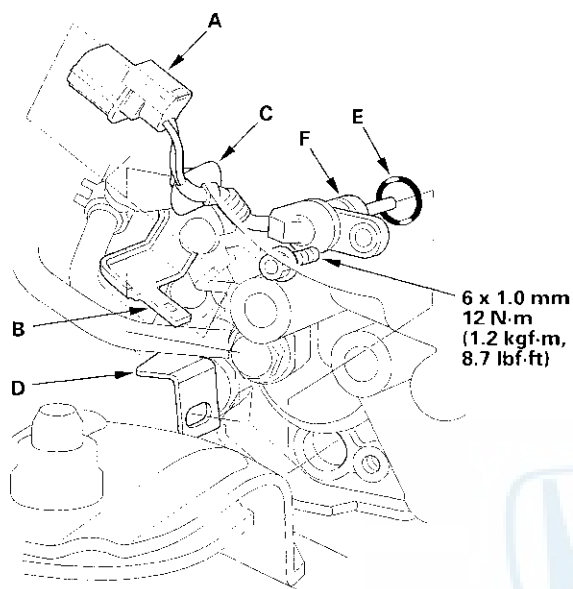


6. Install the new 4th clutch transmission fluid pressure switch (A) and a new sealing washer (B), and tighten the switch.
7. Install the harness clamp bracket and connector bracket with the mounting bolt.
8. Connect the connectors securely.
9. Install the intake air duct and air cleaner housing.



ATF Temperature Sensor Replacement

1. Remove the splash shield.
2. Disconnect the ATF temperature sensor connector (A), then remove the connector from the connector bracket (B).

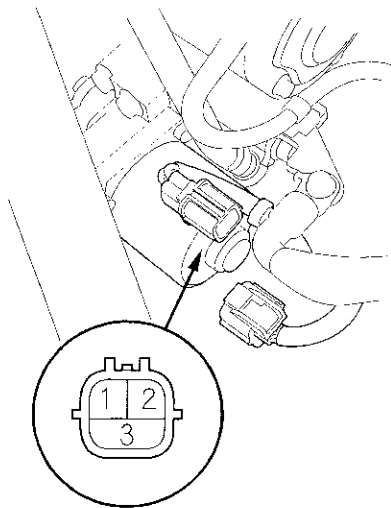


3. Remove the harness clamp (C) from its bracket (D).
4. Remove the ATF temperature sensor, and replace the sensor.
5. Install a new O-ring (E) on the new ATF temperature sensor (F).
6. Install the ATF temperature sensor connector to the connector bracket, then connect the connector securely.
7. Install the harness clamp on its bracket.
8. Install the splash shield.

Automatic Transmission

Auxiliary Transmission Fluid Pump (ATFP) Motor Test

1. Disconnect the auxiliary transmission fluid pump (ATFP) motor connector.
2. Check for continuity between the ATFP motor connector terminals No. 1 and No. 3, and between terminals No. 1 and No. 2. There should be continuity.

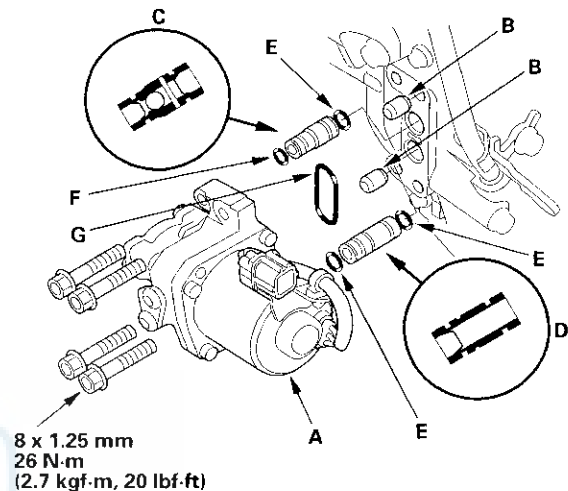


Terminal side of male terminals

3. Check for continuity between each and every ATFP motor connector terminal and body ground. There should be no continuity.
4. If the ATFP motor connector terminal continuity is faulty, replace the ATFP.

Auxiliary Transmission Fluid Pump (ATFP) Replacement

1. Disconnect the auxiliary transmission fluid pump (ATFP) motor connector.
2. Remove the ATFP (A), the dowel pins (B), the ATF feed pipe (C), and the suction pipe (D).

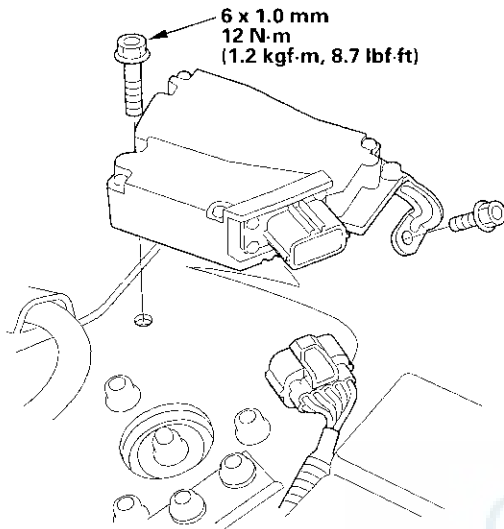


3. Clean the mounting surfaces and fluid passages of the ATFP and the torque converter housing.
4. Install new O-rings (11.7 mm dia.) (E) on the suction pipe, then install the suction pipe in the torque converter housing with the filter end toward the outside of the housing.
5. Install a new O-ring (11.7 mm dia.) (E) and a new O-ring (11.0 mm dia.) (F) on the ATF feed pipe, then install the feed pipe with the large end in the torque converter housing.
6. Install the dowel pins in the torque converter housing.
7. Install a new O-ring (G) in the groove of the ATFP assembly. Do not apply a O-ring with ATF.
8. Install the ATFP on the torque converter housing.
9. Check the connector for rust, dirt, or oil, then connect the connector securely.

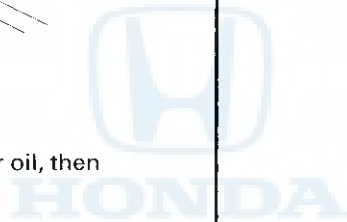


Auxiliary Transmission Fluid Pump (ATFP) Control Unit Replacement

1. Disconnect the auxiliary transmission fluid pump (ATFP) control unit connector.
2. Remove the ATFP control unit.



3. Install the ATFP control unit.
4. Check the connector for rust, dirt, or oil, then connect the connector securely.



Automatic Transmission

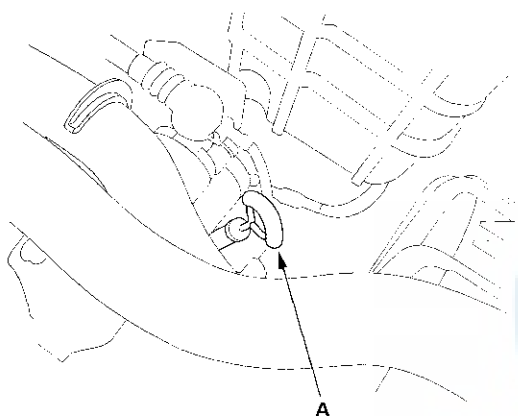
ATF Level Check

NOTE: Keep all foreign particles out of the transmission.

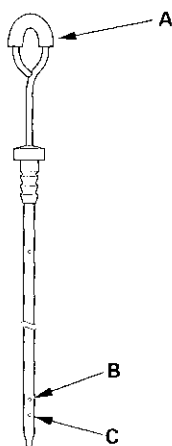
1. Warm up the engine to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.

NOTE: Check the fluid level within 60—90 seconds after turning the engine off.

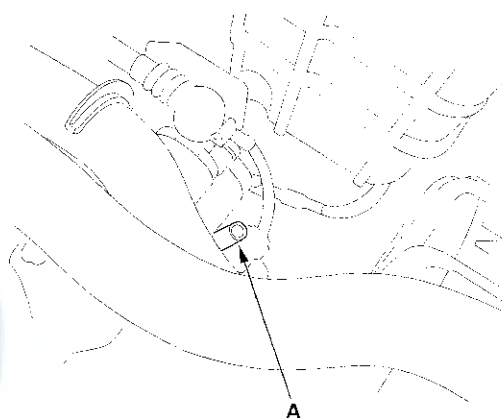
3. Remove the dipstick (yellow loop) (A) from the dipstick tube, and wipe it with a clean cloth.



4. Insert the dipstick into the tube.
5. Remove the dipstick (A) and check the fluid level. It should be between the upper mark (B) and lower mark (C).



6. If the level is below the lower mark, check for fluid leaks at the transmission, hose and line joints. If a problem is found, fix it before filling the transmission. If the level is above the upper mark, drain the ATF to the proper level (see step 3 on page 14-231).
7. If necessary fill the transmission through the dipstick tube opening (A) to bring the fluid level up to the upper mark. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.



8. Insert the dipstick back into the dipstick tube.

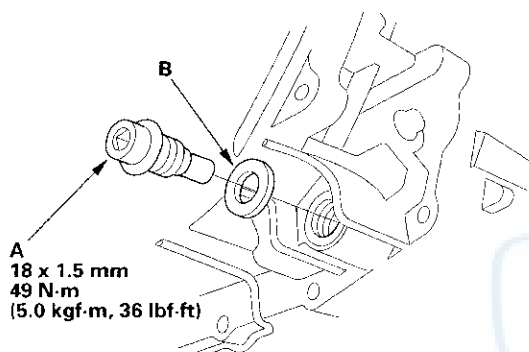


ATF Replacement

NOTE: Keep all foreign particles out of the transmission.

1. Bring the transmission up to normal operating temperature (the radiator fan comes on).
2. Park the vehicle on level ground, and turn the engine off.
3. Remove the ATF filler bolt and drain plug (A), and drain the automatic transmission fluid (ATF).

NOTE: If a cooler cleaning is done, refer to ATF Cooler Cleaning (see page 14-254).



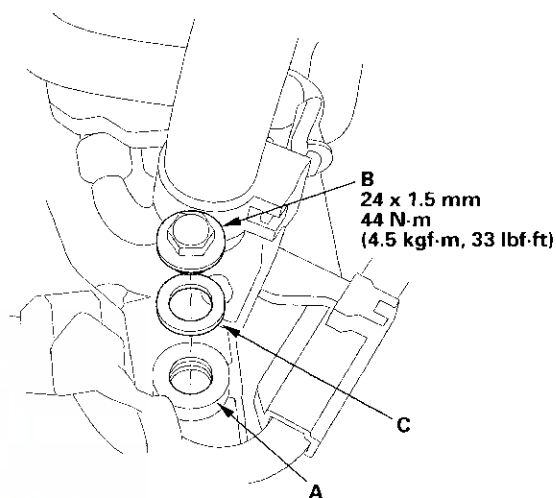
4. Reinstall the drain plug and a new sealing washer (B).

5. Refill the transmission with the recommended fluid through the filler hole (A) to the upper mark on the dipstick. Always use Honda ATF-Z1 Automatic Transmission Fluid (ATF). Using a non-Honda ATF can affect shift quality.

Automatic Transmission Fluid Capacity:

3.4 L (3.6 US qt) at change

7.8 L (8.2 US qt) at overhaul



6. Install the ATF filler bolt (B) with a new sealing washer (C).

Automatic Transmission

Transmission Removal

Special Tools Required

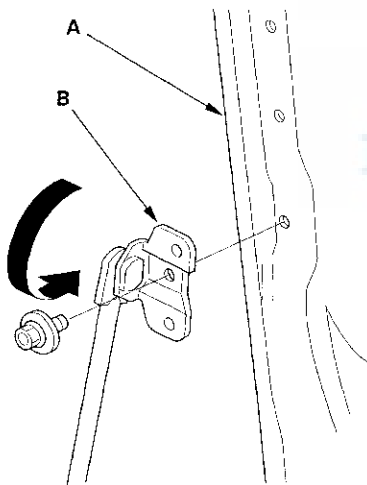
- Engine support hanger, A and Reds AAR-T-12566
- Engine hanger balance bar VSB02C000019
- Front subframe adapter VSB02C000016

These special tools are available through the Honda Tool and Equipment Program 1-888-424-6857.

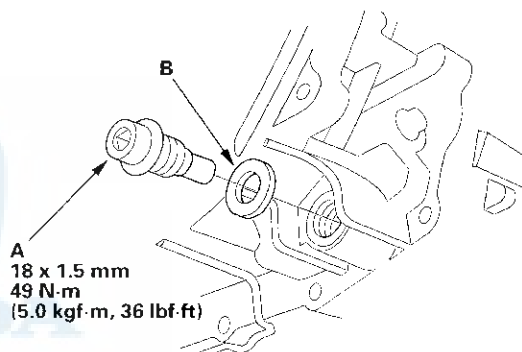
NOTE: Use fender covers to avoid damaging painted surfaces.

1. Make sure you have the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
2. Remove the bolts securing the support strut bracket on the right side hood. Raise and secure the hood (A) in a vertical position, then install the strut bracket (B) by turning it over with its bolt in lower position.

NOTE: Do not attempt to close the hood with the support strut in the vertical position; it will damage the support strut and the hood.



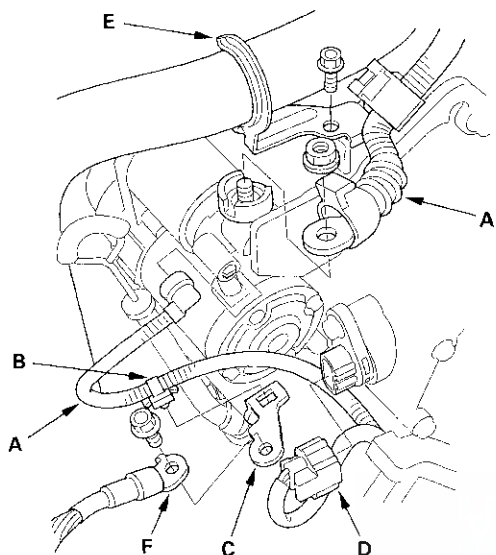
3. Make sure the ignition switch is OFF. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
4. Remove the battery hold-down bracket, and remove the battery and battery tray.
5. Remove the intake air duct and air cleaner housing.
6. Remove the battery base.
7. Disconnect the steering joint (see page 17-9).
8. Remove the splash shield.
9. Remove the drain plug (A), and drain the automatic transmission fluid (ATF).



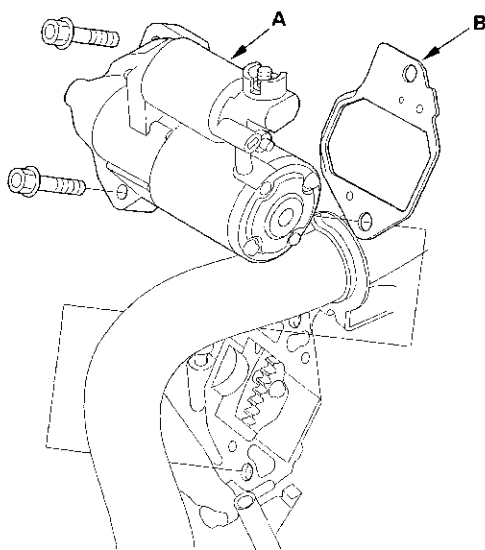
10. Reinstall the drain plug with a new sealing washer (B).



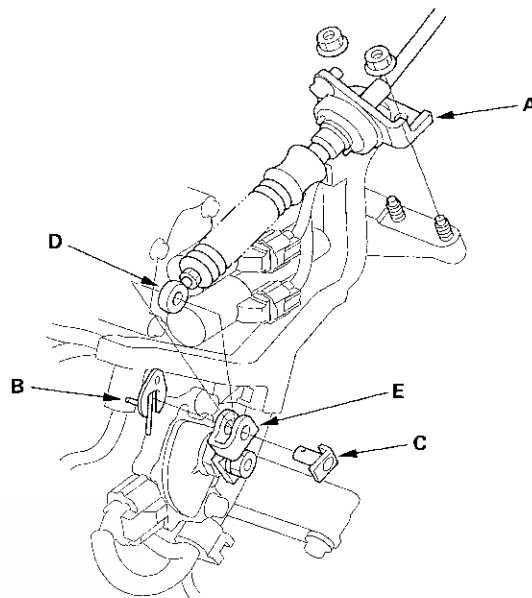
11. Remove the starter cables (A) from the starter, and remove the harness clamp (B) from the clamp bracket (C).



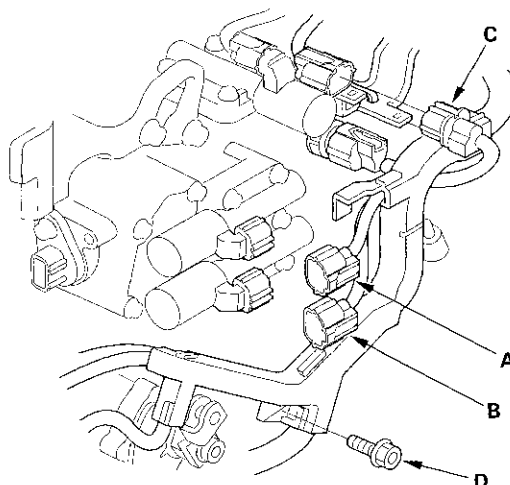
12. Disconnect the solenoid harness connector (D).
13. Remove the bolt securing the radiator hose clamp/harness clamp bracket (E).
14. Remove the transmission ground cable (F).
15. Remove the dipstick, then remove the starter (A) and starter gasket (B) from the torque converter housing.



16. Remove the nuts securing the shift cable bracket (A).



17. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
18. Disconnect the A/T clutch pressure control solenoid valve A connector, A/T clutch pressure control solenoid valve B connector, and 4th clutch transmission fluid pressure switch harness connector (C), and remove the harness cover mounting bolt (D).

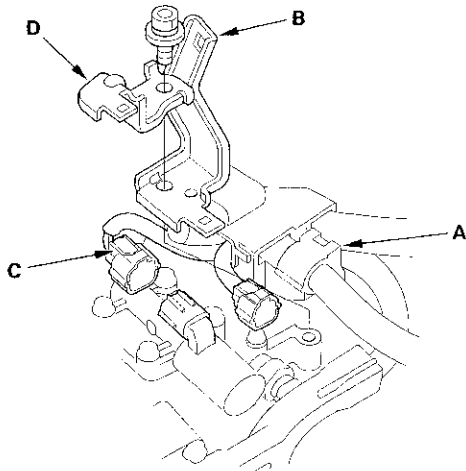


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Automatic Transmission

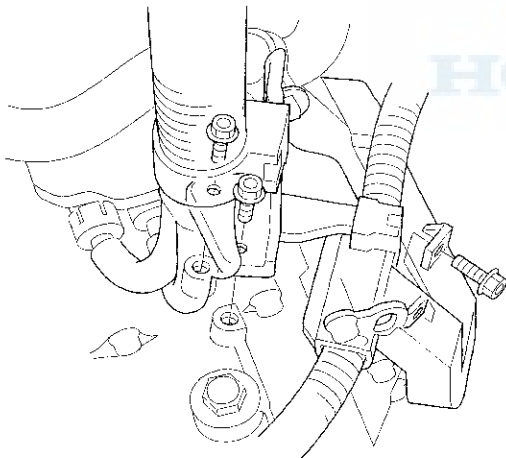
Transmission Removal (cont'd)

19. Remove the harness clamp (A) from the clamp bracket (B).

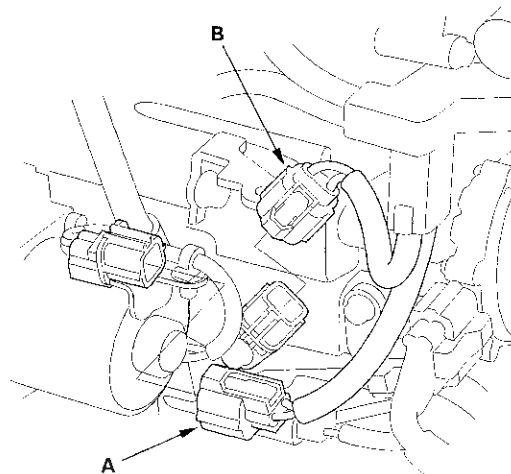


20. Disconnect the A/T clutch pressure control solenoid valve C connector, and remove the connector bracket (D) and the harness clamp bracket.

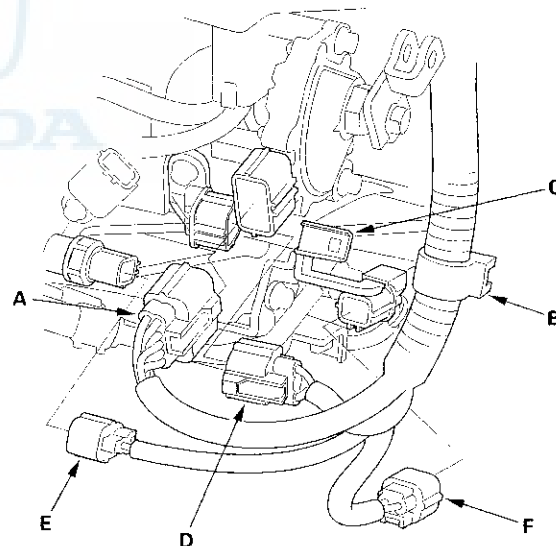
21. Remove the bolts securing the harness clamp brackets.



22. Disconnect the auxiliary transmission fluid pump (ATFP) motor connector (A) and the input shaft (mainshaft) speed sensor connector (B).



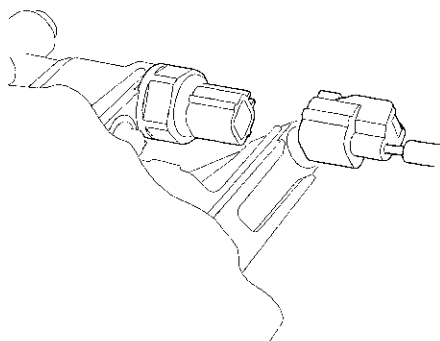
23. Disconnect the transmission range switch connector (A), and remove the harness clamp (B) from the clamp bracket (C).



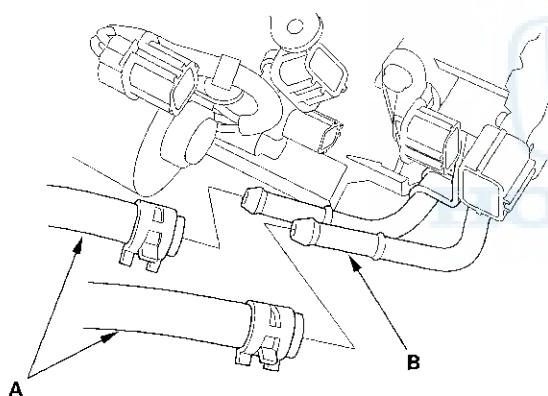
24. Disconnect the output shaft (countershaft) speed sensor connector (D), 3rd clutch transmission fluid pressure switch connector (E), and ATF temperature sensor connector (F).



25. Disconnect the 2nd clutch transmission fluid pressure switch connector.

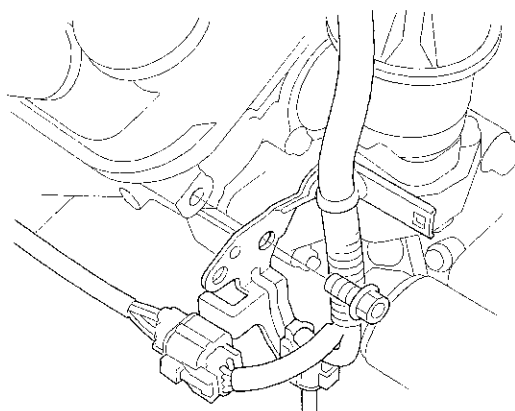


26. Remove the ATF cooler hoses (A) from the ATF cooler lines (B). Turn the ends of the cooler hoses up to prevent ATF from flowing out, then plug the cooler hoses and lines.

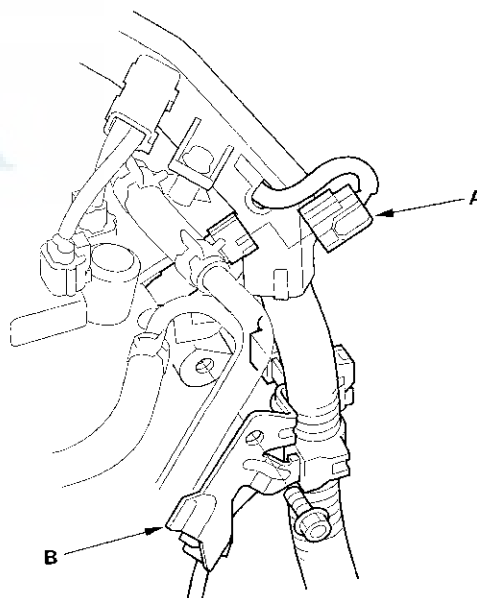


27. Check for any signs of leakage at the hose joints.

28. Remove the connector bracket from the engine front cylinder head; use the bracket bolt hole to attach the engine hanger balancer bar front arm.



29. Disconnect the solenoid valve connector (A), then remove the bracket (B) from the engine rear cylinder head; use the bracket bolt hole to attach the engine hanger balancer bar rear arm.

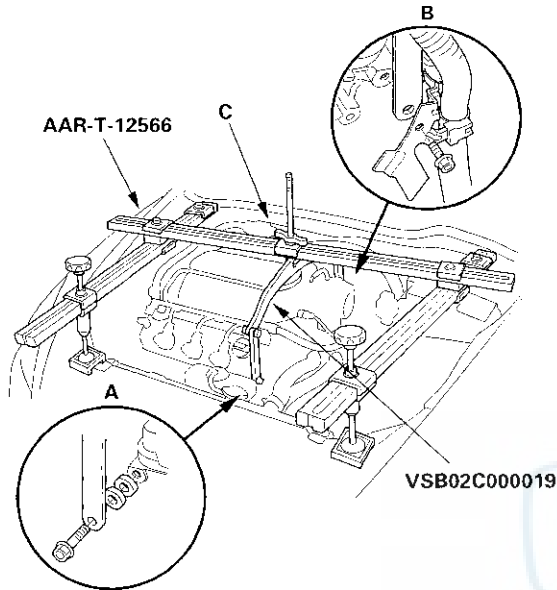


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Automatic Transmission

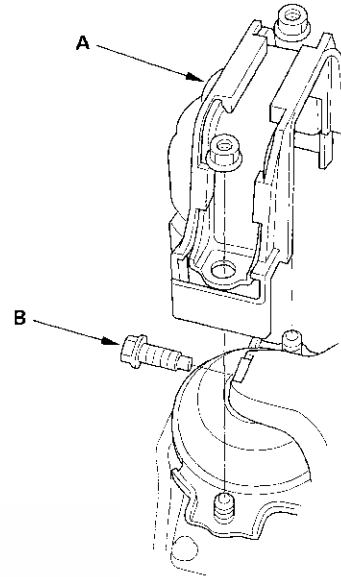
Transmission Removal (cont'd)

30. Install the engine hanger balancer bar (VSB02C000019); attach the front arm (A) to the front cylinder head with the spacer and the 10 mm bolt, and attach the rear arm (B) to the rear cylinder head with the 8 mm bolt.

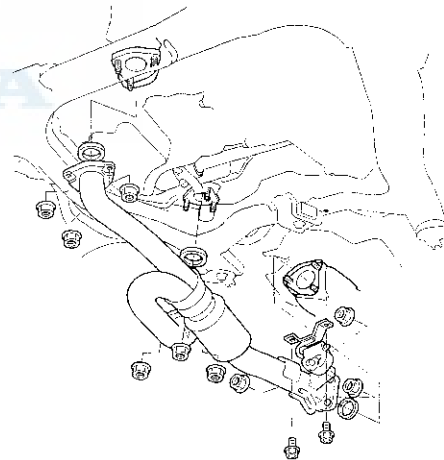


31. Install the engine support hanger (AAR-T-12566) to the vehicle, and attach the hook to the engine balancer bar slot. Tighten the wing nut (C) by hand, and lift and support the engine.

32. Remove the front mount stop (A) and the front mount bolt (B).

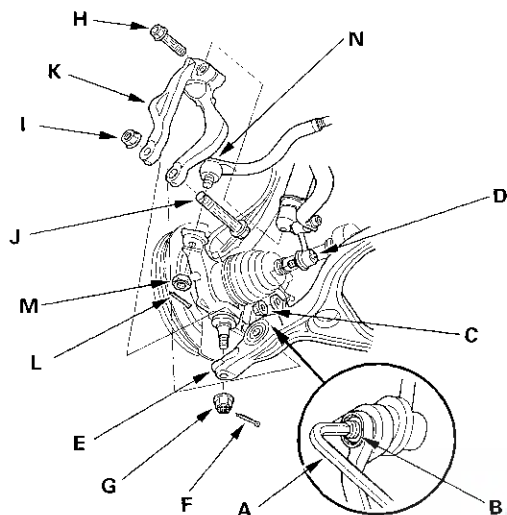


33. Remove the exhaust pipe A.





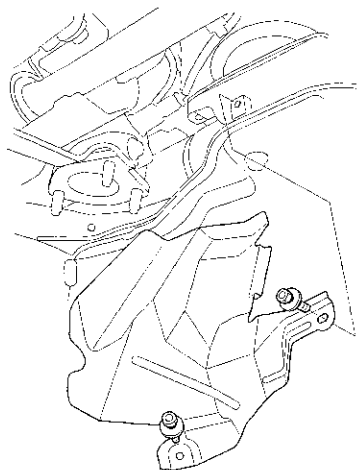
34. Insert a 6 mm Allen wrench (A) in the top of the ball joint pins (B), and remove the nuts (C), then separate the stabilizer links (D) from the lower arms (E).



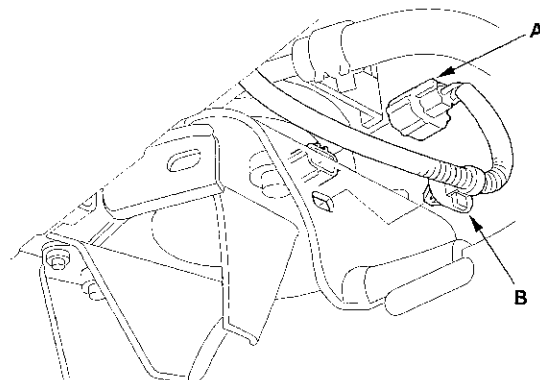
35. Remove the cotter pins (F), castle nuts (G), damper pinch bolts (H), self-locking nuts (I), bolts (J), and damper forks (K), then separate the ball joints from the lower arms (see step 12 on page 18-15).

36. Remove the cotter pins (L) and nuts (M), and separate the steering tie-rod end ball joints (N) from the knuckles (see step 10 on page 18-15).

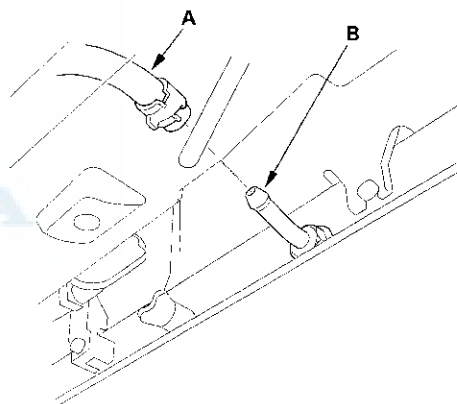
37. Remove the steering gearbox heat shield.



38. Disconnect the front mount control solenoid valve connector (A), and remove the harness clamp (B).



39. Remove the ATF cooler hose (A) from the ATF cooler (B). Turn the end of the cooler hose up to prevent ATF from flowing out, then plug the hose.

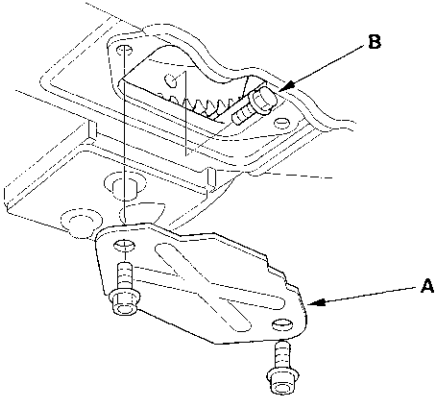


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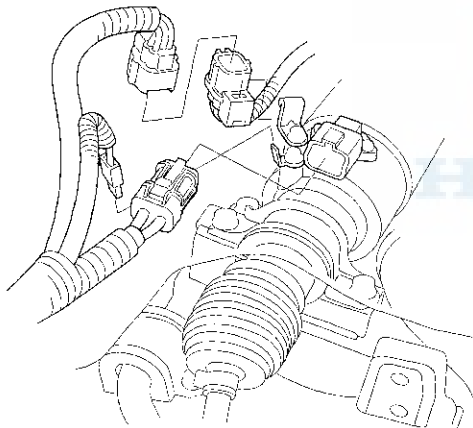
Automatic Transmission

Transmission Removal (cont'd)

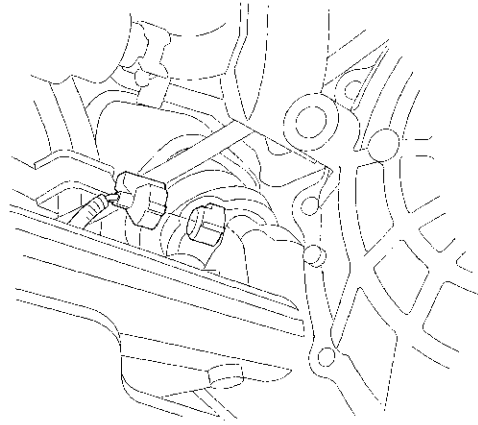
40. Remove the torque converter housing cover (A), and remove the drive plate bolts (B) (8) while rotating the crankshaft pulley.



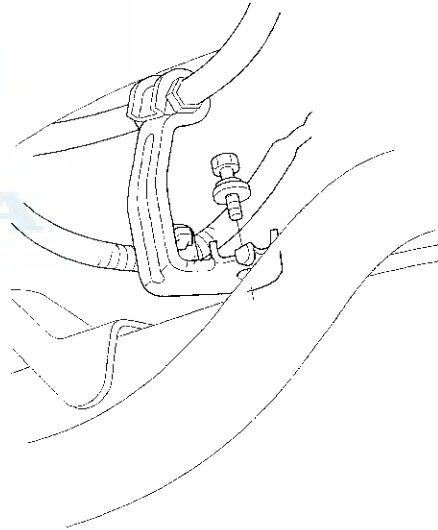
41. Disconnect the connectors at the right of the steering gearbox, and remove the connector from the connector bracket.



42. Disconnect the power steering angle sensor connector.

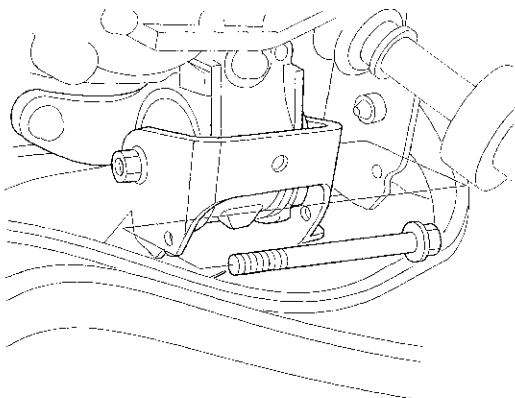


43. Remove the shift cable bracket on the front subframe.

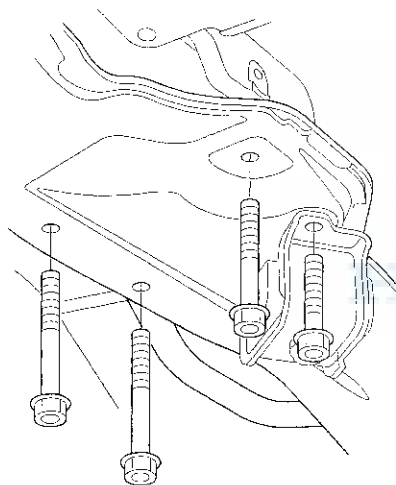




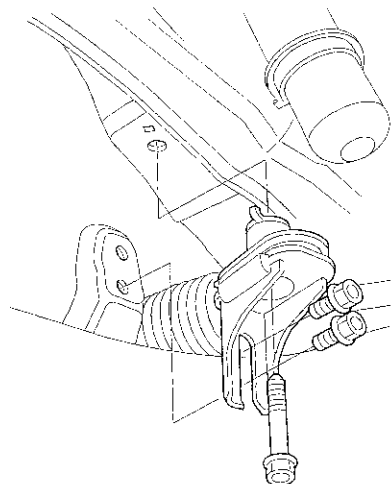
44. Remove the transmission lower mount bolt.



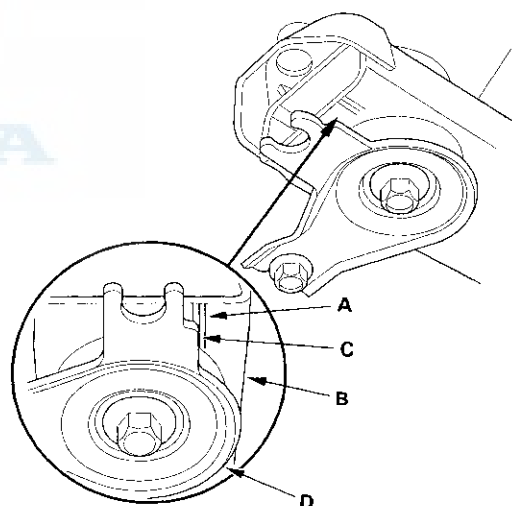
45. Remove the rear mount base bracket bolts.



46. Remove the both mid-mounts.



47. Make a appropriate reference lines (A) at both ends of the subframe (B) that line up with the edge (C) of the stiffener (D).

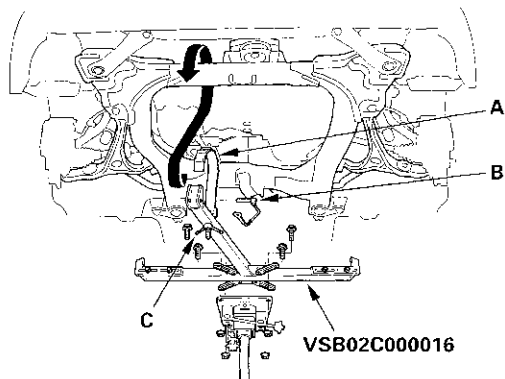


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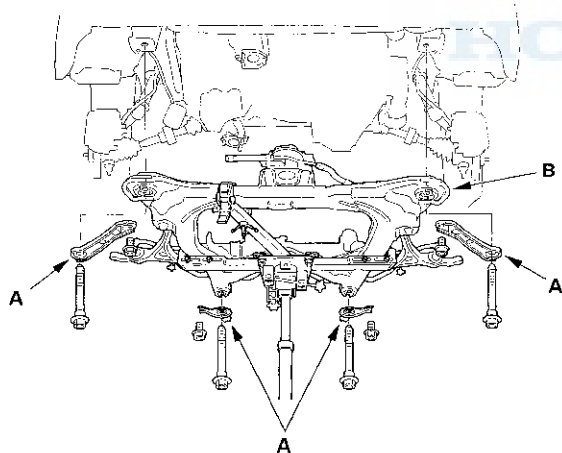
Automatic Transmission

Transmission Removal (cont'd)

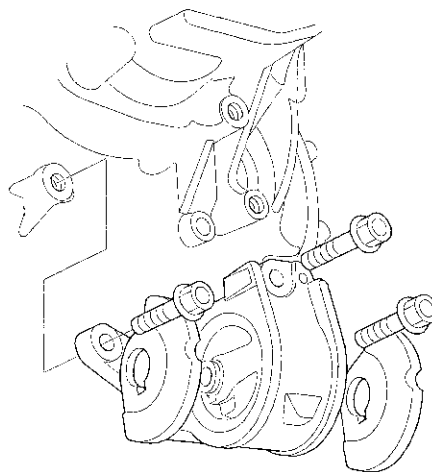
48. Attach the front subframe adapter (VSB02C000016) to the subframe by looping the strap (A) over the front of the subframe, then secure the strap with the stop (B), then tighten the wing nut (C).



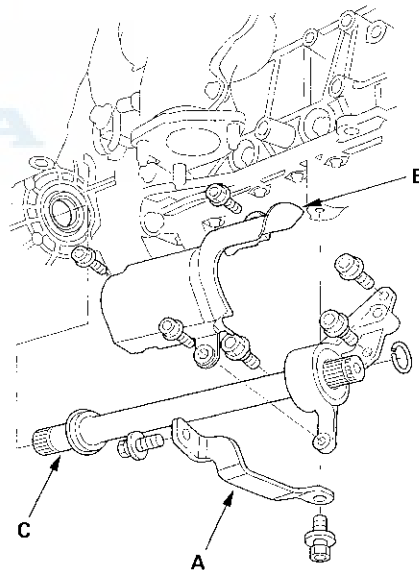
49. Raise the jack and line up the slots in the arms with the bolt holes on the corner of the jack base, then tighten the bolts.
50. Remove the four bolts securing the stiffeners (A) and the four bolts securing the front subframe (B), then lower the front subframe.



51. Remove the transmission lower mount.



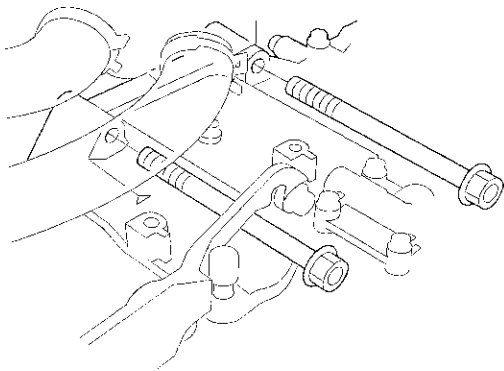
52. Pry out the driveshafts from the differential and the intermediate shaft.
53. Remove the exhaust manifold bracket (A) and the heat shield (B).



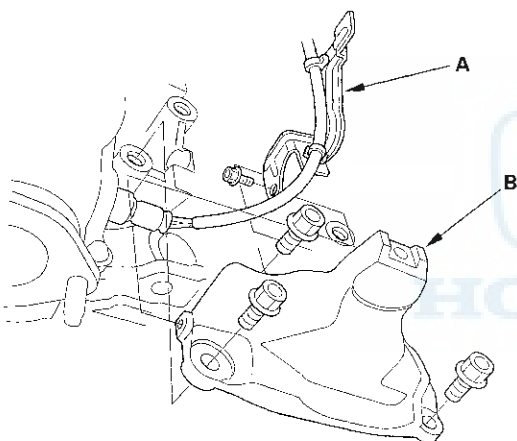
54. Remove the intermediate shaft (C).
55. Coat all precision machined surfaces with clean engine oil, then put plastic bags over driveshaft ends and intermediate shaft ends.



56. Remove the transmission housing mounting bolts.

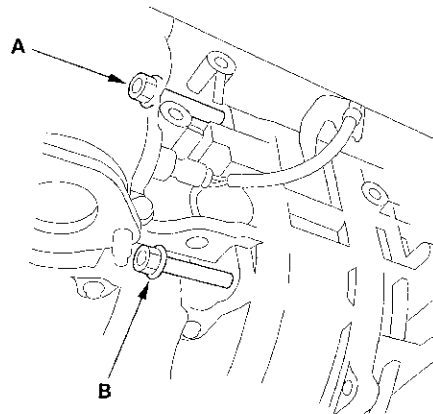


57. Remove the sensor harness clamp bracket (A) from the front mount bracket (B).



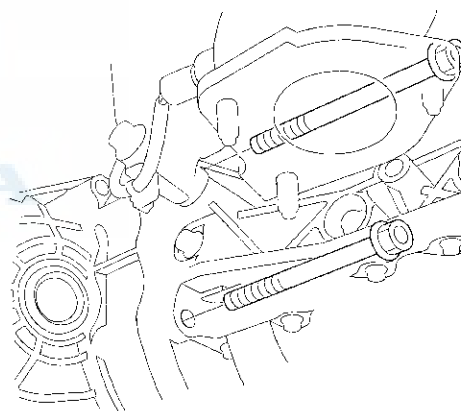
58. Remove the front mount bracket.

59. Remove the transmission housing mounting bolt (A) using a socket 22 mm in length.



60. Remove the transmission housing mounting bolt (B).

61. Remove the transmission housing mounting bolts.



62. Lower the transmission by loosening the wing nut of the engine support hanger, and tilt the engine just enough for the transmission to clear the side frame.

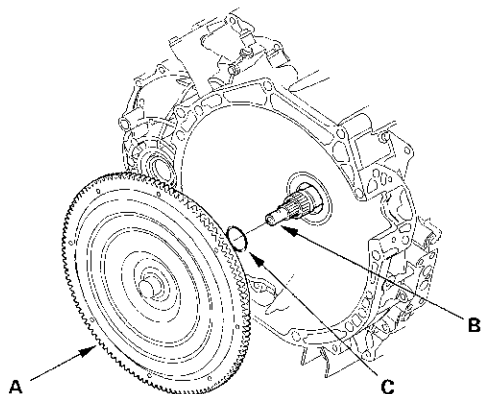
63. Place a jack under the transmission.

(cont'd)

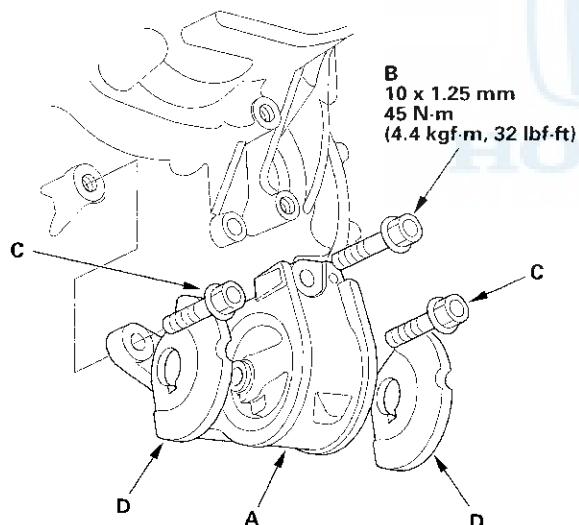


Transmission Installation

1. Clean the ATF cooler (see page 14-254).
2. Install the torque converter (A) on the mainshaft (B) with the new O-ring (C).

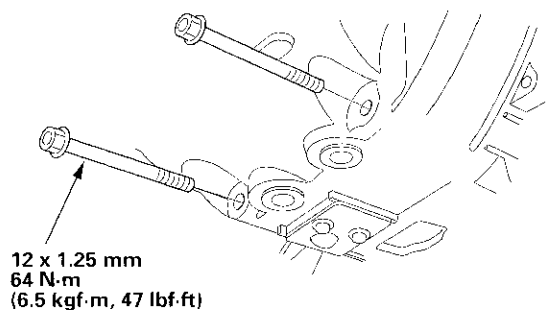


3. Install the transmission lower mount (A) with the 10 x 1.25 mm bolts; 40 mm-length (B) (one bolts) and 35 mm-length (C) (two bolts).

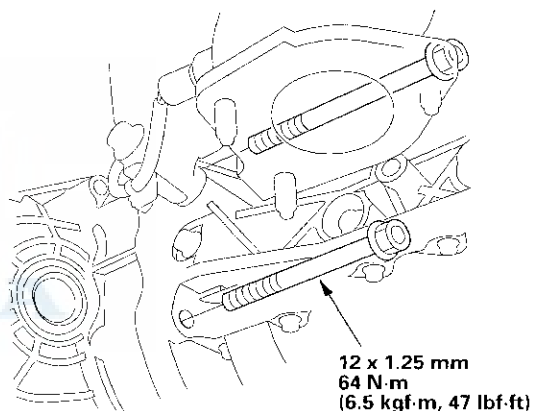


4. Install the rubber plates (D) on both side of the mount.
5. Place the transmission on the jack, and raise it to engine level.

6. Attach the transmission to the engine, and install the transmission housing mounting bolts.



7. Install the transmission housing mounting bolts.



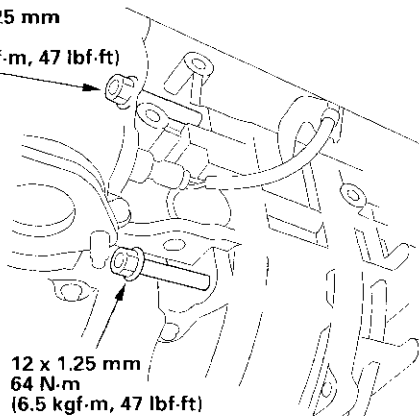
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Automatic Transmission

Transmission Installation (cont'd)

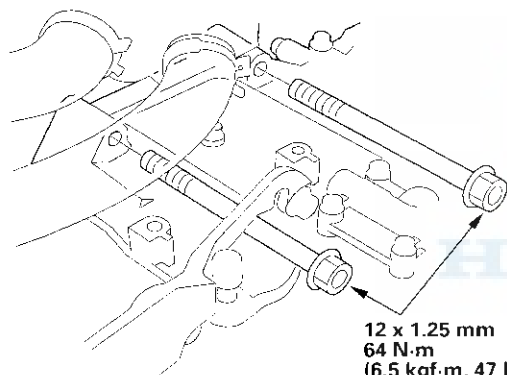
8. Install the transmission housing mounting bolts.

12 x 1.25 mm
64 N·m
(6.5 kgf·m, 47 lbf·ft)



12 x 1.25 mm
64 N·m
(6.5 kgf·m, 47 lbf·ft)

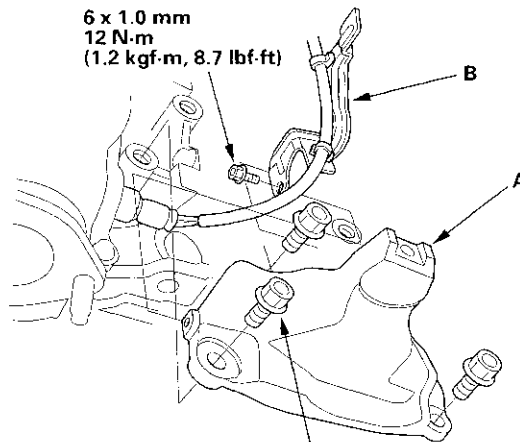
9. Install the transmission housing mounting bolts.



12 x 1.25 mm
64 N·m
(6.5 kgf·m, 47 lbf·ft)

10. Install the front mount bracket (A) with the new mounting bolts.

6 x 1.0 mm
12 N·m
(1.2 kgf·m, 8.7 lbf·ft)

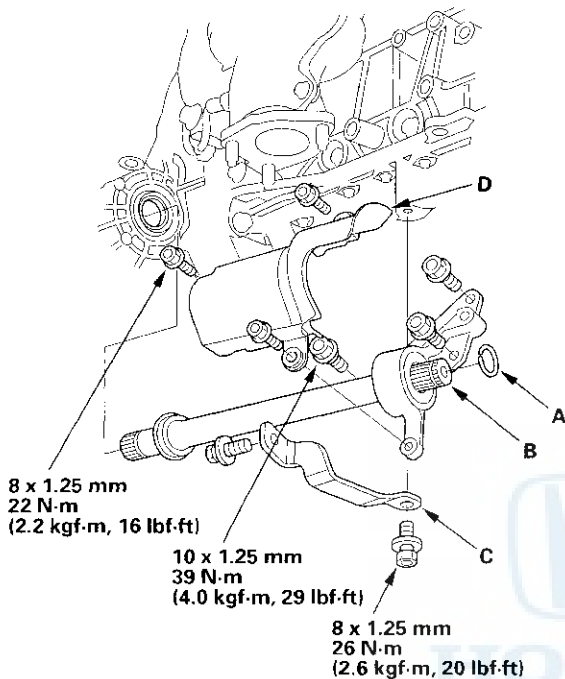


10 x 1.25 mm
54 N·m
(5.5 kgf·m, 40 lbf·ft)
Replace.

11. Install the sensor harness clamp bracket (B) on the mount bracket.



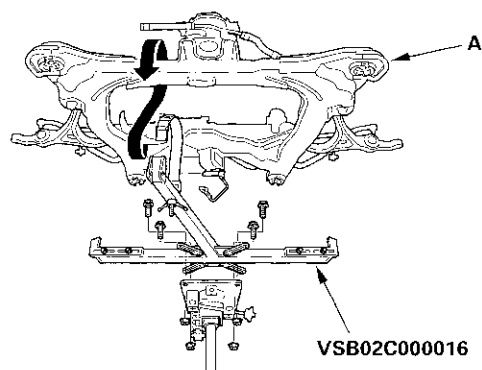
12. Install the new set ring (A) on the intermediate shaft (B), and install the intermediate shaft in the differential. While installing the intermediate shaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission.



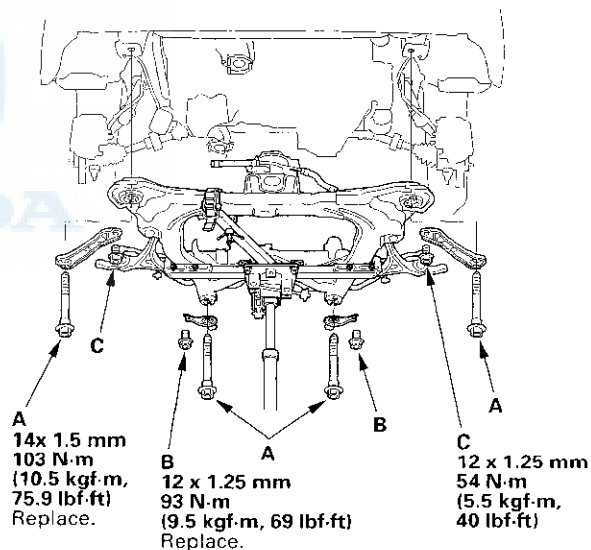
13. Install the exhaust manifold bracket (C) and heat shield (D).
14. Install the new set ring on the left driveshaft, then install the left driveshaft in the differential (see page 16-18). While installing the driveshaft in the differential, be sure not to allow dust or other foreign particles to enter the transmission. Install the right driveshaft on the intermediate shaft.

NOTE: Turn the right and left steering knuckle fully outward, and slide the driveshaft and intermediate shaft into the differential and intermediate shaft until you feel its set ring engage the side gear.

15. Support the front subframe (A) with the front subframe adapter (VSB02C000016) and a jack, and lift it up to the body.



16. Loosely install the new subframe mounting bolts (A), new rear stiffener mounting bolts (B), front stiffener mounting bolts (C).

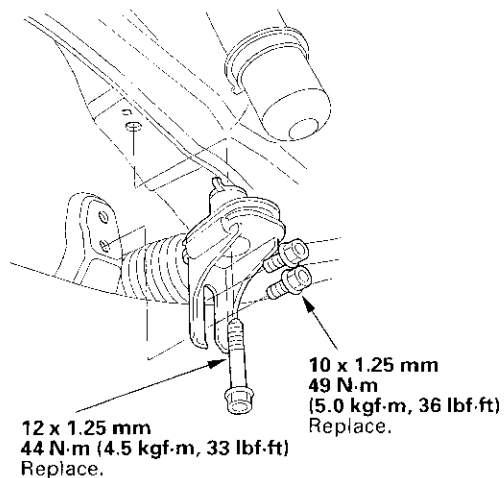


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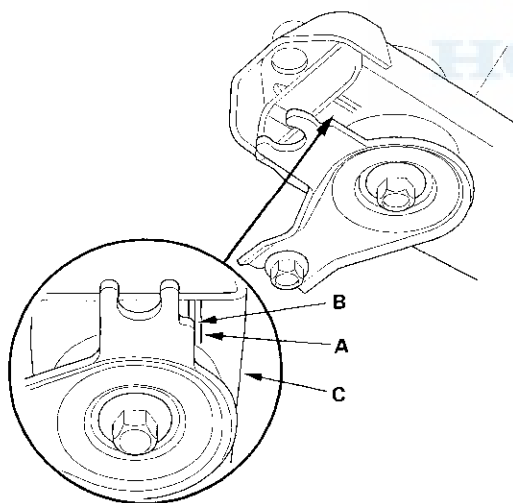
Automatic Transmission

Transmission Installation (cont'd)

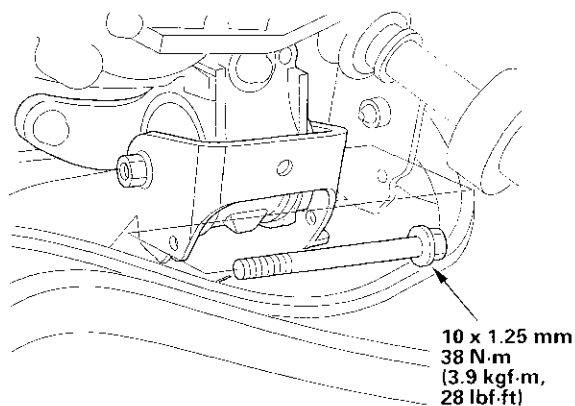
17. Loosely install the both mid-mounts mounting bolts.



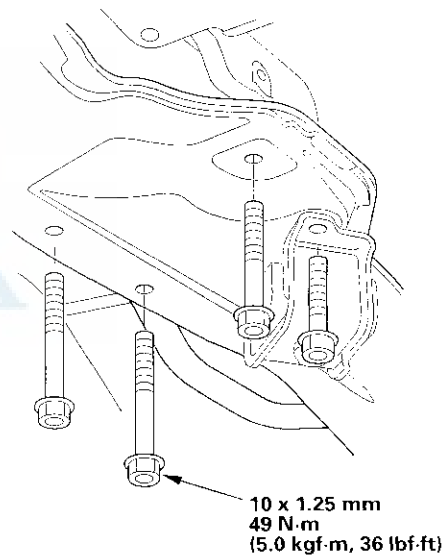
18. Align the reference marks (A) with the edge (B) of both rear stiffener (C), and tighten the rear subframe mounting bolts, then front bolts, and tighten the stiffener mounting bolts to the specified torque.



19. Install the transmission lower mount bolt.

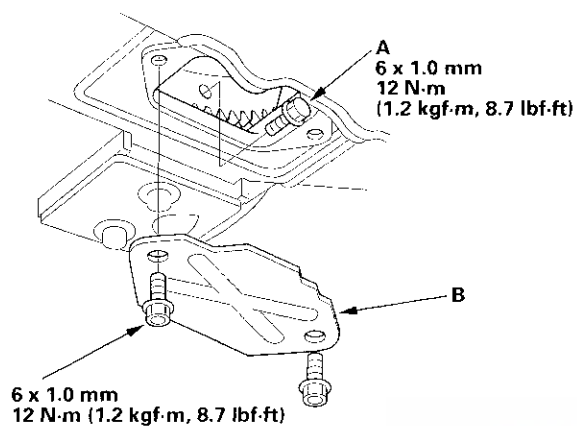


20. Install the rear mount base bracket bolts.

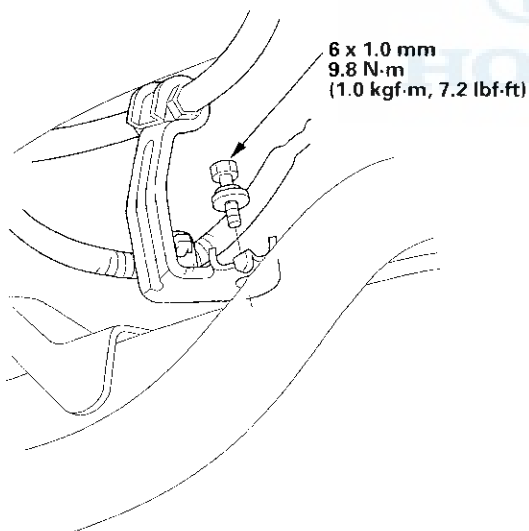




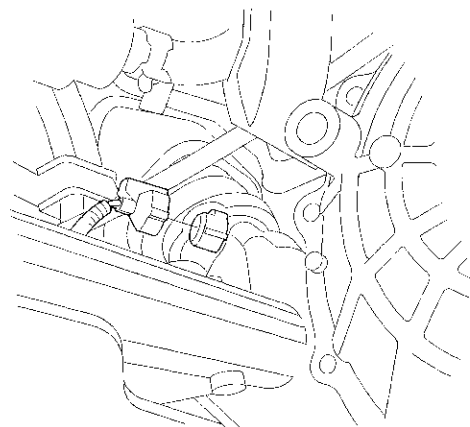
21. Attach the torque converter to the drive plate with the eight bolts (A). Rotate the crankshaft pulley as necessary to tighten the bolt to 1/2 of the specified torque, then to the final torque, in a crisscross pattern. After tightening the last bolt, check that the crankshaft rotates freely.



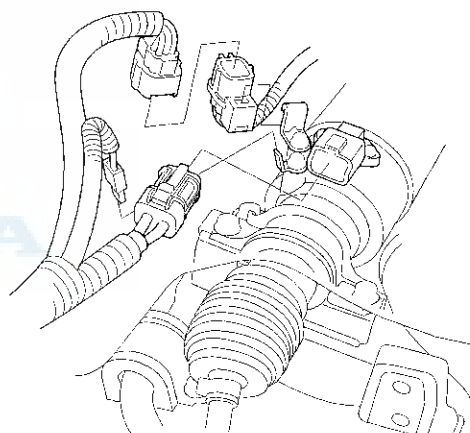
22. Install the torque converter housing cover (B) in the direction shown.
23. Install the shift cable bracket on the front subframe.



24. Connect the power steering angle sensor connector.



25. Connect the connectors at the right of the steering gearbox, and install the connector on its bracket.

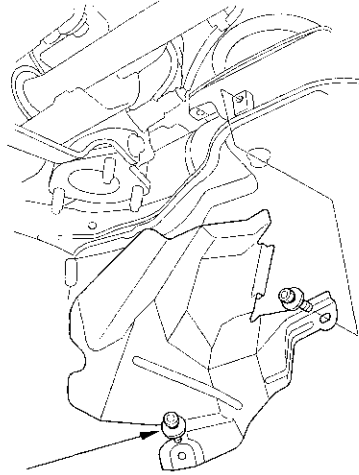


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Automatic Transmission

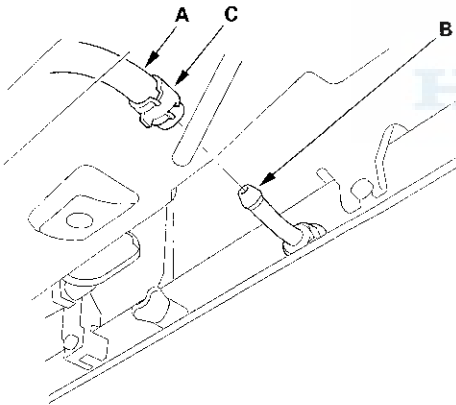
Transmission Installation (cont'd)

26. Install the steering gearbox heat shield.

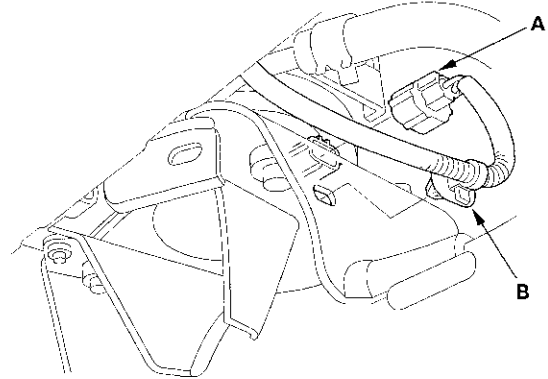


6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

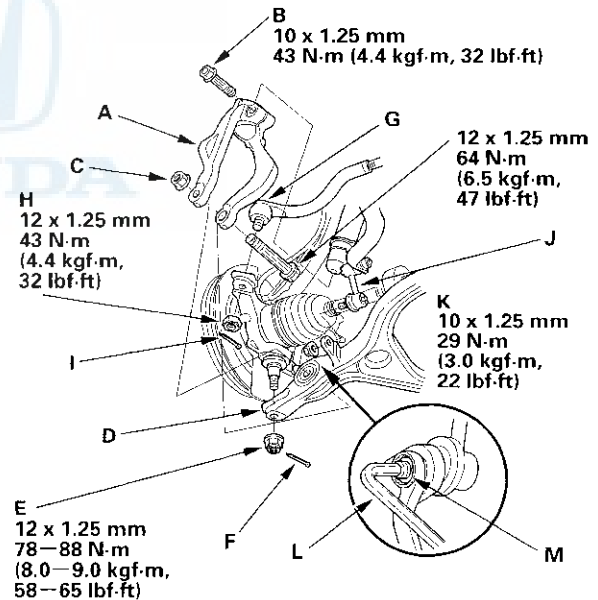
27. Connect the ATF cooler hose (A) to the ATF cooler (B), and secure the hose with the clip (C) (see page 14-256).



28. Connect the front mount control solenoid valve connector (A), and install the harness clamp (B).



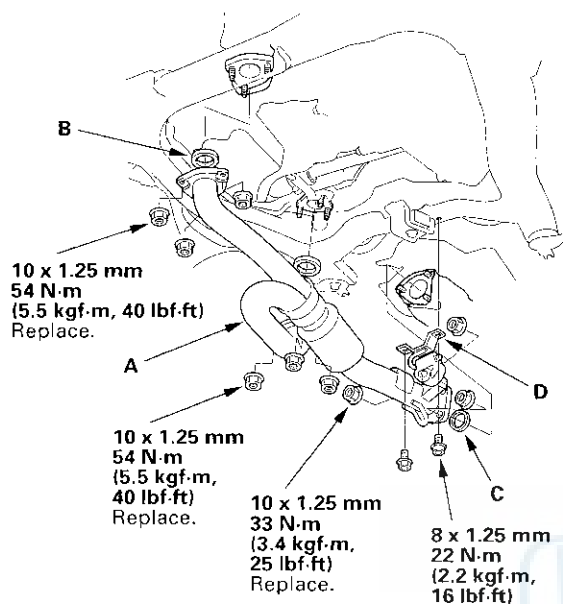
29. Install the damper forks (A) with damper pinch bolts (B) and the new self-locking nuts (C), then install the ball joints on the lower arms (D) with the castle nuts (E) and new cotter pins (F).



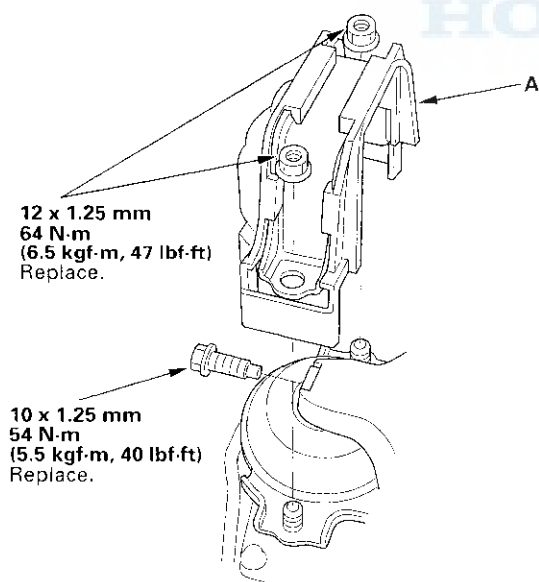
30. Install the tie-rod end ball joints (G) to each knuckle with the nuts (H) and new cotter pins (I).
31. Install the stabilizer links (J) to the lower arms, and install the nuts (K). Insert a 6 mm Allen wrench (L) in the ball joint pin (M), and tighten the nuts.



32. Install the exhaust pipe A with the new self-locking nuts and new gaskets (B) (C), and install the exhaust pipe mount bracket (D).

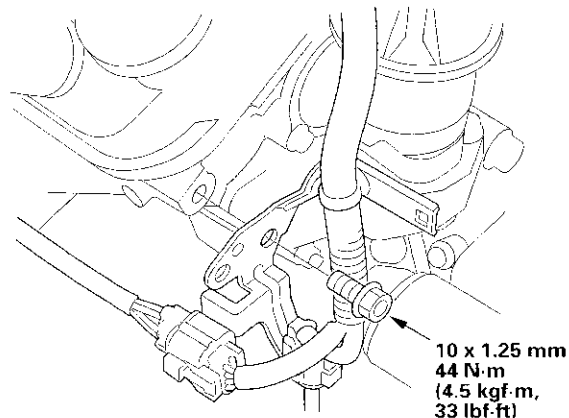


33. Install the new front mount bolt, and install the front mount stop (A) with the new nuts.

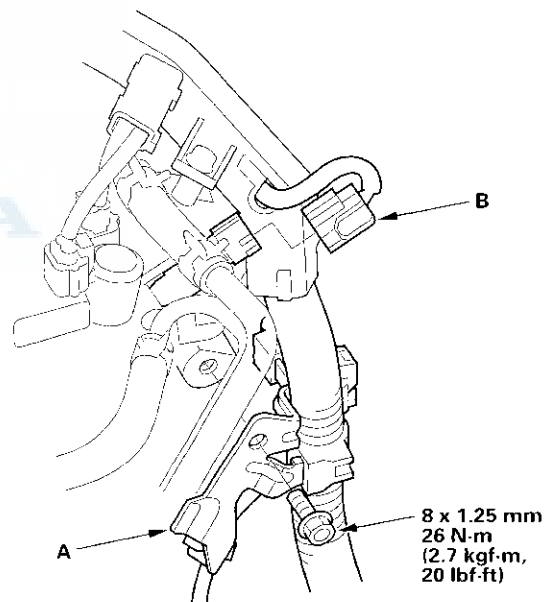


34. Remove the front subframe adapter and the jack.

35. Install the connector bracket on the engine front cylinder head.



36. Install the clamp bracket (A) on the engine rear cylinder head, and connect the solenoid valve connector (B).

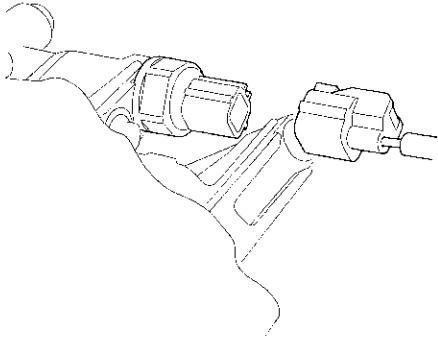


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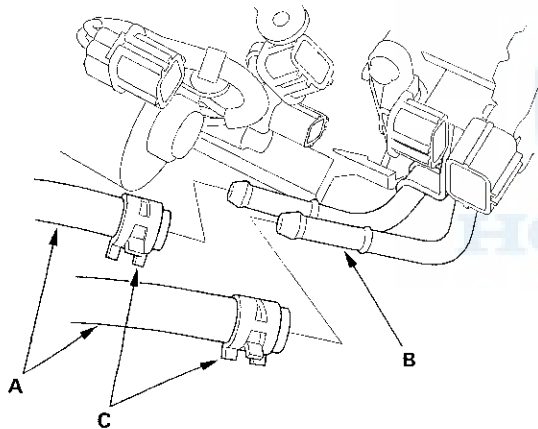
Automatic Transmission

Transmission Installation (cont'd)

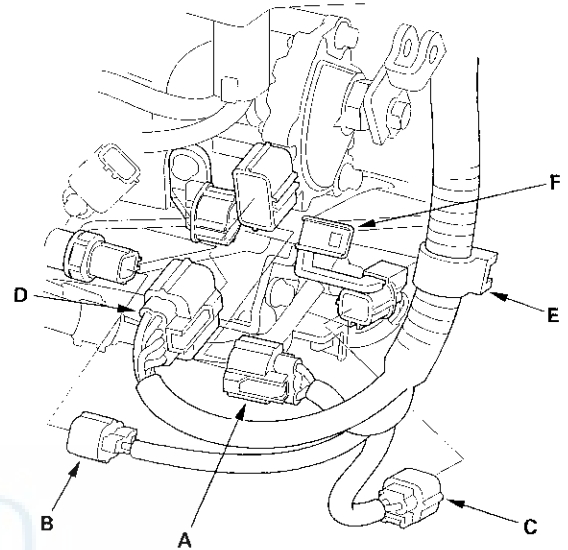
37. Connect the 2nd clutch transmission fluid pressure switch connector.



38. Connect the ATF cooler hoses (A) to the ATF cooler lines (B), and secure the hoses with the clips (C) (see page 14-256).

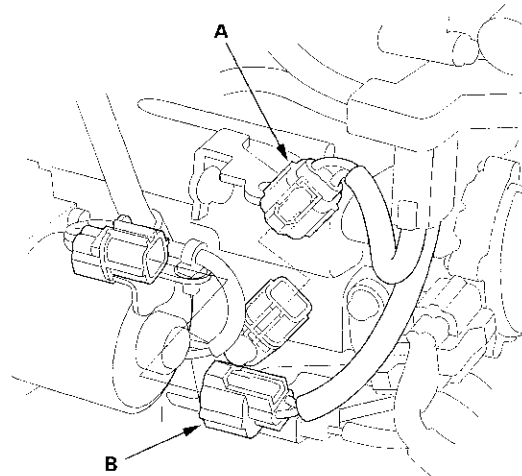


39. Connect the output shaft (countershaft) speed sensor connector (A), the 3rd clutch transmission fluid pressure switch connector (B), and the ATF temperature sensor connector (C).



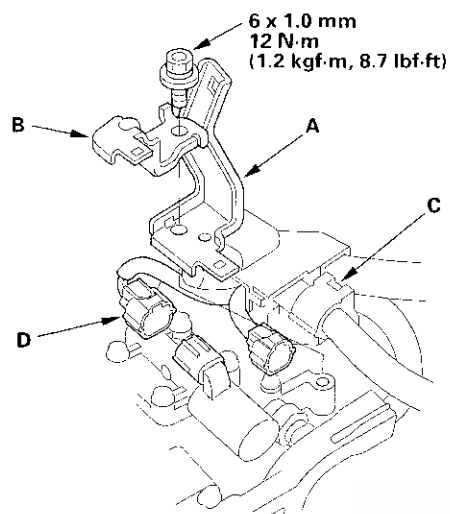
40. Connect the transmission range switch connector (D), and install the harness clamp (E) on the connector bracket (F).

41. Connect the input shaft (mainshaft) speed sensor connector (A) and the auxiliary transmission fluid pump (ATFP) motor connector (B).

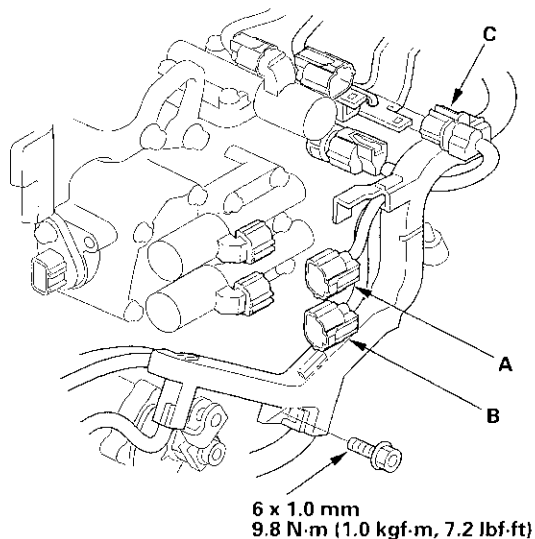




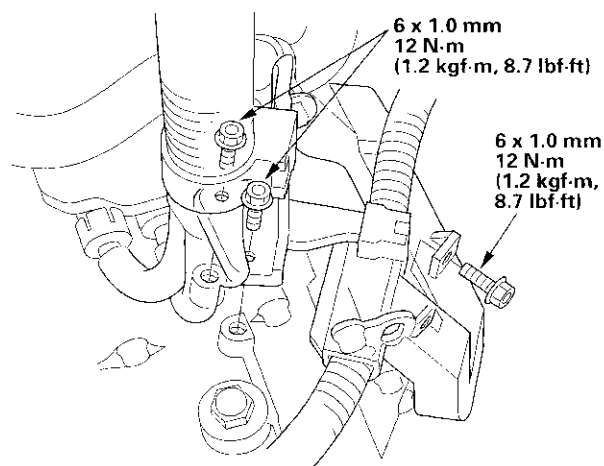
42. Install the harness clamp bracket (A) and connector bracket (B), and install the harness clamp (C) on the clamp bracket.



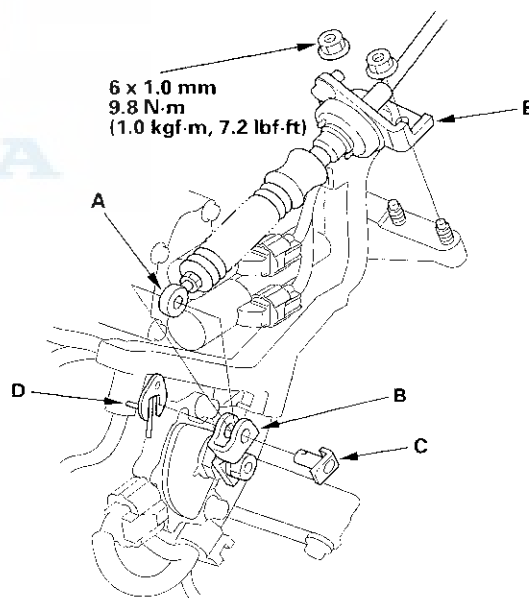
43. Connect the A/T clutch pressure control solenoid valve C connector (D).
44. Secure the harness cover with the bolt, and connect the A/T clutch pressure control solenoid valve A connector, the A/T clutch pressure control solenoid valve B connector, and the 4th clutch transmission fluid pressure switch harness connector (C).



45. Secure the harness clamp bracket with the bolts.



46. Attach the shift cable end (A) to the control lever (B), then insert the control pin (C) into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer (D).



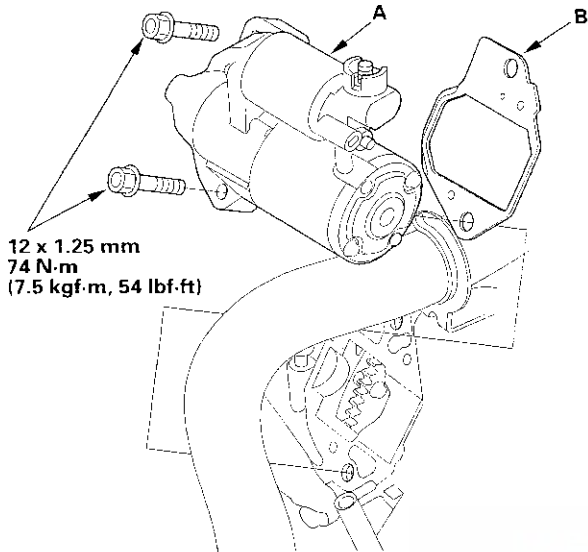
47. Secure the shift cable bracket (E).

(cont'd)

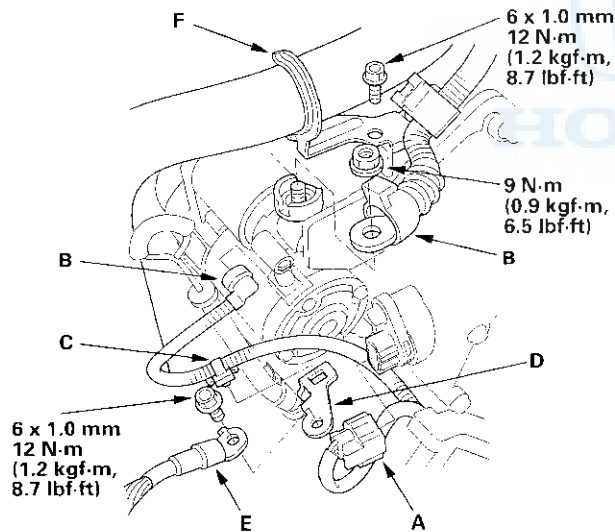
Automatic Transmission

Transmission Installation (cont'd)

48. Install the starter (A) with a new gasket (B) on the torque converter housing.



49. Connect the solenoid harness connector (A).



50. Install the starter cables (B), and install the harness clamp (C) on the clamp bracket (D).
51. Install the transmission ground cable (E).
52. Secure the radiator hose clamp (F) with the bolt.

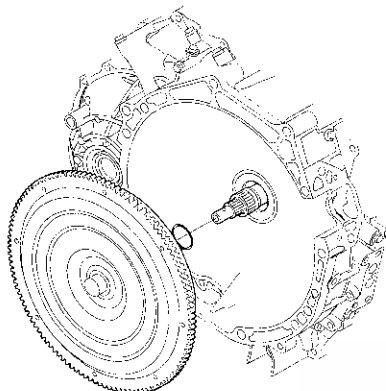
53. Connect the steering joint (see page 17-11).
54. Refill the transmission with ATF (see step 5 on page 14-231).
55. Install the battery base.
56. Install the intake air duct and air cleaner housing.
57. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
58. Install the splash shield.
59. Reinstall the hood support strut to the upper location on right side of the hood.
60. Do the motor rotor position calibration (see page 12-6).
61. Set the parking brake. Start the engine, and shift the transmission through all positions three times. Check the shift lever operation, A/T gear position indicator operation, and shift cable adjustment.
62. Check and adjust the front wheel alignment (see page 18-7).
63. Start the engine in the P or N position, and warm it up to normal operating temperature (the radiator fan comes on).
64. Turn off the engine, and check the ATF level (see page 14-230).
65. Perform the road test (see page 14-199).
66. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
67. Do the power window control unit reset procedure (see page 22-200).
68. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.



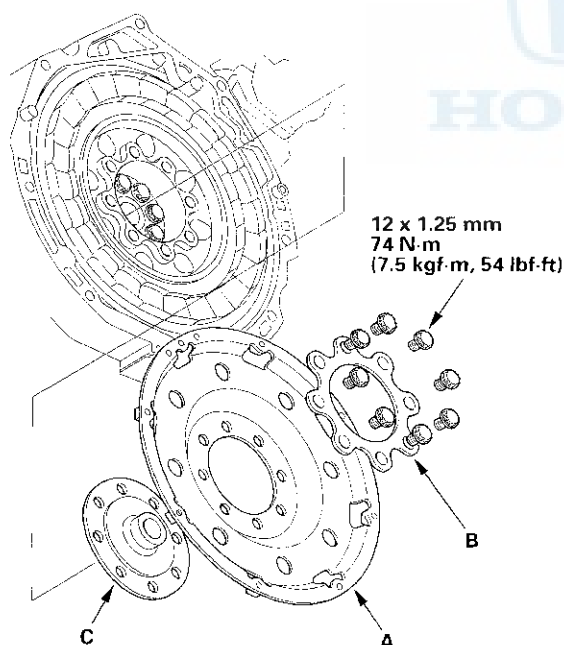
Torque Converter and Torque Converter Support Hub Replacement

NOTE: Replace the torque converter support hub with a new one whenever the torque converter is replaced. Do not reuse the old torque converter support hub.

1. Remove the transmission assembly (see page 14-232).
2. Remove the torque converter.



3. Remove the drive plate (A) and washer (B).



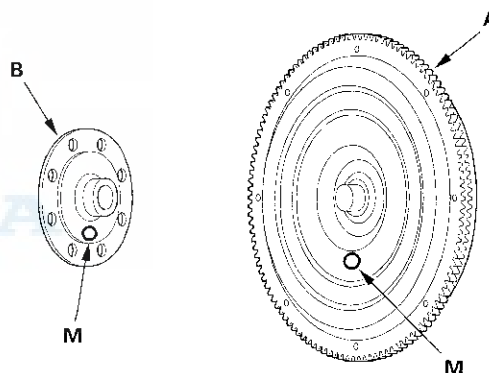
4. Remove the torque converter support hub (C).

NOTE:

- The motor rotor contains very strong magnets and should be handled with special care.
- Keep pieces of metal and all foreign particles out of the motor rotor during the transmission removal.

5. Inspect the drive plate, and replace if it's damaged.
6. Make sure that the replacement torque converter (A) and torque converter support hub (B) are marked with the letter M.

NOTE: Replacement torque converter and torque converter support hub come with marked the letter M. Always use these replacement parts marked with the letter M, do not use both of the torque converter and the torque converter support hub except marked with the M.



7. Install the new torque converter support hub on the motor rotor.
8. Install the drive plate and washer, and tighten bolts in a crisscross pattern in two or more steps.
9. Install the torque converter on the mainshaft with the new O-ring.
10. Install the transmission assembly (see page 14-243).

Automatic Transmission

ATF Cooler Cleaning

Special Tools Required

- ATF Cooler Cleaner GHTTTCF6H
- Magnetic Nonbypass Spin-on Filter GTHGNBP2 (Available through the Honda Tool and Equipment Program 1-888-424-6857)

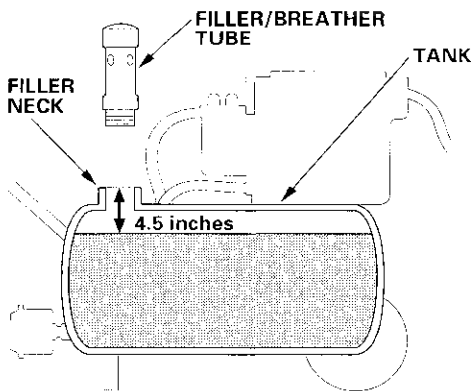
Before installing an overhauled or remanufactured automatic transmission, you must thoroughly clean the ATF cooler to prevent system contamination. Failure to do so could cause a repeat automatic transmission failure.

The cleaning procedure involves heated ATF-Z1 delivered under high pressure (100 psi). Check the security of all hoses and connections. Always wear safety glasses or a face shield, along with gloves and protective clothing. If you get ATF in your eyes or on your skin, rinse with water immediately.

⚠ WARNING

- Improper use of the ATF cooler cleaner can result in burns and other serious injuries.
- Always wear eye protection and protective clothing, and follow all instructions in this manual.

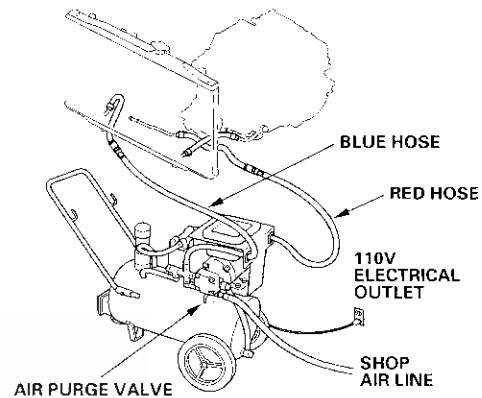
1. Check the fluid in the cooler cleaner tank. (The fluid level should be 4.5 inches from the top of the filler neck.) Adjust the level if needed; do not overfill. Use only Honda ATF-Z1; do not use any additives.



2. Plug the cooler cleaner into a 110 V grounded electrical outlet.

NOTICE

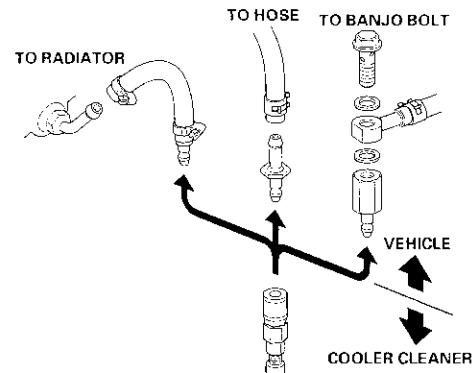
Make sure the outlet has no other appliances (light fixtures, drop lights, extension cords) plugged into it. Also, never plug the cooler cleaner into an extension cord or drop light; you could damage the unit.



3. Flip the HEAT toggle switch to ON; the green indicator above the toggle switch comes on. Wait 1 hour for the cooler cleaner to reach its operating temperature. (The cooler cleaner is ready to use when the temperature gauge reads 140 ° to 150 °F.)

NOTE: If the red indicator above the HEAT toggle switch comes on, the fluid level in the tank is too low for the tank heater to work (see step 1 of this procedure).

4. Select the appropriate pair of fittings, and attach them to the radiator, to the hoses, or to the banjo bolts for flow through the ATF cooler cleaner.





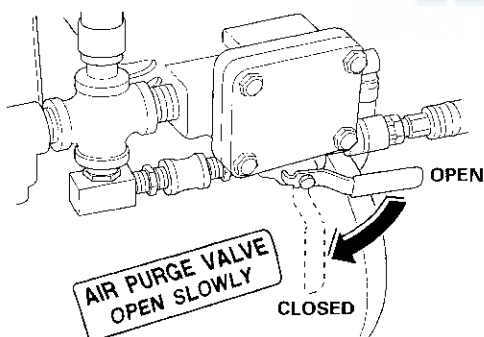
5. Connect the red hose to the cooler outlet line (the line that normally goes to the external filter on the transmission).
6. Connect the blue hose to the cooler inlet line.
7. Connect a shop air hose (regulated to 100 to 125 psi) to the air purge valve.

NOTICE

The quick-connect fitting has a one-way check valve to keep ATF from entering your shop's air system. Do not remove or replace the fitting. Attach the coupler provided with the cooler cleaner to your shop air line if your coupler is not compatible.

8. Flip the MOTOR toggle switch to ON; the green indicator above the toggle switch comes on. Let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically to cause agitation and improve the cleaning process. Always open the valve slowly. At the end of the 5-minutes cleaning period, leave the air purge valve open.

NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.



9. With the air purge valve open, flip the MOTOR toggle switch to OFF; the green indicator goes off. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.
10. Disconnect the red and blue hoses from the ATF cooler. Now connect the red hose to the cooler inlet line.
11. Now connect the blue hose to the cooler outlet line.

12. Flip the MOTOR toggle switch to ON, and let the pump run for 5 minutes. While the pump is running, open and close the air purge valve periodically. Always open the valve slowly. At the end of the 5-minutes cleaning period, leave the air purge valve open.

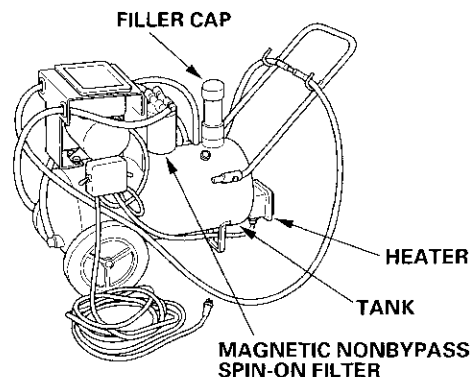
NOTE: While the pump is running with the air purge valve open, it is normal to see vapor coming from the filler/breather tube vents.

13. With the air purge valve open, flip the MOTOR toggle switch to OFF. Leave the air purge valve open for at least 15 seconds to purge the lines and hoses of residual ATF, then close the valve.
14. Disconnect the red and blue hoses from the ATF cooler lines.
15. Connect the red and blue hoses to each other.
16. Disconnect the shop air from the air purge valve. Disconnect and stow the coupler if used.
17. Disconnect and stow the fittings from the ATF cooler inlet and outlet lines.
18. Unplug the cooler cleaner from the 110 V outlet.

Tool Maintenance

Follow these instructions to keep the ATF cooler cleaner working properly:

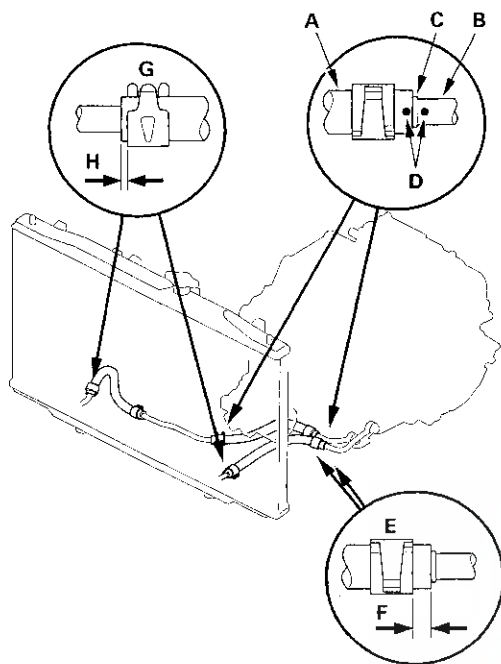
- Replace the two magnetic nonbypass spin-on filters once a year or when you notice a restriction in the ATF flow.
- Check the level and condition of the fluid in the tank before each use.
- Replace the ATF in the tank when it looks dark or dirty.



Automatic Transmission

ATF Cooler Hose Replacement

1. Slide the ATF cooler hoses (A) over the ATF cooler lines (B) until the hose ends contact the bulge (C) on the ATF cooler lines.

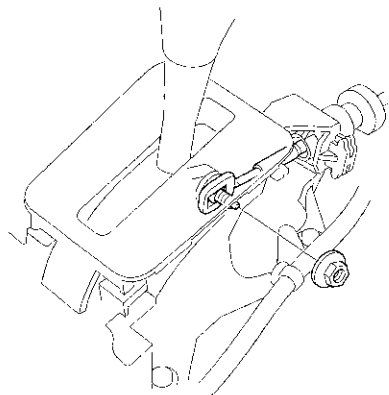


2. Line up the dots (D) on the hose and outlet line at the hose ends.
3. Secure the hoses with the clips (E) at 6–8 mm (0.2–0.3 in.) (F) from the hose ends.
4. Secure the hoses at the ATF cooler with the clips (G) at 2–4 mm (0.1–0.2 in.) (H) from the hose ends.

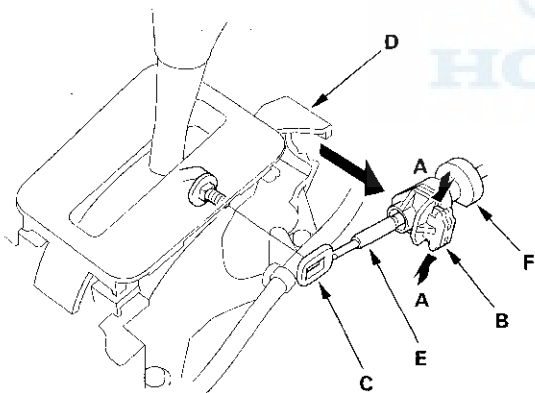


Shift Lever Removal

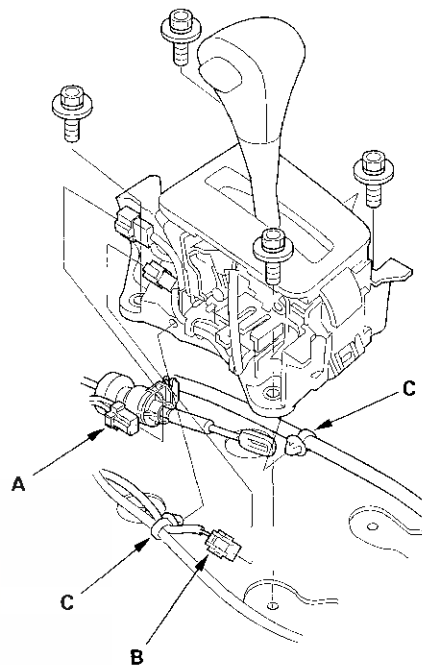
1. Remove the center console (see page 20-62).
2. Shift the transmission into the R position.
3. Remove the nut securing the shift cable end.



4. Press the holder lock release (A), and pull out the socket holder (B) to remove the shift cable (C) from the shift lever bracket base (D). Do not remove the shift cable by pulling the shift cable guide (E) and damper (F).



5. Disconnect shift lock solenoid connector (A), park pin switch/A/T gear position indicator panel light connector (B).

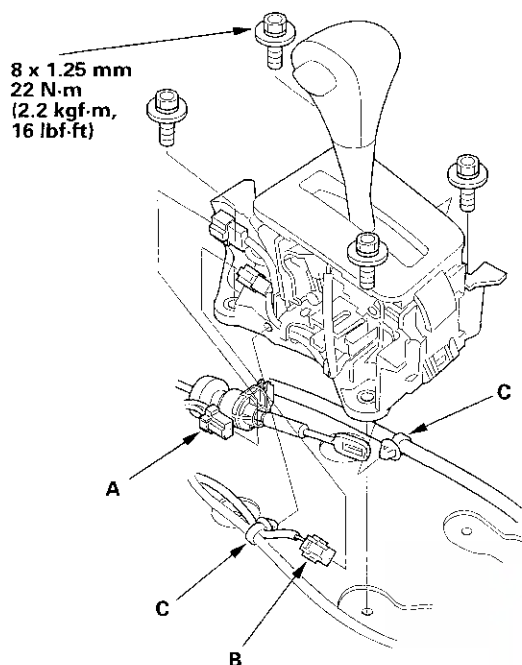


6. Remove the harness clamps (C).
7. Remove the shift lever assembly.

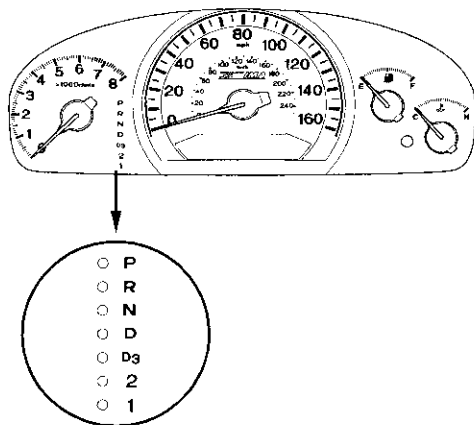
Automatic Transmission

Shift Lever Installation

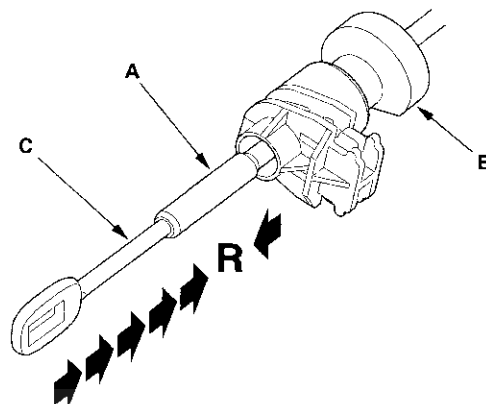
1. Install the shift lever assembly.



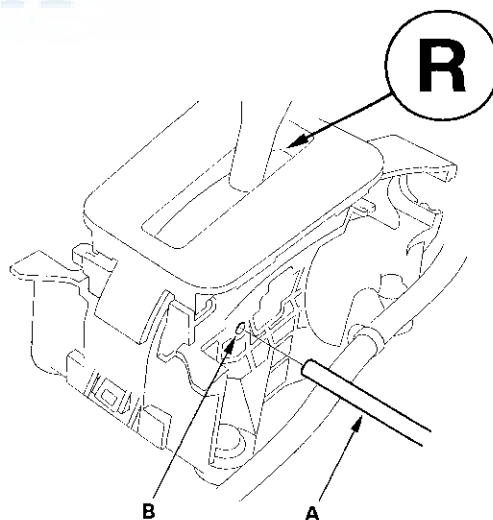
2. Connect the shift lock solenoid connector (A) and park pin switch/A/T gear position indicator panel light connector (B), and install the harness clamps (C) on the shift lever bracket base.
3. Turn the ignition switch ON (II), and verify that the R position indicator comes on.



4. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (A) and damper (B) to adjust the shift cable (C).

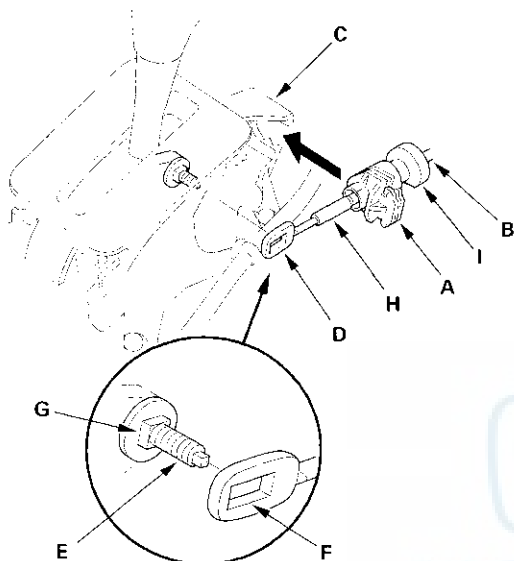


5. Turn the ignition switch OFF.
6. Place the shift lever in the R position, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base, through the positioning hole on the shift lever, and into the positioning hole on the shift lever bracket base. The shift lever is secured in the R position.



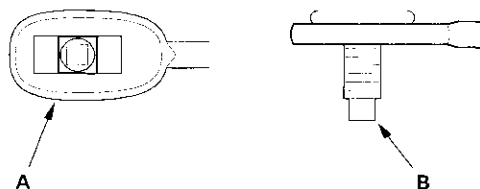


7. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H) and damper (I).

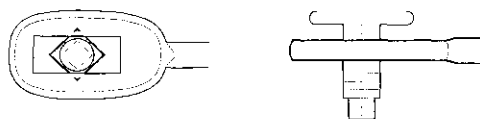


8. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



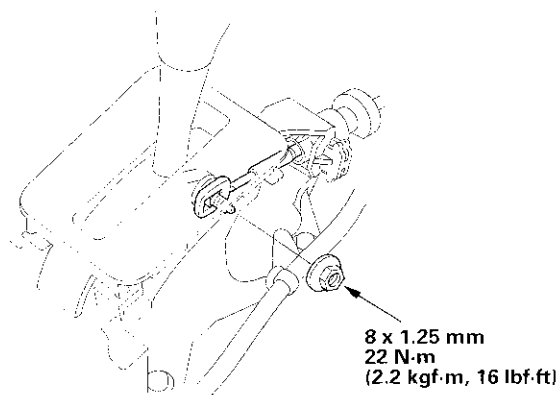
Improperly Installed:



Cable end rides on the bottom of the mounting stud.

9. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.

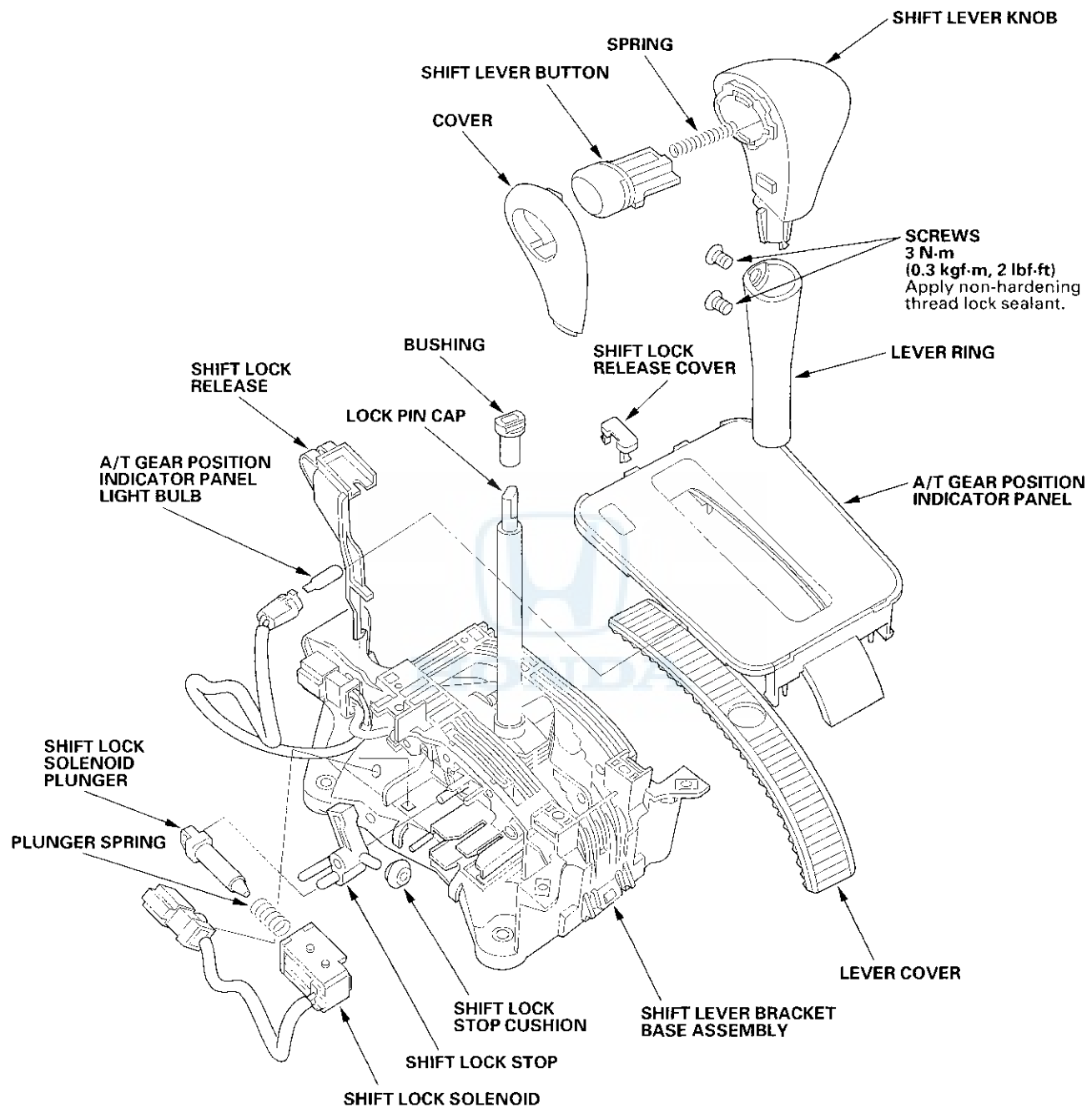
10. Install and tighten the nut.



11. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
12. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.
13. Push the shift lock release, and verify that the shift lever releases.
14. Reinstall the center console (see page 20-62).

Automatic Transmission

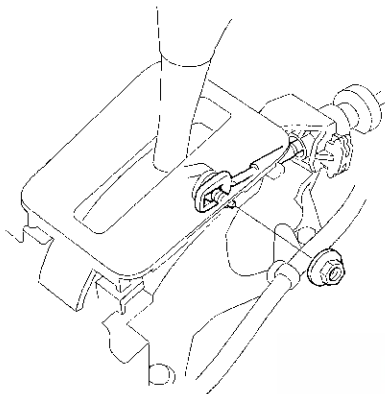
Shift Lever Disassembly/Reassembly



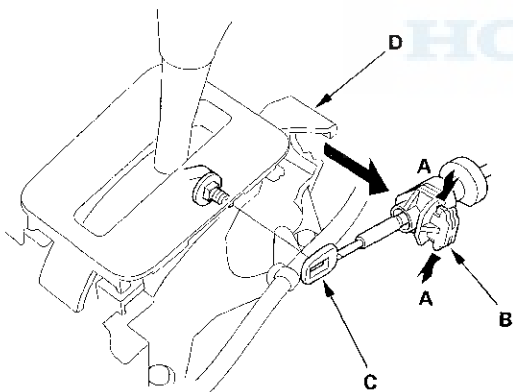


Shift Cable Replacement

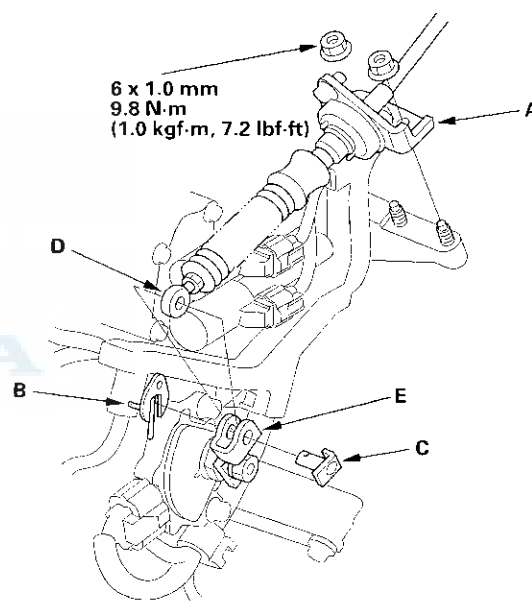
1. Raise the vehicle, and make sure it is supported securely.
2. Remove the center console (see page 20-62).
3. Shift the transmission into the R position.
4. Remove the nut securing the shift cable end.



5. Press the holder lock release (A), and pull out the socket holder (B) to remove the shift cable (C) from the shift lever bracket base (D).



6. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
7. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
8. Remove the battery hold-down bracket, and remove the battery and battery tray.
9. Remove the intake air duct and air cleaner housing.
10. Remove the battery base.
11. Remove the nuts securing the shift cable bracket (A).



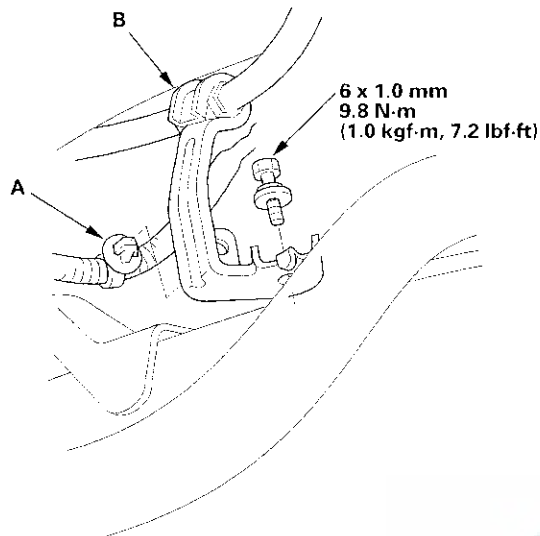
12. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).

(cont'd)

Automatic Transmission

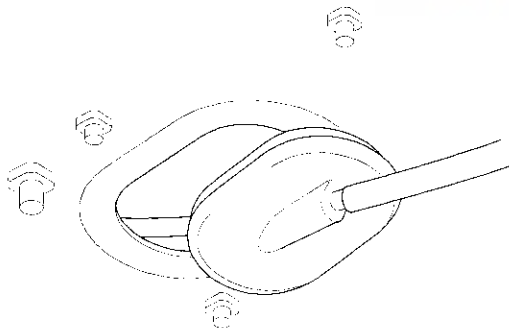
Shift Cable Replacement (cont'd)

13. Remove the harness clamp (A) from the shift cable bracket (B), then remove the bolt securing the bracket.



14. Remove the heat shield under the shift cable grommet.

15. Remove the shift cable grommet, and pull out the shift cable.



16. Insert the new shift cable through the grommet hole, and install the grommet in its hole. Do not bend the shift cable excessively.

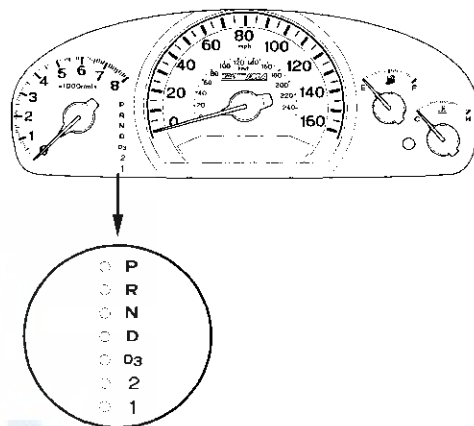
17. Install the heat shield.

18. Secure the shift cable bracket on the front subframe with the bolt, then install the harness clamp on the bracket.

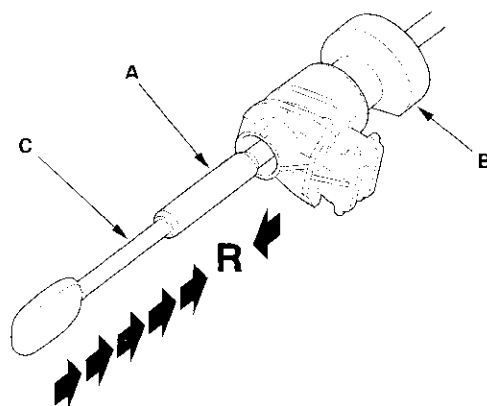
19. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.

20. Secure the shift cable bracket.

21. Turn the ignition switch ON (II), and verify that the R position indicator comes on.



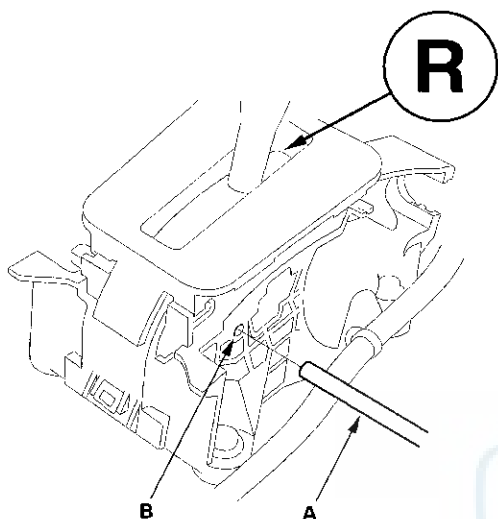
22. If necessary, push the shift cable until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (A) and damper (B) to adjust the shift cable (C).



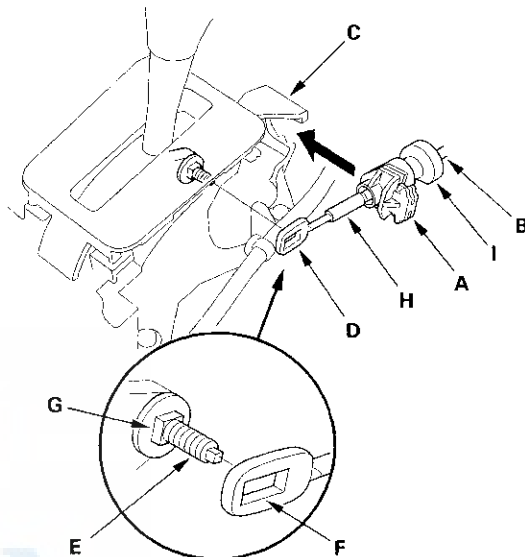
23. Turn the ignition switch OFF.



24. Place the shift lever in the R position, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base, through the positioning hole on the shift lever, and into the positioning hole on the shift lever bracket base. The shift lever is secured in the R position.

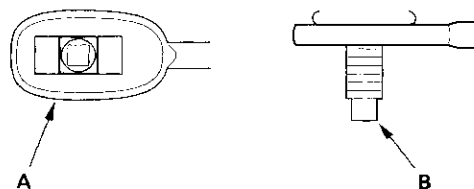


25. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H) and damper (I).

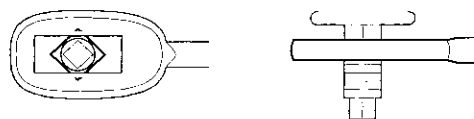


26. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:



Improperly Installed:



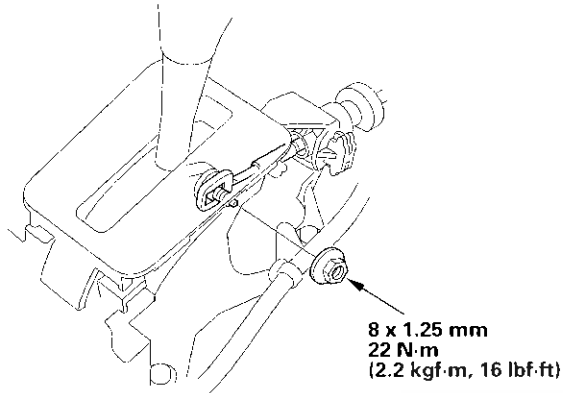
Cable end rides on the bottom of the mounting stud.

(cont'd)

Automatic Transmission

Shift Cable Replacement (cont'd)

27. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.
28. Install and tighten the nut.

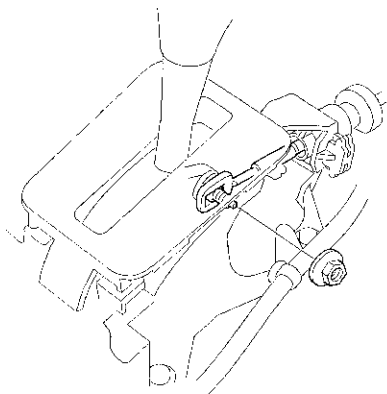


29. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
30. Install the battery base.
31. Install the intake air duct and air cleaner housing.
32. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
33. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.
34. Allow the front wheels to rotate freely.
35. Start the engine, and check the shift lever operation in all gears.
36. Push the shift lock release, and verify that the shift lever releases.
37. Reinstall the center console (see page 20-62).
38. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
39. Do the power window control unit reset procedure (see page 22-200).
40. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.

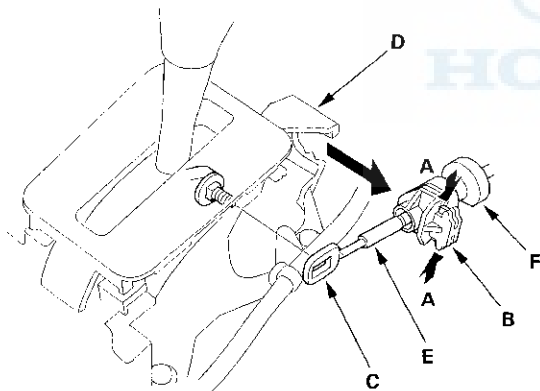


Shift Cable Adjustment

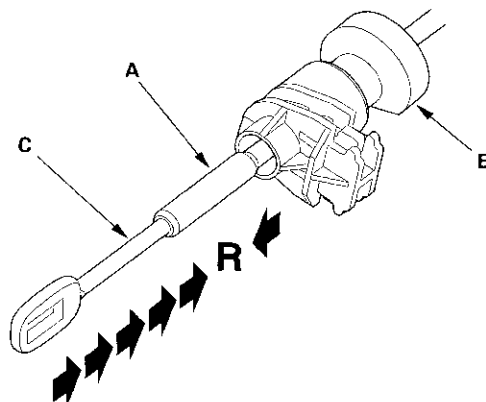
1. Remove the center console (see page 20-62).
2. Shift the transmission into the R position.
3. Remove the nut securing the shift cable end.



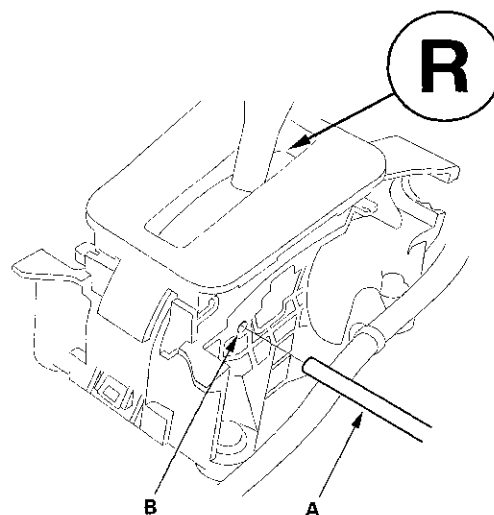
4. Press the holder lock release (A), and pull out the socket holder (B) to remove the shift cable (C) from the shift lever bracket base (D). Do not remove the shift cable by pulling the shift cable guide (E) and damper (F).



5. Push the shift cable until it stops, then release it. Pull the shift cable back one step so that the shift position is in R. Do not hold the shift cable guide (A) and damper (B) to adjust the shift cable (C).



6. Turn the ignition switch ON (II), and verify that the R position indicator comes on.
7. Turn the ignition switch OFF.
8. Place the shift lever in the R position, then insert a 6.0 mm (0.24 in.) pin (A) through the positioning hole (B) on the shift lever bracket base, through the positioning hole on the shift lever, and into the positioning hole on the shift lever bracket base. The shift lever is secured in the R position.

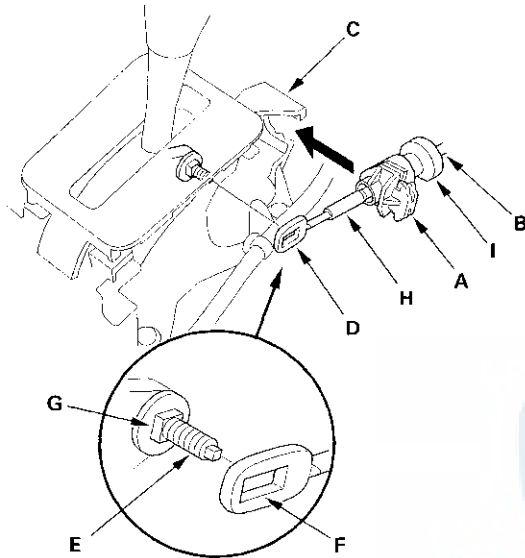


(cont'd)

Automatic Transmission

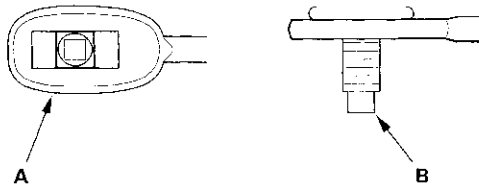
Shift Cable Adjustment (cont'd)

9. Align the socket holder (A) on the shift cable (B) with the slot in the bracket base (C), then slide the holder into the base. Install the shift cable end (D) over the mounting stud (E) by aligning its square hole (F) with the square fitting (G) at the bottom of the stud. Push the holder until it snaps securely in place. Do not install the shift cable by holding the shift cable guide (H) and damper (I).

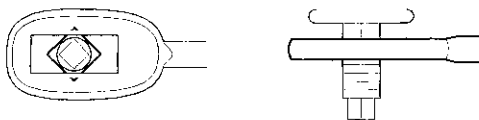


10. Verify that the shift cable end (A) is properly installed on the mounting stud (B).

Properly Installed:

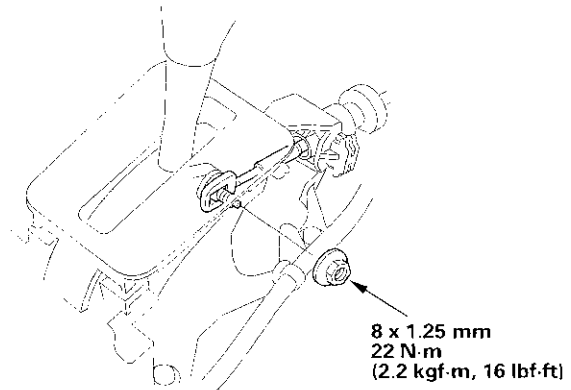


Improperly Installed:



Cable end rides on the bottom of the mounting stud.

11. If improperly installed, remove the shift cable from the bracket base, and reinstall the shift cable. Do not install the shift cable end on the mounting stud while the shift cable is on the bracket base.
12. Install and tighten the nut.

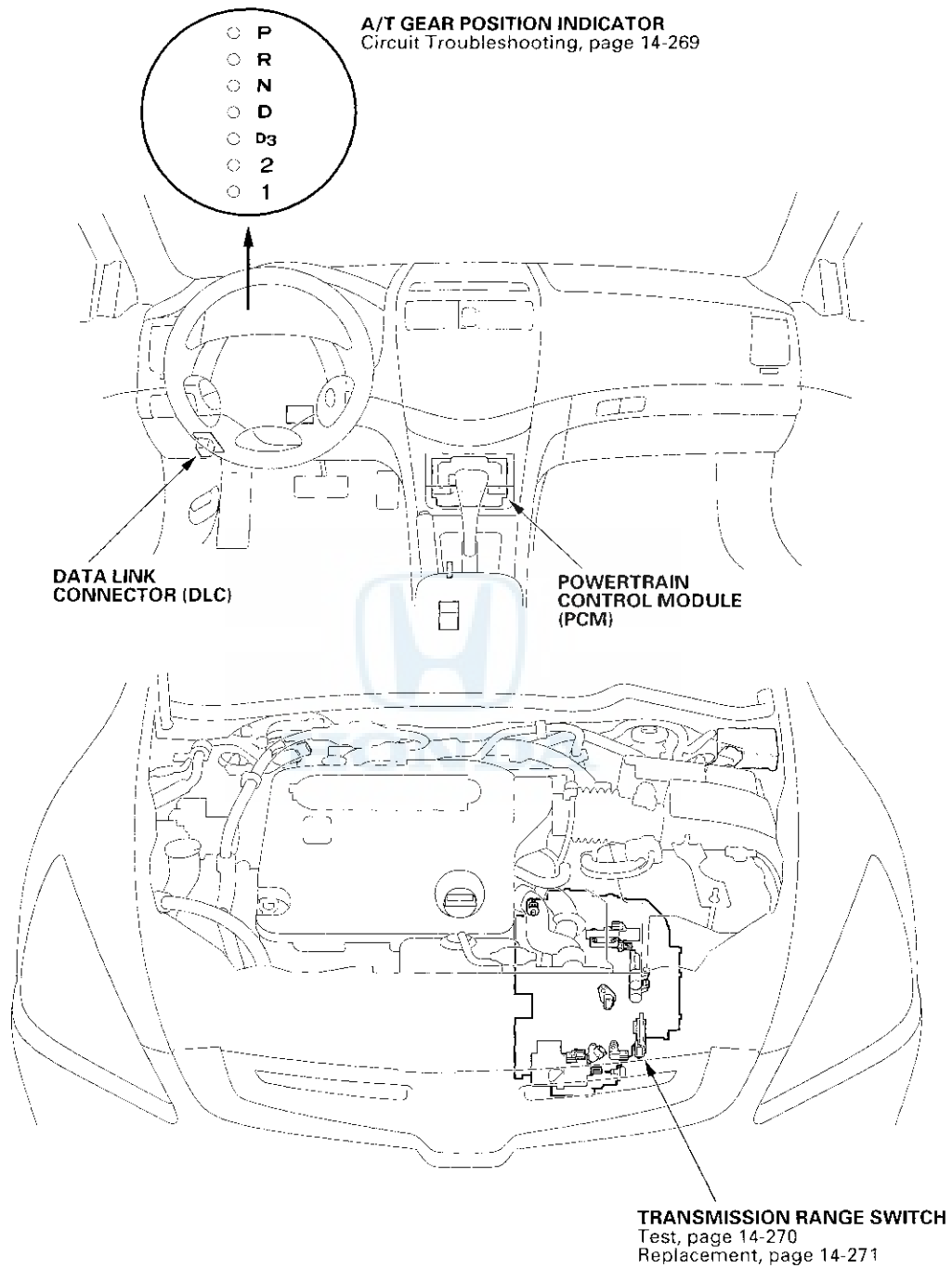


13. Remove the 6.0 mm (0.24 in.) pin that was installed to hold the shift lever.
14. Move the shift lever to each position, and verify that the A/T gear position indicator follows the transmission range switch.
15. Push the shift lock release, and verify that the shift lever releases.
16. Reinstall the center console (see page 20-62).

A/T Gear Position Indicator

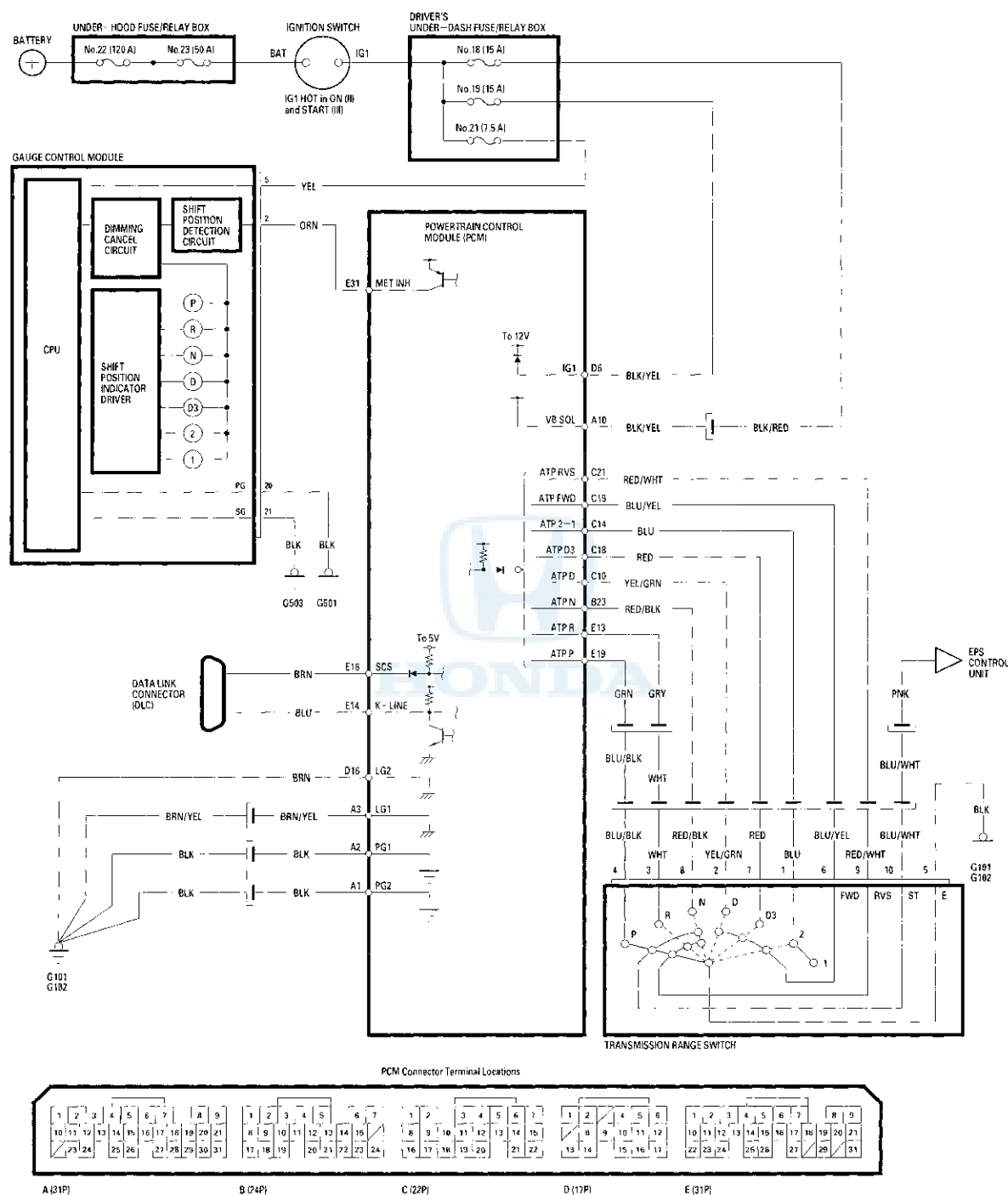


Component Location Index



A/T Gear Position Indicator

Circuit Diagram





A/T Gear Position Indicator Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11), and the precautions and procedures (see page 24-13) in the SRS before performing repair or service.

1. Check the indicator drive circuit and communication line in the gauge control module with the self-diagnostic procedure of the gauge control module (see page 22-226).

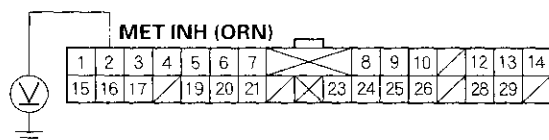
Is the system OK?

YES—Go to step 2.

NO—Record the ODO data in the old gauge control module, and replace the gauge control module (see page 22-235). Input the old ODO data in the new gauge control module with the HDS (see page 22-235). ■

2. Remove the gauge control module (see page 22-235).
3. Turn the ignition switch ON (II).
4. Measure the voltage between gauge control module connector terminal No. 2 and body ground. The shift lever can be in any position.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

Is there battery voltage?

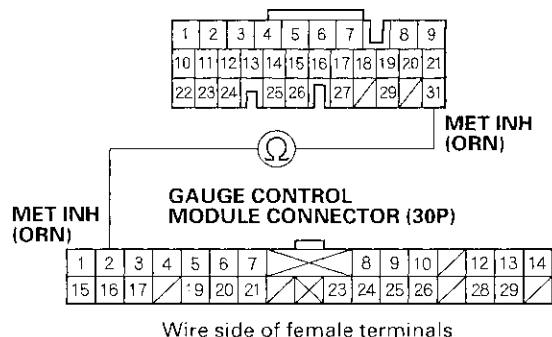
YES—Faulty A/T gear position indicator in the gauge control module, replace the gauge control module (see page 22-235). ■

NO—Go to step 5.

5. Turn the ignition switch OFF, and jump the SCS line with the HDS.
6. Disconnect PCM connector E (31P).

7. Check for continuity between PCM connector terminal E31 and gauge control module connector terminal No. 2.

PCM CONNECTOR E (31P)



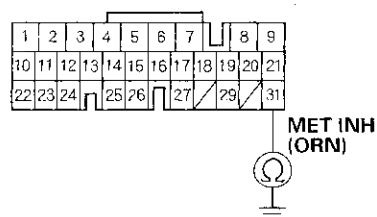
Is there continuity?

YES—Go to step 8.

NO—Repair an open in the wire between PCM connector terminal E31 and gauge control module. ■

8. Check for continuity between PCM connector terminal E31 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

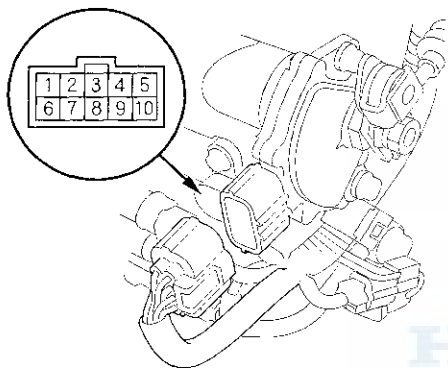
YES—Repair a short to ground in the wire between PCM connector terminal E31 and the gauge control module. ■

NO—Check for loose terminal fit in the PCM connectors. If necessary, substitute a known-good PCM and recheck. ■

A/T Gear Position Indicator

Transmission Range Switch Test

- 1. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
- 2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
- 3. Remove the battery hold-down bracket, and remove the battery and battery tray.
- 4. Remove the intake air duct and air cleaner housing.
- 5. Remove the battery base.
- 6. Disconnect the transmission range switch connector.



- 7. Check for continuity between the terminals at the switch connector. There should be continuity between the terminals in the following table for each switch position.

Transmission Range Switch Connector

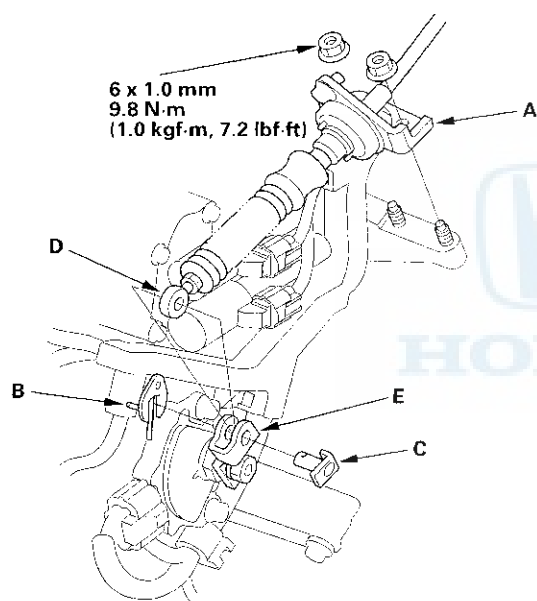
Position	Connector Terminal/Signal									
	1	2	3	4	5	6	7	8	9	10
	2-1	D	R	P	GND	ATP FWD	D3	N	ATP RVS	ATP NP
P				○	○				○	○
R			○		○				○	
N					○			○	○	○
D		○			○	○				
D3					○	○	○			
2	○				○	○				
1	○				○					

- 8. The transmission range switch test is finished if the test results are OK.
If there is no continuity between any terminals, check that transmission range switch installation. If the switch installation is OK, replace the switch (see page 14-271).
- 9. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
- 10. Install the battery base.
- 11. Install the intake air duct and air cleaner housing.
- 12. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
- 13. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
- 14. Do the power window control unit reset procedure (see page 22-200).
- 15. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.



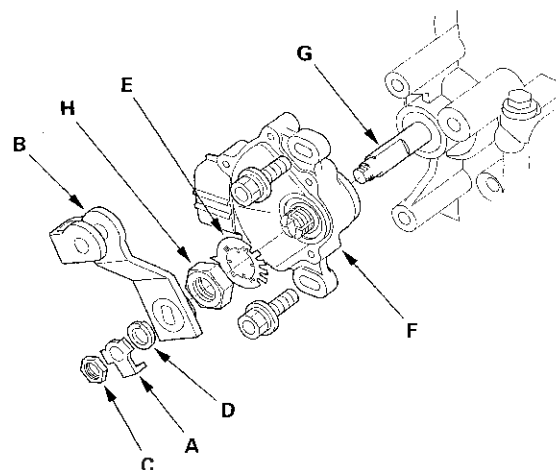
Transmission Range Switch Replacement

1. Get the customer's radio anti-theft code (navigation code), and write down the customer's audio presets.
2. Disconnect the negative terminal from the battery, then disconnect the positive terminal.
3. Remove the battery hold-down bracket, and remove the battery and battery tray.
4. Remove the intake air duct and air cleaner housing.
5. Remove the battery base.
6. Remove the nuts securing the shift cable bracket (A).

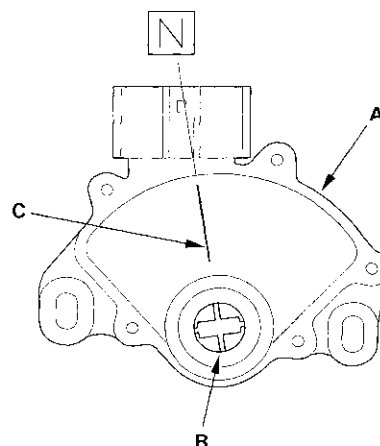


7. Remove the spring clip/washer (B) and the control pin (C), then separate the shift cable end (D) from the control lever (E).
8. Disconnect the transmission range switch connector.

9. Pry the lock tab of the lock washer (A) on the control lever (B), and remove the nut (C), lock washer, spring washer (D) and control lever.



10. Pry the lock tabs of the lock washer (E) on the transmission range switch (F), hold the selector control shaft (G) with a 6.0 mm wrench, and loosen the locknut (H).
11. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).
12. Set the new transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the selector control shaft hole (B) aligns with the N position line (C).

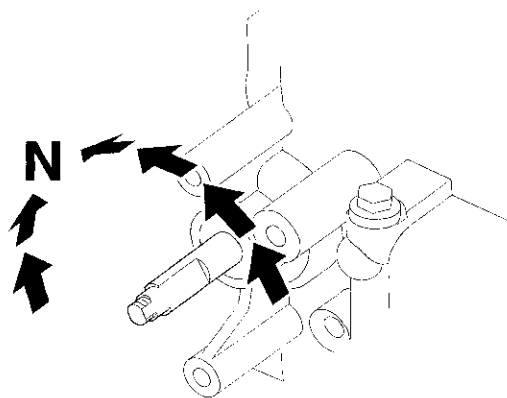


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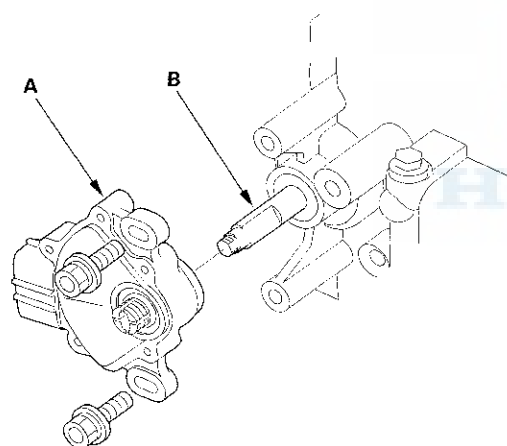
A/T Gear Position Indicator

Transmission Range Switch Replacement (cont'd)

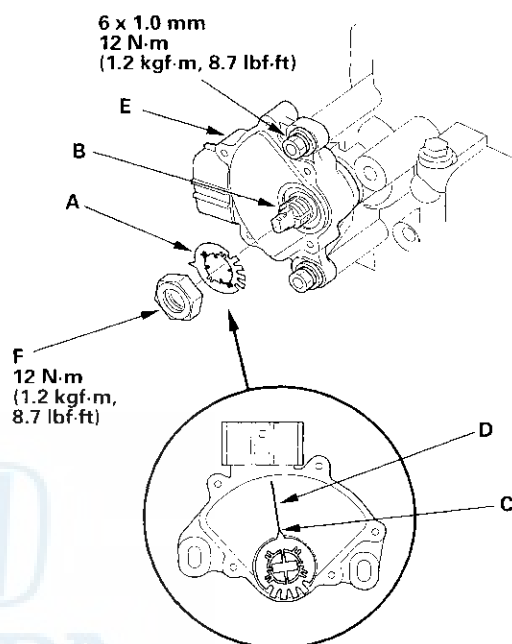
13. Set the selector control shaft to the N position by turning the selector control shaft with a 6.0 mm wrench.



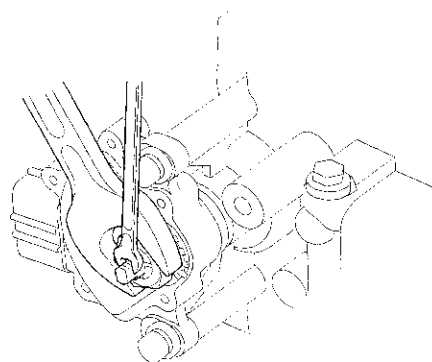
14. Install the transmission range switch (A) gently over the selector control shaft (B), and install the bolts loosely.



15. Install the new lock washer (A) over the selector control shaft (B) while aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).



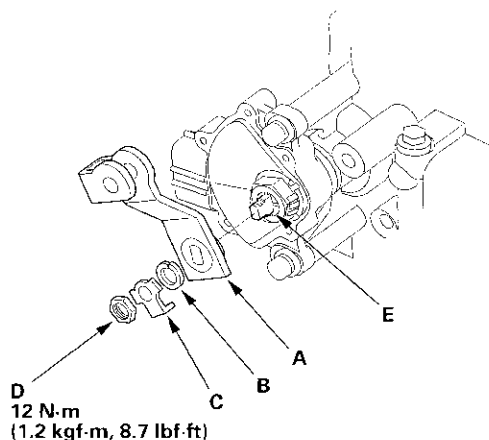
16. Push the locknut against the transmission housing to seat the transmission range switch into the selector control shaft, and tighten the locknut to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the selector control shaft with a 6.0 mm wrench, then bend the lock tabs against the locknut.



17. Tighten the bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) securing the transmission range switch.



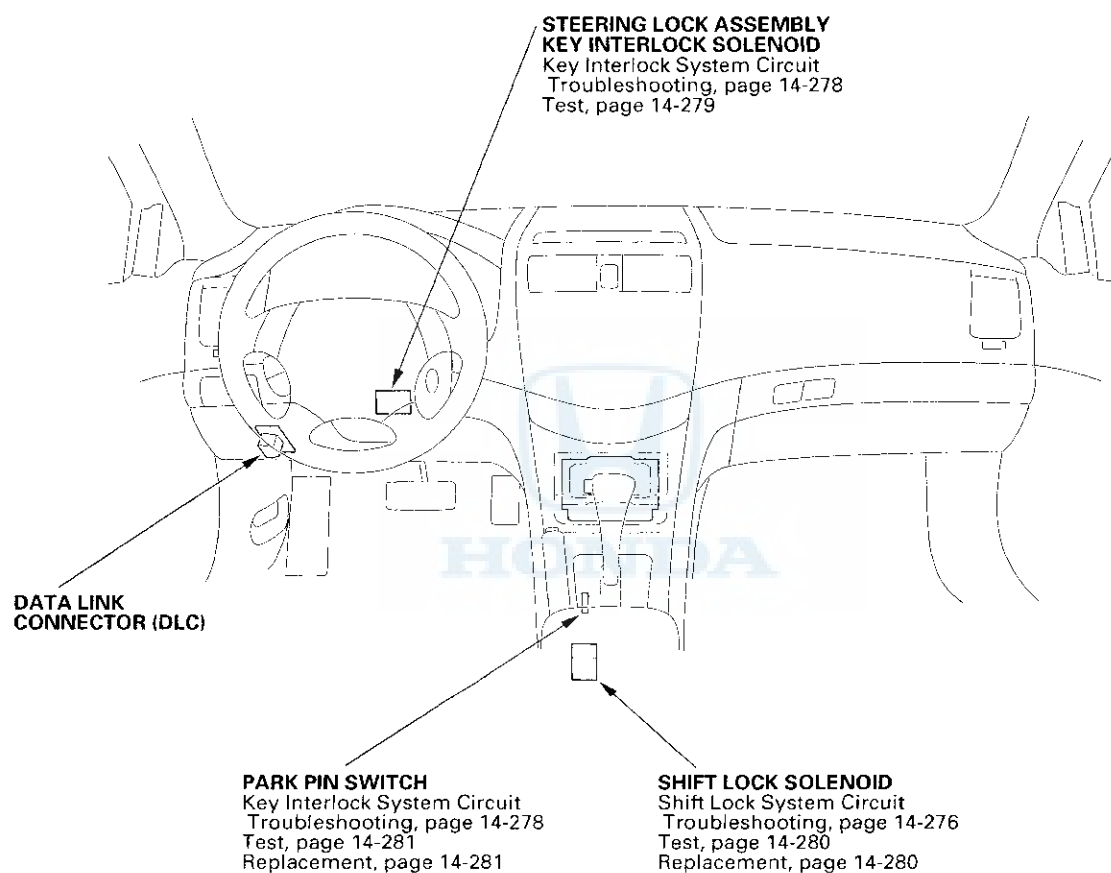
18. Install the control lever (A), spring washer (B), lock washer (C), and locknut (D) on the selector control shaft (E).



19. Attach the shift cable end to the control lever, then insert the control pin into the control lever hole through the shift cable end, and secure the control pin with the spring clip/washer.
20. Secure the shift cable bracket.
21. Check the connectors for rust, dirt, or oil, clean or repair if necessary, then connect the connector securely.
22. Install the battery base.
23. Install the intake air duct and air cleaner housing.
24. Install the battery tray, battery, and battery hold-down bracket, then connect the battery terminals.
25. Turn the ignition switch ON (II). Move the shift lever through all positions, and check the transmission range switch synchronization with the A/T gear position indicator.
26. Check that the engine will start in the P and N positions, and will not start in any other shift lever position.
27. Check that the back-up lights come on when the shift lever is in the R position.
28. Allow the front wheels to rotate freely, then start the engine, and check the shift lever operation.
29. Enter the radio code (navigation code), then enter the customer's audio presets, and set the clock.
30. Do the power window control unit reset procedure (see page 22-200).
31. If the IMA battery level gauge (BAT) displays no segments, start the engine in the P or N position, and hold it between 3,500 and 4,000 rpm with no load until the BAT displays at least three segments.

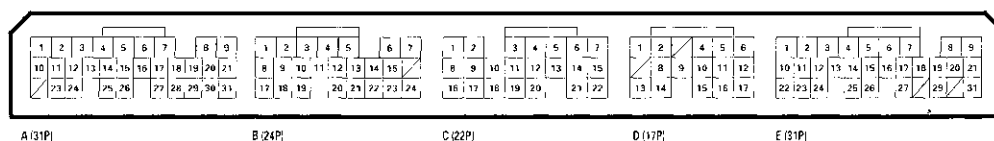
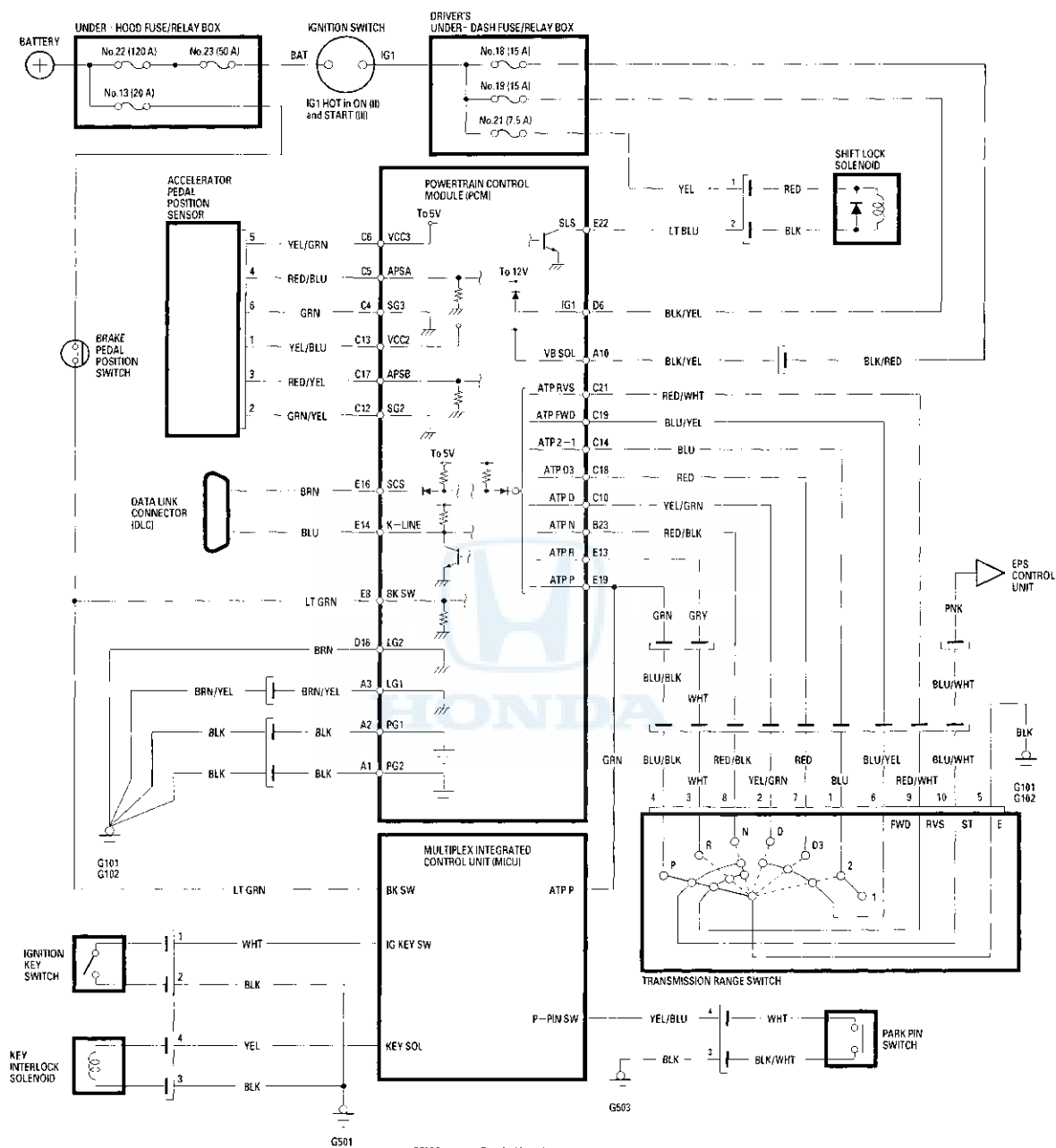
A/T Interlock System

Component Location Index





Circuit Diagram



A/T Interlock System

Shift Lock System Circuit Troubleshooting

1. Press the brake pedal.

Are the brake lights ON?

YES—Go to step 2.

NO—Repair faulty brake light circuit. ■

2. Connect the HDS to the DLC.

3. Start the engine.

4. Check the engine speed and the accelerator pedal position in the A/T data list with the HDS.

Is the engine speed at idle, and APSA about 0.5 V and APSB about 0.5 V?

YES—Go to step 5.

NO—Troubleshoot engine speed or the accelerator pedal position input. ■

5. Choose Shift Lock Solenoid Test in Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.

Does the shift lock solenoid work properly?

YES—Shift lock system is OK. Check the shift lock mechanism, if necessary. ■

NO—Go to step 6.

6. Turn the ignition switch OFF.

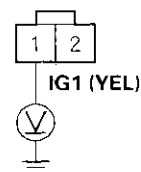
7. Remove the center console (see page 20-62).

8. Disconnect the shift lock solenoid connector.

9. Turn the ignition switch ON (II).

10. Measure the voltage between shift lock solenoid connector terminal No. 1 and body ground.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

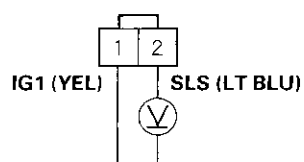
YES—Go to step 11.

NO—Check for a blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair an open or short in the wire between the shift lock solenoid connector and the under-dash fuse/relay box. ■



11. Shift the shift lever into the P position, and press the brake pedal. Do not press the accelerator.
12. Measure the voltage between shift lock solenoid connector terminals No. 1 and No. 2 while pressing the brake pedal.

SHIFT LOCK SOLENOID CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Check the shift lock mechanism. If the mechanism is OK, replace the shift lock solenoid (see page 14-280). ■

NO—Check for poor or loose PCM connector terminal E22 at the PCM, and check for an open in the wire between PCM connector terminal E22 and shift lock solenoid connector. If the connection and wire is OK, substitute a known-good PCM, then recheck. ■

A/T Interlock System

Key Interlock System Circuit Troubleshooting

SRS components are located in this area. Review the SRS component locations (see page 24-11), and the precautions and procedures (see page 24-13) before performing repair or service.

1. Turn the ignition switch to ACC (I). The shift lever must be in the P position.
2. Disconnect the steering lock assembly connector.
3. Check if the ignition key can be moved to the LOCK (0) position, and remove the key from the cylinder.

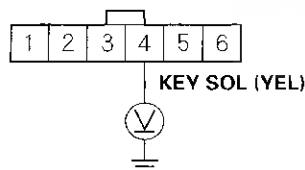
Can the ignition key be moved the LOCK (0) position, and then remove?

YES—Go to step 4.

NO—Replace the ignition key cylinder/steering lock assembly (see page 17-13).

4. Turn the ignition switch to ACC (I) or ON (II), and shift to the N position.
5. Check the voltage between steering lock assembly connector terminal No. 4 and body ground.

STEERING LOCK ASSEMBLY CONNECTOR



Wire side of female terminals

Is there battery voltage?

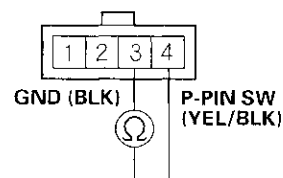
YES—Go to step 6.

NO—Check for an open in the YEL wire between the multiplex integrated control unit (MICU) and the steering lock assembly connector. If the wire is OK, substitute a known-good MICU and recheck. ■

6. Turn the ignition switch to ACC (I), and shift to the P position.
7. Remove the center console (see page 20-62).

8. Disconnect the park pin switch/A/T gear position indicator panel light connector (see page 14-281).
9. Check for continuity between park pin switch/A/T gear position indicator panel light connector terminals No. 3 and No. 4 while the shift lever is in the P position, and when the shift lever is out of the P position.

PARK PIN SWITCH/A/T GEAR POSITION INDICATOR PANEL LIGHT CONNECTOR



Terminal side of male terminals

Is there continuity when the shift lever is in any position other than P, and no continuity when the shift lever is in P?

YES—Check for an open in the wire between the MICU and park pin switch/A/T gear position indicator panel light connector. If the wire is OK, replace the MICU. ■

NO—Replace the shift lever bracket base assembly; the park pin switch is not available separately from the shift lever bracket base assembly (see page 14-281). ■

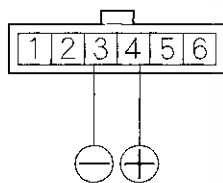


Key Interlock Solenoid Test

SRS components are located in this area. Review the SRS component locations (see page 24-11), and the precautions and procedures (see page 24-13) before performing repair or service.

1. Remove the driver's dashboard lower cover and lower steering column cover.
2. Disconnect steering lock assembly connector.
3. Insert the ignition key in the key cylinder, then turn the ignition key to ACC (I).
4. Connect the battery positive terminal to steering lock assembly connector terminal No. 4, and connect the battery negative terminal to No. 3 terminal. Make sure that the ignition key cannot be turned to LOCK (0) position. Release the battery terminals, and make sure that the key can be turned to LOCK (0) position and removed from the cylinder.

STEERING LOCK ASSEMBLY CONNECTOR



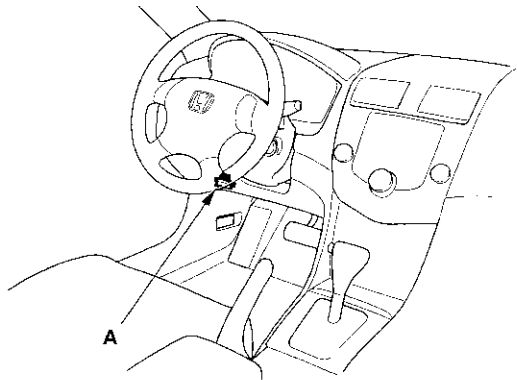
Terminal side of male terminals

5. If the key interlock solenoid does not work properly, replace the ignition key cylinder/steering lock assembly (see page 17-13).

A/T Interlock System

Shift Lock Solenoid Test

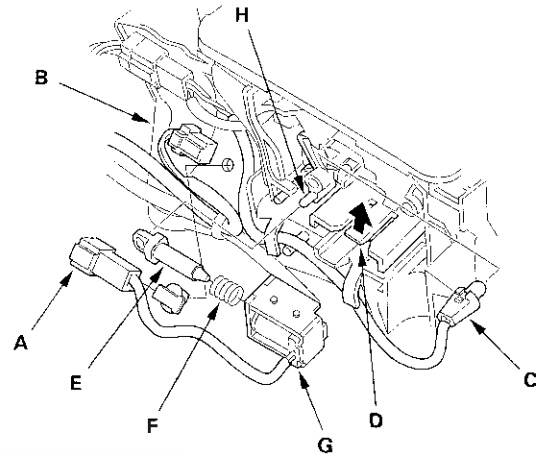
1. Connect the HDS to the DLC (A).



2. Choose Shift Lock Solenoid Test in Miscellaneous Test Menu, and check that the shift lock solenoid operates with the HDS.
3. Check that the shift lever can be moved out of the P position when Shift Lock Solenoid: ON. Move the shift lever back in the P position, and make sure it locks with Shift Lock Solenoid: OFF.
4. Check that the shift lock releases when the shift lock release is pushed, and check that it locks when the shift lock release is released.
5. If the shift lock solenoid does not work properly, perform shift lock system troubleshooting (see page 14-276).

Shift Lock Solenoid Replacement

1. Remove the center console (see page 20-62).
2. Disconnect the shift lock solenoid connector (A), and remove it from the shift lever bracket base (B).

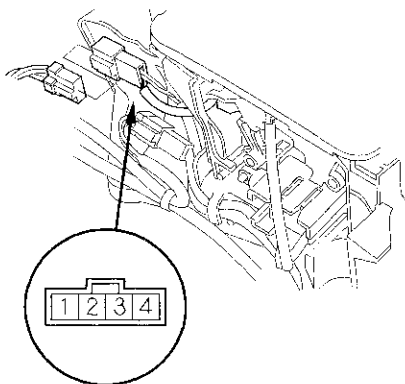


3. Remove the A/T gear position indicator panel light bulb socket (C).
4. Release the lock tab (D) securing the shift lock solenoid, and remove the shift lock solenoid.
5. Install the shift lock solenoid plunger (E) and plunger spring (F) in the new shift lock solenoid (G).
6. Apply silicon grease to joint of the shift lock solenoid plunger, if necessary.
7. Install the new shift lock solenoid by aligning the joint of the shift lock solenoid plunger with the tip of the shift lock stop (H).
8. Install the A/T gear position indicator panel light bulb socket.
9. Install the shift lock solenoid connector on the shift lever bracket base, then connect the connector.
10. Install the center console (see page 20-62).



Park Pin Switch Test

1. Remove the center console (see page 20-62).
2. Disconnect the park pin switch/A/T gear position indicator panel light connector.



Terminal side of male terminals

3. Shift the shift lever into the P position, then check for continuity between connector terminals No. 3 and No. 4. There should be no continuity.
4. Shift out of the P position, and check for continuity between terminals No. 3 and No. 4. There should be continuity.
5. If the park pin switch is faulty, replace the shift lever bracket base assembly; the park pin switch is not available separately (see page 14-281).
6. Install the center console (see page 20-62).

Park Pin Switch Replacement

NOTE: The park pin switch is not available from the shift lever bracket base assembly.

1. Remove the shift lever (see page 14-257).
2. Disassemble the shift lever (see page 14-260).
3. Replace the shift lever bracket base assembly, and assemble the shift lever.
4. Install the shift lever (see page 14-258).
5. Install the center console (see page 20-62).

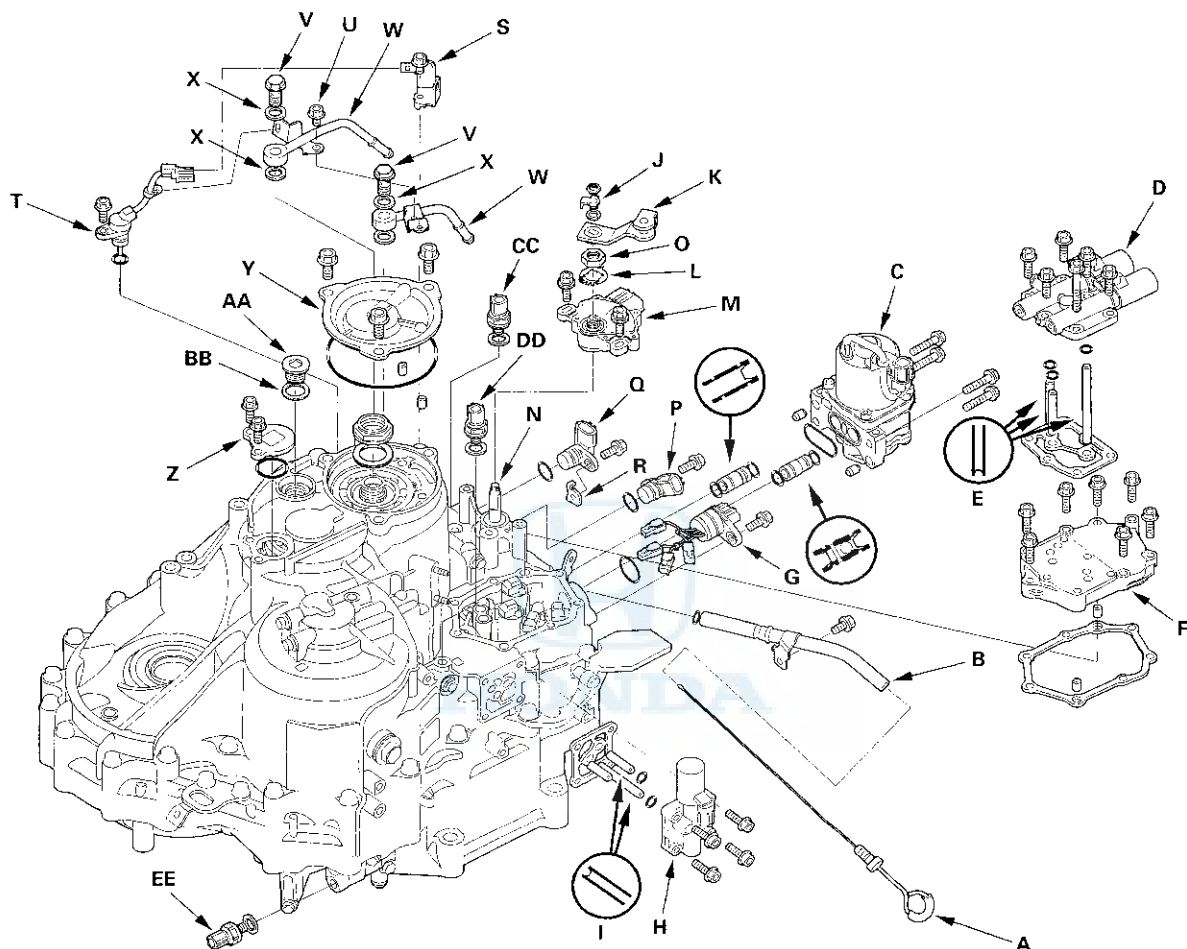
Automatic Transmission

Transmission Disassembly

Special Tools Required

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

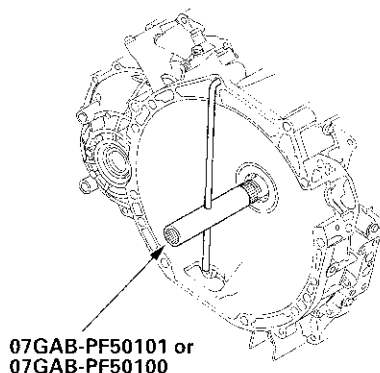
1. Remove the ATF dipstick (A) and the dipstick tube (B).



2. Remove the auxiliary transmission fluid pump (ATFP) (C), dowel pins (two), ATF feed pipe, and suction pipe.
3. Remove the A/T clutch pressure control solenoid valve A and B (D) (six bolts), ATF feed pipes (E) (three), O-rings (three), and gasket.
4. Remove the solenoid valve cover (F) (seven bolts), dowel pins (two), and gasket.
5. Disconnect the solenoid valve connectors, then remove the solenoid harness connector (G).
6. Remove the A/T clutch pressure control solenoid valve C (H) (four bolts), ATF feed pipes (I) (three), O-rings (two), and gasket.

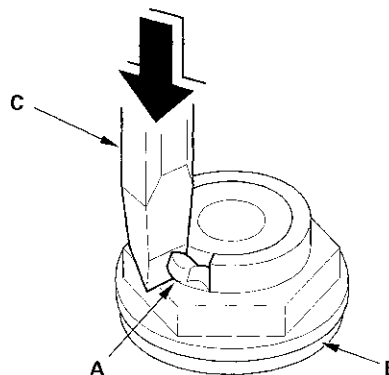


7. Pry the lock tab of the lock washer (J) on the control lever (K), and remove the nut, lock washer, spring washer and control lever.
8. Pry the lock tabs of the lock washer (L) on the transmission range switch (M), hold the selector control shaft (N) with a 6.0 mm wrench, and loosen the locknut (O).
9. Remove the locknut and lock washer, then remove the transmission range switch (two bolts).
10. Remove the input shaft (mainshaft) speed sensor (P), output shaft (countershaft) speed sensor (Q), and sensor washer (R).
11. Remove the ATF temperature sensor connector from the connector bracket (S) and harness clamp from clamp bracket, then remove the ATF temperature sensor (T).
12. Remove the connector bracket (S) and 6.0 mm bolt (U), then remove the line bolts (V), ATF cooler lines (W), and sealing washers (X).
13. Remove the end cover (Y) (three bolts), snap ring cap (Z) (two bolts), sealing plug (AA), and washer (BB).
14. Remove the 3rd clutch transmission fluid pressure switch (CC) and sealing washer.
15. Remove the 4th clutch transmission fluid pressure switch (DD) and sealing washer.
16. Remove the 2nd clutch transmission fluid pressure switch (EE) and sealing washer.
17. Slip the special tool onto the mainshaft.

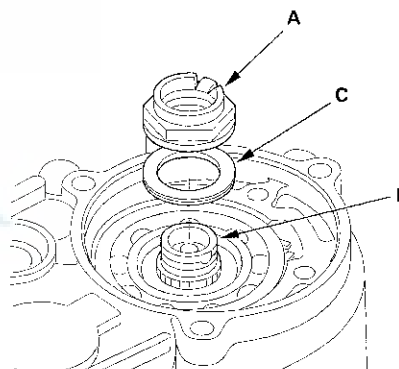


18. Cut the lock tab (A) of the mainshaft locknut (B) using a chisel (C).

NOTE: Keep all of the chiseled particles out of the transmission.



19. Remove the locknut (A) from the mainshaft (B).



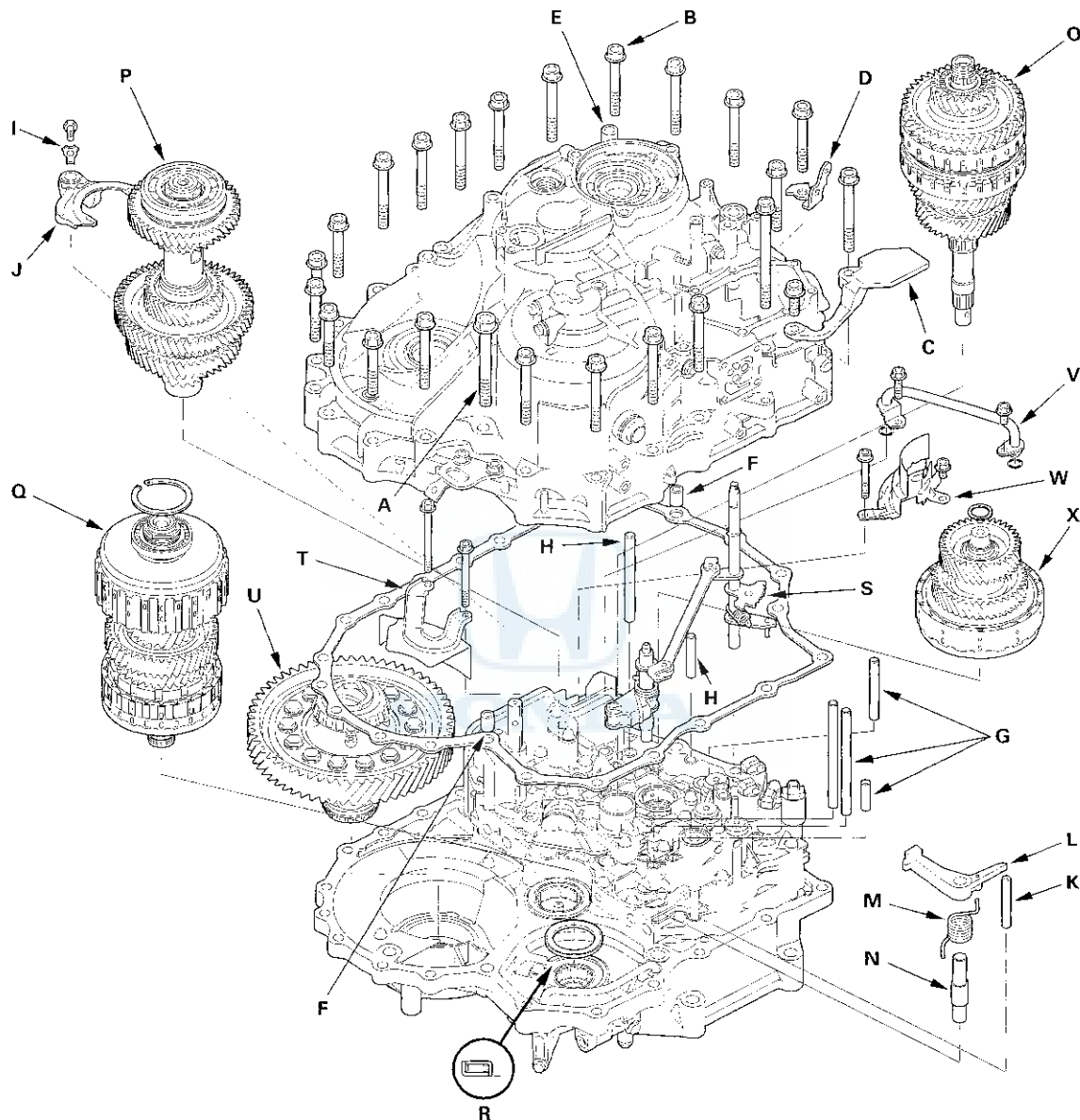
20. Pry the lock washer (C), and remove it.

(cont'd)

Automatic Transmission

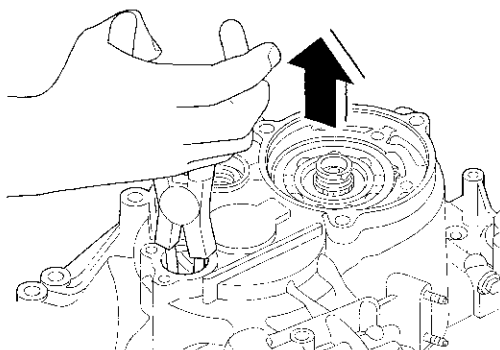
Transmission Disassembly (cont'd)

21. Remove the transmission housing mounting bolts (12 x 1.25 mm) (A) (one bolt), (8 x 1.25 mm) (B) (23 bolts), transmission hanger (C), and ground terminal bracket (D).

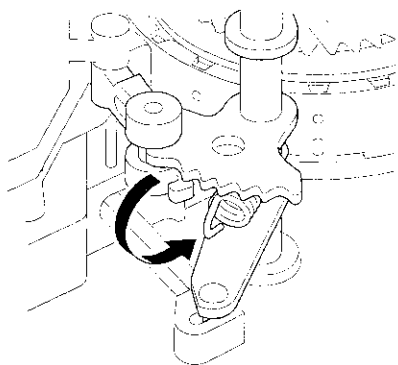




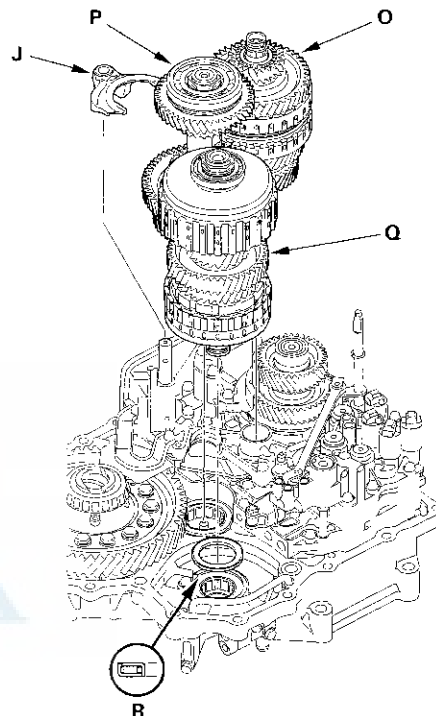
22. While expanding the snap ring of the countershaft bearing using the snap ring pliers, lift the transmission housing.



23. Release the pliers, and remove the transmission housing (E), two dowel pins (F), and gasket.
24. Remove the ATF feed pipes (G) (4 pipes) from the accumulator body.
25. Remove the ATF feed pipes (H) (2 pipes) from the torque converter housing.
26. Remove the special tool from the mainshaft.
27. Pry the lock tab of the lock washer (I) of the shift fork (J), then remove the bolt and lock washer.
28. Unhook the detent spring from the detent arm.



29. Remove the park pawl stop (K), park pawl (L), pawl spring (M), and pawl shaft (N).
30. Remove the mainshaft (O), countershaft (P), shift fork (J), and secondary shaft (Q) together, and remove the needle bearing (R) from the torque converter housing.



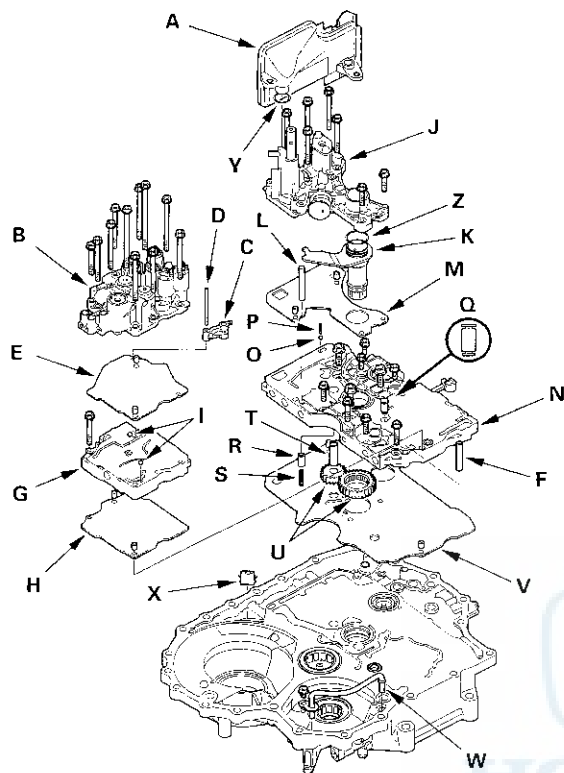
31. Remove the selector control shaft and park lever link (S).
32. Remove the baffle plate (T).
33. Remove the differential assembly (U).
34. Remove the ATEP joint pipe (V).
35. Remove the intermediary shaft baffle plate (W).
36. Remove the intermediary shaft (X).

(cont'd)

Automatic Transmission

Transmission Disassembly (cont'd)

37. Remove the ATF strainer (A).



38. Remove the accumulator body (B) (11 bolts), dowel pins (two), detent arm (C), arm shaft (D), and separator plate (E).

39. Remove the ATF feed pipe (F) from the main valve body.

40. Remove the secondary valve body (G) (one bolt), dowel pins (two), and separator plate (H). Do not let the check balls (I) (two) fall out.

41. Remove the regulator valve body (J) (seven bolts), stator shaft (K), stator shaft stop (L), dowel pins (two), and separator plate (M).

42. Remove the main valve body (N) (8 mm: three bolts, 6 mm: seven bolts). Do not let the cooler check valve (ball) (O), spring (P), and lubrication check valve (Q) fall out.

43. Remove the torque converter check valve (R) and valve spring (S).

44. Remove the ATF pump driven gear shaft (T), then remove the ATF pump gears (U).

45. Remove the dowel pins (two) and main separator plate (V).

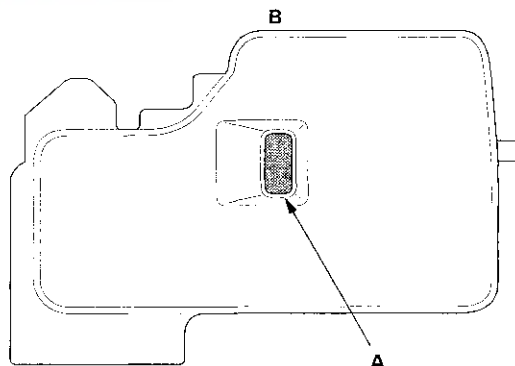
46. Remove the ATF passage pipe (W).

47. Remove the ATF magnet (X), clean it, then reinstall.

48. Remove the O-ring (Y) from the ATF strainer, and replace the new O-ring when reassembling the transmission.

49. Remove the O-ring (Z) from the stator shaft, and replace the new O-ring when reassembling the transmission.

50. Clean the inlet opening (A) of the ATF strainer (B) thoroughly with compressed air, then check that it is in good condition and that the inlet opening is not clogged.



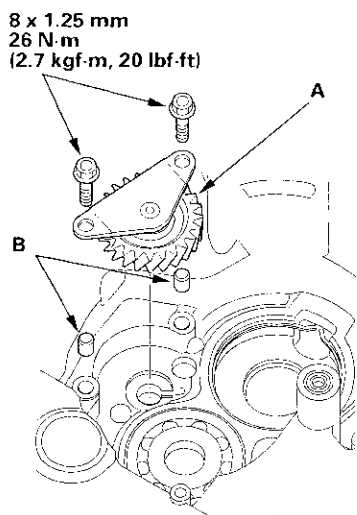
51. Test the ATF strainer by pouring clean ATF through the inlet opening, and replace if it is clogged or damaged.

Transmission Housing



Reverse Idler Gear Removal/ Installation

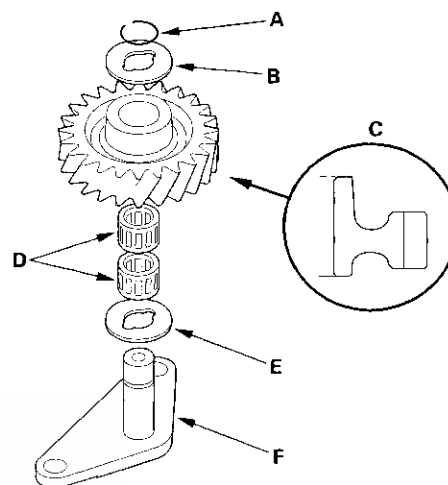
1. Remove the reverse idler gear assembly (A) from the transmission housing.



2. Install the reverse idler gear assembly with the two dowel pins (B) in the transmission housing.

Reverse Idler Gear Disassembly/ Inspection/Reassembly

1. Remove the snap ring (A), then remove the thrust washer (B), reverse idler gear (C), needle bearings (D), and thrust washer (E) from the reverse idler gear shaft/holder (F).

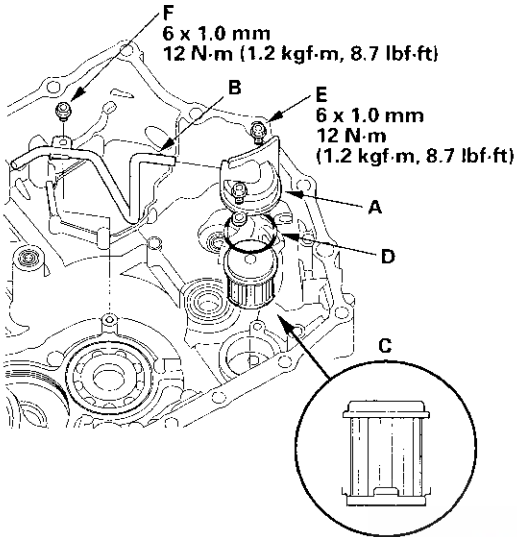


2. Inspect the reverse idler gear and gear shaft for excessive wear and damage.
3. Inspect the needle bearings for galling and rough movement.
4. Install the thrust washer and needle bearings over the gear shaft.
5. Install the reverse idler gear in the direction shown.
6. Install the thrust washer, then install the snap ring to secure the idler gear.

Transmission Housing

ATF Filter Removal/Inspection/Installation

1. Remove the three 6.0 mm bolts securing the ATF filter cover (A) and ATF pipe (B).

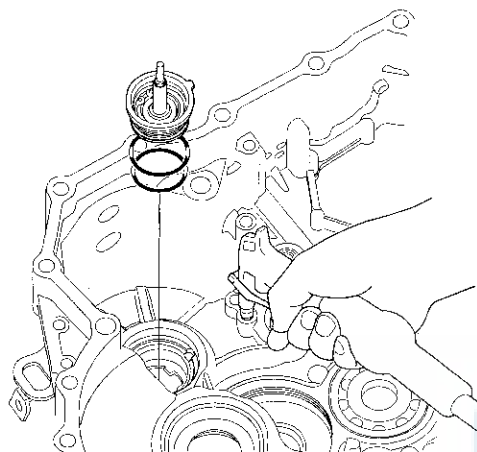


2. Remove the ATF pipe from the ATF filter cover, and remove the ATF filter (C) from the cover.
3. Clean the ATF filter, then check that it is in good condition, and is not clogged. Replace the ATF filter if it is clogged or damaged.
4. Install the ATF filter with the new O-ring (D) in the filter cover, and install the ATF pipe in the cover, then install them in the transmission housing.
5. Secure the ATF filter cover with the two bolts (E), then secure the ATF pipe with the bolt (F).



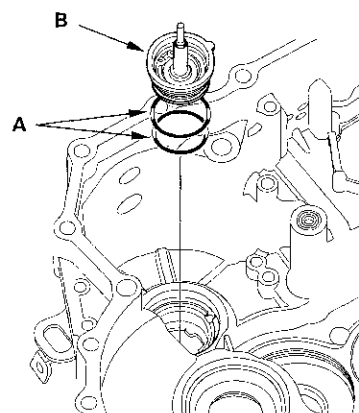
Secondary Shaft ATF Feed Pipe Cap Removal

1. Cover the tip of the 1st-hold clutch ATF feed pipe with a shop rag.
2. Apply air pressure to the ATF feed pipe hole of the 1st-hold clutch pressure circuit, and remove the ATF feed pipe cap from the transmission housing.

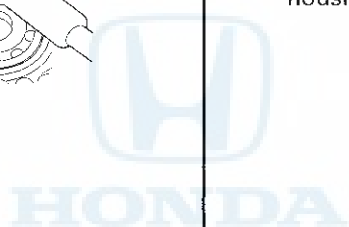


Secondary Shaft ATF Feed Pipe Cap Installation

1. Install the new O-rings (A) on the ATF feed pipe cap (B).



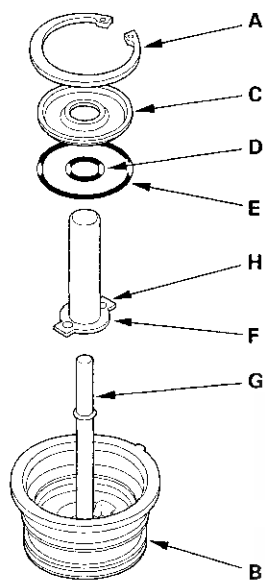
2. Install the ATF feed pipe cap in the transmission housing. Do not pinch the O-rings.



Transmission Housing

Secondary Shaft ATF Feed Pipe Cap, Feed Pipe Replacement

1. Remove the ATF feed pipe cap from the transmission housing (see page 14-289).
2. Remove the snap ring (A) from the feed pipe cap (B), then remove the feed pipe guide (C), O-rings (D) (E), and 1st clutch ATF feed pipe (F).



3. Replace the 1st clutch ATF feed pipe or 1st-hold clutch ATF feed pipe/ATF feed pipe cap assembly. The 1st-hold clutch ATF feed pipe/ATF feed pipe cap is not available separately.
4. Install the new O-ring (D) over the 1st clutch ATF feed pipe, then install the feed pipe over the 1st-hold clutch ATF feed pipe (G) while aligning the feed pipe tabs (H) with the guide in the cap.
5. Install the new O-ring (E) in the cap and feed pipe guide, then secure the guide with the snap ring.

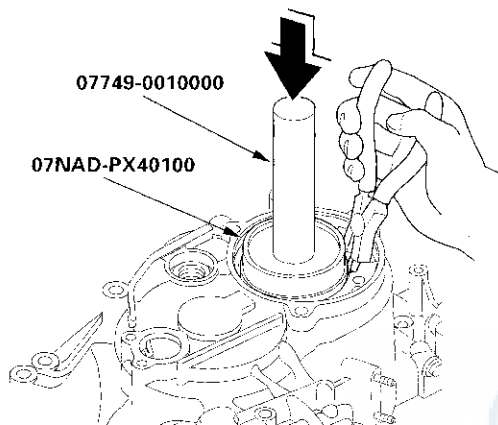


Mainshaft Bearing Removal

Special Tools Required

- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

1. To remove the mainshaft bearing, expand the snap ring with the snap ring pliers, then push the bearing out. Do not remove the snap ring unless it's necessary to clean the groove in the housing.

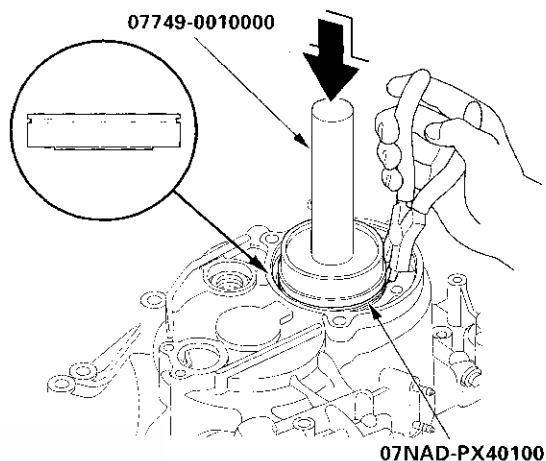


Mainshaft Bearing Installation

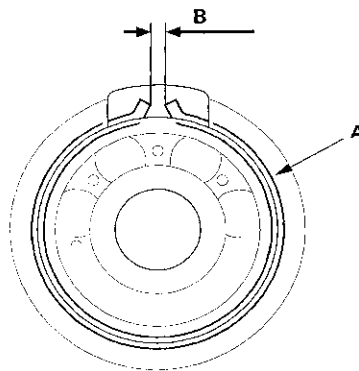
Special Tools Required

- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

1. Install the bearing in the direction shown.



2. Expand the snap ring with the snap ring pliers, and insert the bearing part-way into the housing.
3. Release the pliers, then push the bearing down into housing until the snap ring snaps in place around it.
4. After installing the bearing, verify that the snap ring (A) is seated in the bearing and housing groove, and that the ring end gap (B) is 0–7 mm (0–0.28 in.).



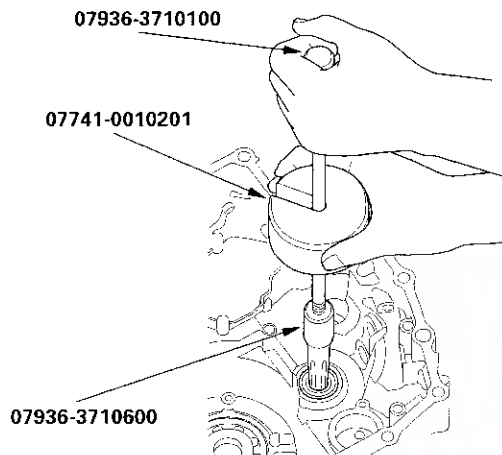
Transmission Housing

Intermediary Shaft Bearing Replacement

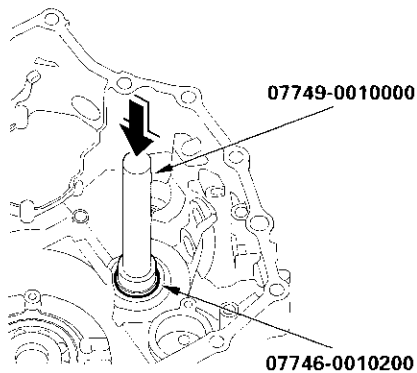
Special Tools Required

- Bearing remover shaft set 20 mm 07936-3710600
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200

1. Remove the intermediary shaft bearing from the transmission housing with the special tools.



2. Install the new bearing until it bottoms in the transmission housing with the special tools.

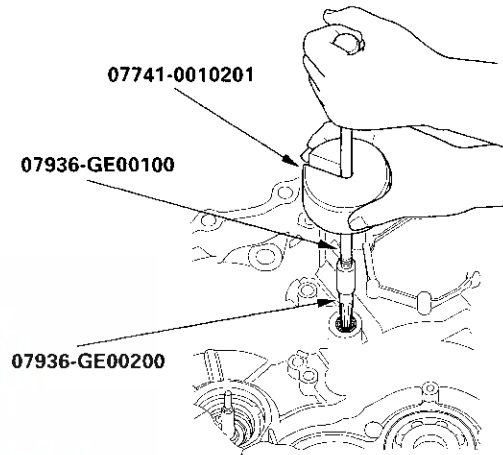


Park Lever Shaft Bearing Replacement

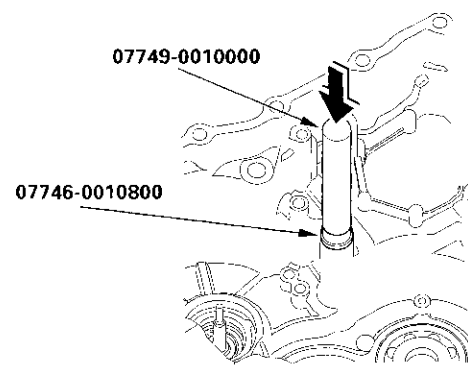
Special Tools Required

- Bearing remover shaft 10 mm 07936-GE00100
- Bearing remover head 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the transmission housing with the special tools.



2. Install the new bearing until it bottoms in the transmission housing with the special tools.



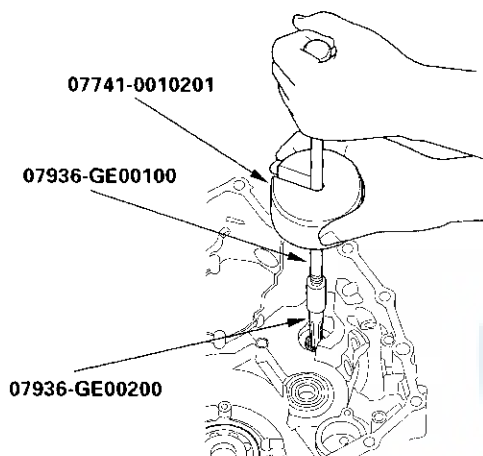


Selector Control Shaft Bearing Replacement

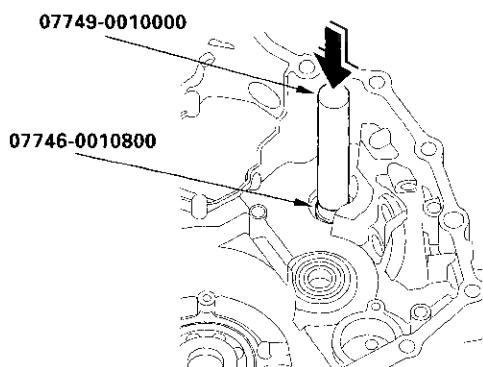
Special Tools Required

- Bearing remover shaft 10 mm 07936-GE00100
- Bearing remover head 10 mm 07936-GE00200
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the selector control shaft bearing from the transmission housing with the special tools.



2. Install the new bearing in the transmission housing with the special tools.

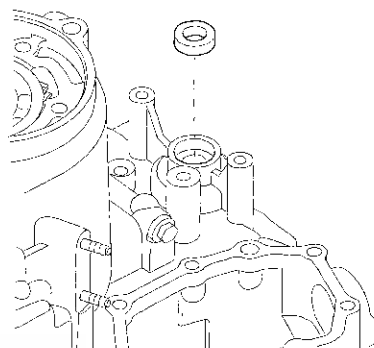


Selector Control Shaft Oil Seal Replacement

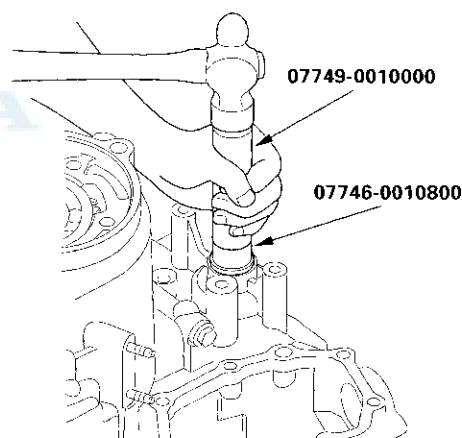
Special Tools Required

- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the oil seal from the transmission housing.



2. Install the new oil seal in the transmission housing with the special tools.



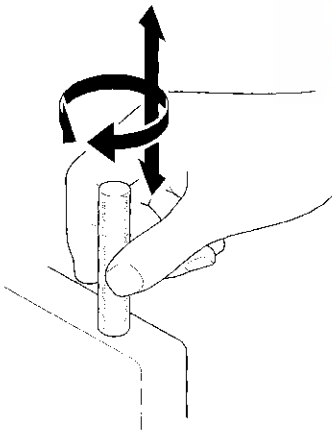
Valve Body

Valve Body Repair

NOTE: Valve body repair is only necessary if one or more of the valves in a valve body do not slide smoothly in their bores. Use this procedure to free the valves.

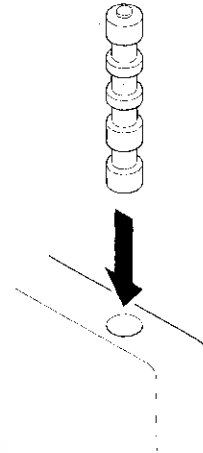
1. Soak a sheet of # 600 abrasive paper in ATF for about 30 minutes.
2. Carefully tap the valve body so the sticking valve drops out of its bore. It may be necessary to use a small screwdriver to pry the valve free. Be careful not to scratch the bore with the screwdriver.
3. Inspect the valve for any scuff marks. Use the ATF-soaked # 600 paper to polish off any burrs that are on the valve, then wash the valve in solvent and dry it with compressed air.
4. Roll up half of the ATF-soaked # 600 paper and insert it in the valve bore of the sticking valve. Twist the paper slightly, so that it unrolls and fits the bore tightly, then polish the bore by twisting the paper as you push it in and out.

NOTE: The valve body is aluminum and doesn't require much polishing to remove any burrs.



5. Remove the # 600 paper. Thoroughly wash the entire valve body in solvent, then dry it with compressed air.

6. Coat the valve with ATF, then drop it into its bore. It should drop to the bottom of the bore under its own weight. If not, repeat steps 4 and 5, then retest. If the valve still sticks, replace the valve body.

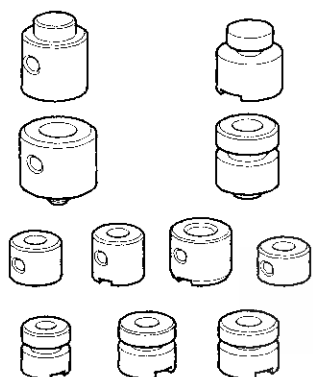


7. Remove the valve, and thoroughly clean it and the valve body with solvent. Dry all parts with compressed air, then reassemble using ATF as a lubricant.

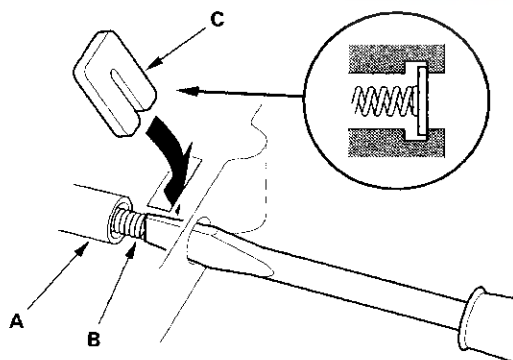


Valve Body Valve Installation

1. Coat all parts with ATF before assembly.
2. Install the valves and springs in the sequence shown for the main valve body (see page 14-296), secondary valve body (see page 14-298), regulator valve body (see page 14-299), and accumulator body (see page 14-300). Refer to the following valve cap illustrations, and install each valve cap so the end shown facing up will be facing the outside of the valve body, then secure the valve cap with the valve cap clip.



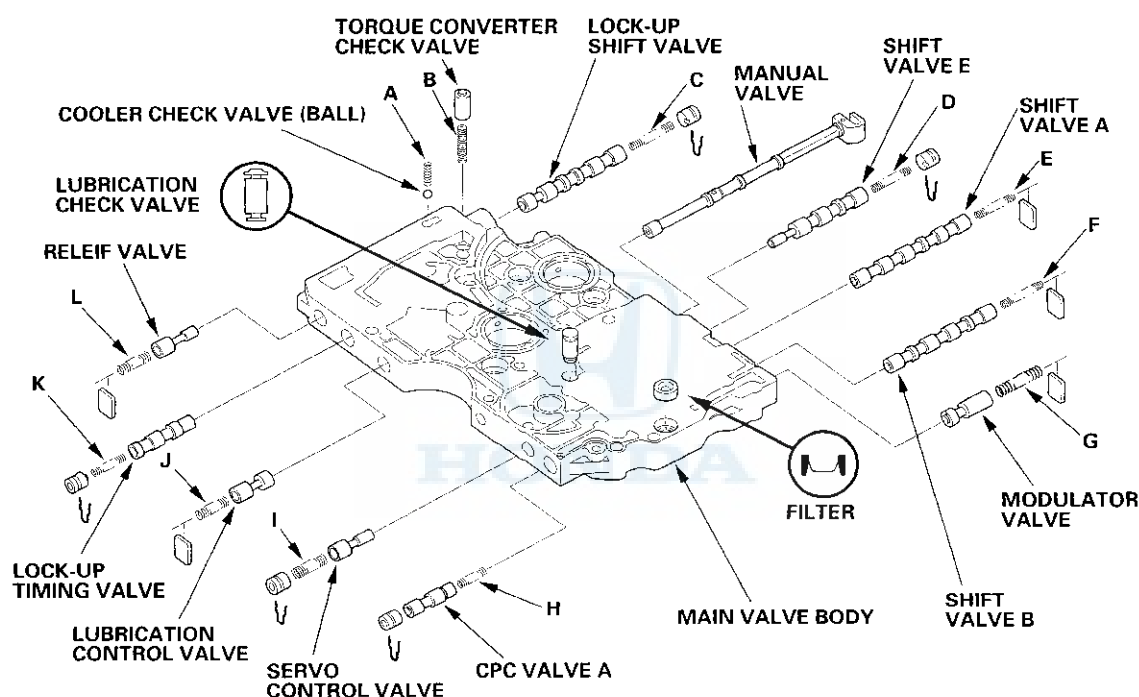
3. Install the valve (A) and valve spring (B) in the valve body. Push the valve spring in with a screwdriver, then install the spring seat (C).



Valve Body

Main Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the cooler check valve, it may magnetize the check valve (ball).
3. Inspect the main valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-294).
5. Coat all parts with ATF during assembly.
6. Replace the filter with a new one, and install it and the lubrication check valve in the direction shown.



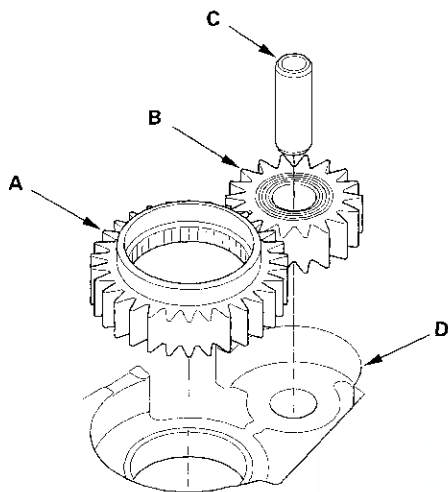
VALVE SPRING SPECIFICATIONS

Valve Spring		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coils
A	Cooler check valve spring	0.6 (0.024)	5.8 (0.228)	14.5 (0.571)	6.8
B	Torque converter check valve spring	1.1 (0.043)	8.6 (0.339)	35.0 (1.378)	12.6
C	Lock-up shift valve spring	1.0 (0.039)	6.6 (0.260)	35.5 (1.398)	18.2
D	Shift valve E spring	0.7 (0.028)	6.6 (0.260)	42.4 (1.669)	17.6
E	Shift valve A spring	0.9 (0.035)	6.6 (0.260)	50.5 (1.988)	23.3
F	Shift valve B spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
G	Modulator valve spring	1.6 (0.063)	10.4 (0.409)	33.5 (1.319)	9.8
H	CPC valve A spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
I	Servo control valve spring	0.9 (0.035)	9.6 (0.378)	30.2 (1.189)	8.4
J	Lubrication control valve spring	0.9 (0.035)	8.7 (0.343)	25.0 (0.984)	7.2
K	Lock-up timing valve spring	0.65 (0.026)	6.6 (0.260)	34.8 (1.370)	15.6
L	Relief valve spring	1.0 (0.039)	9.6 (0.378)	28.1 (1.106)	7.7



ATF Pump Inspection

1. Install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C) in the main valve body (D). Lubricate all parts with ATF, and install the ATF pump driven gear with its grooved and chamfered side facing up.



2. Measure the side clearance of the ATF pump drive gear (A) and driven gear (B).

ATF Pump Gears Side (Radial) Clearance

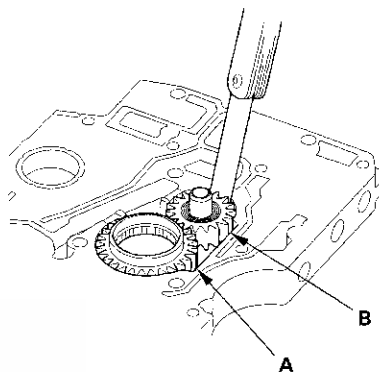
Standard (New):

ATF Pump Drive Gear

0.210—0.265 mm (0.0083—0.0104 in.)

ATF Pump Driven Gear

0.070—0.125 mm (0.0028—0.0050 in.)



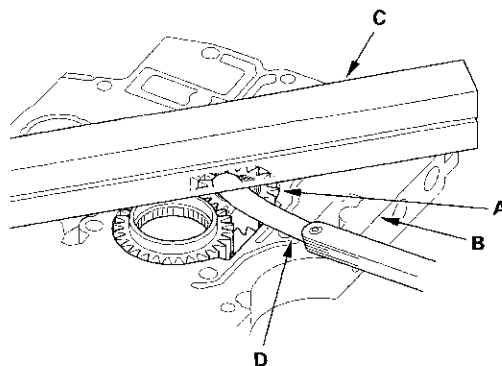
3. Remove the ATF pump driven gear shaft. Measure the thrust clearance between the ATF pump driven gear (A) and the valve body (B) with a straight edge (C) and a feeler gauge (D).

ATF Pump Drive/Driven Gear Thrust (Axial) Clearance

Clearance

Standard (New): 0.03—0.06 mm (0.001—0.002 in.)

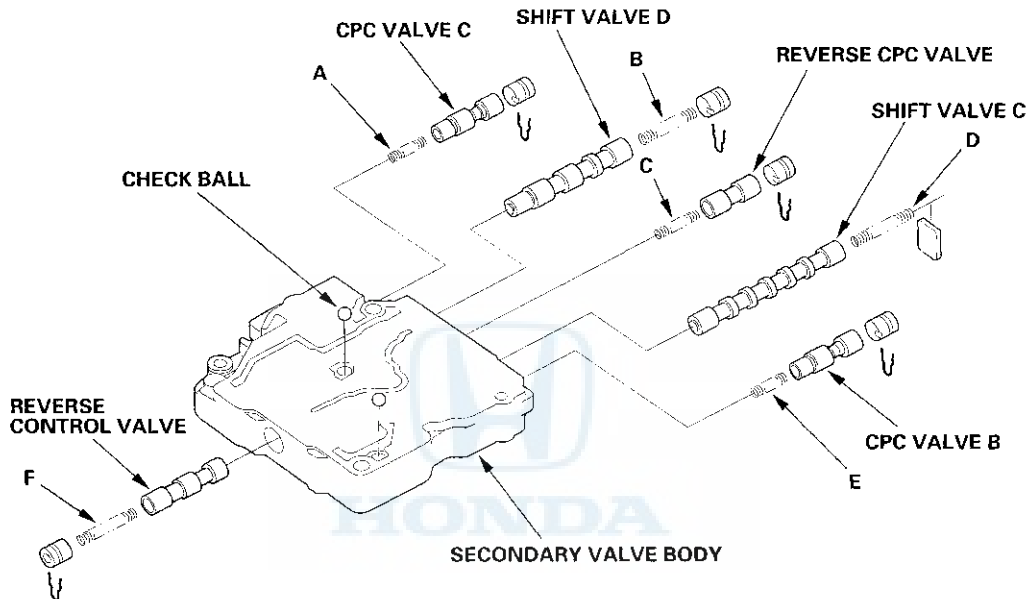
Service Limit: 0.07 mm (0.003 in.)



Valve Body

Secondary Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Do not use a magnet to remove the check balls, it may magnetize the check balls.
3. Inspect the secondary valve body for scoring and damage.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-294).
5. Coat all parts with ATF during assembly.



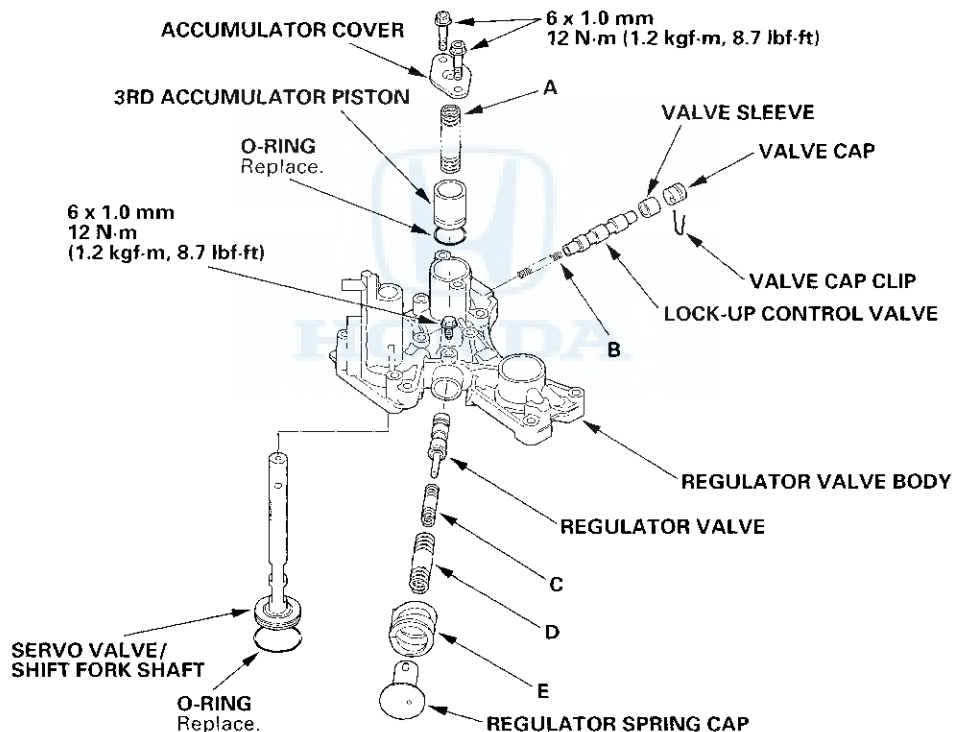
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coil
A	CPC valve C spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
B	Shift valve D spring	0.7 (0.028)	6.6 (0.260)	42.4 (1.669)	17.6
C	Reverse CPC valve spring	0.8 (0.031)	6.1 (0.240)	24.4 (0.961)	14.6
D	Shift valve C spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7
E	CPC valve B spring	0.7 (0.028)	6.1 (0.240)	17.8 (0.701)	7.9
F	Reverse control valve spring	0.8 (0.031)	6.6 (0.260)	49.1 (1.933)	21.7



Regulator Valve Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the regulator valve body for scoring and damage.
3. Hold the regulator spring cap in place while removing the stop bolt. The regulator spring cap is spring loaded. Once the stop bolt is removed, release the spring cap slowly so it does not pop out.
4. Check all valves for free movement. If any fail to slide freely, refer to valve body repair (see page 14-294).
5. Coat all parts with ATF during assembly.
6. Align the hole in the regulator spring cap with the stop bolt hole, then press the spring cap into the valve body, and tighten the stop bolt.
7. Install the servo valve with the new O-ring, and the 3rd accumulator piston with the new O-ring.



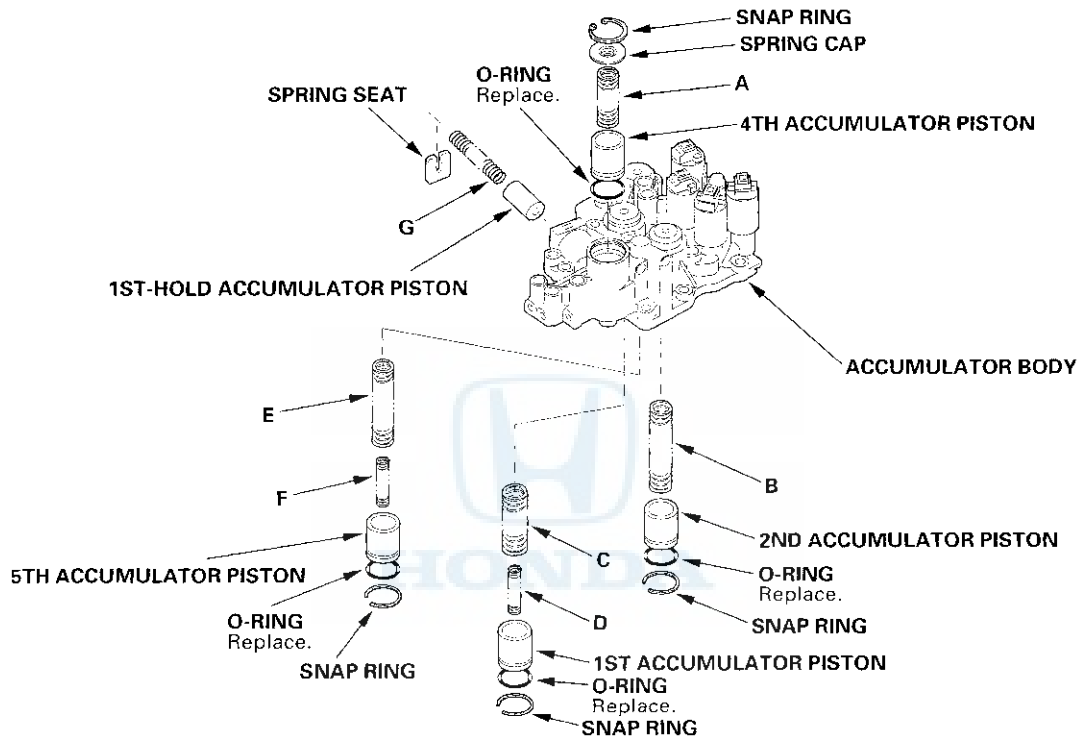
VALVE SPRING SPECIFICATIONS

Valve Springs		Standard (New)-Unit: mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coil
A	3rd accumulator spring	3.1 (0.122)	19.6 (0.772)	41.4 (1.630)	5.5
B	Lock-up control valve spring	0.7 (0.028)	6.6 (0.260)	42.9 (1.689)	14.2
C	Regulator valve spring B	1.4 (0.055)	8.8 (0.346)	44.0 (1.732)	12.0
D	Regulator valve spring A	1.9 (0.075)	14.7 (0.579)	80.6 (3.173)	16.1
E	Stator reaction spring	5.5 (0.217)	37.4 (1.472)	30.3 (1.193)	2.1

Valve Body

Accumulator Body Disassembly, Inspection, and Reassembly

1. Clean all parts thoroughly in solvent or carburetor cleaner, and dry them with compressed air. Blow out all passages.
2. Inspect the accumulator body for scoring and damage.
3. Coat all parts with ATF during assembly.
4. Replace the O-rings with new ones.



VALVE SPRING SPECIFICATIONS

Valve Springs		Standard: (New)-Unit mm (in.)			
		Wire Diameter	O.D.	Free Length	No. of Coil
A	4th accumulator spring	3.3 (0.130)	19.6 (0.772)	39.1 (1.539)	5.8
B	2nd accumulator spring	3.1 (0.122)	19.6 (0.772)	53.4 (2.102)	7.5
C	1st accumulator spring A	2.3 (0.091)	19.6 (0.772)	60.8 (2.394)	9.5
D	1st accumulator spring B	2.5 (0.098)	12.8 (0.504)	46.0 (1.811)	9.5
E	5th accumulator spring A	2.4 (0.094)	19.6 (0.772)	65.5 (2.579)	12.0
F	5th accumulator spring B	2.6 (0.102)	13.2 (0.520)	50.5 (1.988)	10.1
G	1st-hold accumulator spring	2.0 (0.079)	13.1 (0.516)	42.9 (1.689)	9.8

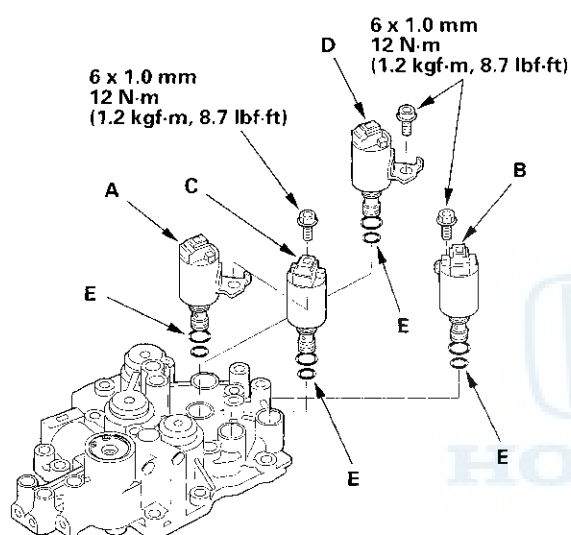


Shift Solenoid Valve Removal and Installation

NOTE: Do not hold the solenoid valve connector to remove and install the solenoid valve. Be sure to hold the solenoid valve body.

1. Remove the mounting bolts, then remove the solenoid valves by holding the solenoid valve body.
2. Install the new O-rings (E) on each solenoid valve.

NOTE: A new solenoid valve comes with new O-rings. If you install a new solenoid valve, use the O-rings provided on it.



3. Install shift solenoid valve D (black connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the accumulator body.
4. Install shift solenoid valve A (black connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the accumulator body.

5. Install shift solenoid valve C (brown connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the bracket of shift solenoid valve A.

NOTE: Do not install shift solenoid valve C before installing shift solenoid valve A. If shift solenoid valve C is installed before installing shift solenoid valve A, it may damage to hydraulic control system.

6. Install shift solenoid valve B (brown connector) by holding the shift solenoid valve body; be sure to install the mounting bracket contacts to the accumulator body.

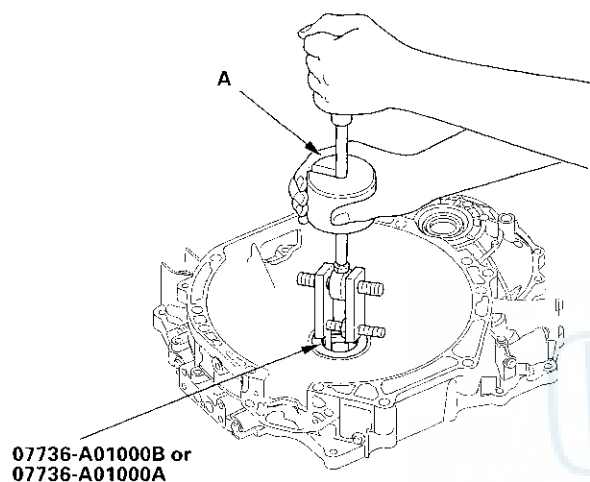
Torque Converter Housing

Mainshaft Bearing and Oil Seal Replacement

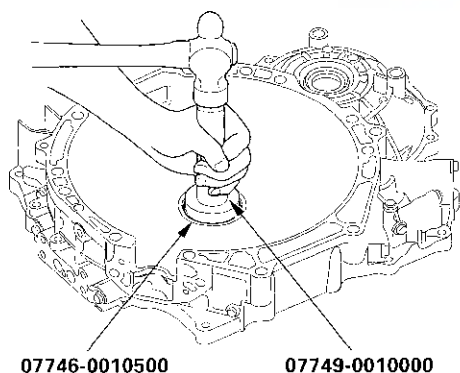
Special Tools Required

- Adjustable bearing puller, 25—40 mm
07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 62 x 68 mm 07746-0010500
- Attachment, 72 x 75 mm 07746-0010600

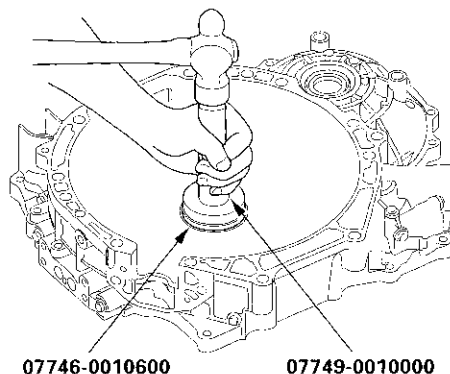
1. Remove the mainshaft bearing and oil seal with the special tool and a commercially available 3/8 "-16" slide hammer (A).



2. Install the new mainshaft bearing until it bottoms in the housing with the special tools.



3. Install the new oil seal flush to the housing with the special tools.



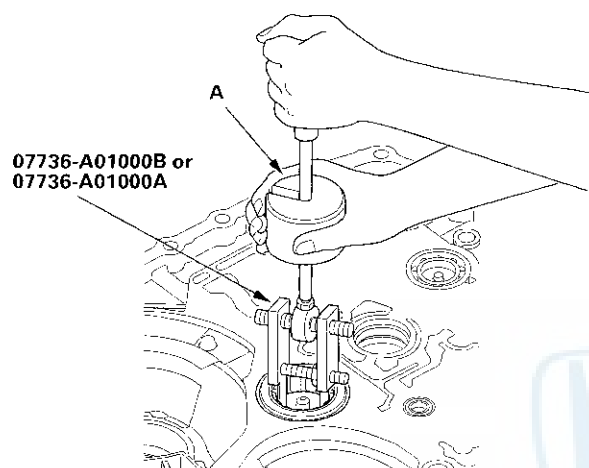


Countershaft Bearing Replacement

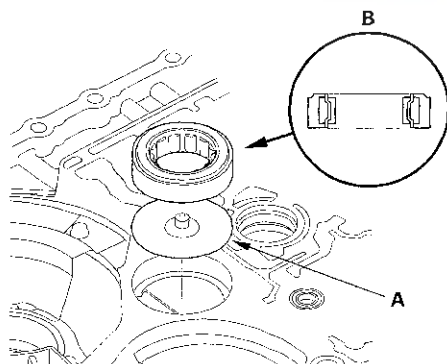
Special Tools Required

- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 78 x 80 mm 07NAD-PX40100

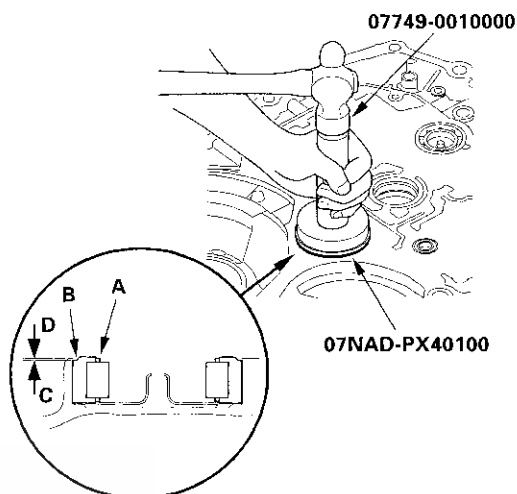
1. Remove the countershaft bearing from the torque converter housing with the special tool and a commercially available 3/8"-16" slide hammer (A).



2. Install the ATF guide plate (A) into the housing, then install the new bearing (B) in the direction shown.



3. Install the bearing (A) in the housing with the special tools; install bearing outer notch-cut (B) in depth (C) of 0—0.03 mm (0—0.001 in.) below the housing surface (D).



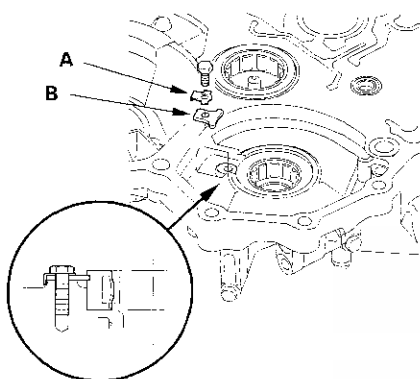
Torque Converter Housing

Secondary Shaft Bearing Replacement

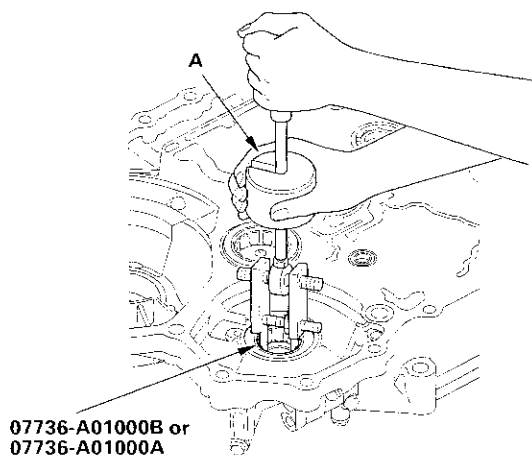
Special Tools Required

- Adjustable bearing puller, 25—40 mm 07736-A01000B or 07736-A01000A
- Bearing remover shaft set 30 mm 07936-8890300
- Bearing remover shaft handle 07936-3710100
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 37 x 40 mm 07746-0010200
- Attachment, 62 x 68 mm 07746-0010500

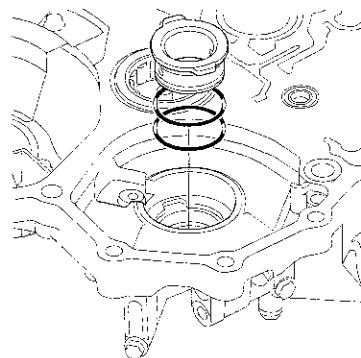
1. Remove the bolt, then remove the lock washer (A) and bearing set plate (B).



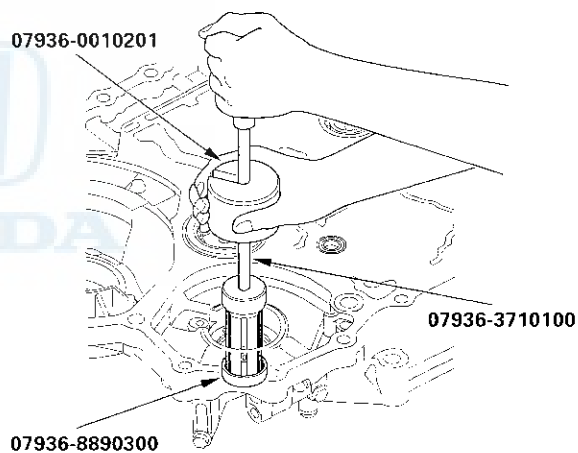
2. Remove the secondary shaft bearing from the torque converter housing with the special tool and a commercially available 3/8"-16" slide hammer (A).



3. Remove the ATF guide collar from the torque converter housing.

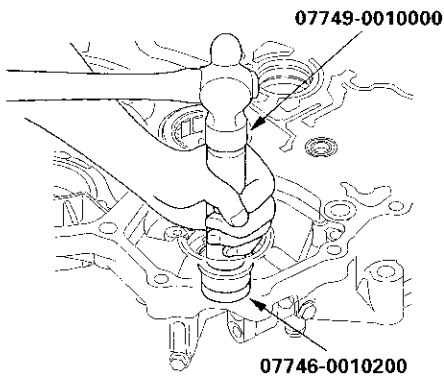


4. Remove the 29 x 39 x 9.5 mm secondary shaft bearing from the torque converter housing with the special tools.

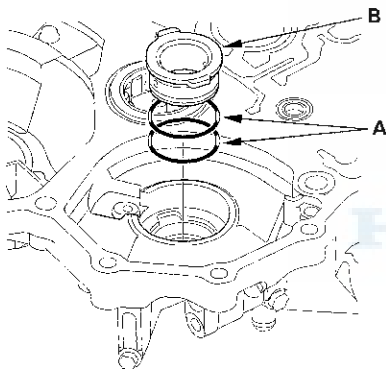




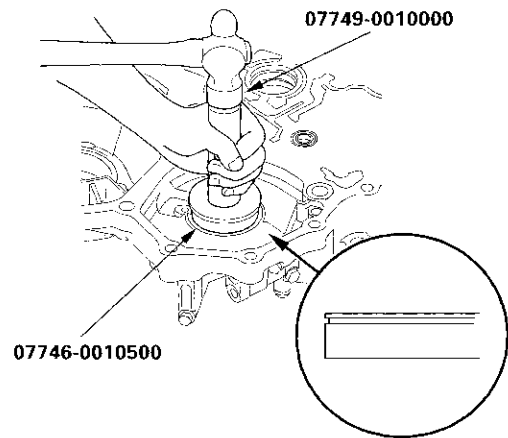
5. Install the 29 x 39 x 9.5 mm bearing into the torque converter housing with the special tools.



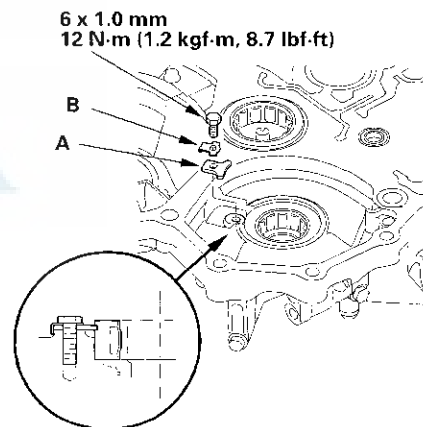
6. Install the new O-rings (A) on the ATF guide collar (B), then install the guide collar in the torque converter housing.



7. Install the bearing in the direction shown in the housing with the special tools.



8. Check that the bearing groove aligns with the set plate mounting surface, then install the set plate (A) by aligning it with the bearing groove.



9. Install the new lock washer (B) and bolt, then bend the lock tab of the lock washer against the bolt head.

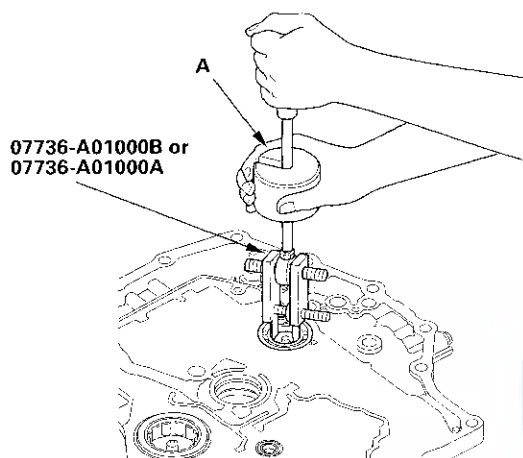
Torque Converter Housing

Intermediary Shaft Bearing Replacement

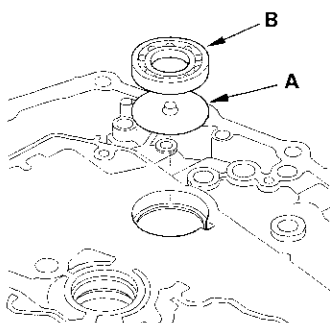
Special Tools Required

- Adjustable bearing puller, 25—40 mm
07736-A01000B or 07736-A01000A
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400

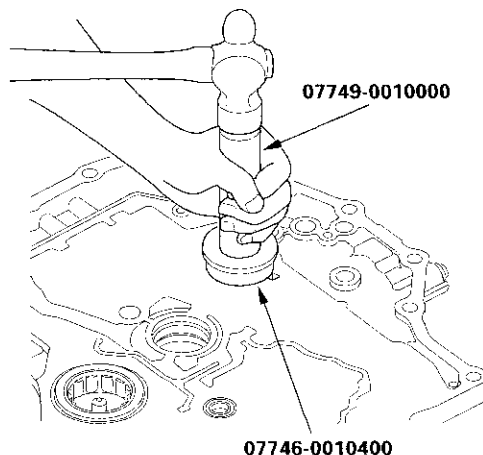
1. Remove the intermediary shaft bearing from the torque converter housing with the special tool and a commercially available 3/8"-16" slide hammer (A).



2. Install the ATF guide plate (A), then install the new bearing (B) in the housing.



3. Drive the bearing into the housing with the special tools.



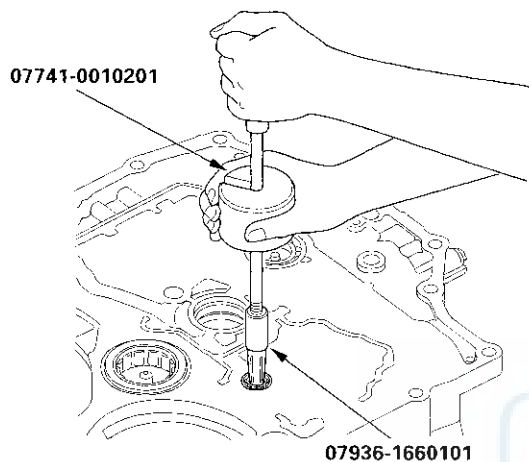


Park Lever Shaft Bearing Replacement

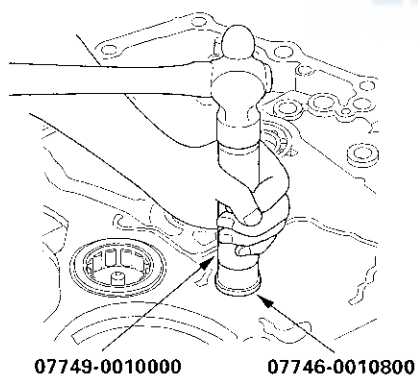
Special Tools Required

- Bearing remover shaft set 12 mm 07936-1660101
- Sliding hammer weight 07741-0010201
- Driver 07749-0010000
- Attachment, 22 x 24 mm 07746-0010800

1. Remove the park lever shaft bearing from the torque converter housing with the special tools.



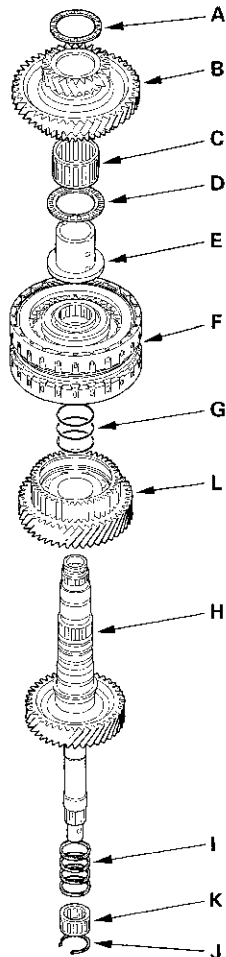
2. Install the new bearing until it bottoms in the housing with the special tools.



Shafts and Clutches

Mainshaft Disassembly, Inspection, and Reassembly

1. Remove the thrust needle bearing (A), mainshaft 5th gear (B), needle bearing (C), thrust needle bearing (D), mainshaft 5th gear collar (E), 4th/5th clutch (F), and O-rings (G) from the mainshaft (H).



2. Inspect the condition of the sealing rings (I). If the sealing rings are worn, distorted, or damaged, remove the set ring (J) and needles bearing (K), and replace the sealing rings with new ones.
3. Inspect the thrust needle bearing and needle bearing for wear and rough movement.
4. Inspect the splines for excessive wear and damage.
5. Inspect the 4th gear for wear and damage, and inspect 4th gear bearing for wear and rough rotation.
6. Replace the mainshaft 4th gear (L) if the 4th gear is worn or damaged, or the bearing is worn or damaged.
7. Check the shaft bearing surfaces for scoring and excessive wear.
8. Lubricate all parts with ATF during reassembly.
9. Wrap the shaft splines with tape to prevent O-ring damage, install the new O-rings on the mainshaft, then remove the tape.
10. Install the 4th/5th clutch.
11. Install the mainshaft 5th gear collar, thrust needle bearing, needle bearing, mainshaft 5th gear, and thrust needle bearing.

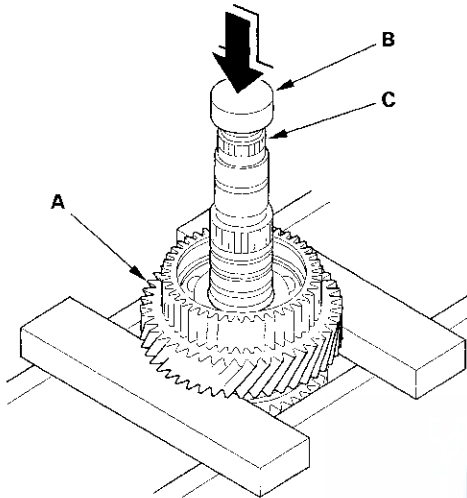


Mainshaft 4th Gear Replacement

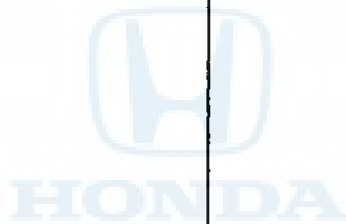
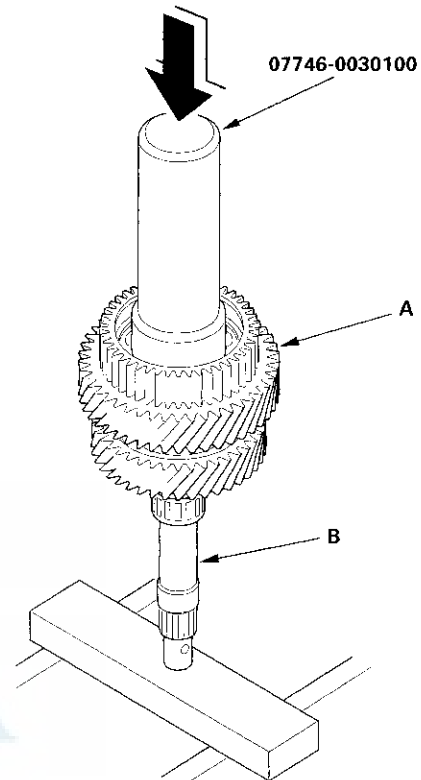
Special Tools Required

Driver, 40 mm I. D. 07746-0030100

1. Remove the mainshaft 4th gear (A) with a press. Place a shaft protector (B) between the press and mainshaft (C) to prevent damaging the mainshaft.



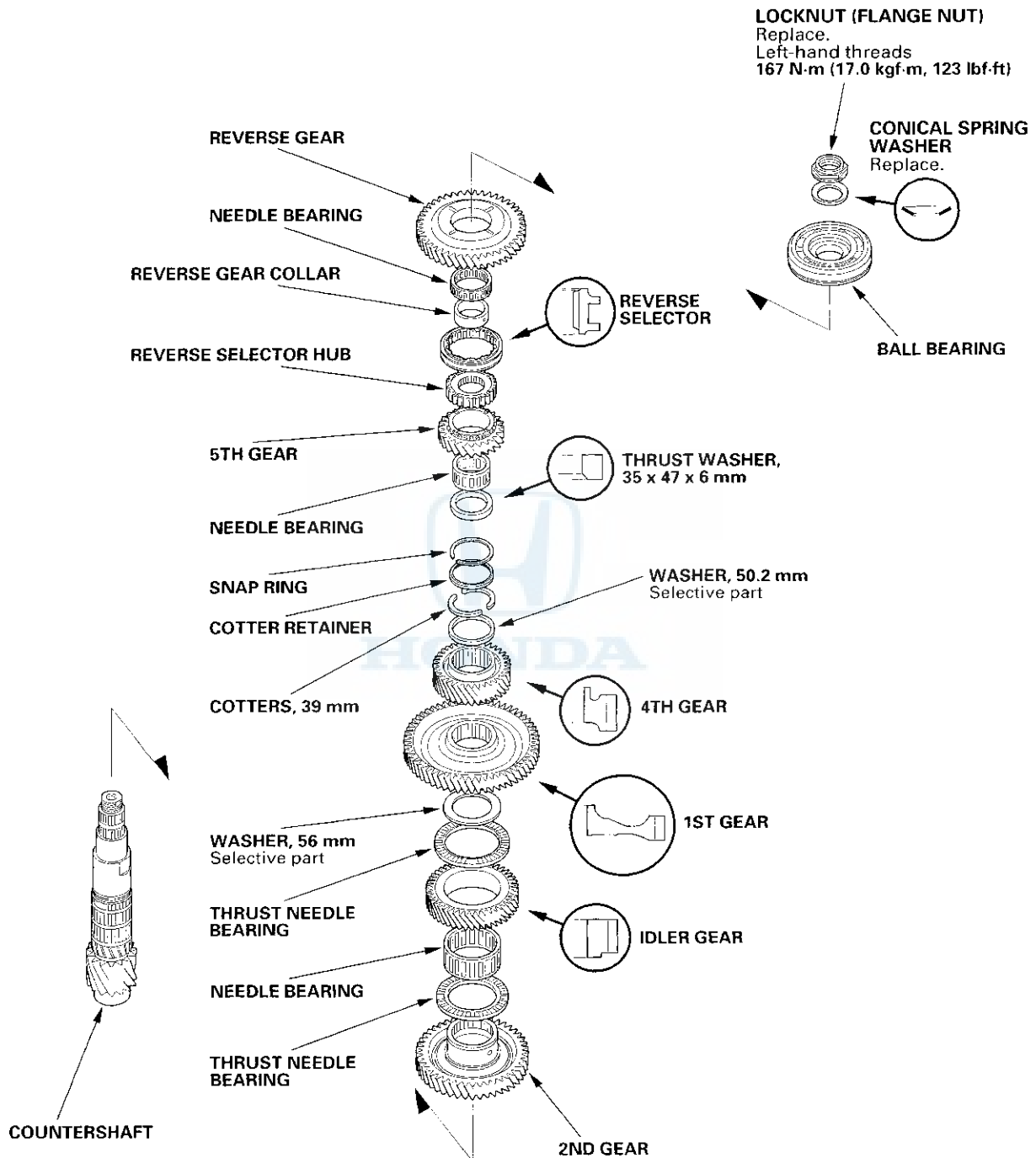
2. Slide the new mainshaft 4th gear (A) over the mainshaft (B), then press it into place with the special tool and a press.



Shafts and Clutches

Countershaft Disassembly

Exploded View

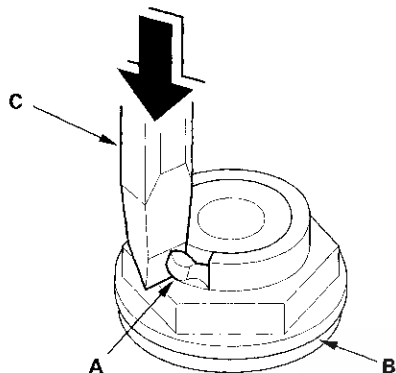




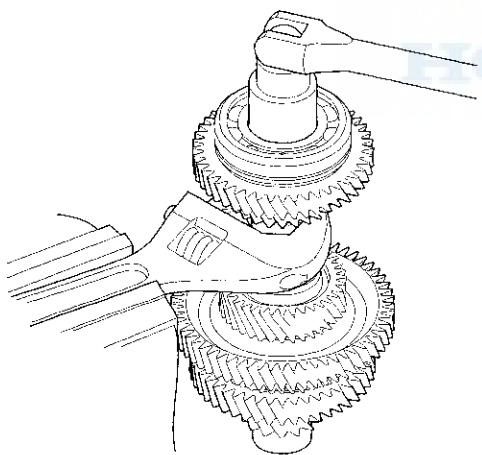
NOTE: Refer to the Exploded View as needed during the following procedure.

1. Cut the lock tab (A) of the countershaft locknut (B) using a chisel (C).

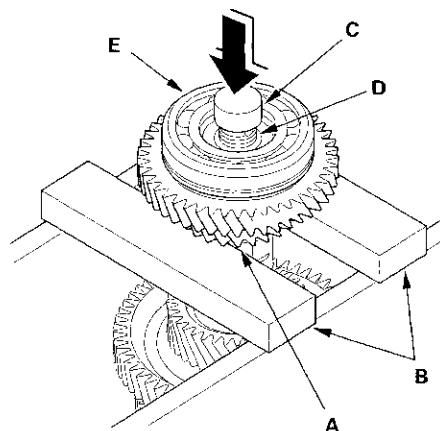
NOTE: Keep all of the chiseled particles out of the countershaft.



2. Hold the countershaft with a wrench and a vise securely, loosen the locknut, and remove it. The locknut has left-hand threads.



3. Place the countershaft 5th gear (A) on press bases (B), and place a shaft protector (C) between the countershaft (D) and a press to prevent damaging the countershaft.

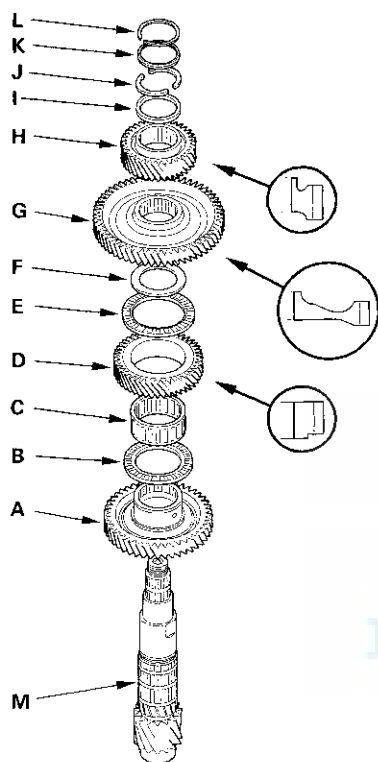


4. Press the countershaft out of the press-fitted bearing (E) and the press-fitted reverse selector hub, and remove the countershaft while holding the underside of the countershaft. The countershaft falls down when pressing the countershaft out of the press-fitted reverse selector hub. Some reverse selector hubs are not press-fitted, and the countershaft falls down when pressing the countershaft out of press-fitted bearing.
5. Remove the remaining parts from the countershaft.
6. Inspect the bearing for galling and rough movement.
7. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.
8. Check the idler gear axial clearance and 4th gear axial clearance (see page 14-312).

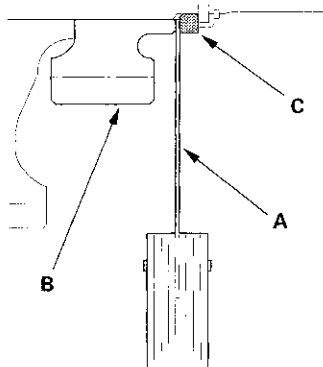
Shafts and Clutches

Countershaft Idler Gear and 4th Gear Axial Clearance Inspection

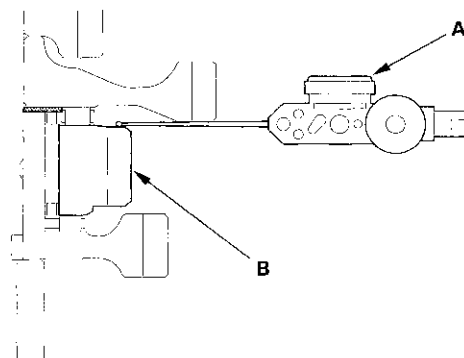
1. Install the 2nd gear (A), thrust needle bearing (B), needle bearing (C), idler gear (D), thrust needle bearing (E), 56 mm washer (F), 1st gear (G), 4th gear (H), 50.2 mm washer (I), 39 mm cotters (J), cotter retainer (K), and snap ring (L) on the countershaft (M).



2. Insert a feeler gauge blade (A) as thick as possible between the 4th gear (B) and cotters (C).

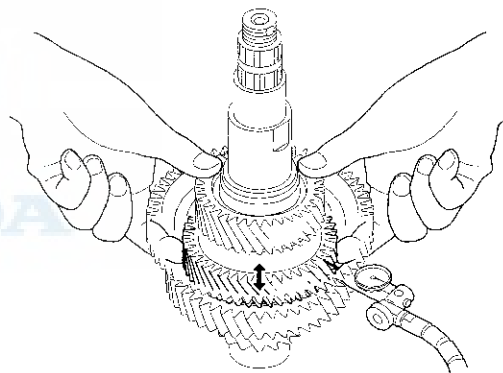


3. Set the dial indicator (A) on the idler gear (B).



4. Measure the idler gear axial clearance in at least three places while moving the idler gear. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



5. If the measurement is out of standard, remove the 56 mm washer and measure its thickness.



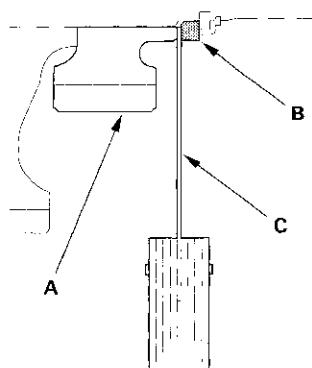
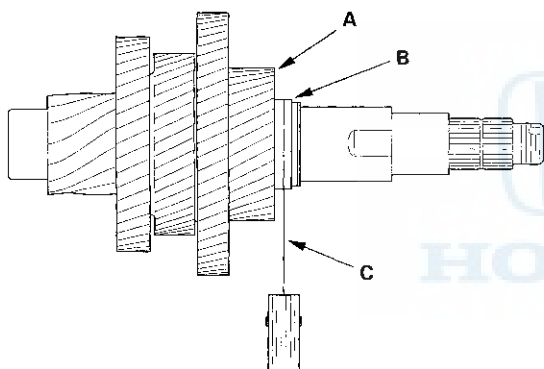
6. Select and install a new washer, then recheck the clearance.

WASHER, 56 mm

No.	Part Number	Thickness
A	90582-RDK-000	1.525 mm (0.0600 in.)
B	90583-RDK-000	1.505 mm (0.0593 in.)
C	90584-RDK-000	1.485 mm (0.0585 in.)
D	90585-RDK-000	1.465 mm (0.0577 in.)
E	90586-RDK-000	1.445 mm (0.0569 in.)
F	90587-RDK-000	1.425 mm (0.0561 in.)
G	90588-RDK-000	1.405 mm (0.0553 in.)

7. Measure the clearance between the 4th gear (A) and the 39 mm cotters (B) with a feeler gauge (C) in at least three places. Use the average as the actual clearance.

Standard: 0.005—0.040 mm (0.0002—0.0016 in.)



8. If the measurement is out of standard, remove the 50.2 mm washer and measure its thickness.

9. Select and install a new washer, then recheck the clearance.

WASHER, 50.2 mm

No.	Part Number	Thickness
A	90521-RDK-010	3.95 mm (0.1555 in.)
B	90522-RDK-010	3.97 mm (0.1563 in.)
C	90523-RDK-010	3.99 mm (0.1571 in.)
D	90524-RDK-010	4.01 mm (0.1579 in.)
E	90525-RDK-010	4.03 mm (0.1587 in.)
F	90526-RDK-010	4.05 mm (0.1594 in.)
G	90527-RDK-010	4.07 mm (0.1602 in.)
H	90528-RDK-010	4.09 mm (0.1610 in.)
I	90529-RDK-010	4.11 mm (0.1618 in.)
J	90530-RDK-010	4.13 mm (0.1626 in.)
K	90531-RDK-010	4.15 mm (0.1634 in.)
L	90532-RDK-010	4.17 mm (0.1642 in.)
M	90533-RDK-010	4.19 mm (0.1650 in.)
N	90534-RDK-010	4.21 mm (0.1657 in.)
O	90535-RDK-010	4.23 mm (0.1665 in.)
P	90536-RDK-010	4.25 mm (0.1673 in.)
Q	90537-RDK-010	4.27 mm (0.1681 in.)
R	90538-RDK-010	4.29 mm (0.1689 in.)
S	90539-RDK-010	4.31 mm (0.1697 in.)
T	90540-RDK-010	4.33 mm (0.1705 in.)
U	90541-RDK-010	4.35 mm (0.1713 in.)

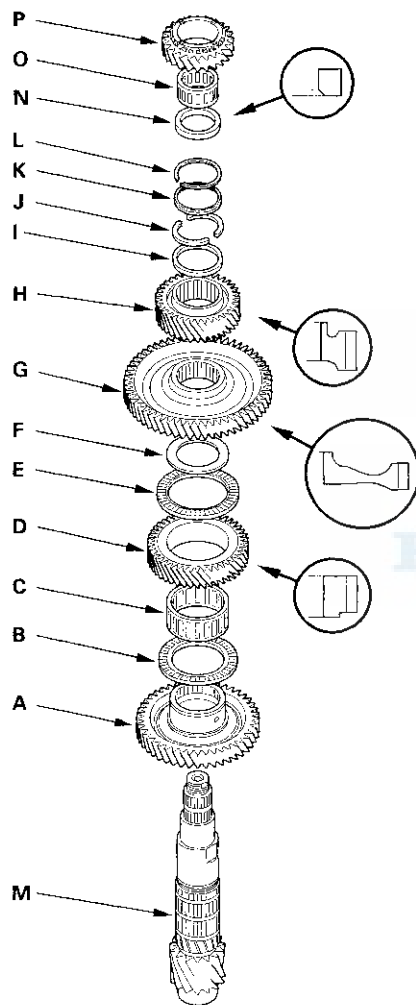
Shafts and Clutches

Countershaft Reassembly

Special Tools Required

Driver, 40 mm I. D. 07746-0030100

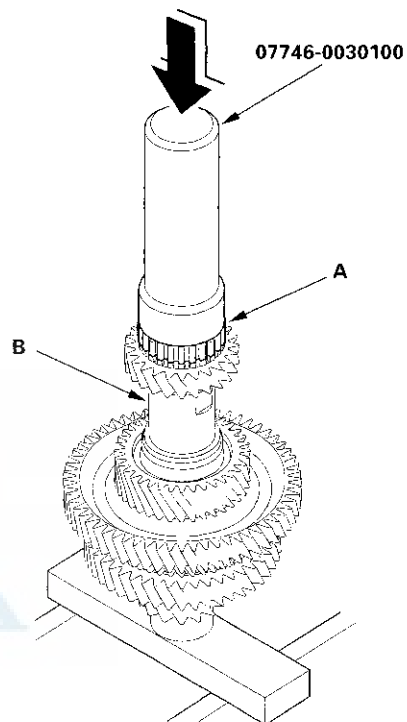
1. Install the 2nd gear (A), thrust needle bearing (B), needle bearing (C), idler gear (D), thrust needle bearing (E), 56 mm washer (F), 1st gear (G), 4th gear (H), 50.2 mm washer (I), 39 mm cotters (J), cotter retainer (K), and snap ring (L) on the countershaft (M).



2. Install the 35 x 47 x 6 mm thrust washer (N) in the direction shown, then install the needle bearing (O) and the 5th gear (P).

3. Slide the reverse selector hub (A) over the countershaft (B), then press it into place with the special tool and a press.

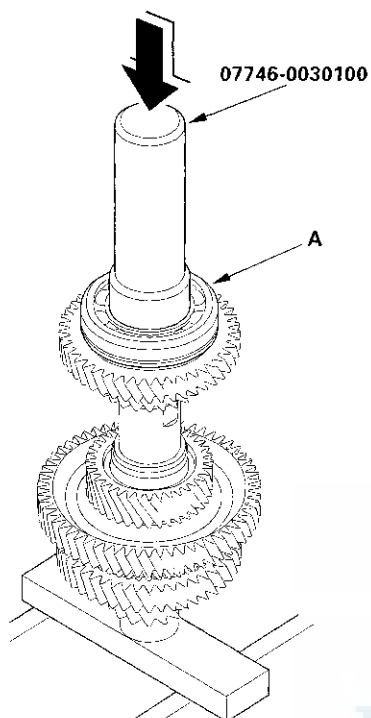
NOTE: Some reverse selector hubs are not press-fitted, and can be installed without using the special tool and a press.



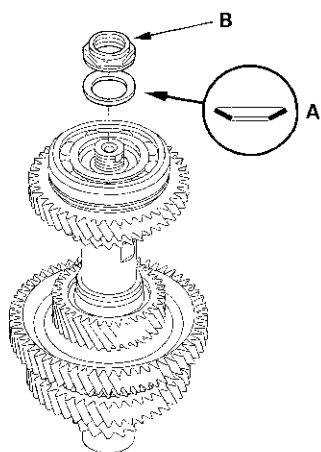
4. Install the reverse selector, reverse gear collar, needle bearing, and reverse gear over the reverse selector hub.



5. Install the ball bearing (A) over the countershaft, then press it into place with the special tool and a press.



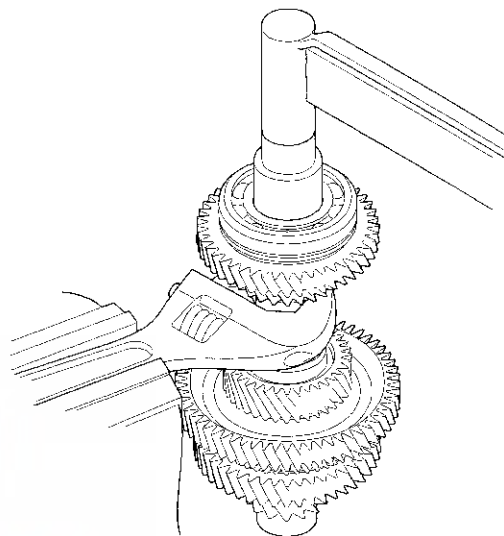
6. Install the new conical spring washer (A) in the direction shown, and install the new locknut (B).



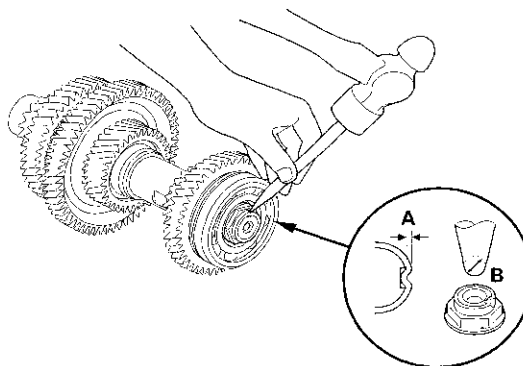
7. Hold the countershaft with a wrench and a vise securely, and tighten the locknut to 167 N·m (17.0 kgf·m, 123 lbf·ft).

NOTE:

- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- The locknut has left-hand threads.



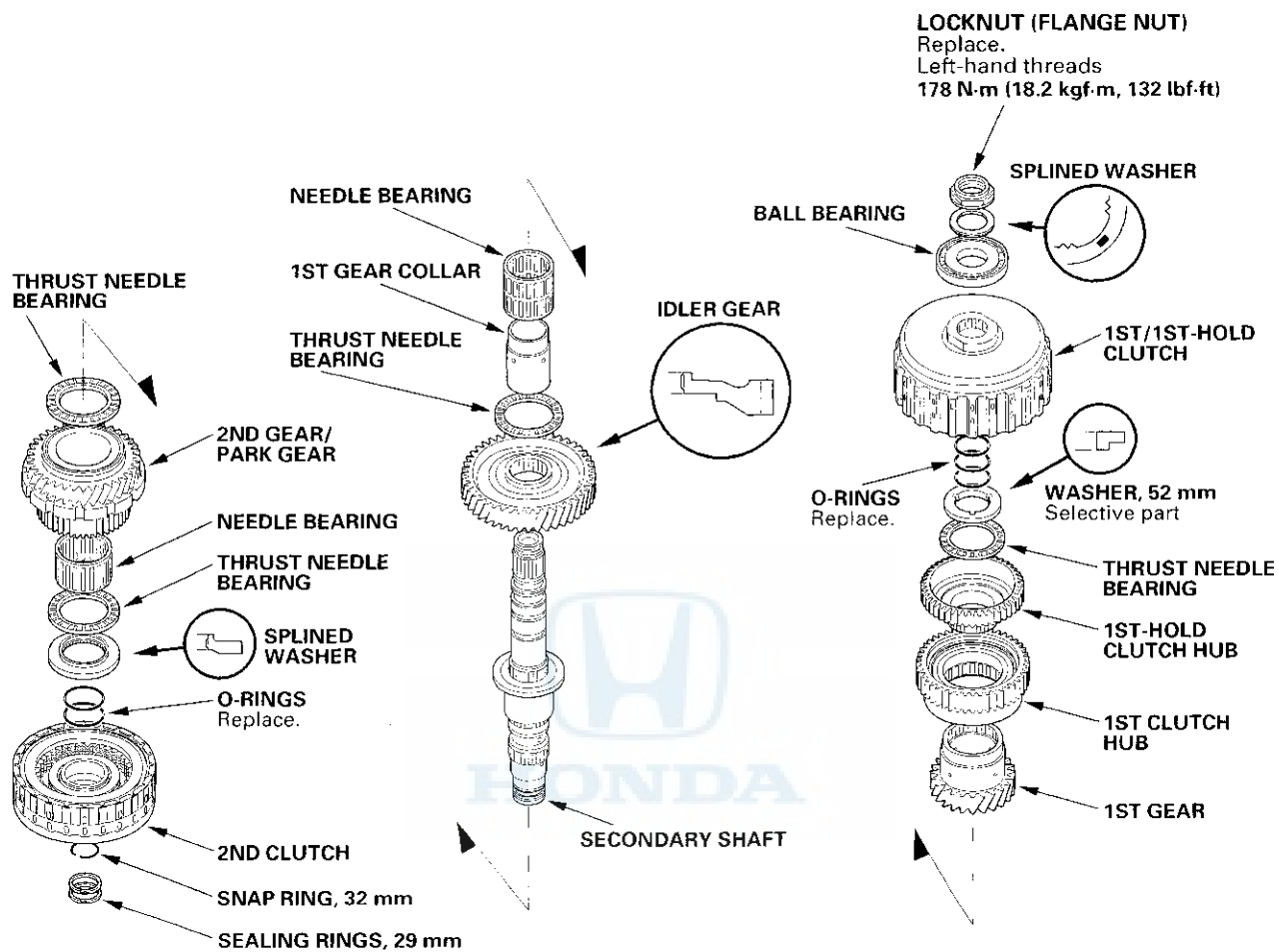
8. Stake the locknut into its shaft in depth (A) of 0.7 — 1.3 mm (0.03 — 0.05 in.) using a 3.5 mm punch (B).



Shafts and Clutches

Secondary Shaft Disassembly

Exploded View





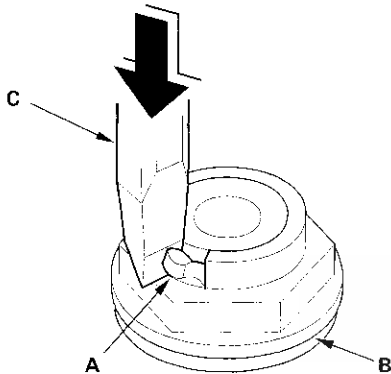
Special Tools Required

Wrench 40 x 42 mm 07XAA-002010A

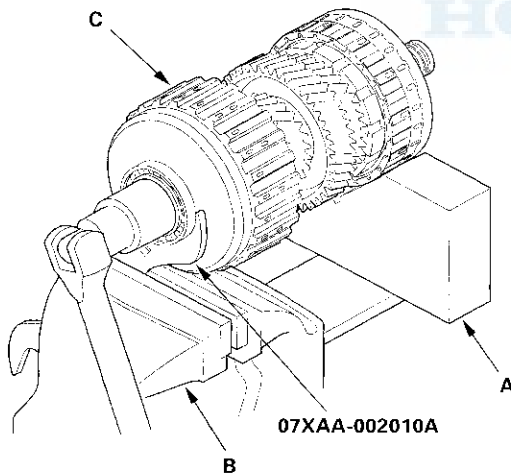
NOTE: Refer to the exploded view as needed during the following procedure.

1. Cut the lock tab (A) of the secondary shaft locknut (B) using a chisel.

NOTE: Keep all of the chiseled particles out of the secondary shaft.

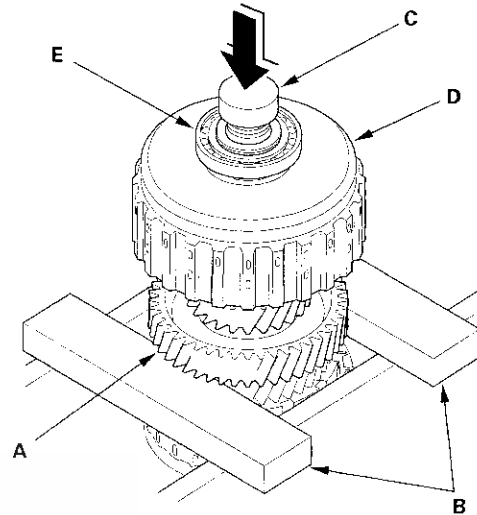


2. Place a V-block (A) on a vise (B), and put the secondary shaft (C) on the V-block and vise.



3. Attach the special tool onto the 1st clutch guide, and secure the special tool with the vise to hold the secondary shaft. Loosen the locknut, and remove it. Remove any burrs from the splines on the shaft and splined washer.

4. Place the idler gear (A) on press bases (B), and place a shaft protector (C) between the secondary shaft (D) and a press to prevent damaging the secondary shaft.



5. Press the secondary shaft out of the press-fitted bearing (E), and remove the secondary shaft while holding the underside of the secondary shaft. The secondary shaft falls down when pressing the secondary shaft out of the press-fitted bearing.
6. Remove the 1st/1st-hold clutch, 52 mm washer, thrust needle bearing, 1st gear assembly, needle bearing, 1st gear collar, thrust needle bearing, and idler gear.
7. Remove the 32 mm snap ring, and remove the 2nd clutch, splined washer, thrust needle bearing, needle bearing, 2nd gear/park gear, and thrust needle bearing.
8. Inspect the bearing for galling and rough movement.
9. Check the shaft bearing surfaces for scoring and excessive wear, and check the shift splines for excessive wear and damage.
10. Check the 1st gear axial clearance (see page 14-318), 1st gear one-way clutch (see page 14-320), and secondary shaft installation height (see page 14-323).

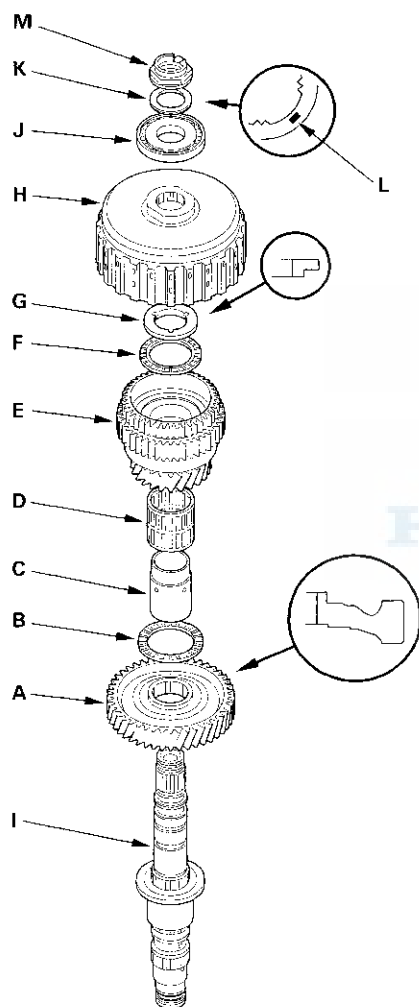
Shafts and Clutches

Secondary Shaft 1st Gear Clearance Inspection

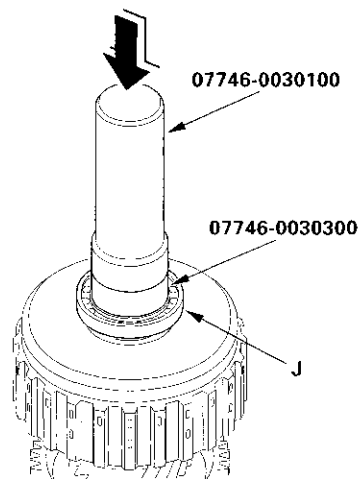
Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300

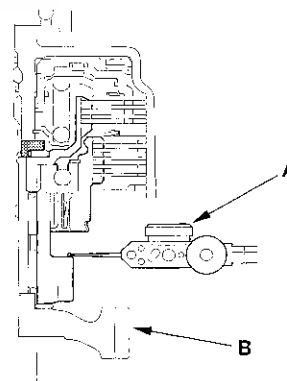
1. Install the idler gear (A), thrust needle bearing (B), 1st gear collar (C), needle bearing (D), 1st gear assembly (E), thrust needle bearing (F), 52 mm washer (G), and 1st/1st-hold clutch (H) on the secondary shaft (I). Do not install the O-rings during inspection.



2. Install the ball bearing (J) over the 1st/1st-hold clutch guide with the special tools and a press.



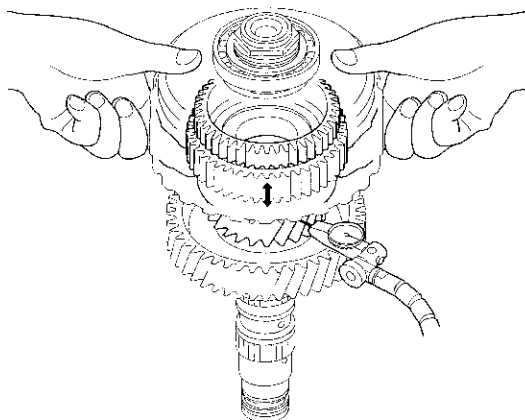
3. Install the splined washer (K) with the marked side (L) up over the ball bearing in the same manner as installing the ball bearing with the special tool and a press.
4. Install the old lock nut (M) and tighten it to 29 N·m (3.0 kgf·m, 22 lbf·ft).
5. Set the dial indicator (A) on the 1st gear (B).



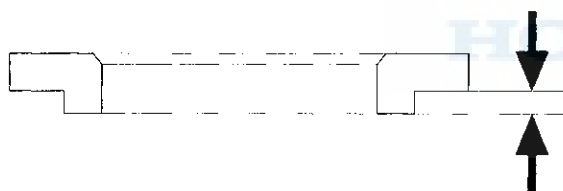


6. Measure the 1st gear axial clearance in at least three places while moving the 1st gear. Use the average as the actual clearance.

Standard: 0.085—0.130 mm (0.003—0.05 in.)



7. If the measurement is out of standard, remove the washer and measure its difference.



8. Select and install a new washer, then recheck the clearance.

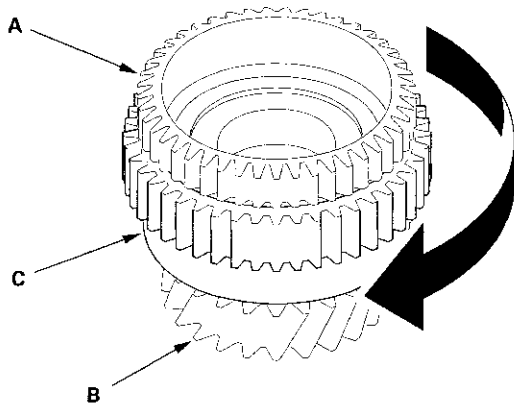
WASHER, 52 mm

No.	Part Number	Thickness
A	90502-RDK-010	2.705 mm (0.107 in.)
B	90503-RDK-010	2.680 mm (0.106 in.)
C	90504-RDK-010	2.655 mm (0.105 in.)
D	90505-RDK-010	2.630 mm (0.104 in.)
E	90506-RDK-010	2.605 mm (0.103 in.)
F	90507-RDK-010	2.580 mm (0.102 in.)
G	90508-RDK-010	2.555 mm (0.101 in.)
H	90509-RDK-010	2.530 mm (0.100 in.)
I	90510-RDK-010	2.505 mm (0.100 in.)
J	90511-RDK-010	2.480 mm (0.099 in.)
K	90512-RDK-000	2.455 mm (0.097 in.)
L	90513-RDK-000	2.430 mm (0.096 in.)
M	90514-RDK-000	2.405 mm (0.095 in.)

Shafts and Clutches

1st Gear One-way Clutch Inspection

1. Hold the 1st-hold clutch hub (A), and turn the 1st gear (B) in the direction shown to be sure it turns freely. Also make sure the 1st gear locks in the opposite direction.



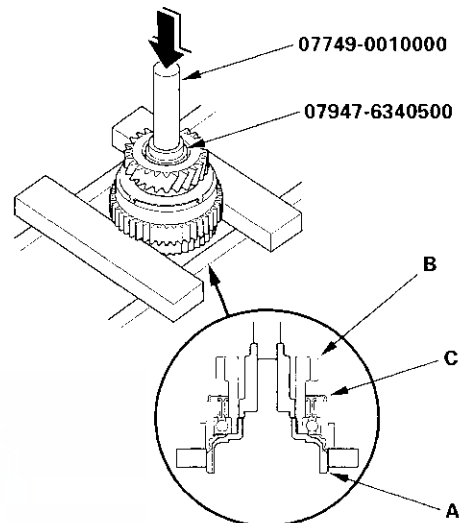
2. If any problem occurs on the 1st gear one-way clutch, replace the 1st clutch hub (C). The 1st gear one-way clutch is not available separately from the 1st clutch hub.

1st Clutch Hub Replacement

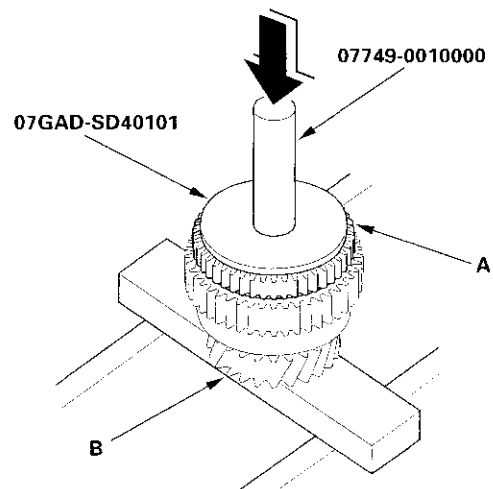
Special Tools Required

- Driver 07749-0010000
- Driver attachment 07947-6340500
- Attachment, 78 x 90 mm 07GAD-SD40101

1. Remove the 1st-hold clutch hub (A) from the 1st gear (B) with the special tools and a press.



2. Remove the 1st clutch hub (C) from the 1st gear, then install the new 1st clutch hub in the 1st gear.
3. Install the 1st-hold clutch hub (A) in the 1st gear (B) with the special tools and a press.



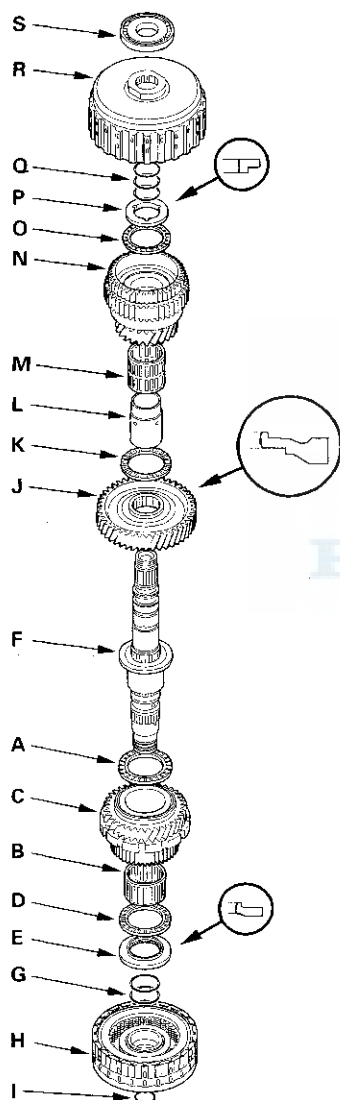


Secondary Shaft Reassembly

Special Tools Required

- Driver, 40 mm I.D. 07746-0030100
- Attachment, 30 mm I.D. 07746-0030300
- Wrench 40 x 42 mm 07XAA-002010A

1. Install the thrust needle bearing (A), needle bearing (B), 2nd gear/park gear (C), thrust needle bearing (D), and splined washer (E) in the direction shown on the secondary shaft (F).



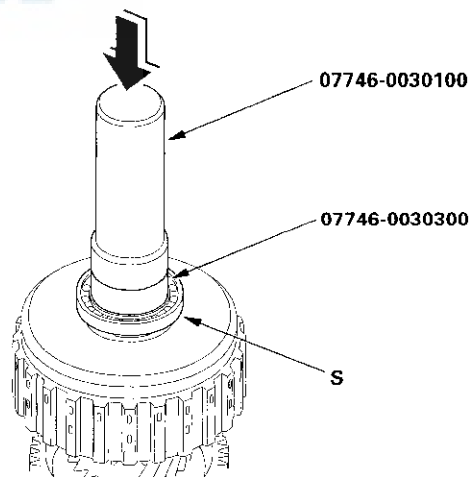
2. Wrap the shaft splines with tape, and install the new O-rings (G) in 2nd clutch O-ring grooves, then remove the tape.

NOTE: To prevent damage to the O-rings, be sure to install the O-rings after installing the splined washer.

3. Install the 2nd clutch (H) on the secondary shaft, and secure the 2nd clutch with the snap ring (I).
4. Install the idler gear (J) in the direction shown, thrust needle bearing (K), 1st gear collar (L), needle bearing (M), 1st gear assembly (N), thrust needle bearing (O), and 52 mm washer (P) in the direction shown on the secondary shaft.
5. Wrap the shaft splines with tape, and install the new O-rings (Q) in 1st/1st-hold clutch O-ring grooves, then remove the tape.

NOTE: To prevent damage to the O-rings, be sure to install the O-rings after installing the 1st gear collar and 52 mm washer.

6. Install the 1st/1st-hold clutch (R).
7. Install the ball bearing (S) over the 1st/1st-hold clutch guide with the special tools and a press.

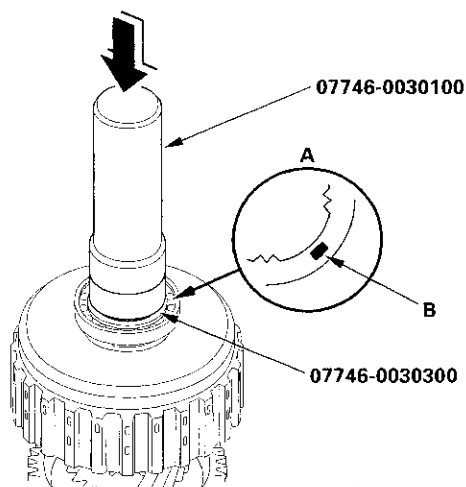


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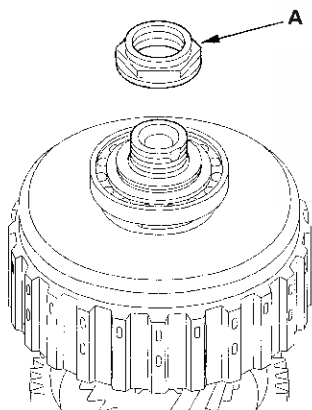
Shafts and Clutches

Secondary Shaft Reassembly (cont'd)

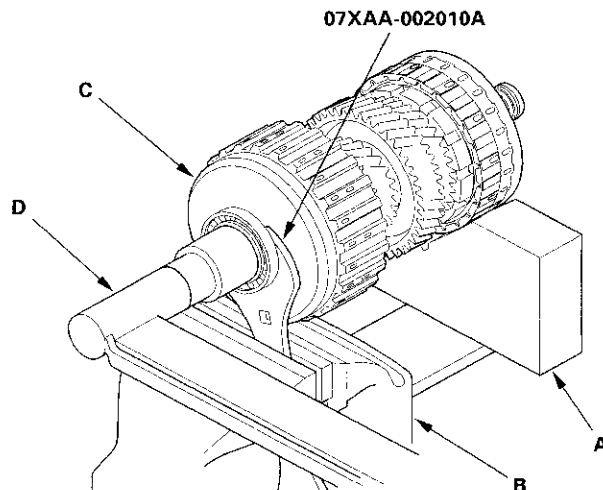
8. Install the new splined washer (A) with the marked side (B) up over the ball bearing with the special tools and a press.



9. Install the new locknut (A).



10. Place a V-block (A) on a vise (B), and put the secondary shaft (C) on the V-block and vise.

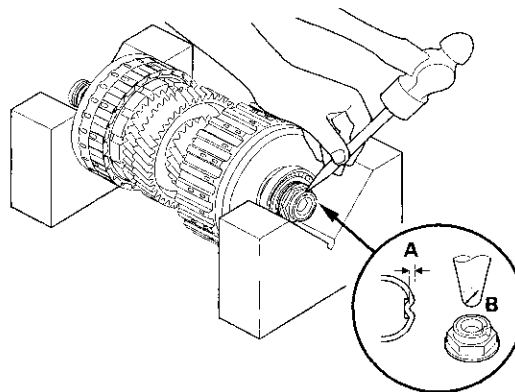


11. Attach the special tool onto the 1st clutch guide, and secure the special tool with the vise to hold the secondary shaft. Tighten the locknut to 178 N·m (18.2 kgf·m, 132 lbf·ft) with the torque wrench (D).

NOTE:

- Use a torque wrench to tighten the locknut. Do not use an impact wrench.
- The locknut has left-hand threads.

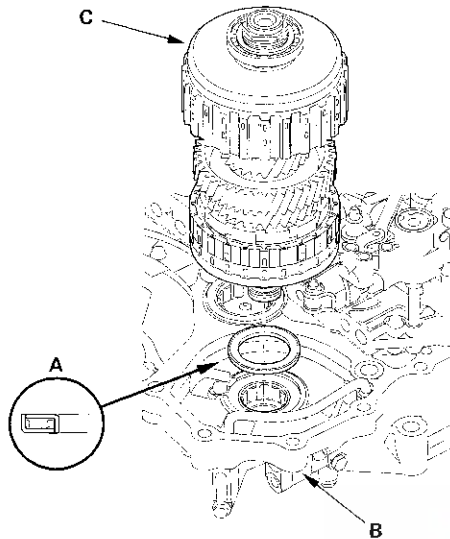
12. Stake the locknut into its shaft in depth (A) of 0.7—1.3 mm (0.03—0.05 in.) using a 3.5 mm punch (B).



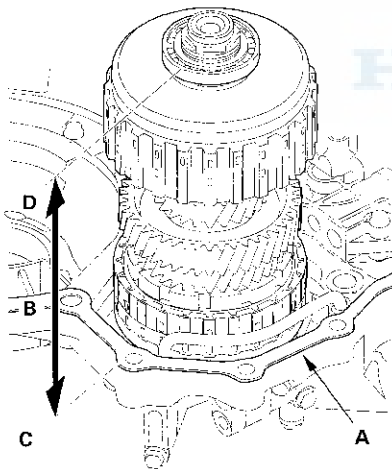


Secondary Shaft Installation Height Inspection/Adjustment

1. Install the thrust needle bearing (A) in the torque converter housing (B) in the direction shown, and install the secondary shaft assembly (C).

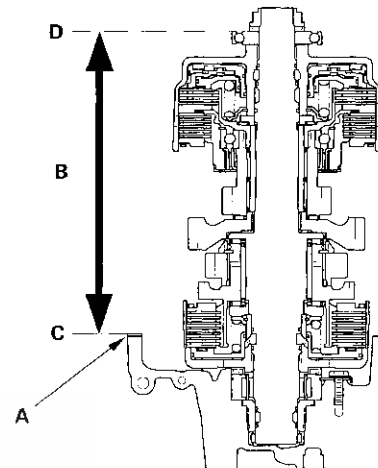


2. Install the new gasket (A) on the torque converter housing.



3. Measure the height (B) of the secondary shaft installation between the surface (C) of the gasket and the top of the ball bearing outer race (D), then note the measurement.

Secondary Shaft Cutaway View:

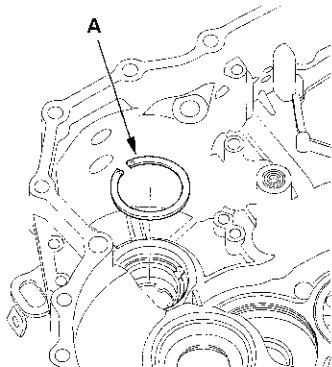


(cont'd)

Shafts and Clutches

Secondary Shaft Installation Height Inspection/Adjustment (cont'd)

4. Remove the 65 mm thrust shim (A) from the transmission housing, and measure its thickness.



5. Calculate the thickness of the 65 mm thrust shim using the formula.

Formula:

65 mm Thrust Shim Thickness

**= Secondary Shaft Installation Height Standard
— Measurement**

**Secondary Shaft Installation Height
Standard:**

222.54—222.63 mm (8.761—8.765 in.)

6. Select the 65 mm thrust shim from the following table.

THRUST SHIM, 65 mm

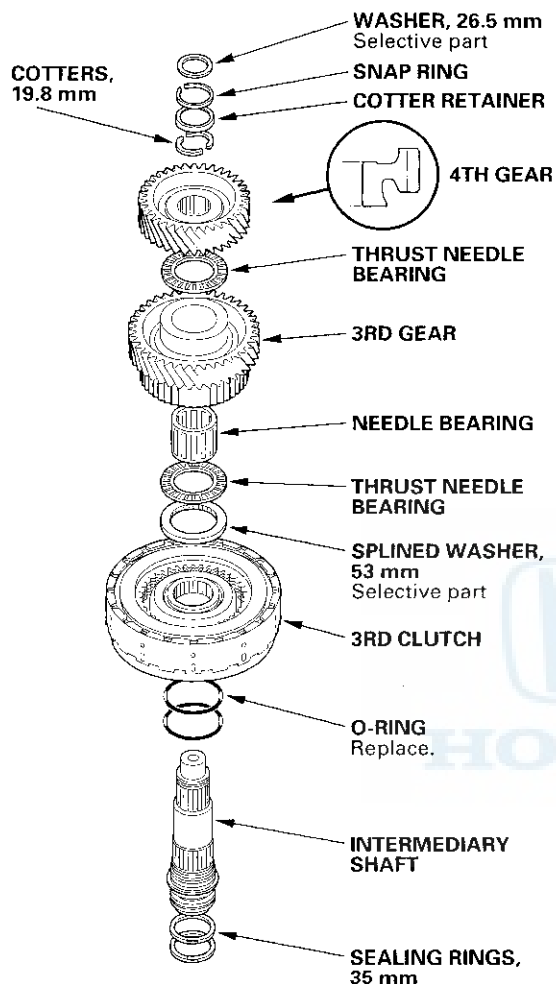
No.	Part Number	Thickness
0A	90460-RDK-000	0.80 mm (0.031 in.)
A	90461-RDK-010	0.84 mm (0.033 in.)
B	90462-RDK-010	0.88 mm (0.035 in.)
C	90463-RDK-010	0.92 mm (0.036 in.)
D	90464-RDK-010	0.96 mm (0.038 in.)
E	90465-RDK-010	1.00 mm (0.039 in.)
F	90466-RDK-010	1.04 mm (0.041 in.)
G	90467-RDK-010	1.08 mm (0.043 in.)
H	90468-RDK-010	1.12 mm (0.044 in.)
I	90469-RDK-010	1.16 mm (0.046 in.)
J	90470-RDK-010	1.20 mm (0.047 in.)
K	90471-RDK-010	1.24 mm (0.049 in.)
L	90472-RDK-010	1.28 mm (0.050 in.)
M	90473-RDK-010	1.32 mm (0.052 in.)
N	90474-RDK-010	1.36 mm (0.054 in.)
O	90475-RDK-010	1.40 mm (0.055 in.)
P	90476-RDK-010	1.44 mm (0.057 in.)
Q	90477-RDK-010	1.48 mm (0.058 in.)
R	90478-RDK-010	1.52 mm (0.060 in.)
S	90479-RDK-010	1.56 mm (0.061 in.)
T	90480-RDK-010	1.60 mm (0.063 in.)
U	90481-RDK-000	1.64 mm (0.065 in.)
V	90482-RDK-000	1.68 mm (0.066 in.)
W	90483-RDK-000	1.72 mm (0.068 in.)
X	90484-RDK-000	1.76 mm (0.069 in.)
Y	90485-RDK-000	1.80 mm (0.071 in.)
Z	90486-RDK-000	1.84 mm (0.072 in.)
AA	90487-RDK-000	1.88 mm (0.074 in.)
AB	90488-RDK-000	1.92 mm (0.076 in.)
AC	90489-RDK-000	1.96 mm (0.077 in.)
AD	90490-RDK-000	2.00 mm (0.079 in.)
AE	90491-RDK-000	2.04 mm (0.080 in.)
AF	90492-RDK-000	2.08 mm (0.082 in.)
AG	90493-RDK-000	2.12 mm (0.083 in.)
AH	90494-RDK-000	2.16 mm (0.085 in.)
AI	90495-RDK-000	2.20 mm (0.087 in.)
AJ	90496-RDK-000	2.24 mm (0.088 in.)
AK	90497-RDK-000	2.28 mm (0.090 in.)
AL	90498-RDK-000	2.32 mm (0.091 in.)

7. Install the thrust shim in the transmission housing.



Intermediary Shaft Disassembly, Inspection, and Reassembly

1. Remove the 26.5 mm washer, snap ring, cotter retainer, and cotters from the intermediary shaft.



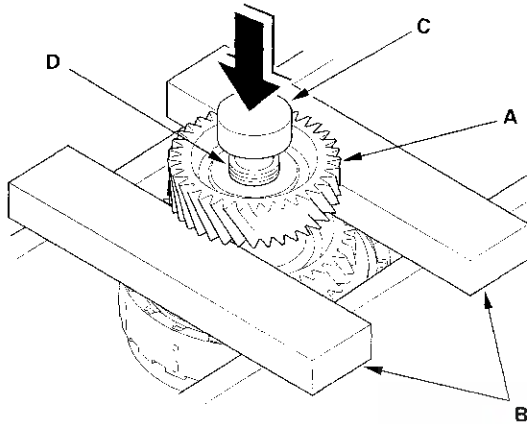
2. Remove the intermediary shaft 4th gear using a press (see page 14-326), and disassemble the shaft and gears.
3. Inspect the bearings for galling and rough movement.

4. Check the shaft bearing surfaces for scoring and excessive wear, and check the shaft splines for excessive wear and damage.
5. Check the sealing rings for excessive wear and damage.
6. Check the 3rd gear axial clearance (see page 14-327), and intermediary shaft installation height (see page 14-329).
7. Before installing the O-rings, wrap the shaft splines with tape to prevent damage to the O-rings.
8. Lubricate all parts with ATF, and reassemble the shaft and gears.
9. Install the press-fitted 4th gear with the special tool and a press (see page 14-326) in the direction shown.

Shafts and Clutches

Intermediary Shaft 4th Gear Removal

1. Place the 4th gear (A) on press bases (B), and place a shaft protector (C) between the intermediary shaft (D) and a press to prevent damaging the intermediary shaft.



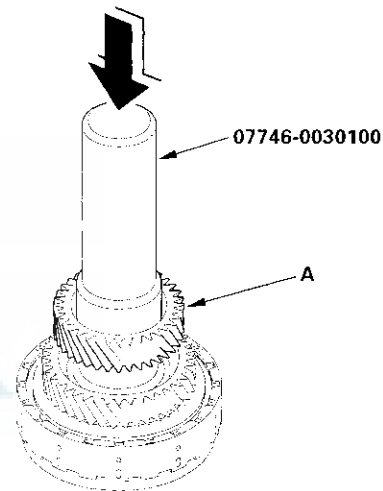
2. Press the intermediary shaft out of the press-fitted 4th gear, and remove the intermediary shaft while holding the underside the intermediary shaft. The intermediary shaft falls down when pressing the intermediary shaft out of the press-fitted gear.
3. Remove the remaining parts from the intermediary shaft.

Intermediary Shaft 4th Gear Installation

Special Tools Required

Driver, 40 mm I. D. 07746-0030100

1. Wrap the shaft splines with tape, and install the new O-rings in the 3rd clutch O-ring grooves, then remove the tape.
2. Install the 3rd clutch, 53 mm splined washer, thrust needle bearing, needle bearing, 3rd gear, thrust needle bearing on the intermediary shaft.
3. Install the 4th gear (A) with the special tool and a press.



4. Install the 19.8 mm cotters, cotter retainer, and snap ring.
5. Install the 26.5 mm washer on the top of the intermediary shaft.

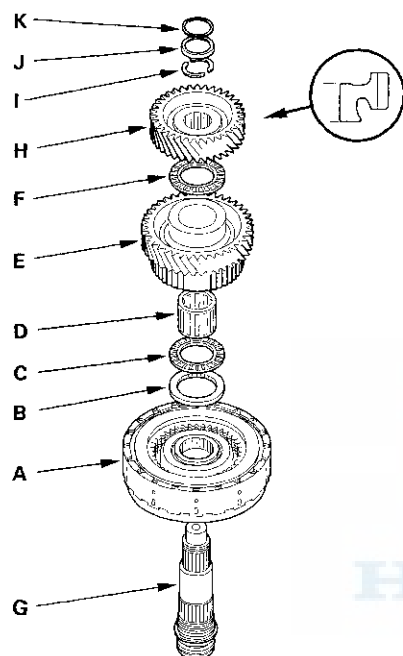


Intermediary Shaft 3rd Gear Clearance Inspection

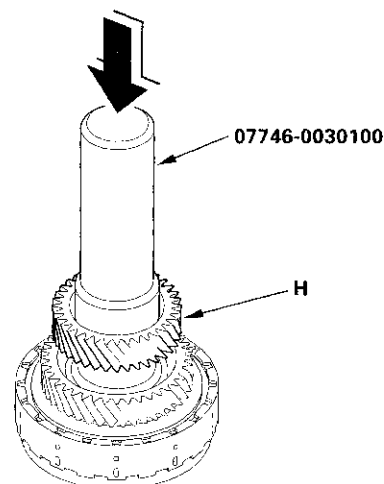
Special Tools Required

Driver, 40 mm I. D. 07746-0030100

1. Install the 3rd clutch (A), 53 mm splined washer (B), thrust needle bearing (C), needle bearing (D), 3rd gear (E), and thrust needle bearing (F) on the Intermediary shaft (G). Do not install the O-rings during inspection.

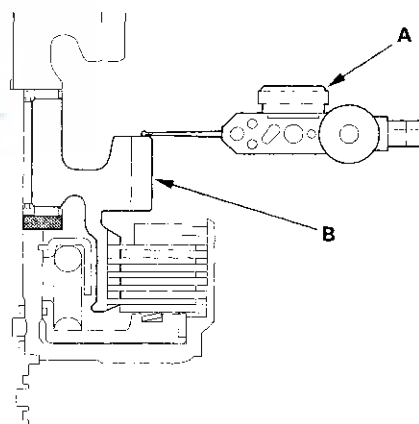


2. Install the 4th gear (H) with the special tool and a press.



3. Install the cotters (I), cotter retainer (J), and snap ring (K).

4. Set the dial indicator (A) on the 4th gear (B).



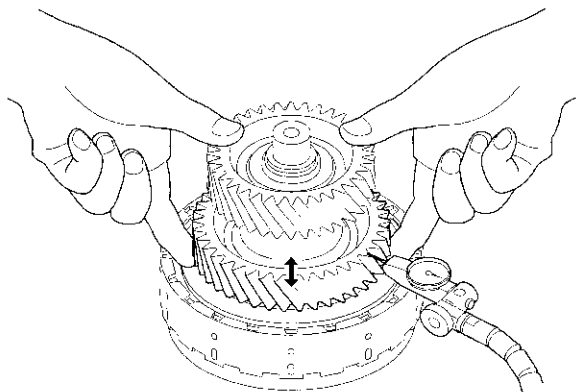
(cont'd)

Shafts and Clutches

Intermediary Shaft 3rd Gear Clearance Inspection (cont'd)

5. Measure the 4th gear axial clearance in at least three places while moving the 4th gear. Use the average as the actual clearance.

Standard: 0.005—0.045 mm (0.0002—0.0018 in.)



6. If the measurement is out of standard, remove the splined washer and measure its thickness.
7. Select and install a new splined washer, then recheck the clearance.

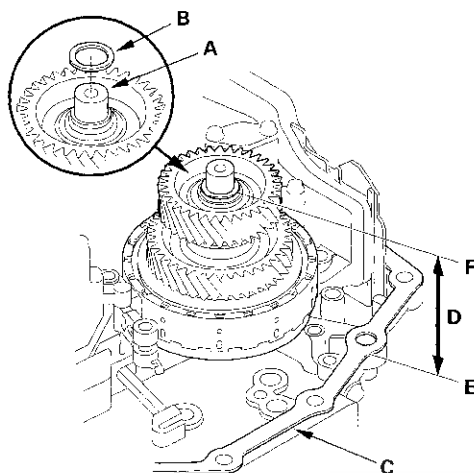
SPLINED WASHER, 53 mm

No.	Part Number	Thickness
A	90546-RDK-000	3.995 mm (0.1573 in.)
B	90547-RDK-000	4.015 mm (0.1581 in.)
C	90548-RDK-000	4.035 mm (0.1589 in.)
D	90549-RDK-000	4.055 mm (0.1596 in.)
E	90550-RDK-000	4.075 mm (0.1604 in.)
F	90551-RDK-000	4.095 mm (0.1612 in.)
G	90552-RDK-000	4.115 mm (0.1620 in.)
H	90553-RDK-000	4.135 mm (0.1628 in.)
I	90554-RDK-000	4.155 mm (0.1636 in.)
J	90555-RDK-000	4.175 mm (0.1644 in.)
K	90556-RDK-000	4.195 mm (0.1652 in.)
L	90557-RDK-000	4.215 mm (0.1659 in.)
M	90558-RDK-000	4.235 mm (0.1667 in.)
N	90559-RDK-000	4.255 mm (0.1675 in.)



Intermediary Shaft Installation Height Inspection/Adjustment

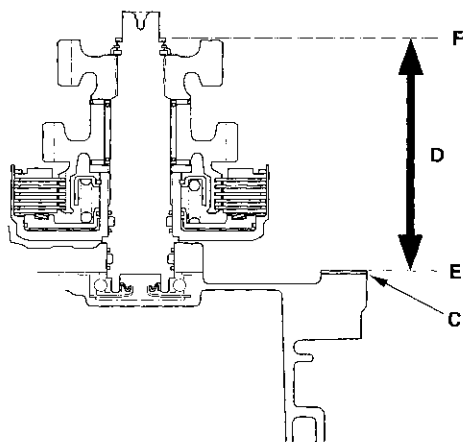
1. Install the intermediary shaft (A) in the torque converter housing, and install the 26.5 mm washer (B) on the intermediary shaft.



2. Install the new gasket (C) on the torque converter housing.
3. Measure the height (D) of the intermediary shaft installation between the surface (E) of the gasket and the surface of the 26.5 mm washer (F).

Intermediary Shaft Installation Height
Standard:
 133.785—133.885 mm (5.2671—5.2711 in.)

Intermediary Shaft Cutaway View:



4. If the measurement is out of standard, remove the 26.5 mm washer and measure its thickness.
5. Select and install a new washer, then recheck the installation height.

WASHER, 26.5 mm

No.	Part Number	Thickness
A	90564-RDK-000	1.05 mm (0.041 in.)
B	90565-RDK-000	1.13 mm (0.044 in.)
C	90566-RDK-000	1.21 mm (0.048 in.)
D	90567-RDK-000	1.29 mm (0.051 in.)
E	90568-RDK-000	1.37 mm (0.054 in.)
F	90569-RDK-000	1.45 mm (0.057 in.)
G	90570-RDK-000	1.53 mm (0.060 in.)
H	90571-RDK-000	1.61 mm (0.063 in.)
I	90572-RDK-000	1.69 mm (0.067 in.)
J	90573-RDK-000	1.77 mm (0.070 in.)
K	90574-RDK-000	1.85 mm (0.073 in.)
L	90575-RDK-000	1.93 mm (0.076 in.)
M	90576-RDK-000	2.01 mm (0.079 in.)
N	90577-RDK-000	2.09 mm (0.082 in.)

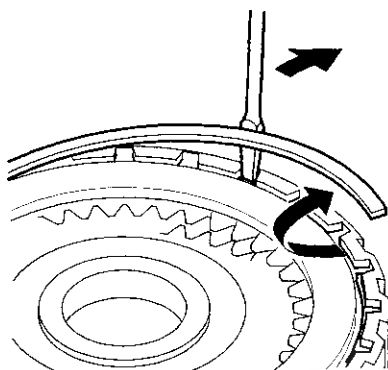
Shafts and Clutches

Clutch Disassembly

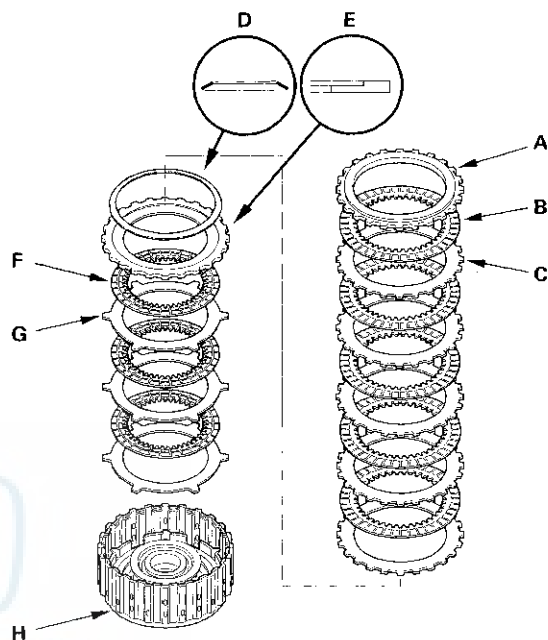
Special Tools Required

- Clutch spring compressor attachment
07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly
07GAE-PG40200 or 07GAE-PG4020A

1. Remove the snap ring (A) with a screwdriver (B).

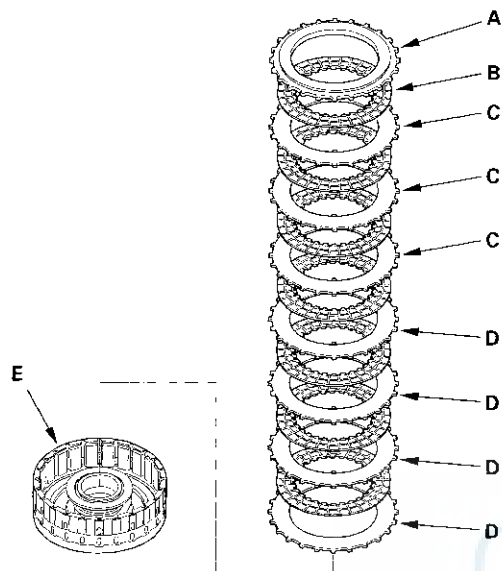


2. Remove the 1st clutch end plate (A), 1st clutch discs (B) (5), 1st clutch waved-plates (C) (5), disc spring (D), 1st-hold clutch plate B (E), 1st-hold clutch discs (F) (3), and 1st-hold clutch waved-plates (G) (3) from the 1st/1st-hold clutch drum (H).



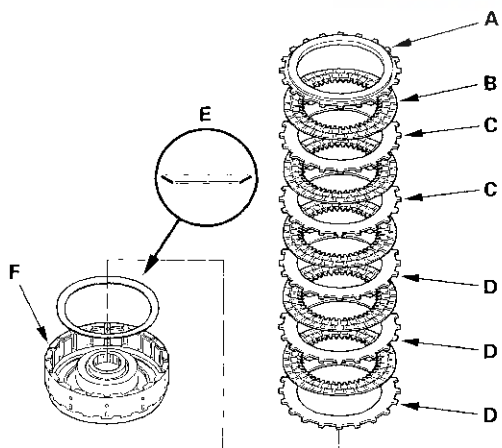


3. Remove the clutch end plate (A), clutch discs (B) (7), clutch waved-plates (C) (3), and clutch flat-plates (D) (4) from the 2nd clutch drum (E).



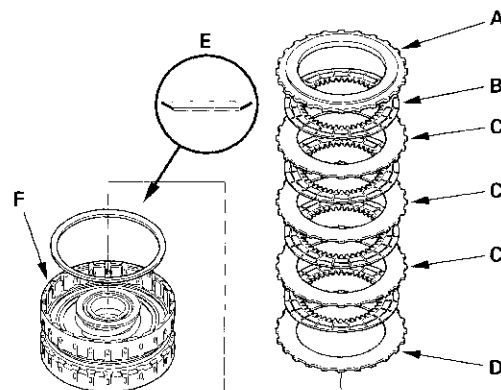
4. Make reference marks on the clutch waved-plates.

5. Remove the clutch end plate (A), clutch discs (B) (5), clutch waved-plates (C) (2), clutch flat-plates (D) (3), and disc spring (E) from the 3rd clutch drum (F).



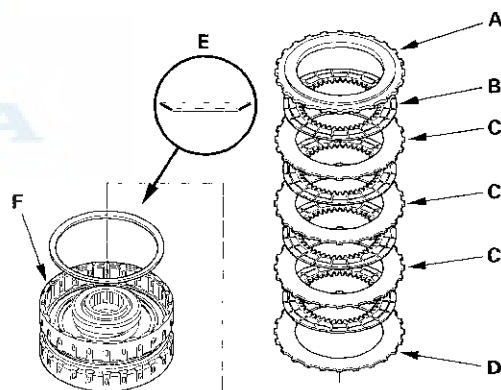
6. Make reference marks on the clutch waved-plates.

7. Remove the clutch end plate (A), clutch discs (B) (4), clutch waved-plates (C) (3), clutch flat-plates (D) (1), and disc spring (E) from the 4th clutch drum (F).



8. Make reference marks on the clutch waved-plates.

9. Remove the clutch end plate (A), clutch discs (B) (4), clutch waved-plates (C) (3), clutch flat-plates (D) (1), and disc spring (E) from the 5th clutch drum (F).



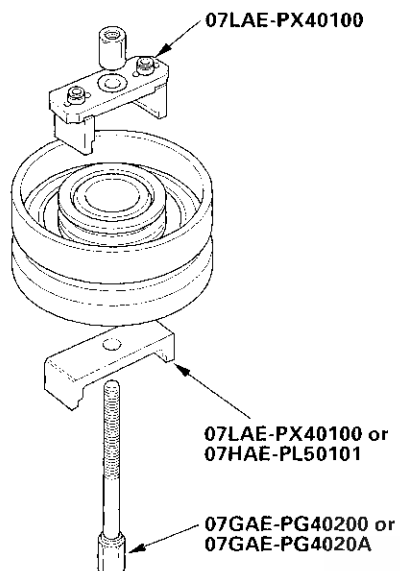
10. Make reference marks on the clutch waved-plates.

(cont'd)

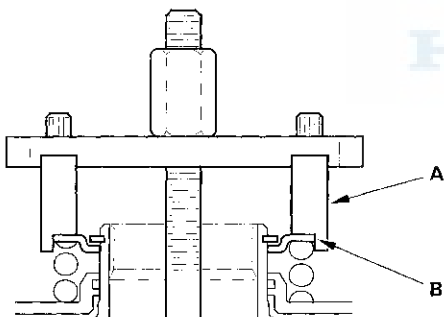
Shafts and Clutches

Clutch Disassembly (cont'd)

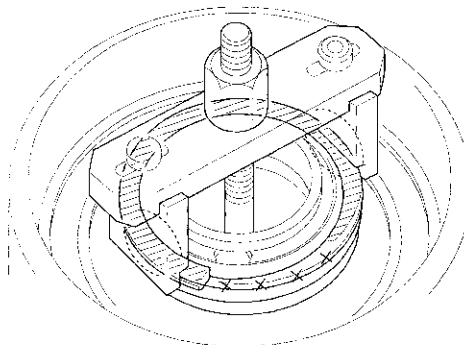
11. Install the special tools.



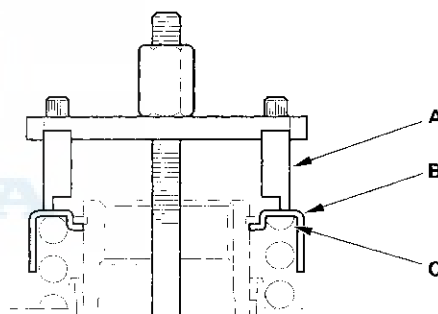
12. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



13. If either end of the special tool is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

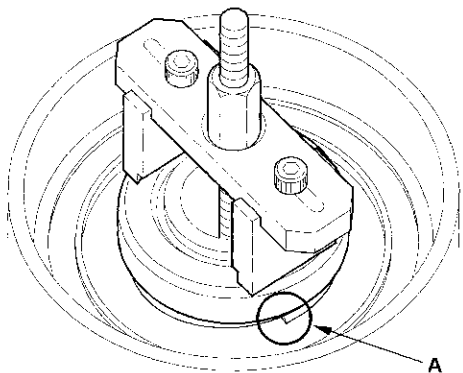


14. Set the special tool (A) on the spring retainer (B) of the 3rd and 5th clutches so the special tool works on the clutch return spring (C).

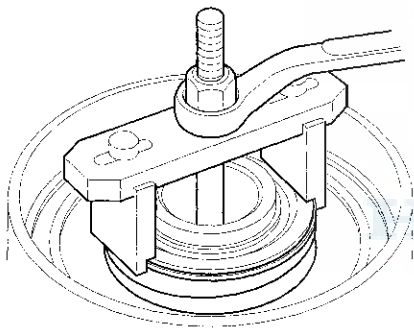




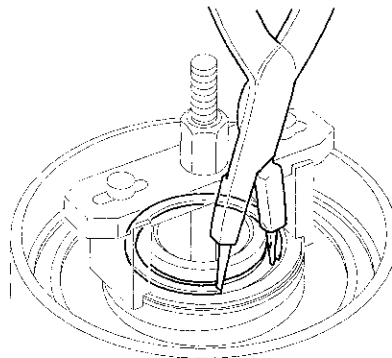
15. If either end of the special tool is not set over the clutch return spring end (A), the retainer may be damaged.



16. Compress the return spring until the snap ring can be removed.

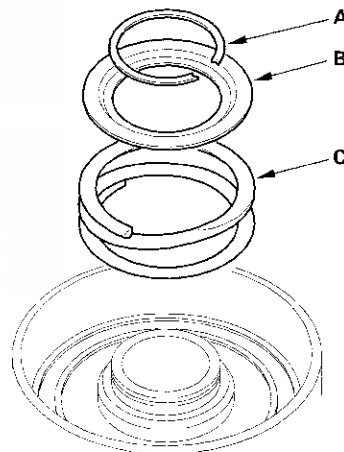


17. Remove the snap ring with the snap ring pliers.



18. Remove the special tools.

19. Remove the snap ring (A), spring retainer (B), and return spring (C).

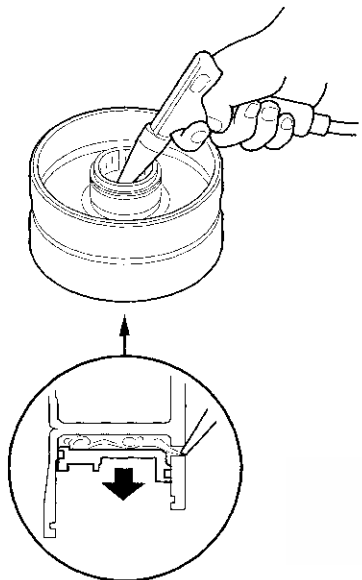


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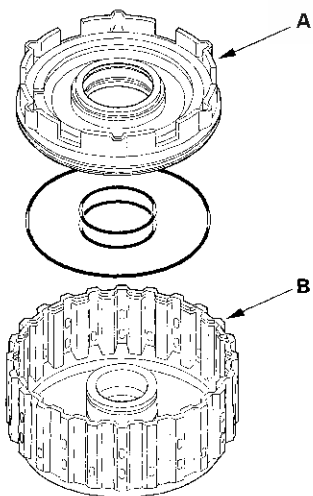
Shafts and Clutches

Clutch Disassembly (cont'd)

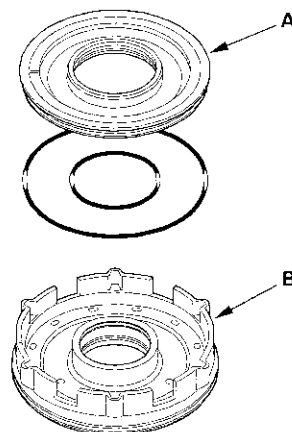
20. Wrap a shop rag around the clutch drum, and apply air pressure to the fluid passage to remove the piston. Place a finger tip on the other passage while applying air pressure.



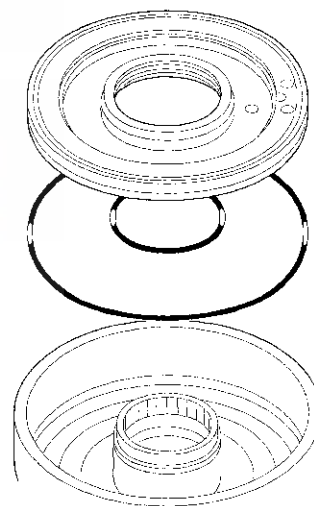
21. Remove the 1st/1st-hold clutch piston (A) from the clutch drum (B), and remove the O-rings from the 1st clutch piston.



22. Remove the 1st-hold clutch piston (A) from the 1st clutch piston (B), and remove the O-rings from the 1st-hold clutch piston.



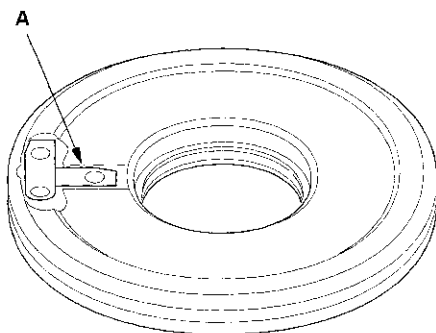
23. Remove the clutch piston, and remove the O-rings from the 2nd, 3rd, 4th, and 5th clutch pistons.





Clutch Inspection

1. Inspect the clutch pistons and clutch piston check valves.



2. If the clutch piston check valve is loose or damaged, replace the clutch piston.
3. Check the spring retainer for wear and damage.
4. If the spring retainer is worn or damaged, replace it.
5. Inspect the clutch discs, clutch plates, and clutch end plate for wear, damage, and discoloration.

Clutch Discs

Standard Thickness: 1.94 mm (0.076 in.)

Clutch Flat-plates and Clutch Waved-plates Standard Thickness

1st clutch:	1.6 mm (0.063 in.)
1st-hold clutch:	1.8 mm (0.071 in.)
2nd clutch:	1.8 mm (0.071 in.)
3rd clutch:	2.0 mm (0.079 in.)
4th clutch:	2.0 mm (0.079 in.)
5th clutch:	2.0 mm (0.079 in.)

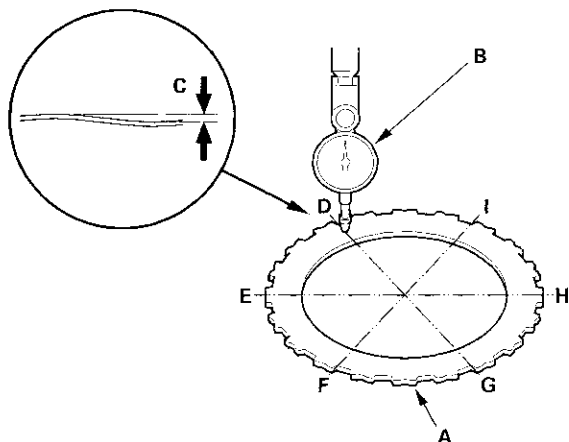
6. If the clutch discs are worn or damaged, replace them as a set. If the clutch discs are replaced, inspect the clutch end-plate-to-top-disc clearance.
7. If any plate is worn, damaged, or discolored, replace the damaged plate with a new plate, and inspect the other waved-plates for a phase difference. If the clutch plate is replaced, inspect the clutch end-plate-to-top-disc clearance.

8. If the clutch end plate is worn, damaged, or discolored, inspect the clutch end-plate-to-top-disc clearance, then replace the clutch end plate.

Shafts and Clutches

Clutch Waved-plate Phase Difference Inspection

1. Place the clutch waved-plate (A) on a surface plate, and set a dial indicator (B) on the waved-plate.



2. Find the bottom (D) of a phase difference of the waved-plate, zero the dial indicator and make a reference mark on the bottom of the waved-plate.
3. Rotate the clutch waved-plate of the 1st, 2nd, 4th, and 5th clutches about 60-degrees apart from the bottom while holding the waved-plate by its circumference, and rotate the 3rd clutch waved-plate about 72-degrees or 54-degrees apart from the bottom while holding the waved-plate by its circumference. The dial indicator should be at the top (E) of a phase difference. Do not rotate the waved-plate while holding its surface, always rotate it by holding its circumference.
4. Read the dial indicator. The dial indicator reads the phase difference (C) of the waved-plate between the bottom and top.

Standard

1st clutch: 0.22—0.30 mm (0.0087—0.012 in.)

2nd, 3rd, 4th, and 5th clutches:

0.12—0.20 mm (0.0047—0.0079 in.)

5. Rotate the waved-plate of the 1st, 2nd, 4th, and 5th clutches about 60-degrees, and the 3rd clutch waved-plate about 54-degrees or 72 degrees. The dial indicator should be at the bottom of a phase difference (F and H), and zero the dial indicator.
6. Measure the phase difference at the other two tops (G and I) of the waved-plate by following steps 3 thru 5.

7. If the two values of the three measurements are within the standard, the waved-plate is OK. If the two values of the three measurements are out of the standard, replace the waved-plate.

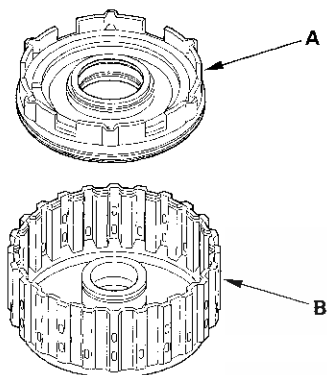


Clutch Clearance Inspection

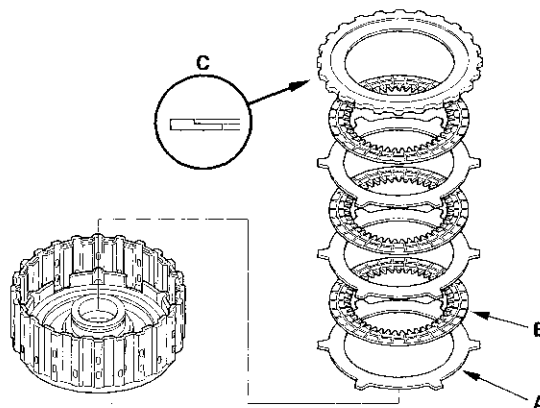
Special Tools Required

Clutch compressor attachment 07ZAE-PRP0100

1. Inspect the clutch piston, discs, plates, and end plate for wear and damage (see page 14-335), and inspect the clutch waved-plate phase difference (see page 14-336), if necessary.
2. Install the 1st-hold clutch piston in the 1st clutch piston, and install 1st/1st-hold clutch piston (A) in the 1st/1st-hold clutch drum (B). Do not install the O-rings on the clutch pistons during inspection.

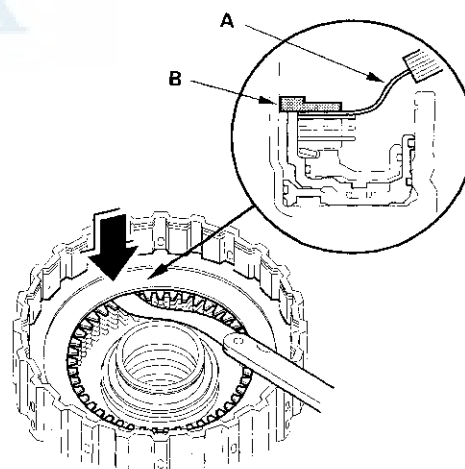


3. Starting with the 1st-hold clutch plate, alternately install the plates (A) (3) and discs (B) (3), then install the 1st-hold clutch plate B (C) with the flat side down in the direction shown.



4. Measure the 1st-hold clutch plate B-to-top-disc clearance with a feeler gauge (A) while pressing the 1st-hold clutch plate B down. Take measurements in at least three places, and use the average as the actual clearance.

1st-hold Clutch Plate B-to-Top-Disc Clearance
Service Limit: 0.6—1.0 mm (0.024—0.039 in.)



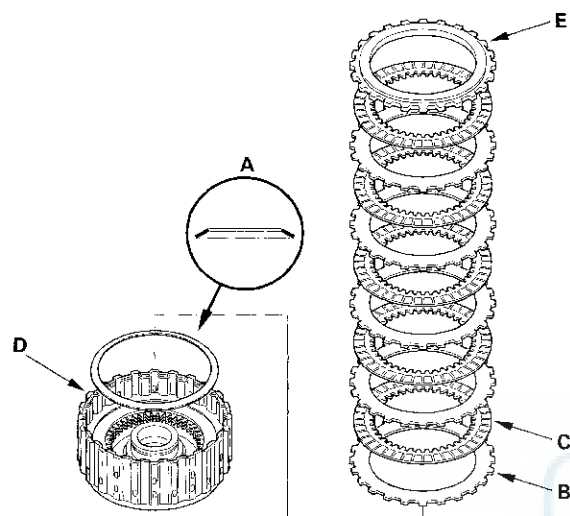
5. If the clearance is out of standard, replace the 1st-hold clutch plates and discs as a set, and recheck.

(cont'd)

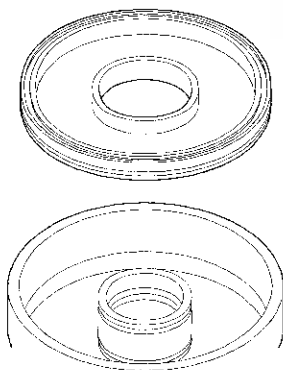
Shafts and Clutches

Clutch Clearance Inspection (cont'd)

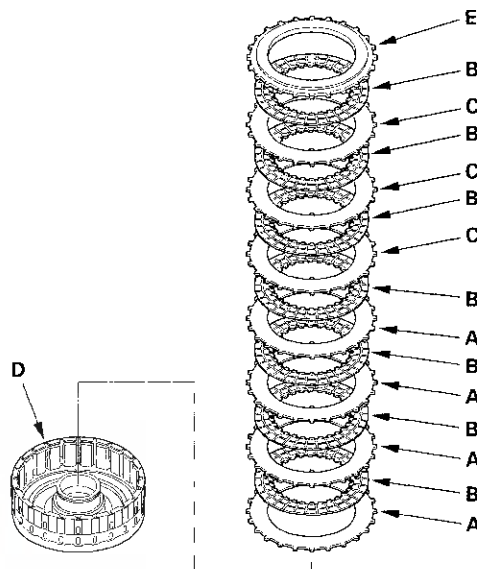
6. Install the disc spring (A) on the 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch waved-plate, alternately install the waved-plates (B) (5) and discs (C) (5) in the 1st clutch drum (D), then install the clutch-end-plate (E) with the flat side down.



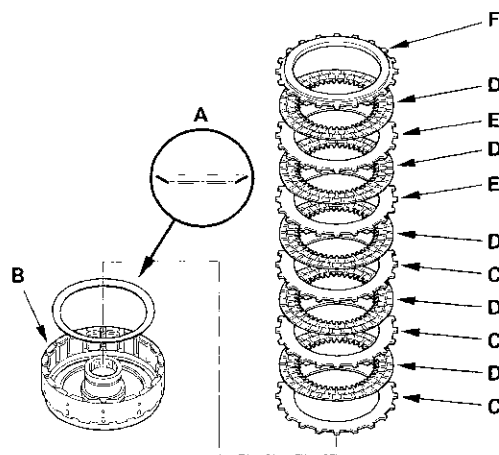
7. Install the clutch pistons in the 2nd, 3rd, 4th, and 5th clutch drums. Do not install the O-rings on the clutch pistons during inspection.



8. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4), and alternately install the waved-plates (C) (3) and discs (B) (3) in the 2nd clutch drum (D). Install the clutch-end-plate (E) with the flat side down on the top disc.

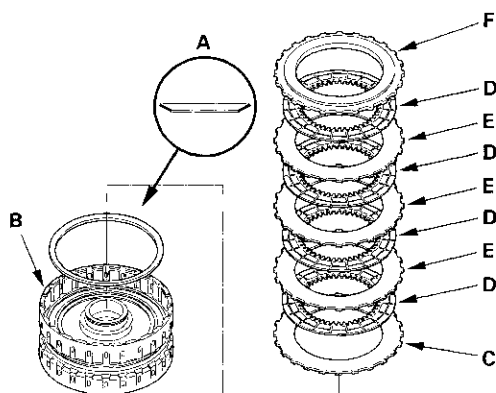


9. Install the disc spring (A) in the 3rd clutch drum (B) in the direction shown. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the waved-plates (E) (2) and discs (D) (2). Install the clutch-end-plate (F) with the flat side down on the top disc.

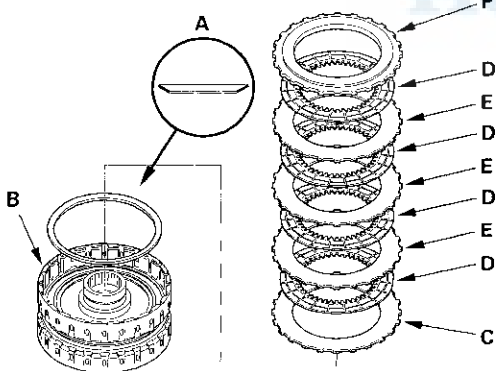




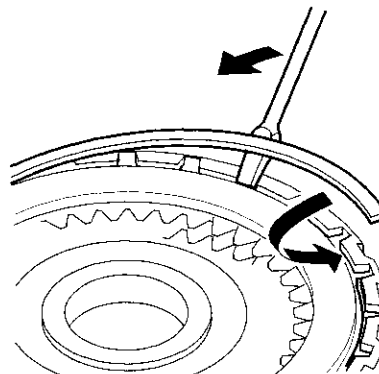
10. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Install the 4th clutch flat-plate (C) (1). Starting with the clutch disc, alternately install the clutch discs (D) (4) and waved-plates (E) (3). Install the clutch-end-plate (F) with the flat side down on the top disc.



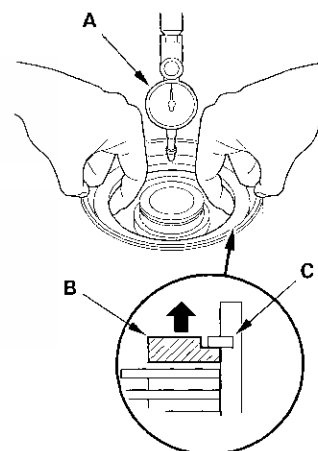
11. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Install the 5th clutch flat-plate (C) (1). Starting with the clutch disc, alternately install the clutch discs (D) (4) and waved-plates (E) (3). Install the clutch-end-plate (F) with the flat side down on the top disc.



12. Install the snap ring with a screwdriver to secure the clutch-end-plate.



13. Set a dial indicator (A) on the clutch-end-plate (B).



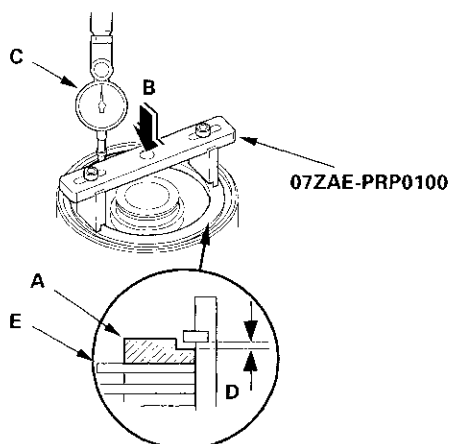
14. Zero the dial indicator with the clutch-end-plate lifted up to the snap ring (C).

(cont'd)

Shafts and Clutches

Clutch Clearance Inspection (cont'd)

15. Release the clutch-end-plate to lower the clutch-end-plate, then put the special tool on the end-plate (A).



16. Press the special tool down with 150—160 N (15 — 16 kgf, 33 — 35 lbf) (B) using a force gauge, and read the dial indicator (C). The dial indicator reads the clearance (D) between the clutch-end-plate and top disc (E). Take measurements in at least three places, and use the average as the actual clearance.

Clutch End-Plate-to-Top-Disc Clearance Service Limit:

- 1st clutch: 1.20—1.35 mm (0.047—0.053 in.)
 2nd clutch: 1.10—1.25 mm (0.043—0.049 in.)
 3rd clutch: 0.85—1.00 mm (0.033—0.039 in.)
 4th clutch: 0.80—0.95 mm (0.031—0.037 in.)
 5th clutch: 0.80—0.95 mm (0.031—0.037 in.)

17. If the clearance is out of the service limit, select a new clutch-end-plate from the following table.



1ST CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22551-RDK-003	3.1 mm (0.122 in.)
2	22552-RDK-003	3.2 mm (0.126 in.)
3	22553-RDK-003	3.3 mm (0.130 in.)
4	22554-RDK-003	3.4 mm (0.134 in.)
5	22555-RDK-003	3.5 mm (0.138 in.)
6	22556-RDK-003	3.6 mm (0.142 in.)
7	22557-RDK-003	3.7 mm (0.146 in.)
8	22558-RDK-003	3.8 mm (0.150 in.)
9	22559-RDK-003	3.9 mm (0.154 in.)

2ND CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22561-RDK-003	2.1 mm (0.083 in.)
2	22562-RDK-003	2.2 mm (0.087 in.)
3	22563-RDK-003	2.3 mm (0.091 in.)
4	22564-RDK-003	2.4 mm (0.094 in.)
5	22565-RDK-003	2.5 mm (0.098 in.)
6	22566-RDK-003	2.6 mm (0.102 in.)
7	22567-RDK-003	2.7 mm (0.106 in.)
8	22568-RDK-003	2.8 mm (0.110 in.)
9	22569-RDK-003	2.9 mm (0.114 in.)



3RD CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22591-RDK-A01	2.1 mm (0.083 in.)
2	22592-RDK-A01	2.2 mm (0.087 in.)
3	22593-RDK-A01	2.3 mm (0.091 in.)
4	22594-RDK-A01	2.4 mm (0.094 in.)
5	22595-RDK-A01	2.5 mm (0.098 in.)
6	22596-RDK-A01	2.6 mm (0.102 in.)
7	22597-RDK-A01	2.7 mm (0.106 in.)
8	22598-RDK-A01	2.8 mm (0.110 in.)
9	22599-RDK-A01	2.9 mm (0.114 in.)

4TH and 5TH CLUTCH END PLATES

Plate No.	Part Number	Thickness
1	22571-RJB-003	2.1 mm (0.083 in.)
2	22572-RJB-003	2.2 mm (0.087 in.)
3	22573-RJB-003	2.3 mm (0.091 in.)
4	22574-RJB-003	2.4 mm (0.094 in.)
5	22575-RJB-003	2.5 mm (0.098 in.)
6	22576-RJB-003	2.6 mm (0.102 in.)
7	22577-RJB-003	2.7 mm (0.106 in.)
8	22578-RJB-003	2.8 mm (0.110 in.)
9	22579-RJB-003	2.9 mm (0.114 in.)

18. Install the new clutch-end-plate, and recheck the clearance. If the thickest clutch-end-plate is installed, but the clearance is still over the service limit, replace the clutch discs and plates.

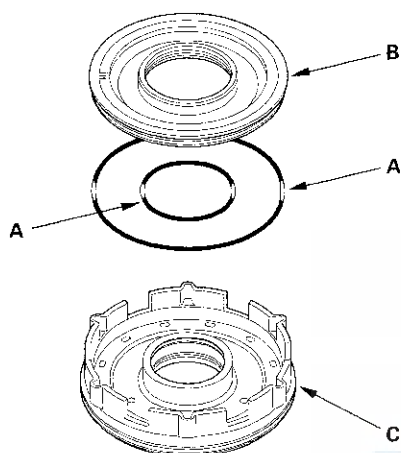
Shafts and Clutches

Clutch Reassembly

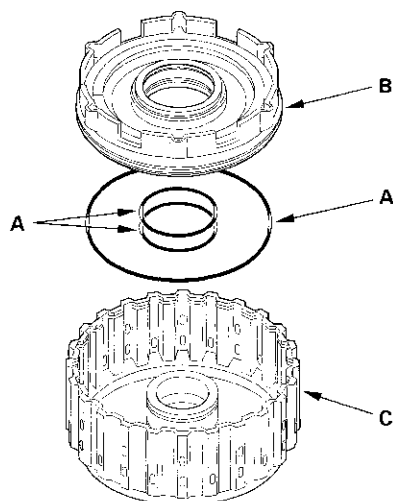
Special Tools Required

- Clutch spring compressor attachment
07LAE-PX40100 or 07HAE-PL50101
- Clutch spring compressor bolt assembly
07GAE-PG40200 or 07GAE-PG4020A

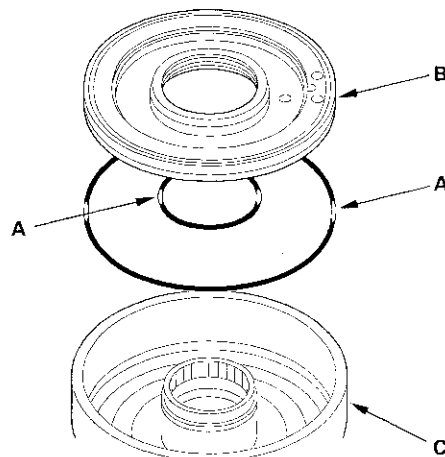
1. Soak the clutch discs thoroughly in ATF for a minimum of 30 minutes.
2. Install the new O-rings (A) on the 1st-hold clutch piston (B), and install the 1st-hold clutch piston in the 1st clutch piston (C).



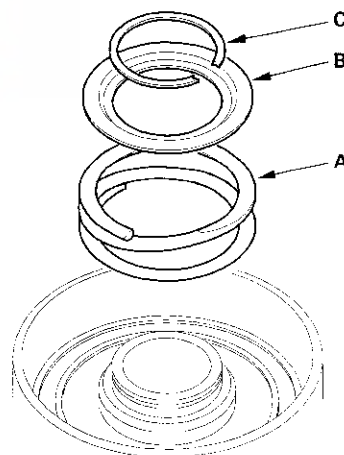
3. Install the new O-rings (A) on the 1st clutch piston (B), and install the 1st/1st-hold clutch piston in the 1st/1st-hold clutch drum (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.



4. Install the O-rings (A) on the 2nd, 3rd, 4th, and 5th clutch piston (B).

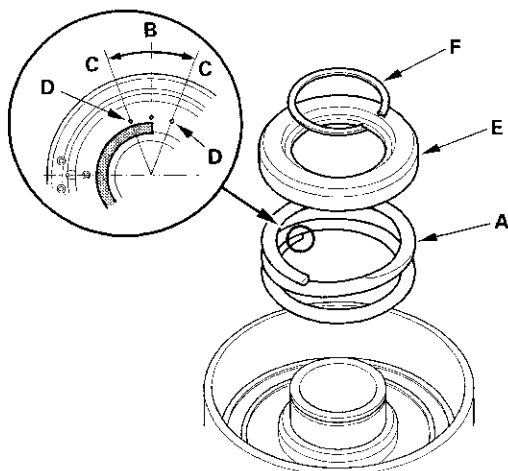


5. Install the clutch pistons in the clutch drums (C) while applying pressure and rotating to ensure proper seating. Do not pinch the O-ring.
6. Install the return spring (A) and spring retainer (B) of the 1st, 2nd, 3rd, and 4th clutches, and position the snap ring (C) on the spring retainer.



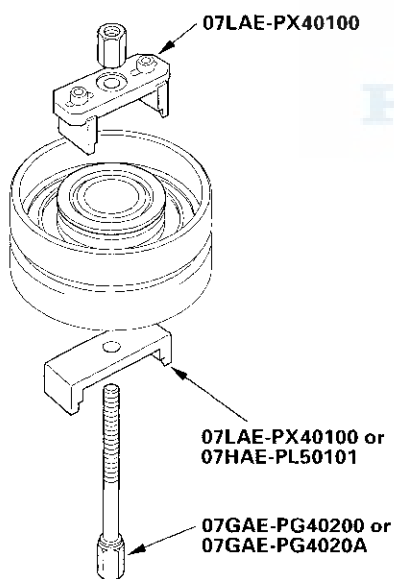


7. Install the 5th clutch return spring (A) on the clutch piston while positioning the spring end (B) in the range (C) of the reference marks (D) on the piston.

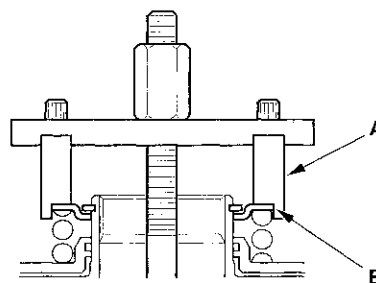


8. Install the spring retainer (E) on the return spring, and position the snap ring (F) on the retainer.

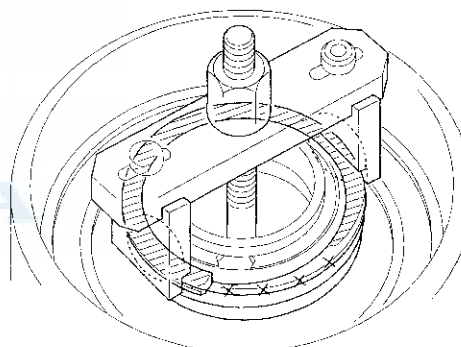
9. Install the special tools.



10. Be sure the special tool (A) is adjusted to have full contact with the spring retainer (B) on the 1st, 2nd, and 4th clutches.



11. If either end of the special tool is set over an area of the spring retainer that is unsupported by the return spring, the retainer may be damaged.

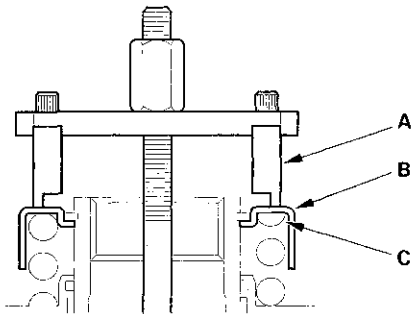


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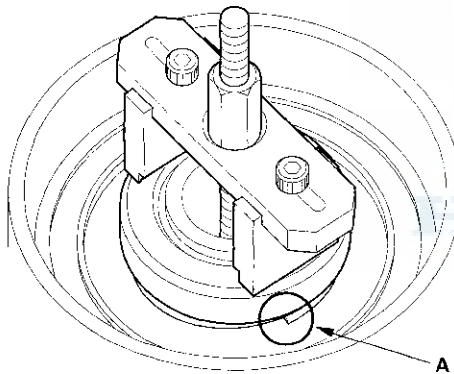
Shafts and Clutches

Clutch Reassembly (cont'd)

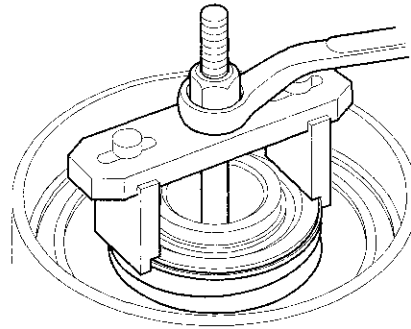
12. Set the special tool (A) on the spring retainer (B) of the 3rd and 5th clutches so the special tool works on the clutch return spring (C).



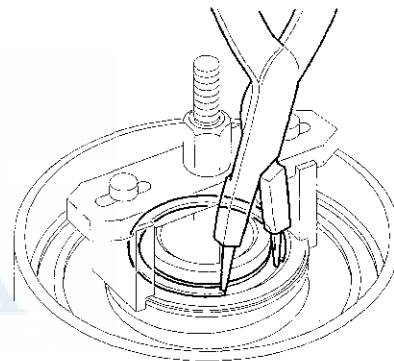
13. If either end of the special tool is not set over the clutch return spring end (A), the retainer may be damaged.



14. Compress the return spring until the snap ring can be installed.



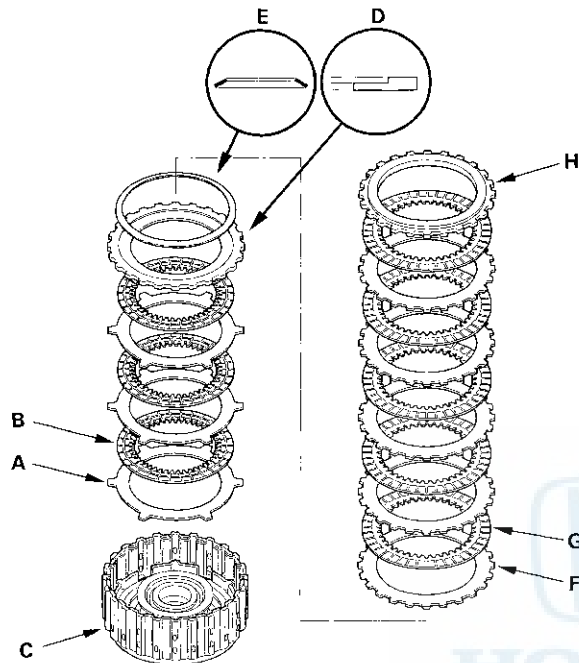
15. Install the snap ring with the snap ring pliers.



16. Remove the special tools.

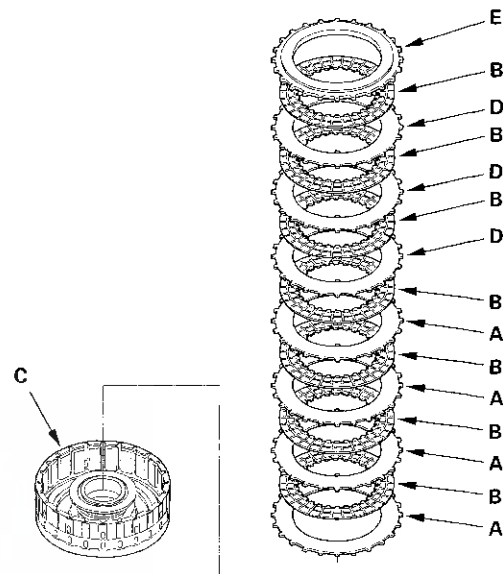


17. Starting with the 1st-hold clutch plate, alternately install the plates (A) (3) and discs (B) (3) in the 1st/1st-hold clutch drum (C), then install the 1st-hold clutch plate B (D) with the flat side down in the direction shown.

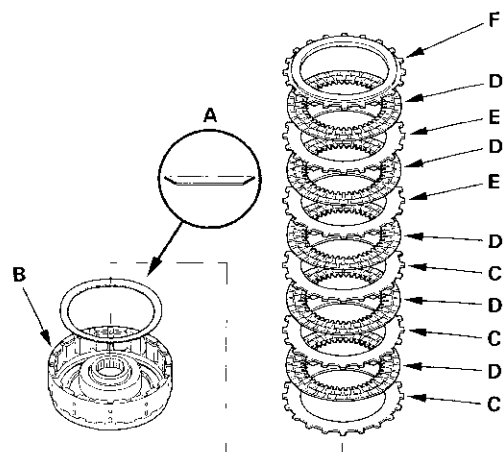


18. Install the disc spring (E) on the 1st-hold clutch plate B in the direction shown. Starting with the 1st clutch waved-plate, alternately install the waved-plates (F) (5) and discs (G) (5), then install the clutch-end-plate (H) with the flat side down on the top disc.

19. Starting with the 2nd clutch flat-plate, alternately install the flat-plates (A) (4) and discs (B) (4) in the 2nd clutch drum (C), and alternately install the waved-plates (D) (3) and discs (B) (3). Install the clutch-end-plate (E) with the flat side down on the top disc.



20. Install the disc spring (A) in the 3rd clutch drum (B) in the direction shown. Starting with the 3rd clutch flat-plate, alternately install the flat-plates (C) (3) and discs (D) (3), and alternately install the waved-plates (E) (2) and discs (D) (2). Install the clutch-end-plate (F) with the flat side down on the top disc.

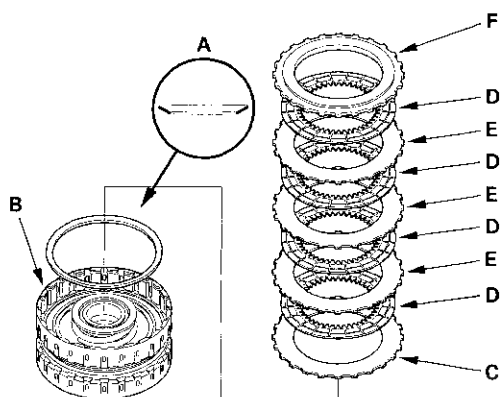


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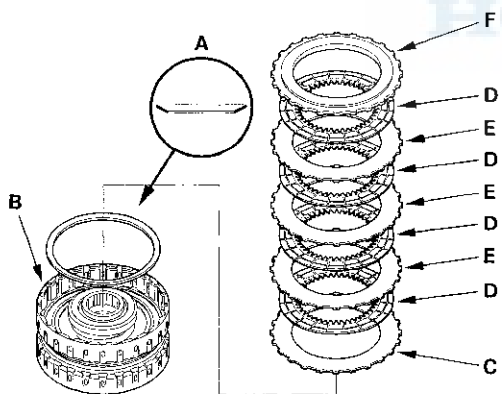
Shafts and Clutches

Clutch Reassembly (cont'd)

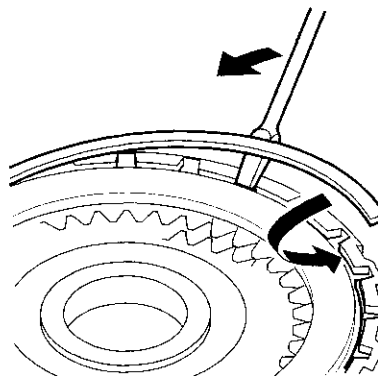
21. Install the disc spring (A) in the 4th clutch drum (B) in the direction shown. Install the 4th clutch flat-plate (C) (1). Starting with the clutch disc, alternately install the clutch discs (D) (4) and waved-plates (E) (3). Install the clutch-end-plate (F) with the flat side down on the top disc.



22. Install the disc spring (A) in the 5th clutch drum (B) in the direction shown. Install the 5th clutch flat-plate (C) (1). Starting with the clutch disc, alternately install the clutch discs (D) (4) and waved-plates (E) (3). Install the clutch-end-plate (F) with the flat side down on the top disc.



23. Install the snap ring with a screwdriver to secure the clutch-end-plate.



Automatic Transmission



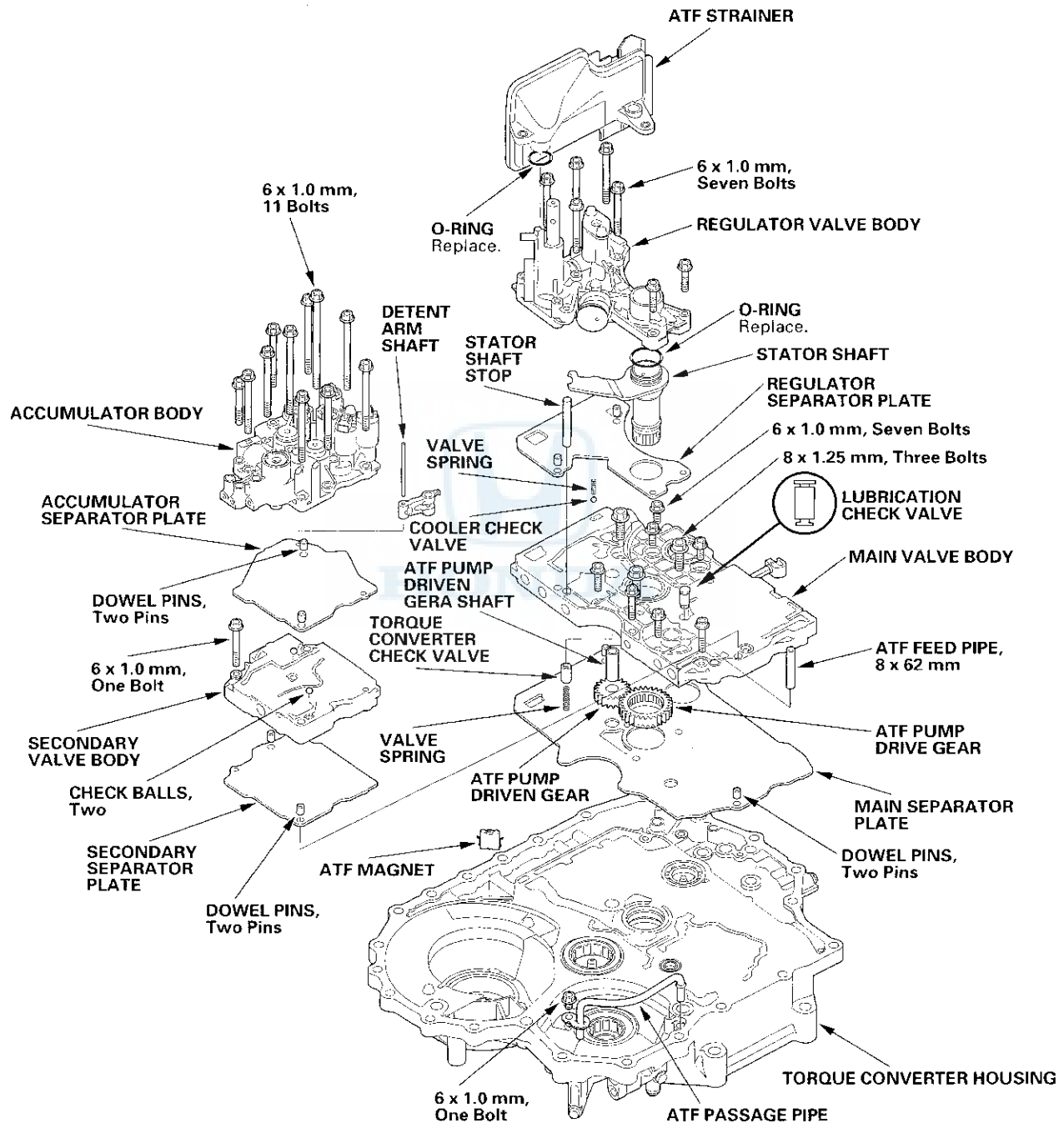
Transmission Reassembly

Exploded View

Bolt Tightening Torque

6 x 1.0 mm: 12 N·m (1.2 kgf·m, 8.7 lbf·ft)

8 x 1.25 mm: 18 N·m (1.8 kgf·m, 13 lbf·ft)



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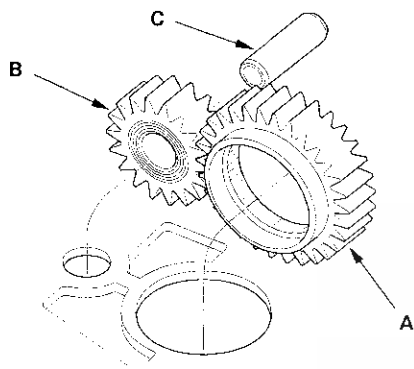
Automatic Transmission

Transmission Reassembly (cont'd)

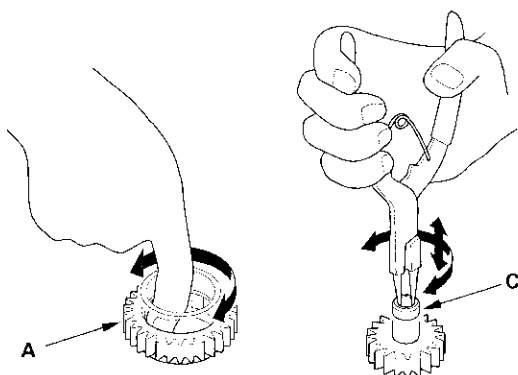
Special Tool Required

Mainshaft holder 07GAB-PF50101 or 07GAB-PF50100

1. Make sure that the ATF magnet is cleaned and installed in the torque converter housing. Clean and install the ATF magnet, if necessary.
2. Install the main separator plate and the two dowel pins on the torque converter housing. Then install the ATF pump drive gear (A), driven gear (B), and ATF pump driven gear shaft (C). Install the ATF pump driven gear with its grooved and chamfered side facing down.



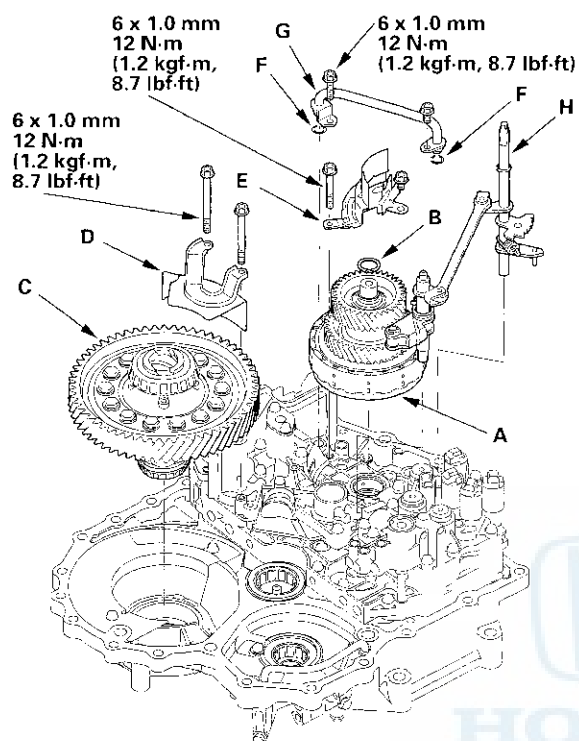
3. Install the torque converter check valve spring and valve in the torque converter housing.
4. Install the main valve body (seven 6 mm bolt and three 8 mm bolts). Make sure the ATF pump drive gear (A) rotates smoothly in the normal operating direction, and the ATF pump driven gear shaft (C) moves smoothly in the axial and normal operating direction.



5. If the ATF pump drive gear and ATF pump driven gear shaft do not move smoothly, loosen the main valve body bolts. Realign the ATF pump driven gear shaft, and retighten the bolts to the specified torques, then recheck. Failure to align the ATF pump driven gear shaft correctly will result in a seized ATF pump drive gear or ATF pump driven gear shaft.
6. Install the lubrication check valve, cooler check valve and cooler check valve spring in the main valve body. Install the lubrication check valve in the direction shown in the exploded view.
7. Install the secondary separator plate and the two dowel pins on the main valve body, and install the secondary valve body (one bolt).
8. Install the three check balls and choke in the secondary valve body.
9. Install the accumulator separator plate and the two dowel pins on the secondary valve body.
10. Position the detent arm on the accumulator separator plate, and install the detent arm shaft into the detent arm through the separator plates to the main valve body.
11. Install the 8 x 62 mm ATF feed pipes in the main valve body, and install the accumulator body (11 bolts).
12. Install the regulator separator plate and the two dowel pins on the main valve body.
13. Install the stator shaft with the new O-ring, and install the regulator valve body (eight bolts).
14. Install the stator shaft stop in the main valve body.
15. Install the ATF strainer with the new O-ring.
16. Install the ATF passage pipe (one bolt) in the torque converter housing.

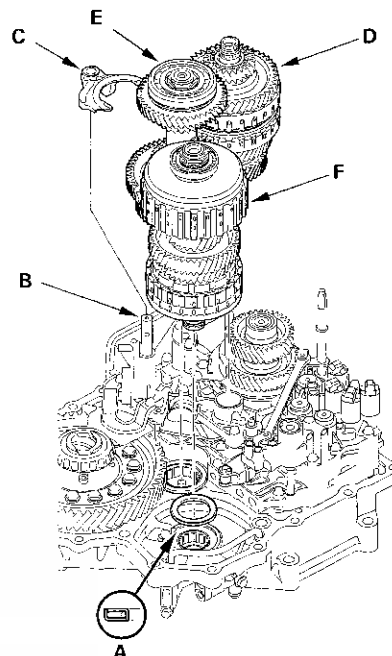


17. Install the intermediary shaft (A) into the main valve body, and install the 26.5 mm washer (B) on the top of the intermediary shaft.



18. Install the differential assembly (C) in the torque converter housing.
19. Install the baffle plate (D), and make sure if the differential is clear of the baffle plate.
20. Install the baffle plate (E), and make sure if the intermediary shaft is clear of the baffle plate.
21. Install new O-rings (F) on the ATFP joint pipe ends, then install the ATFP joint pipe (G).
22. Install the selector control shaft and the park lever link (H).
23. Assemble the mainshaft, countershaft, and secondary shaft.

24. Install the needle bearing (A) on the secondary shaft roller bearing in the torque converter housing.



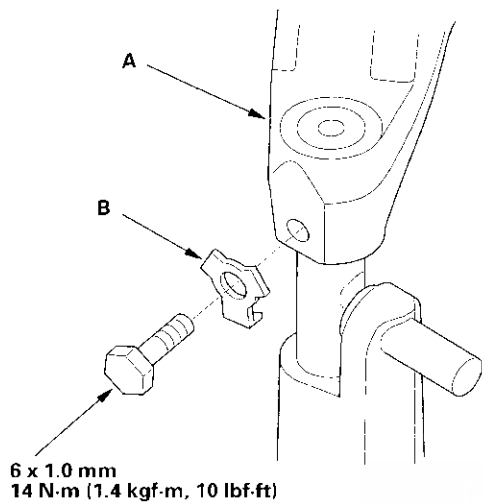
25. Turn the shift fork shaft (B) so the large chamfered hole is facing the fork bolt hole of the shift fork.
26. Engage the shift fork (C) with the reverse selector on the countershaft, and join the mainshaft (D), countershaft (E), and secondary shaft (F), then install them in the torque converter housing and shift fork on the shift fork shaft.

(cont'd)

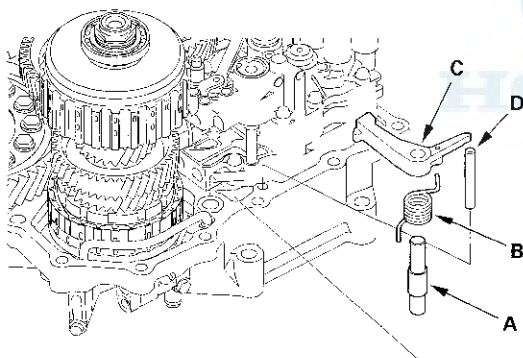
Automatic Transmission

Transmission Reassembly (cont'd)

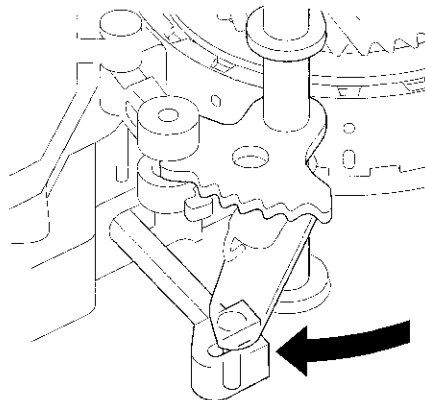
27. Secure the shift fork (A) to the shift fork shaft with the lock bolt and the new lock washer (B), then bend the lock tab of the lock washer against the bolt head.



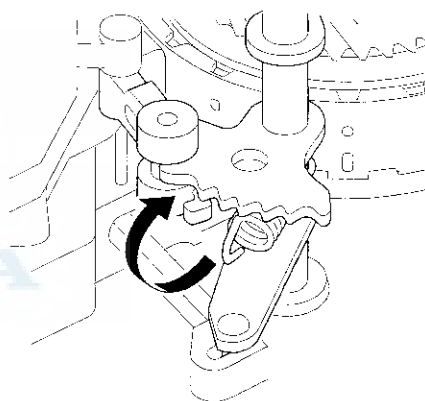
28. Install the park pawl shaft (A), pawl spring (B), park pawl (C), and park pawl stop (D).



29. Align the control lever pin with the manual valve guide.

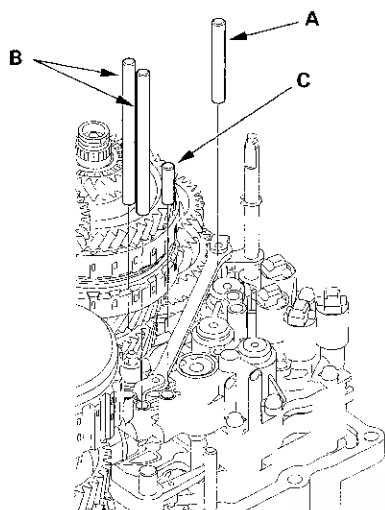


30. Hook the detent arm spring to the detent arm.

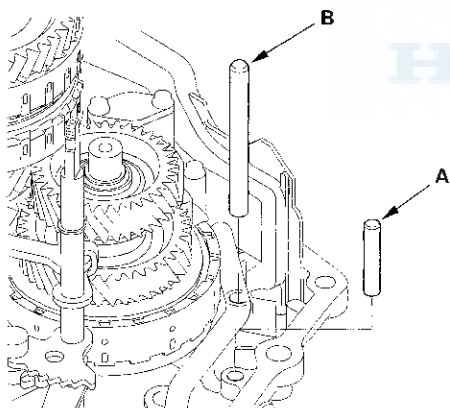




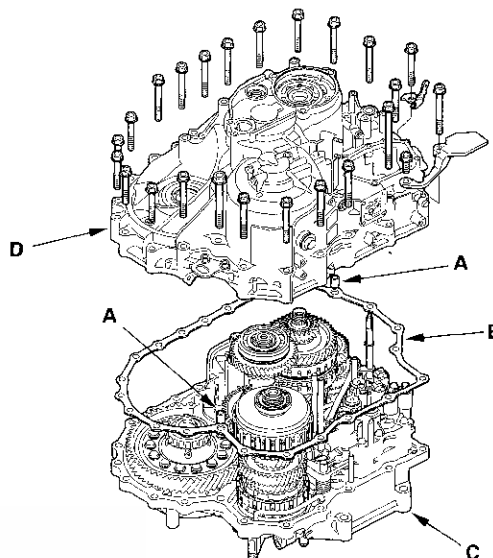
31. Install the 8 x 85 mm ATF feed pipe (A), the 8 x 151.5 mm pipes (B), and the 8 x 40 mm pipe (C) in the accumulator body.



32. Install the 8 x 57.6 mm ATF feed pipe (A) and the 10 x 123 mm pipe (B) in the torque converter housing.

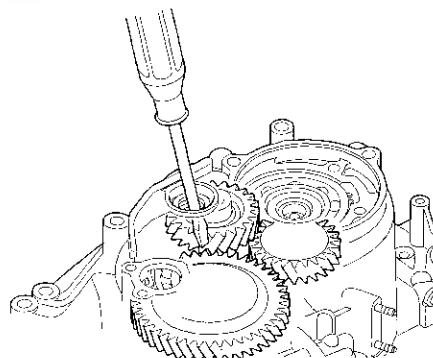


33. Install the two dowel pins (A) and the new gasket (B) on the torque converter housing (C).



34. Place the transmission housing (D) on the torque converter housing.

35. Wrap a screwdriver tip with tape to prevent damage to the reverse idler gear teeth. Engage the reverse idler gear with reverse gears by rotating the idler gear using the screwdriver.

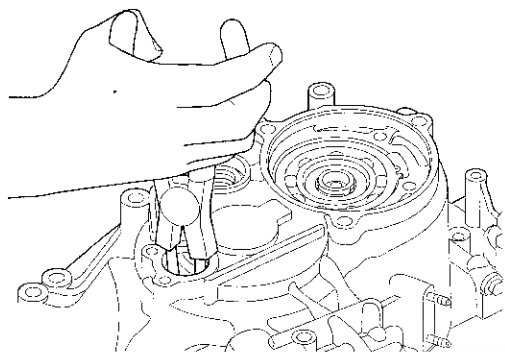


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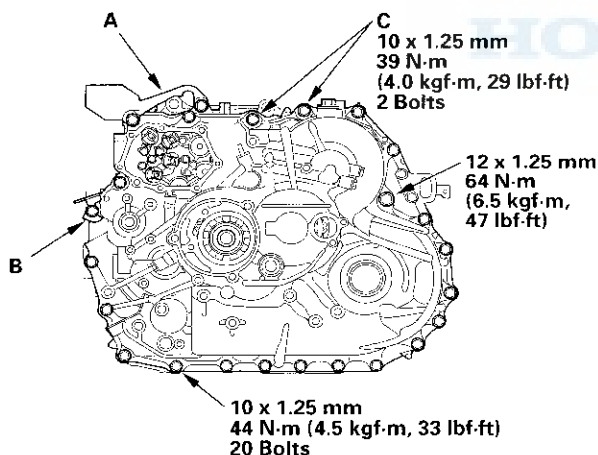
Automatic Transmission

Transmission Reassembly (cont'd)

36. While expanding the snap ring of the countershaft bearing using snap ring pliers, install the transmission housing onto the bearing part-way. Then release the snap ring pliers, and push down on the housing until it bottoms and the snap ring snaps into place in the transmission housing snap ring groove.

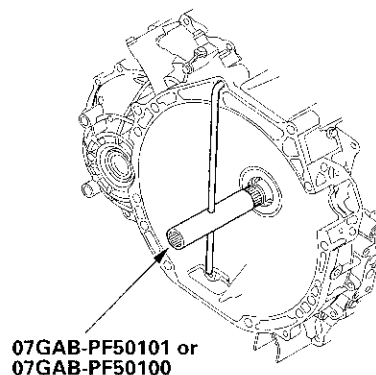


37. Install the transmission housing mounting bolts (20 bolts) along with the transmission hanger (A) and the transmission ground terminal bracket (B), and tighten the bolts in two or more steps in a criss-cross pattern to 44 N·m (4.5 kgf·m, 33 lbf·ft).

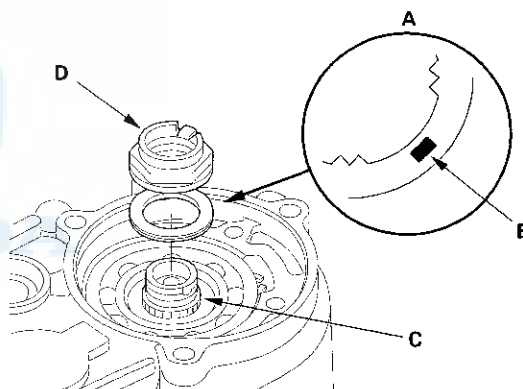


38. Install and tighten the two mounting bolts (C) to 39 N·m (4.0 kgf·m, 29 lbf·ft). Keep the mounting bolts free of grease or oil.
39. Install and tighten the 12 x 1.25 mm bolt to 64 N·m (6.5 kgf·m, 47 lbf·ft).

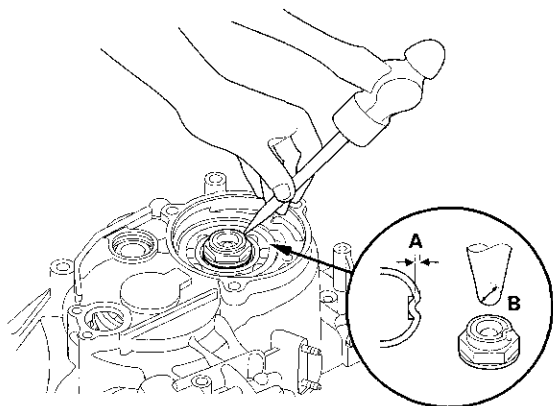
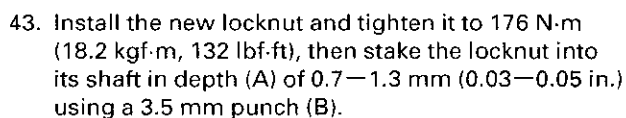
40. Install the special tool onto the mainshaft.



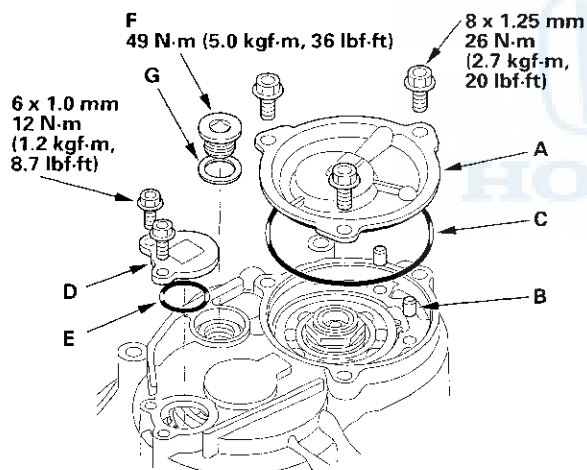
41. Install the new lock washer (A) with the marked side (B) up over the mainshaft (C), and apply the surfaces of the lock washer and old locknut (D) with ATF.



42. Install the old locknut, and tighten it to seat the lock washer to 178 N·m (18.2 kgf·m, 132 lbf·ft), then remove the old locknut.

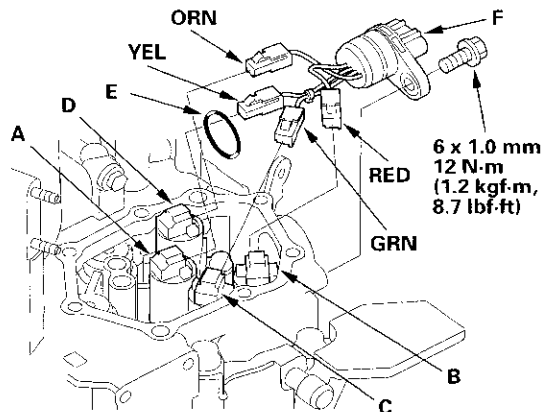


44. Install the end cover (A), dowel pin (B), and new O-ring (C).



45. Install the snap ring cap (D) with the new O-ring (E).
46. Apply thread lock sealant to the threads of the sealing plug (F), and install the sealing plug and the new sealing washer (G).

47. Install the new O-ring (E) on the solenoid harness connector (F).



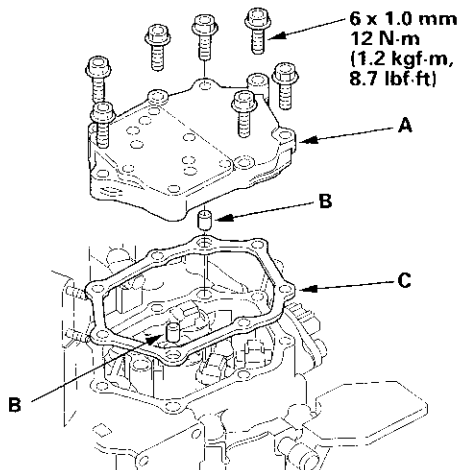
48. Route the solenoid harness through the transmission housing, and install the solenoid harness connector.
49. Connect the GRN harness connector to the shift solenoid valve C.
50. Connect the YEL harness connector to the shift solenoid valve A.
51. Connect the RED harness connector to the shift solenoid valve B.
52. Connect the ORN harness connector to the shift solenoid valve D.
53. Secure the solenoid harness connector with the bolt on the transmission housing.

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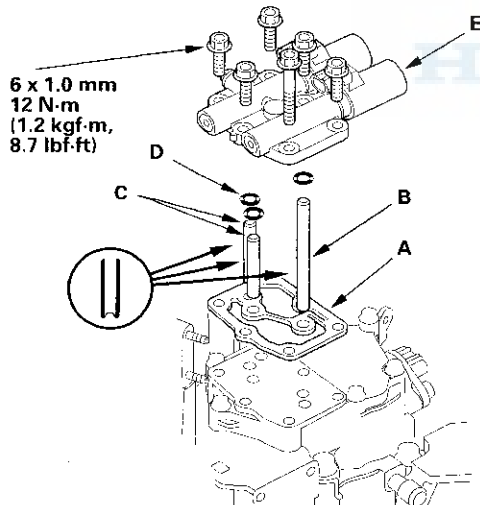
Automatic Transmission

Transmission Reassembly (cont'd)

54. Install the solenoid valve cover (A) with the two dowel pins (B) and the new gasket (C), and secure it with the seven bolts.

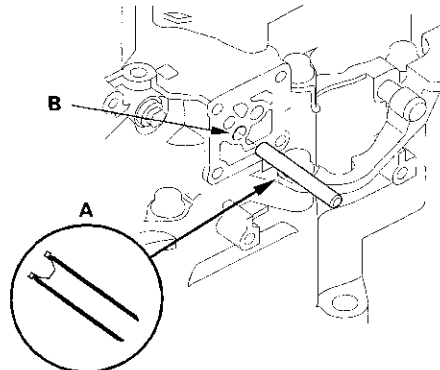


55. Place the new gasket (A) on the solenoid valve cover, then install the 8 x 105.8 mm ATF feed pipes (B) and the 8 x 58.3 mm pipes (C) with their filter side into the transmission housing.

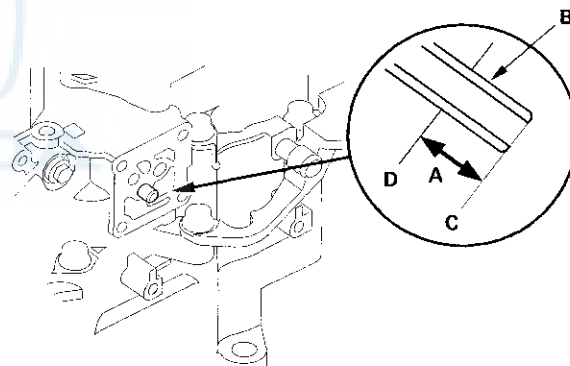


56. Install the new O-rings (D) over the ATF feed pipes, and install the A/T clutch pressure control solenoid valves A and B (E).

57. Install the 8 x 53 mm ATF joint pipe (A) with the filter side into its mounting hole (B).

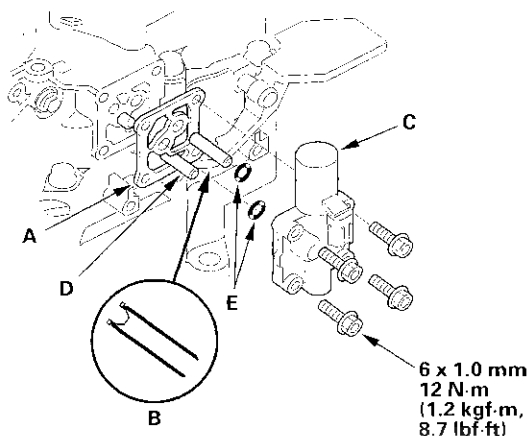


58. Check the height (A) of the 8 x 53 mm ATF joint pipe (B) between the top (C) of the pipe and the solenoid valve body mounting surface (D). The height is about 7 mm (0.3 in.). If the height is over 7 mm (0.3 in.), install the pipe securely until it stops the accumulator body.

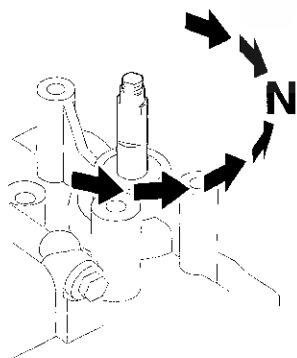




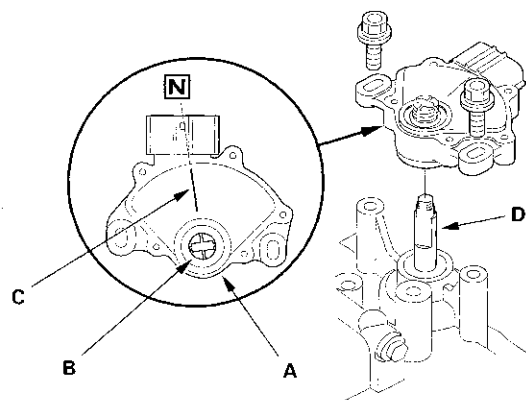
59. Install the new gasket (A) on the transmission housing. Install the 8 x 34.5 mm ATF pipe (B) with the filter side into the transmission housing, and install the 8 x 25.5 mm ATF pipe (D).



60. Install new O-rings (E) over the ATF joint pipes.
61. Install the A/T clutch pressure control solenoid valve C.
62. Set the selector control shaft to the N position by turning the selector control shaft with a 6.0 mm wrench.

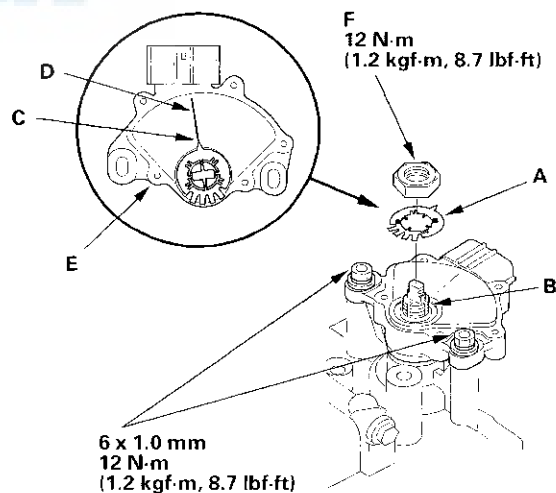


63. Set the transmission range switch (A) to the N position. The transmission range switch clicks in the N position, and the selector control shaft hole (B) aligns with the N positioning line (C).



64. Install the transmission range switch gently over the selector control shaft (D), and install the bolts loosely.

65. Install the new lock washer (A) over the selector control shaft (B) with aligning the projection (C) of the lock washer with the N positioning line (D) on the transmission range switch (E), and install the locknut (F).

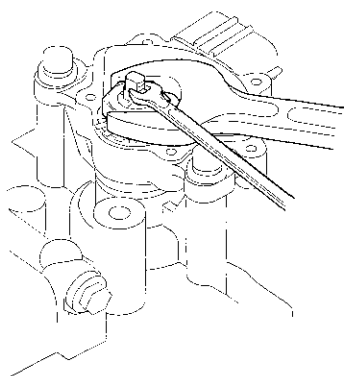


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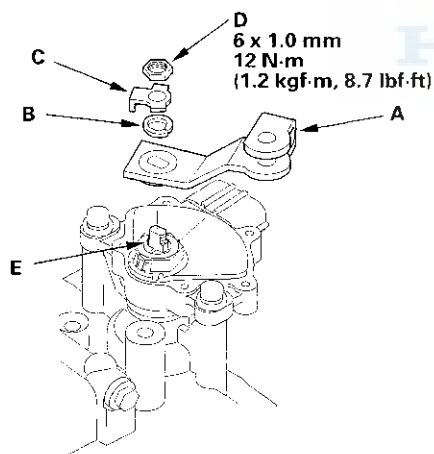
Automatic Transmission

Transmission Reassembly (cont'd)

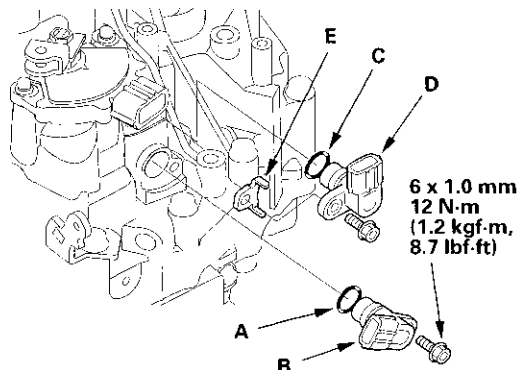
66. Push the locknut against the transmission housing to seat the range switch into the selector control shaft, and tighten the locknut to 12 N·m (1.2 kgf·m, 8.7 lbf·ft) while holding the selector control shaft with a 6 mm wrench, then bend the lock tabs against the locknut.



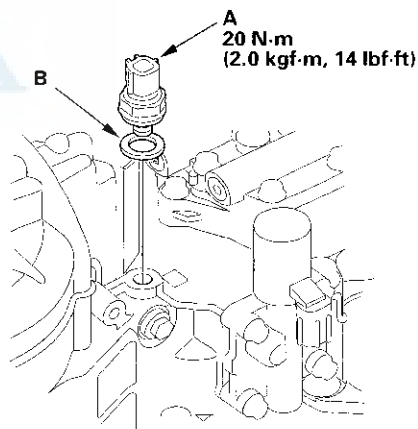
67. Tighten the range switch mounting bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).
68. Install the control lever (A), spring washer (B), lock washer (C), and locknut (D) on the selector control shaft (E).



69. Install the new O-ring (A) on the input shaft (mainshaft) speed sensor (B), and install the input shaft (mainshaft) speed sensor.

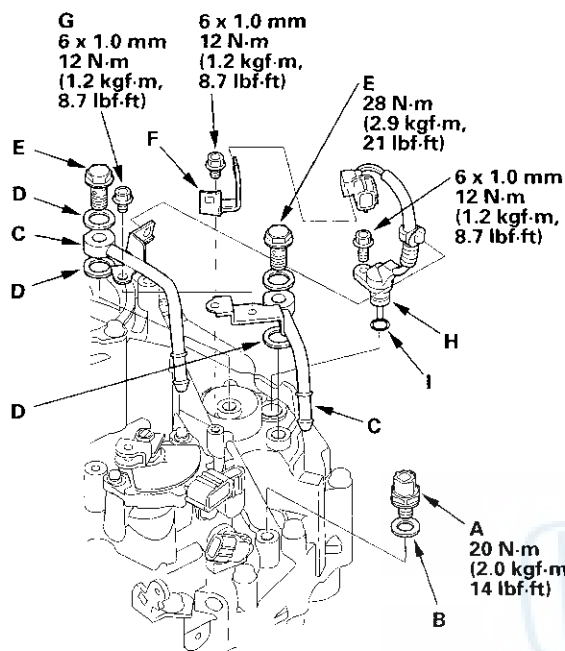


70. Install the new O-ring (C) on the output shaft (countershaft) speed sensor (D), and install the output shaft (countershaft) speed sensor and the sensor washer (E).
71. Install the 4th clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch with the metal part.



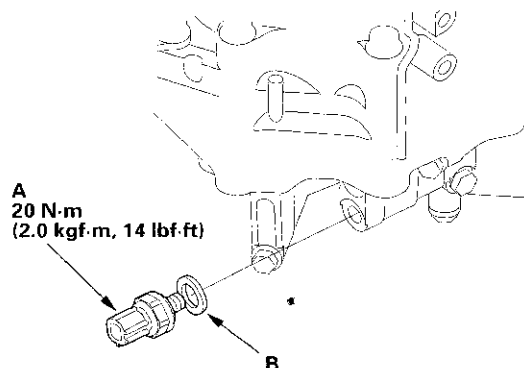


72. Install the 3rd clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch with the metal part.

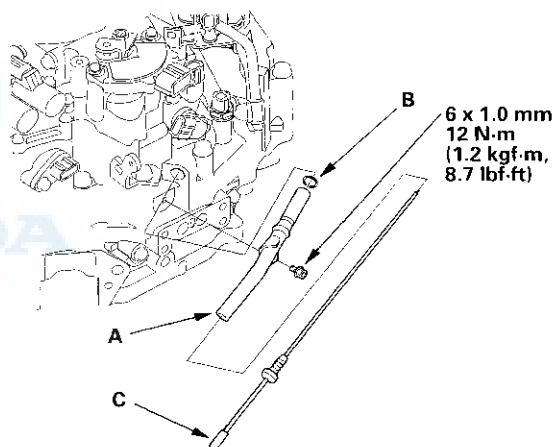


73. Install the ATF cooler lines (C) with the new sealing washers (D) and the line bolts (E).
74. Install the connector bracket (F), and secure the ATF lines with the 6.0 mm bolt (G). Tighten the bolts to 12 N·m (1.2 kgf·m, 8.7 lbf·ft).
75. Install the ATF temperature sensor (H) with the new O-ring (I). Install the harness clamp on the clamp bracket, and install the connector on the connector bracket.

76. Install the 2nd clutch transmission fluid pressure switch (A) with the new sealing washer (B). Tighten the switch with the metal part.



77. Install the ATF dipstick tube (A) with the new O-ring (B).



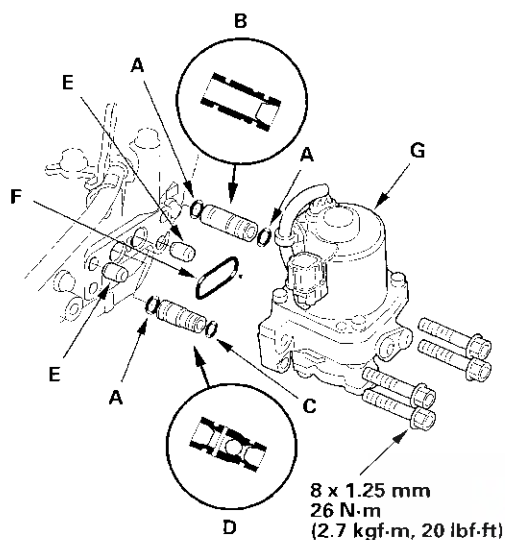
78. Install the ATF dipstick (C) in the tube.

(cont'd)

Automatic Transmission

Transmission Reassembly (cont'd)

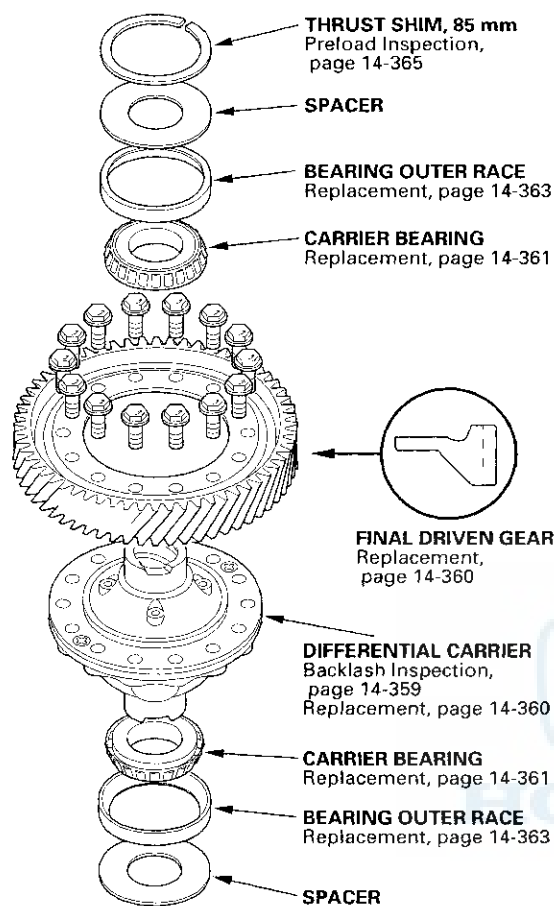
79. Install new O-rings (11.7 mm dia.) (A) on the suction pipe (B), then install the suction pipe in the torque converter housing with the filter end toward the outside of the housing.



80. Install a new O-ring (11.7 mm dia.) (A) and a new O-ring (11.0 mm dia.) (C) on the ATF feed pipe (D), then install the feed pipe with the large end in the torque converter housing.
81. Install the dowel pins (E) in the torque converter housing.
82. Install a new O-ring (F) in the groove of the auxiliary transmission fluid pump (ATFP) assembly. Do not apply a O-ring (F) with ATF.
83. Install the ATFP (G) on the torque converter housing. Do not pinch the O-ring.

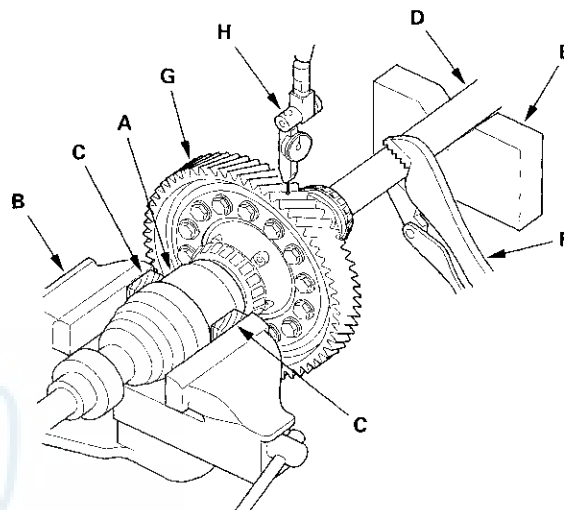


Component Location Index



Backlash Inspection

1. Install the driveshaft and intermediate shaft into the differential assembly.
2. Secure the driveshaft inboard joint (A) in a bench vise (B) with soft jaws (C). To prevent damage to the inboard joint, always use soft jaws or equivalent materials between the inboard joint and a vise.



3. Place the intermediate shaft (D) on a V-block (E), then fix the intermediate shaft using a locking pliers (F) or equivalent.
4. Measure the backlash of the final driven gear (G) with a dial indicator (H).

Standard (New): 0.6—1.5 mm (0.024—0.059 in.)

5. If the backlash is out of standard, replace the differential carrier.

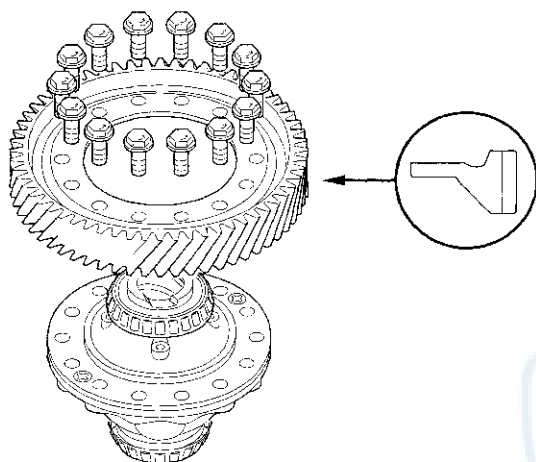
A/T Differential

Differential Carrier, Final Driven Gear Replacement

NOTE: Inspect and adjust the carrier bearing preload whenever the differential carrier is replaced.

1. Remove the final driven gear from the differential carrier.

NOTE: The final driven gear bolts has left-hand threads.



2. Install the final driven gear on the differential carrier in the direction shown.
3. Tighten the bolts to 118 N·m (12.0 kgf·m, 86.8 lbf·ft) in a crisscross pattern in two or more steps.



Carrier Bearing Replacement

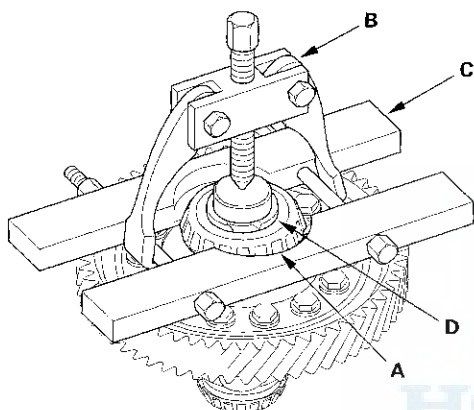
Special Tools Required

Attachment, 45 x 55 mm 07MAD-PR90100

NOTE:

- The bearing and outer race should be replaced as a set.
- Inspect and adjust the carrier bearing preload whenever the bearing is replaced.
- Check the bearing for wear and rough rotation. If the bearing is OK, removal is not necessary.

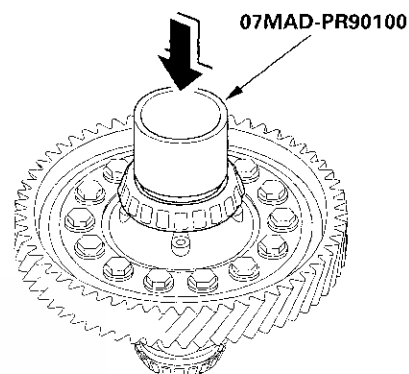
1. Remove the carrier bearing (A) with a commercially available bearing puller (B), bearing separator (C), and stepper adapter (D).



2. Install the new carrier bearings with the special tool and a press.

NOTE:

- Press the bearing on until it bottoms.
- Use the small end of the special tool to install the bearings.
- Press the bearing on securely so there is no clearance between the bearing and the differential carrier.



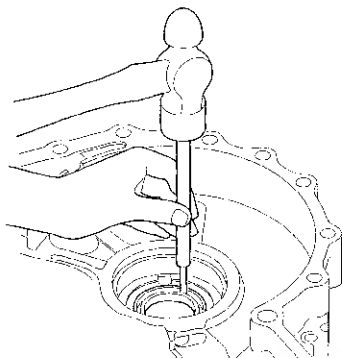
A/T Differential

Oil Seal Replacement

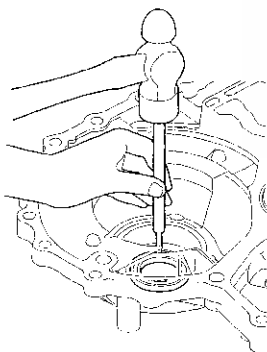
Special Tools Required

- Driver 07749-0010000
- Oil seal driver attachment 07GAD-PG40100 or 07GAD-PG40101
- Oil seal driver attachment 07JAD-PH80101

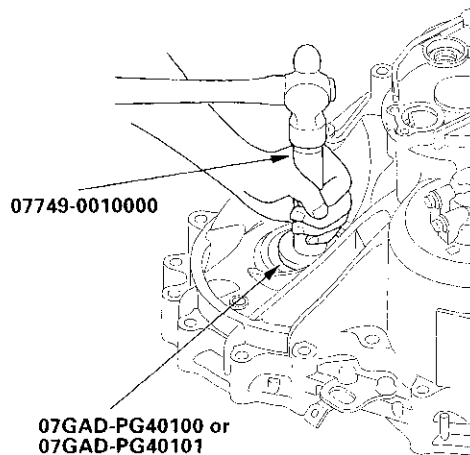
1. Remove the oil seal from the transmission housing.



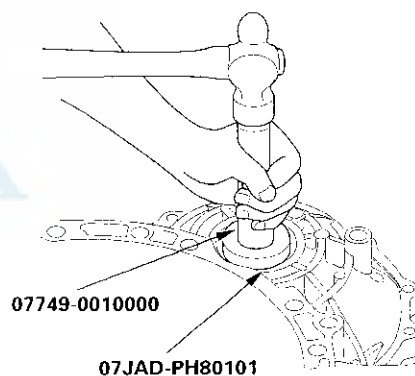
2. Remove the oil seal from the torque converter housing.



3. Install the new oil seal flush to the transmission housing with the special tools.



4. Install the new oil seal to the torque converter housing with the special tools.





Carrier Bearing Outer Race Replacement

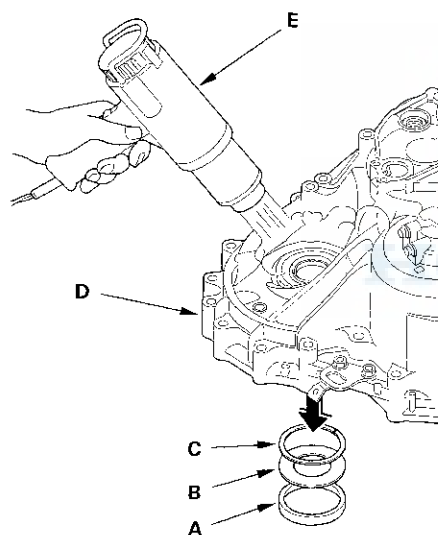
Special Tools Required

- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Attachment, 78 x 80 mm 07NAD-PX40101

NOTE:

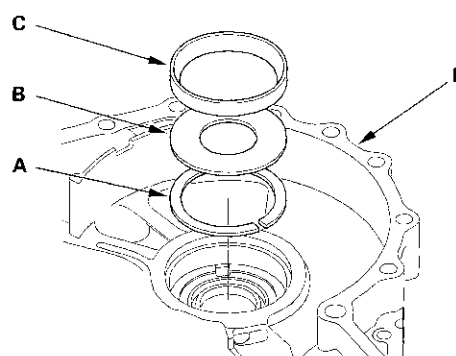
- Replace the bearing with a new one whenever the outer race is replaced.
- Do not use shim(s) on the torque converter housing side.
- Adjust the preload after replacing the bearing and the outer race.
- Coat all parts with ATF during installation.

1. Remove the bearing outer race (A), spacer (B), and 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).

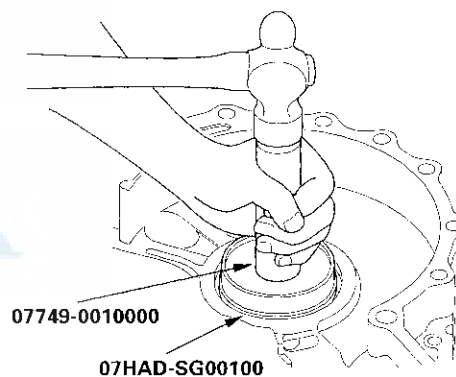


2. Remove the bearing outer race from the torque converter housing.

3. Install the 85 mm thrust shim (A), spacer (B), and outer race (C) in the transmission housing (D).



4. With the special tools, drive the outer race securely in the housing so there is no clearance between the outer race, spacer, shim, and housing.

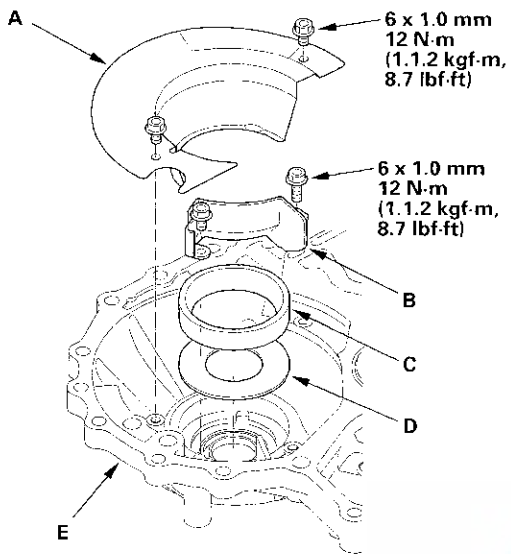


(cont'd)

A/T Differential

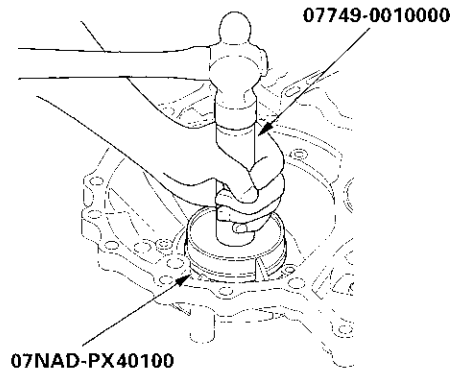
Carrier Bearing Outer Race Replacement (cont'd)

5. Remove the plates (A) (B), and remove the bearing outer race (C) and spacer (D) from the torque converter housing (E).



6. Install the spacer and the new outer race in the torque converter housing.

7. Drive the bearing outer race into the housing with the special tools.



8. Install the plates over the outer race in the torque converter housing.



Carrier Bearing Preload Inspection

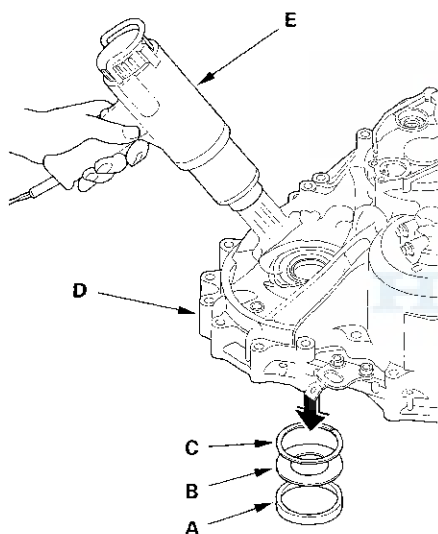
Special Tools Required

- Driver 07749-0010000
- Attachment, 83 mm 07HAD-SG00100
- Preload inspection tool 07YAJ-S3V0100

NOTE: If the transmission housing, torque converter housing, differential carrier, tapered roller bearing, bearing outer race, or thrust shim were replaced, the bearing preload must be adjusted.

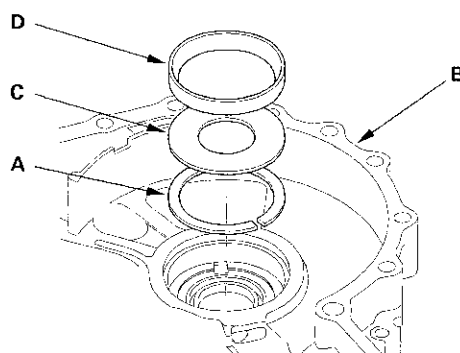
1. Remove the bearing outer race (A), spacer (B), and 85 mm thrust shim (C) from the transmission housing (D) by heating the housing to about 212 °F (100 °C) with a heat gun (E). Do not heat the housing more than 212 °F (100 °C).

NOTE: Let the transmission housing cool to room temperature before adjusting the bearing preload.

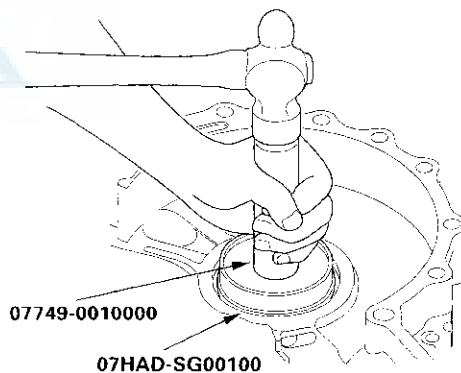


2. Replace the tapered roller bearing when the outer race is to be replaced.
3. Do not use a shim on the torque converter housing side.

4. Install the 85 mm thrust shim (A) in the transmission housing (B). If you replace the 85 mm thrust shim with a new one, use the same thickness shim as the old one.



5. Install the spacer (C), and the bearing outer race (D) in the transmission housing.
6. Drive the outer race securely in the housing with the special tools so there is no clearance between the outer race, spacer, shim, and housing.

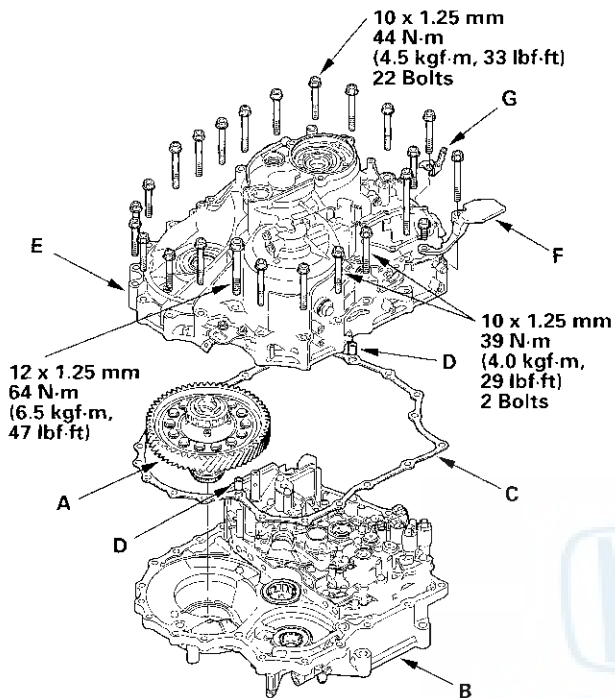


(cont'd)

A/T Differential

Carrier Bearing Preload Inspection (cont'd)

7. Install the differential assembly (A) in the torque converter housing (B), and install the gasket (C) and the two dowel pins (D) on the housing.



8. Install the transmission housing (E), and install the mounting bolts (23 bolts) with the transmission hangers (F) and the ground terminal bracket (G), then tighten the bolts.

9. Rotate the differential assembly in both directions to seat the bearings.

10. Measure the starting torque of the differential assembly with the special tool, a torque wrench (A), and a socket (B). Measure the starting torque at normal room temperature in both directions.

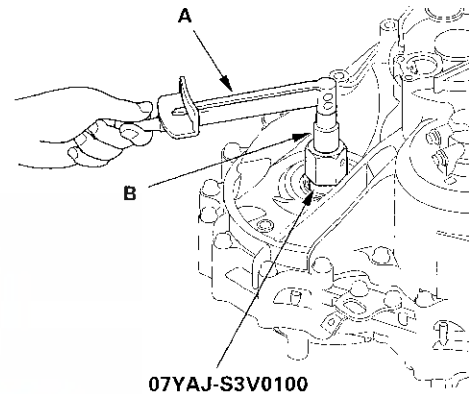
Standard

New bearings:

3.9—5.1 N·m (40—52 kgf·cm, 35—45 lbf·in.)

Reused bearings:

3.6—4.8 N·m (37—49 kgf·cm, 32—43 lbf·in.)



11. If the measurement is out of standard, remove the thrust shim and measure its thickness.



12. Select a new thrust shim. To increase the starting torque, increase thickness of the thrust shim. To decrease the starting torque, decrease the thickness of the thrust shim.
Changing the shim to the next size will increase or decrease the starting torque about 0.5—0.6 N·m (5—6 kgf·cm, 5—5 lbf·in.).

THRUST SHIM, 85 mm

No.	Part Number	Thickness
A	41440-RDK-000	1.350 mm (0.0531 in.)
B	41441-RDK-000	1.375 mm (0.0541 in.)
C	41442-RDK-000	1.400 mm (0.0551 in.)
D	41443-RDK-000	1.425 mm (0.0561 in.)
E	41444-RDK-000	1.450 mm (0.0571 in.)
F	41445-RDK-000	1.475 mm (0.0581 in.)
G	41446-RDK-000	1.500 mm (0.0591 in.)
H	41447-RDK-000	1.525 mm (0.0600 in.)
I	41448-RDK-000	1.550 mm (0.0610 in.)
J	41449-RDK-000	1.575 mm (0.0620 in.)
K	41450-RDK-000	1.600 mm (0.0630 in.)
L	41451-RDK-000	1.625 mm (0.0640 in.)
M	41452-RDK-000	1.650 mm (0.0650 in.)
N	41453-RDK-000	1.675 mm (0.0659 in.)
O	41454-RDK-000	1.700 mm (0.0669 in.)
P	41455-RDK-000	1.725 mm (0.0679 in.)
Q	41456-RDK-000	1.750 mm (0.0689 in.)
R	41457-RDK-000	1.775 mm (0.0699 in.)
S	41458-RDK-000	1.800 mm (0.0709 in.)
T	41459-RDK-000	1.825 mm (0.0719 in.)
U	41460-RDK-000	1.850 mm (0.0728 in.)
V	41461-RDK-000	1.875 mm (0.0738 in.)
W	41462-RDK-000	1.900 mm (0.0748 in.)
X	41463-RDK-000	1.925 mm (0.0758 in.)
Y	41464-RDK-000	1.950 mm (0.0768 in.)
Z	41465-RDK-000	1.975 mm (0.0778 in.)

THRUST SHIM, 85 mm (cont'd)

No.	Part Number	Thickness
AA	41466-RDK-000	2.000 mm (0.0787 in.)
AB	41467-RDK-000	2.025 mm (0.0797 in.)
AC	41468-RDK-000	2.050 mm (0.0807 in.)
AD	41469-RDK-000	2.075 mm (0.0817 in.)
AE	41470-RDK-000	2.100 mm (0.0827 in.)
AF	41471-RDK-000	2.125 mm (0.0837 in.)
AG	41472-RDK-000	2.150 mm (0.0846 in.)
AH	41473-RDK-000	2.175 mm (0.0856 in.)
AI	41474-RDK-000	2.200 mm (0.0866 in.)
AJ	41475-RDK-000	2.225 mm (0.0876 in.)
AK	41476-RDK-000	2.250 mm (0.0886 in.)
AL	41477-RDK-000	2.275 mm (0.0896 in.)
AM	41478-RDK-000	2.300 mm (0.0906 in.)
AN	41479-RDK-000	2.325 mm (0.0915 in.)
AO	41480-RDK-000	2.350 mm (0.0925 in.)

13. Install the new thrust shim, then recheck the starting torque.

Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

Driveline/Axle

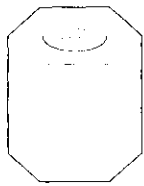
Special Tools	16-2
Driveshaft Removal	16-3
Driveshaft Disassembly	16-5
Dynamic Damper Replacement	16-8
Driveshaft Reassembly	16-10
Driveshaft Installation	16-18
Intermediate Shaft Removal	16-20
Intermediate Shaft Disassembly	16-21
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Intermediate Shaft Installation	16-27



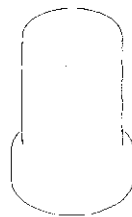
Driveline/Axle

Special Tools

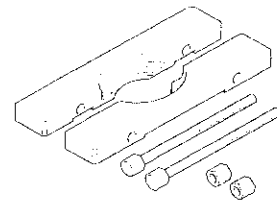
Ref. No.	Tool Number	Description	Qty
①	07AAF-SDAA100	Ball Joint Thread Protector, 12 mm	1
②	07GAD-PH70201	Oil Seal Driver	1
③	07KAF-PS30200	Bearing Separator	1
④	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑤	07NAF-SR30101	Half Shaft Base	1
⑥	07XAC-001020A	Threaded Adapter, 24 x 1.5 mm	1
⑦	07746-0010400	Attachment, 52 x 55 mm	1
⑧	07746-0030400	Attachment, 35 mm I.D.	1
⑨	07749-0010000	Driver	1
⑩	07947-SB00100	Oil Seal Driver	1



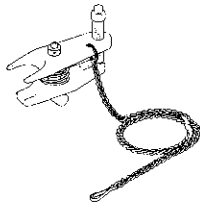
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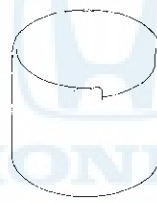
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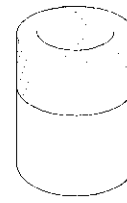
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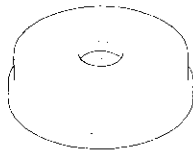
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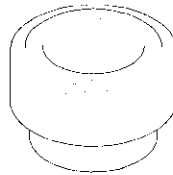
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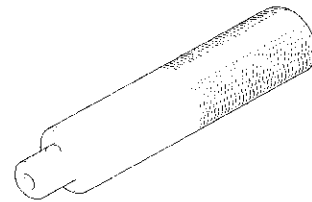
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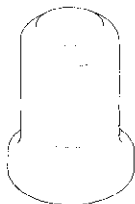
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⑩

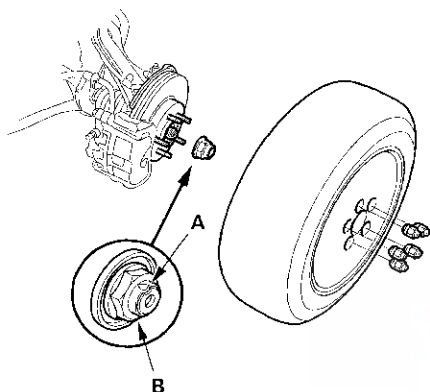


Driveshaft Removal

Special Tools Required

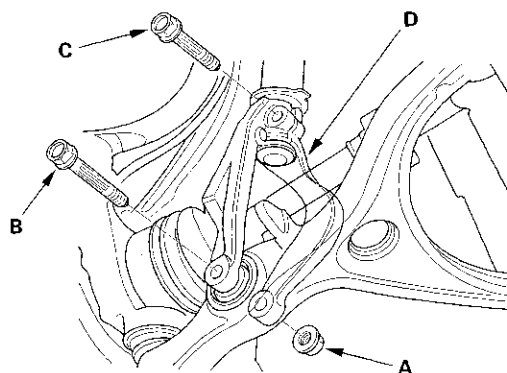
- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector, 12 mm 07AAF-SDAA100

1. Loosen the front wheel nuts slightly.
2. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
3. Remove the wheel nuts and front wheels.



4. Lift up the locking tab (A) on the spindle nut (B), then remove the nut.
5. Drain the automatic transmission fluid. Reinstall the drain plug with a new washer (see page 14-231).

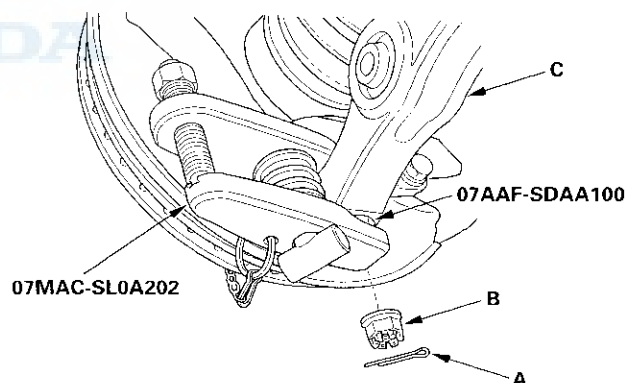
6. Remove the self-locking nut (A), 12 mm flange bolt (B), and 10 mm flange bolt (C), then remove the damper fork (D).



7. Remove the cotter pin (A) from the lower arm ball joint castle nut (B), and remove the nut.

NOTE:

- To avoid damaging the ball joint, install the ball joint thread protector onto the threads of the ball joint.
- Be careful not to damage the ball joint boot when installing the remover.



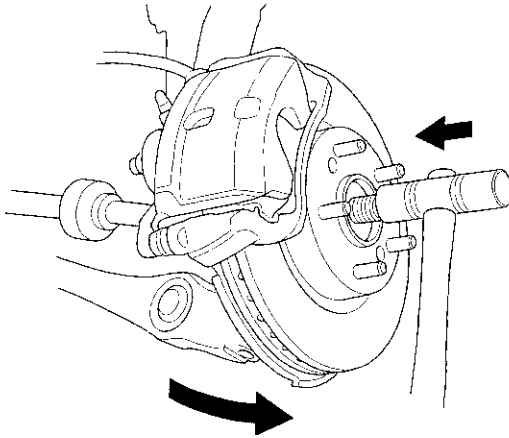
8. Separate the ball joint from the lower arm (C) with the special tools (see page 18-12).

(cont'd)

Driveline/Axle

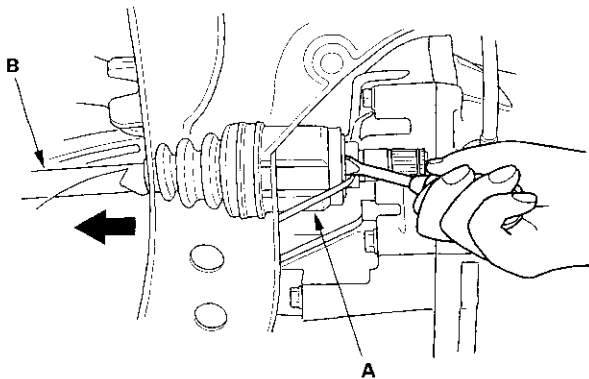
Driveshaft Removal (cont'd)

9. Pull the knuckle outward, and remove the outboard joint from the front wheel hub using a plastic hammer.

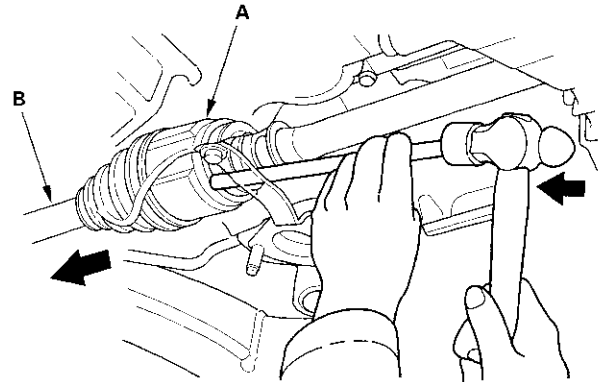


10. Left driveshaft: Pry the inboard joint (A) from the differential case with a prybar.
Right driveshaft: Drive the inboard joint (A) off of the intermediate shaft with a drift and hammer. Remove the driveshaft as an assembly. Do not pull on the driveshaft (B), because the inboard joint may come apart. Pull the driveshaft straight out to avoid damaging the oil seal.

Left driveshaft



Right driveshaft





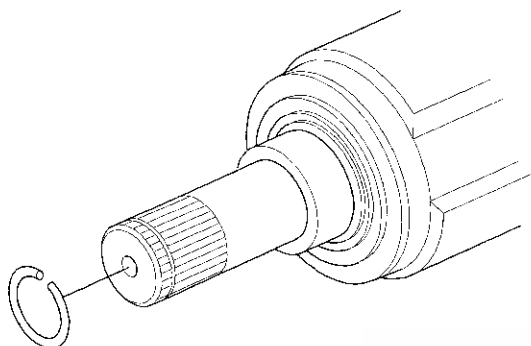
Driveshaft Disassembly

Special Tools Required

- Threaded adapter, 24 x 1.5 mm 07XAC-001020A
- Boot band pincers, commercially available
- Slide hammer 5/8" x 18 UNF, commercially available

Inboard Joint Side

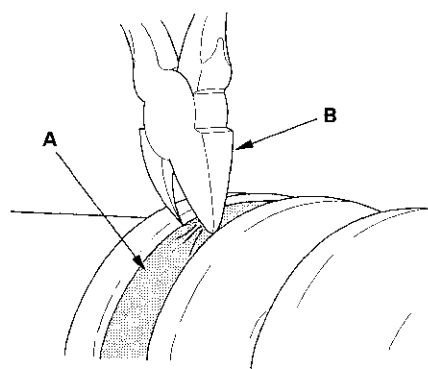
1. Remove the set ring from the inboard joint.



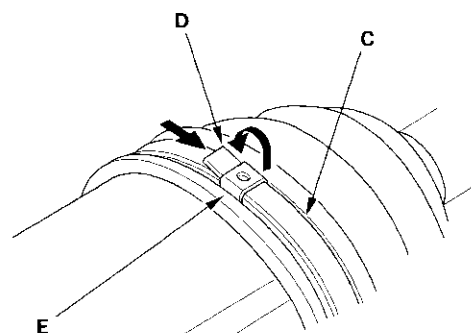
2. Remove the boot bands. Be careful not to damage the boot.

- If the boot band is a welded type (A), cut the boot band (B).
- If the boot band is a double loop type (C), lift up the band end (D), and push it into the clip (E).
- If the boot band is a low profile type (F), pinch the boot band using commercially available boot band pincers (G).

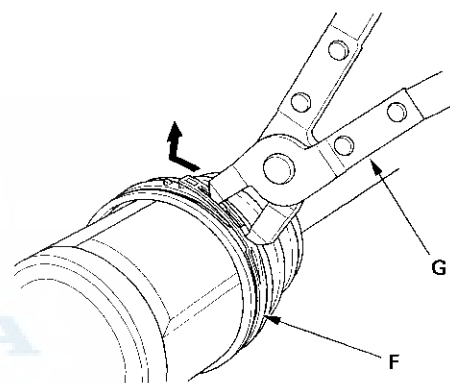
Welded type



Double loop type



Low profile type

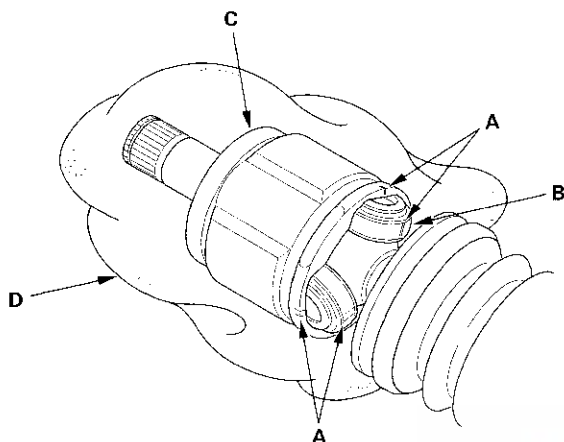


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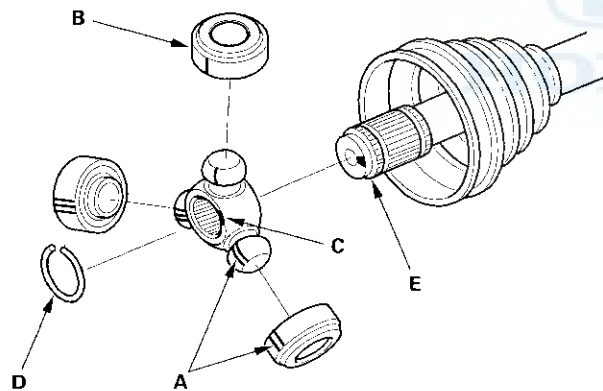
Driveline/Axle

Driveshaft Disassembly (cont'd)

3. Make a mark (A) on each roller (B) and inboard joint (C) to identify the locations of rollers and grooves in the inboard joint. Then remove the inboard joint on the shop towel (D). Be careful not to drop the rollers when separating them from the inboard joint.

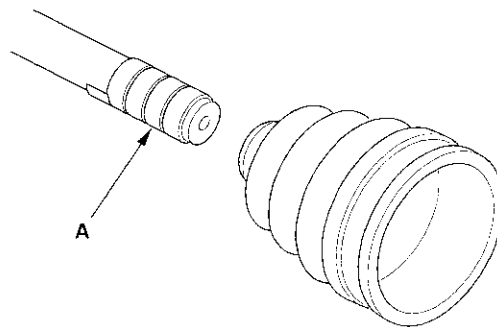


4. Make a mark (A) on the rollers (B) and spider (C) to identify the locations of the rollers on the spider, then remove the rollers.



5. Remove the circlip (D).
6. Mark the spider and driveshaft (E) to identify the position of the spider on the shaft.
7. Remove the spider.

8. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



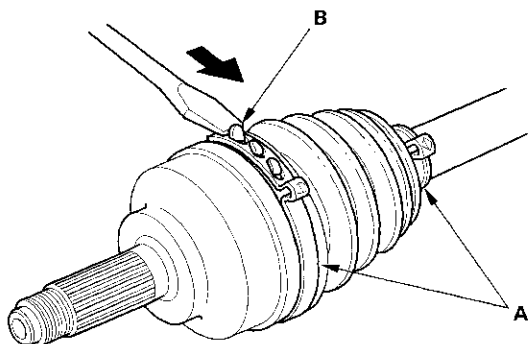
9. Remove the inboard boot. Be careful not to damage the boot.
10. Remove the vinyl tape.



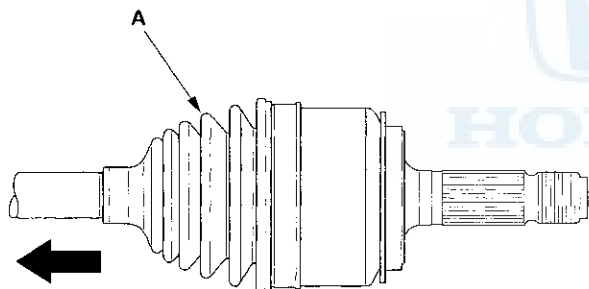
Outboard Joint Side

1. Remove the boot bands (A). Lift up the three tabs (B) with a screwdriver. Be careful not to damage the boot and dynamic damper.

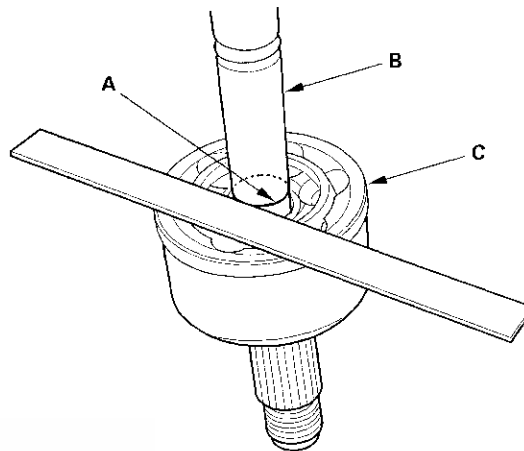
Ear clamp type



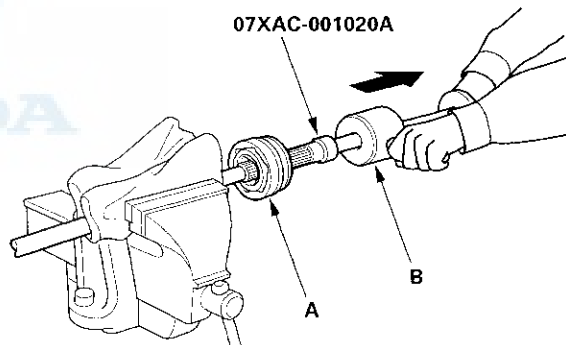
2. Slide the outboard boot (A) partially to the inboard joint side. Be careful not to damage the boot.



3. Wipe off the grease to expose the driveshaft and the outboard joint inner race.
4. Make a mark (A) on the driveshaft (B) at the same position of the outboard joint end (C).



5. Carefully clamp the driveshaft in a vise.



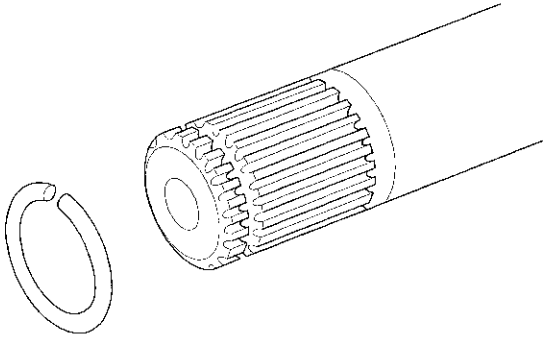
6. Remove the outboard joint (A) using the threaded adapter and a commercially available 5/8" x 18 UNF slide hammer (B).
7. Remove the driveshaft from the vise.

(cont'd)

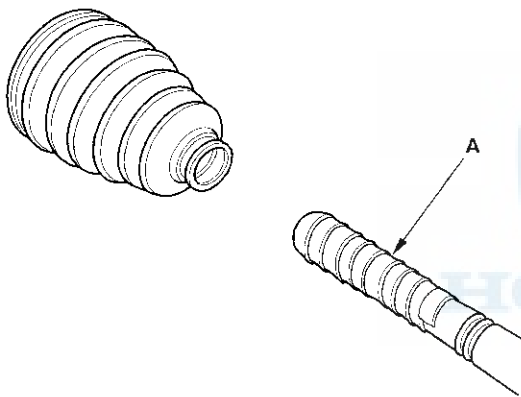
Driveline/Axle

Driveshaft Disassembly (cont'd)

8. Remove the stop ring from the driveshaft.



9. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the boot.



10. Remove the outboard boot. Be careful not to damage the boot.
11. Remove the vinyl tape.

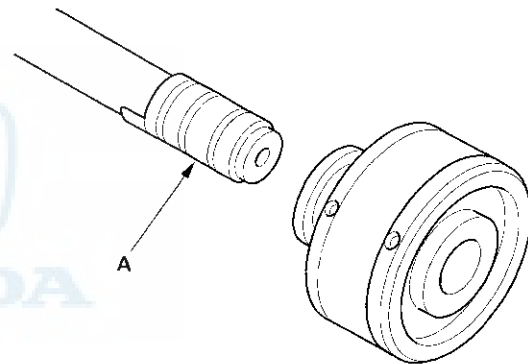
Dynamic Damper Replacement

Special Tools Required

Bearing separator 07KAF-PS30200

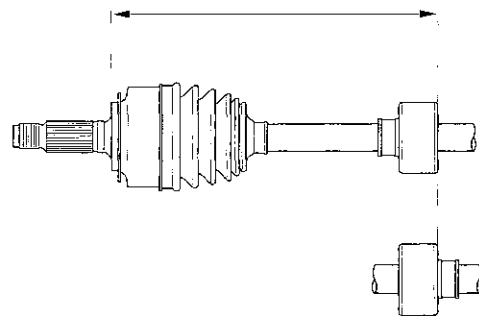
Band type

1. Remove the inboard joint (see page 16-5).
2. Remove the dynamic damper bands. Be careful not to damage the dynamic damper (see page 16-5).
 - If the band is a welded type, cut the band.
 - If the band is a double loop type, lift up the band end, and push it into the clip.
 - If the band is a low profile type, pinch the band using commercially available boot band pincers.
3. Wrap the splines on the driveshaft with vinyl tape (A) to prevent damage to the dynamic damper.



4. Remove the dynamic damper. Be careful not to damage the dynamic damper.
5. Adjust the position of the new dynamic damper to these measurements.

Left driveshaft: 270—274 mm (10.63—10.79 in.)
Right driveshaft: 283—287 mm (11.14—11.30 in.)



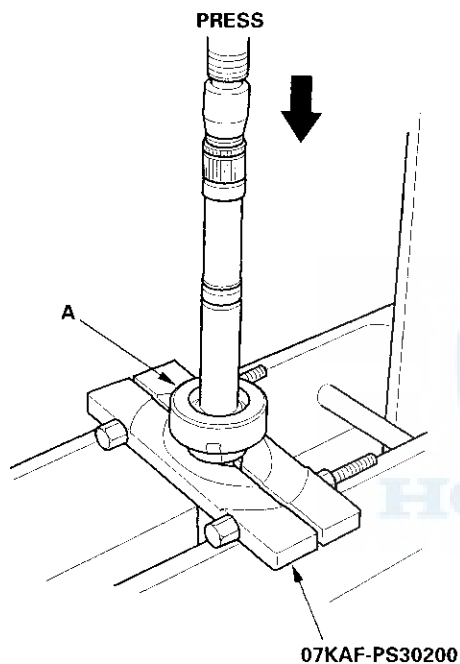


6. Install the low profile band (see step 9 on page 16-12).

7. Install the inboard joint (see page 16-11).

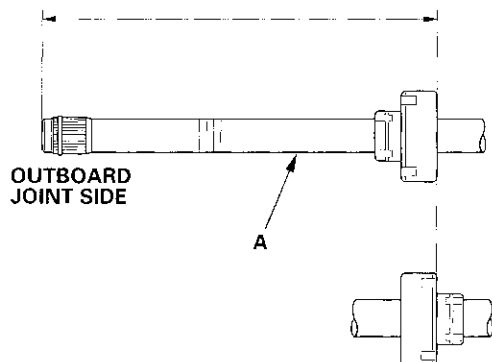
Bandless type

1. Remove the inboard joint and outboard joint.
2. Remove the dynamic damper (A) using the bearing separator and a press as shown.

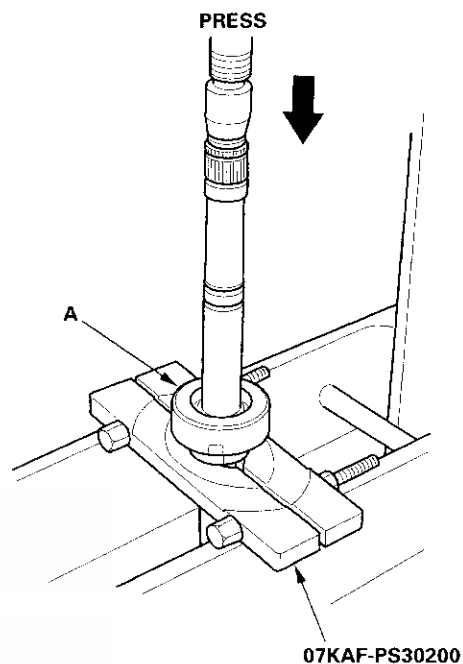


3. Mark the following position on the driveshaft (A).

Left driveshaft: 291.7—295.7 mm (11.48—11.64 in.)
Right driveshaft: 304.7—308.7 mm (11.20—12.15 in.)



4. Install the dynamic damper (A) to the marked position using the bearing separator and a press as shown.

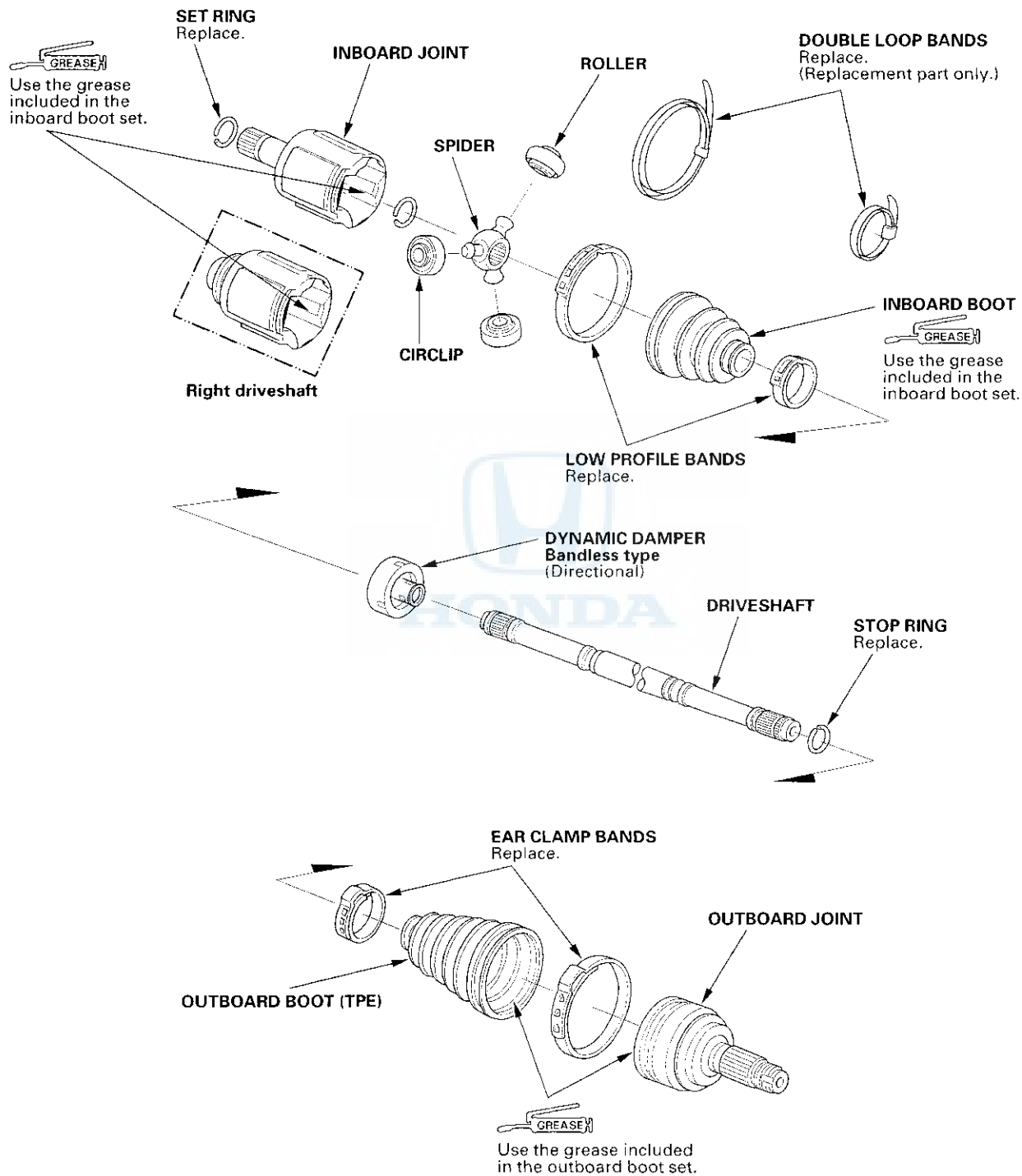


5. Install the inboard joint and outboard joint (see page 16-11).

Driveline/Axle

Driveshaft Reassembly

Exploded View





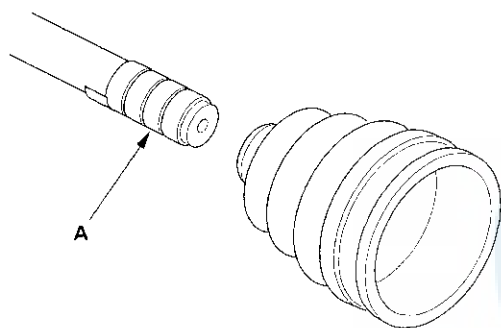
Special Tools Required

- Boot band tool, KD-3191 or equivalent, commercially available
- Boot band pincers, Kent-Moore J-35910 or equivalent, commercially available
- Boot band pincers, commercially available

NOTE: Refer to the Exploded View as needed during this procedure.

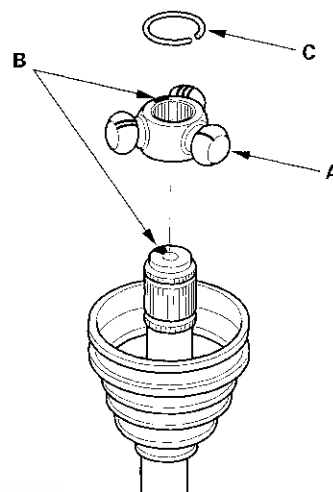
Inboard Joint Side

1. Wrap the splines with vinyl tape (A) to prevent damage to the inboard boot.



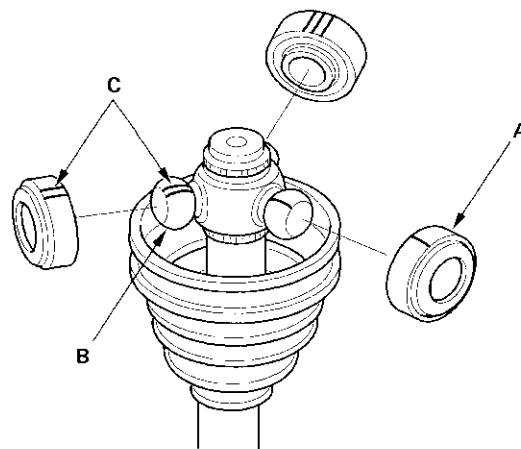
2. Install the inboard boot onto the driveshaft, then remove the vinyl tape. Be careful not to damage the inboard boot.

3. Install the spider (A) onto the driveshaft by aligning the marks (B) on the spider and the end of the driveshaft.



4. Fit the circlip (C) into the driveshaft groove. Rotate the circlip in its groove to make sure it is fully seated.
5. Fit the rollers (A) onto the spider (B) with their high shoulders facing outward, and note these items:

- Reinstall the rollers in their original positions on the spider by aligning the marks (C).
- Hold the driveshaft pointed up to prevent the rollers from falling off.



(cont'd)

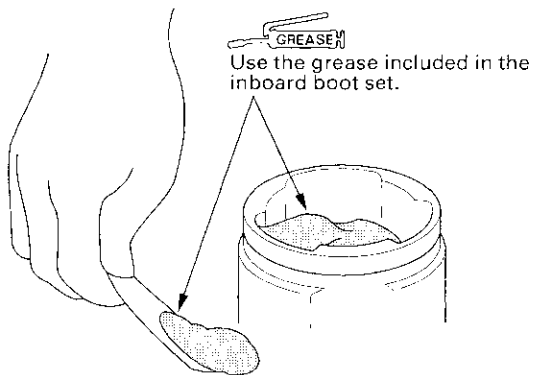
Driveline/Axle

Driveshaft Reassembly (cont'd)

6. Pack the inboard joint with the joint grease included in the new driveshaft set.

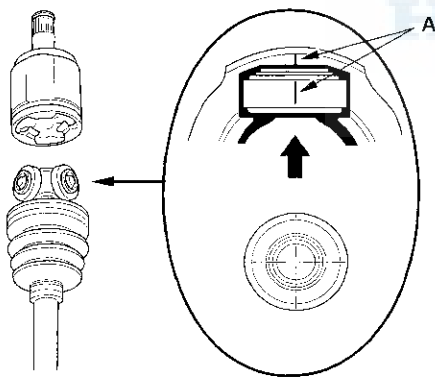
Grease quantity

Inboard joint: 150—160 g (5.3—5.6 oz)



7. Fit the inboard joint onto the driveshaft, and note these items:

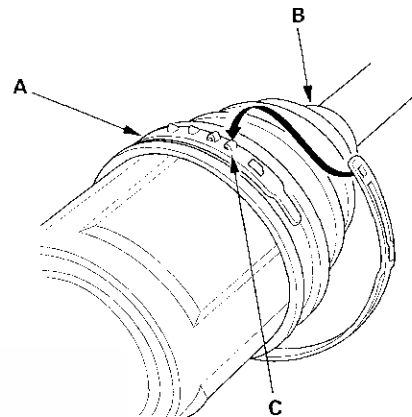
- Reinstall the inboard joint onto the driveshaft by aligning the marks (A) on the inboard joint and the rollers.
- Hold the driveshaft so the inboard joint is pointing up to prevent it from falling off.



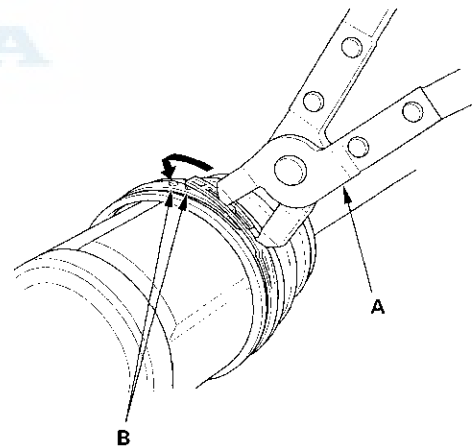
8. Install the boot bands.

- For the double loop type, go to step 13. (Boot band replacement only)
- For the low profile type, go to step 9.

9. Install the new low profile band (A) onto the boot (B), then hook the tab (C) of the band.



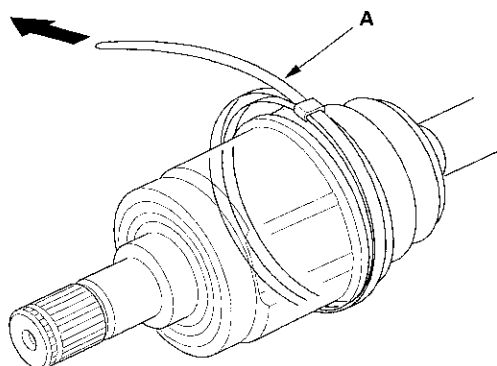
10. Close the hook portion of the band with commercially available boot band pincers (A), then hook the tabs (B) of the band.



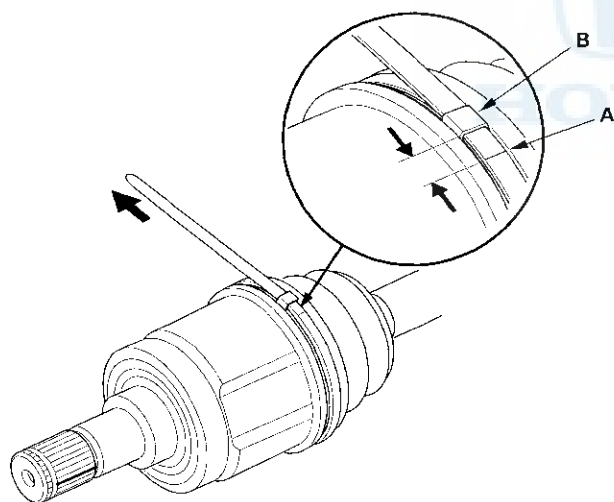
11. Install the boot band on the other end of the boot, and repeat steps 9 through 10.



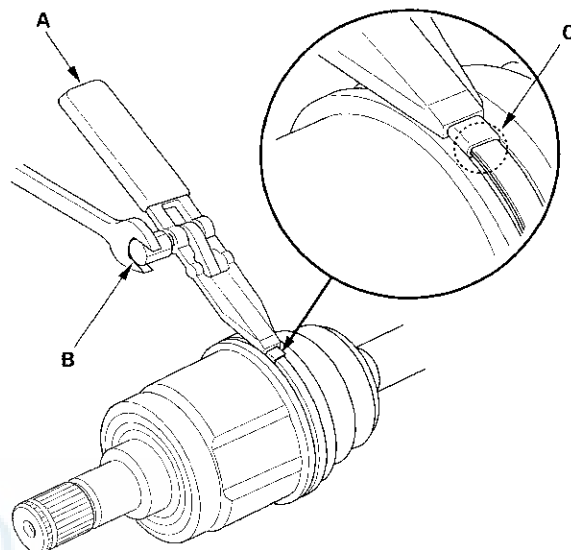
12. Adjust the inboard joint until the rollers are in the middle of the joint.
13. Fit the boot ends onto the driveshaft and the inboard joint, then install the new double loop band (A) onto the boot.



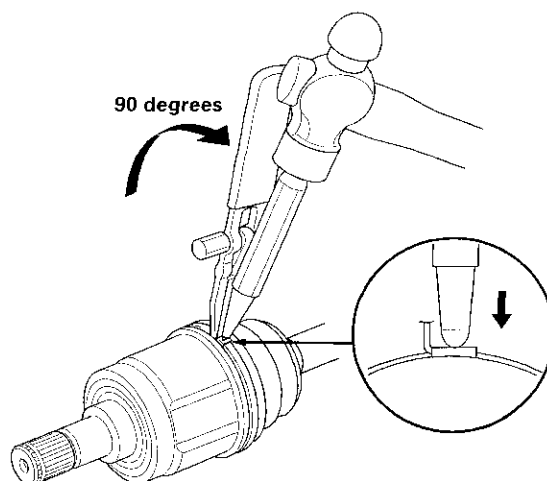
14. Pull up the slack in the band by hand.
15. Mark a position (A) on the band 10—14 mm (0.4—0.6 in.) from the clip (B).



16. Using the free end of the band through the nose section of the commercially available boot band tool KD-3191 or equivalent (A), and into the slot on the winding mandrel (B).



17. Using a wrench on the winding mandrel of the boot band tool, and tighten the band until the marked spot (C) on the band meets the edge of the clip.
18. Lift up the boot band tool to bend the free end of the band 90 degrees to the clip. Center-punch the clip, then fold over the remaining tail onto the clip.

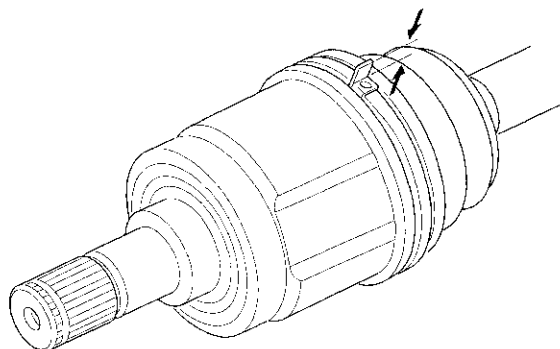


(cont'd)

Driveline/Axle

Driveshaft Reassembly (cont'd)

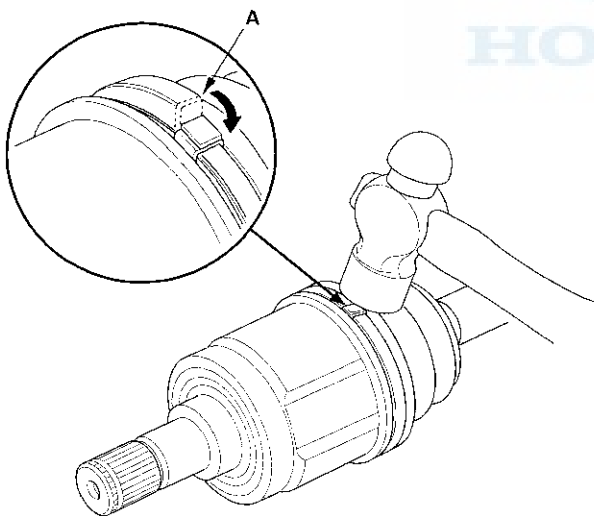
19. Unwind the boot band tool, and cut off the excess free end of the band to leave a 5—10 mm (0.2—0.4 in.) tail protruding from the clip.



20. Bend the band end (A) by tapping it down with a hammer.

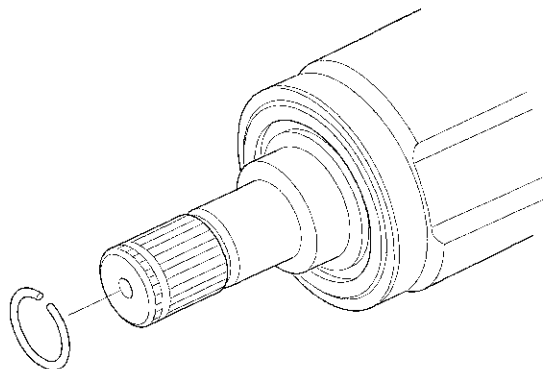
NOTE:

- Make sure the band and clip do not interfere with anything on the vehicle and the band does not move.
- Remove any grease remaining on the surrounding surfaces.



21. Repeat steps 13 through 20 for the band on the other end of the boot.

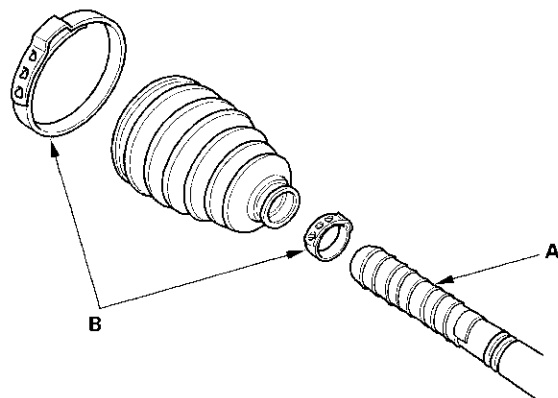
22. Install the new set ring.



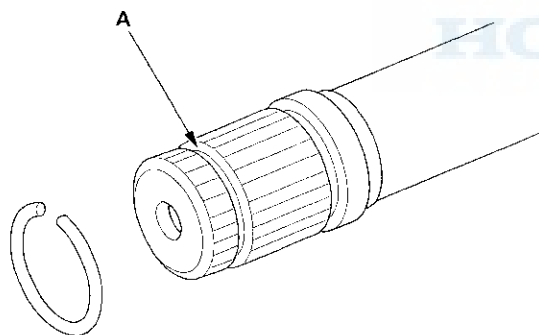


Outboard Joint Side

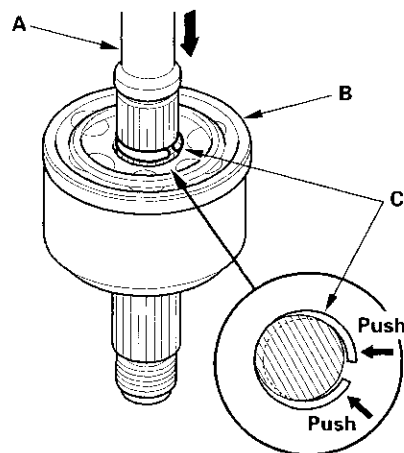
1. Wrap the splines with vinyl tape (A) to prevent damage to the outboard boot.



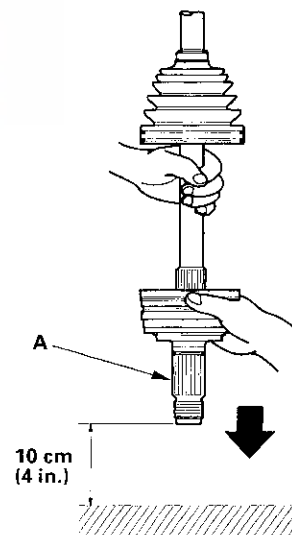
2. Install the new ear clamp bands (B) and outboard boot, then remove the vinyl tape. Be careful not to damage the outboard boot.
3. Install the new stop ring in the driveshaft groove (A).



4. Insert the driveshaft (A) into the outboard joint (B) until the stop ring (C) is close to the joint.



5. To completely seat the outboard joint, pick up the driveshaft and joint, and tap them hard from a height of about 10 cm (4 in.) onto a hard surface. Do not use a hammer as excessive force may damage the driveshaft. Be careful not to damage the threaded section (A) of the outboard joint.

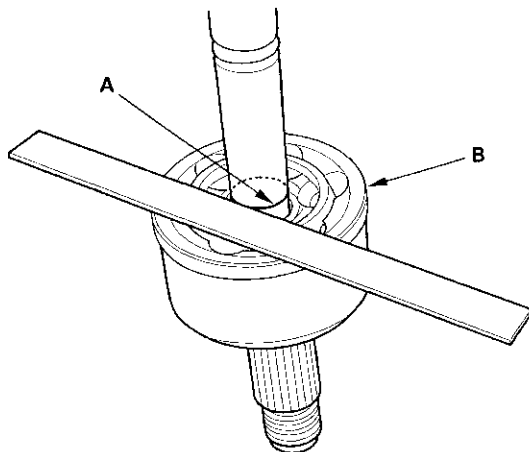


(cont'd)

Driveline/Axle

Driveshaft Reassembly (cont'd)

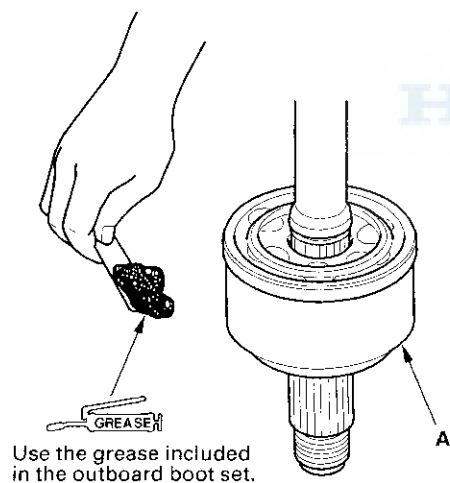
6. Check the alignment of the paint mark (A) with the outboard joint end (B).



7. Pack the outboard joint (A) with the joint grease included in the new joint boot set.

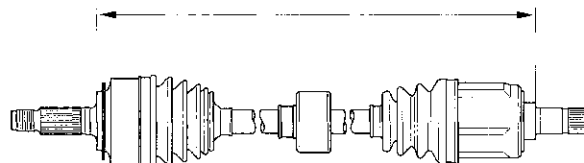
Grease quantity

Outboard joint: 140—150 g (4.9—5.3 oz)

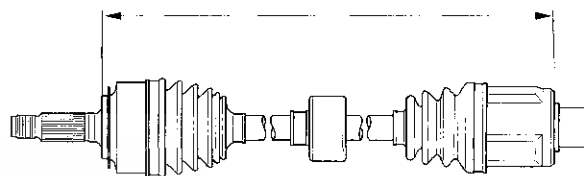


8. Adjust the length of the driveshafts to these measurements, then adjust the boots to halfway between full compression and full extension. Make sure the ends of the boots seat in the groove of the driveshaft and joint.

Left driveshaft: 511—516 mm (20.12—20.31 in.)

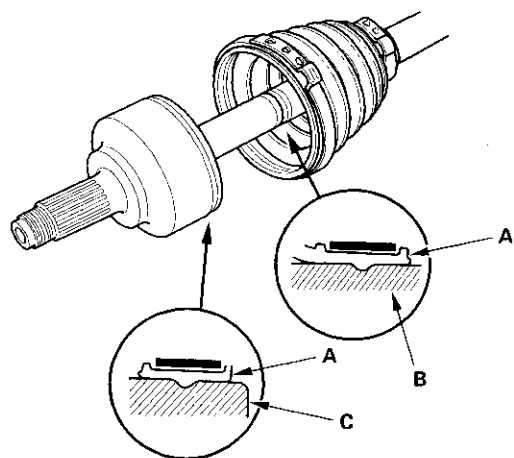


Right driveshaft: 480—485 mm (18.90—19.09 in.)

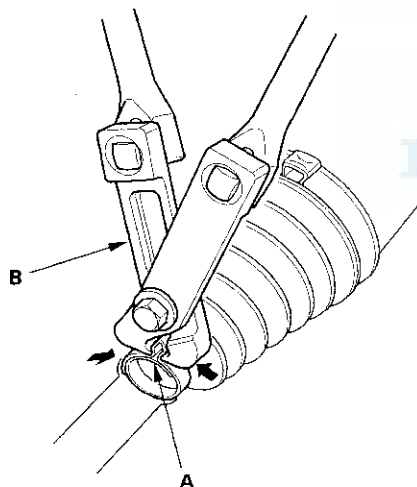




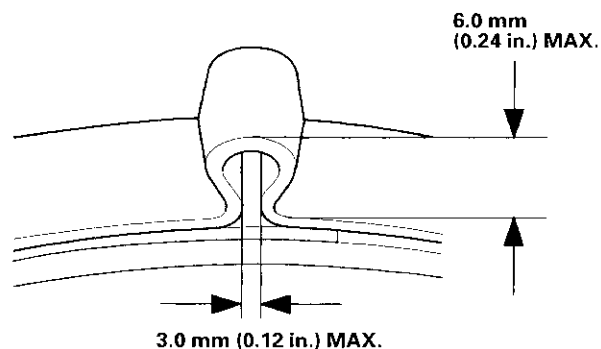
9. Fit the boot ends (A) onto the driveshaft (B) and outboard joint (C).



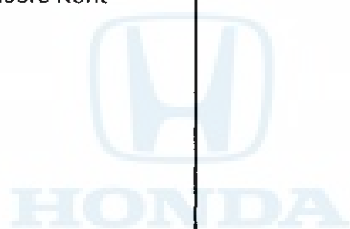
10. Close the ear portion (A) of the band with commercially available boot band pincers Kent-Moore J-35910 or equivalent (B).



11. Check the clearance between the closed ear portion of the band. If the clearance is not within the specifications shown, close the ear portion of the band tighter.



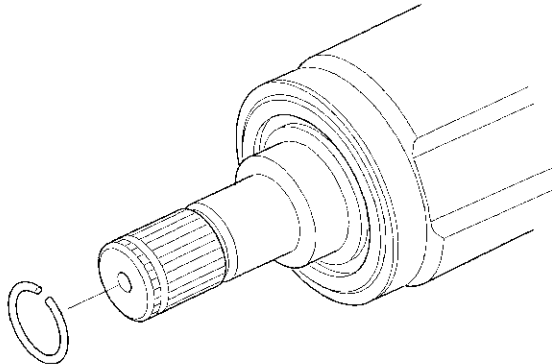
12. Repeat steps 10 and 11 for the band on the other end of the boot.



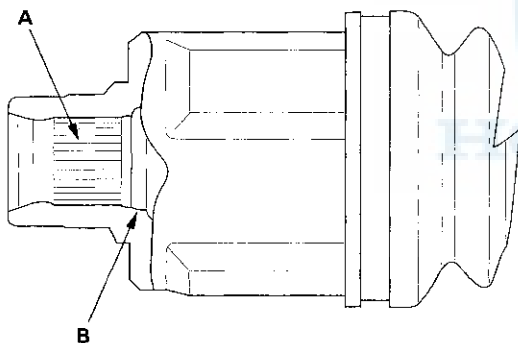
Driveline/Axle

Driveshaft Installation

1. Install a new set ring in the set ring groove of the driveshaft (left driveshaft).

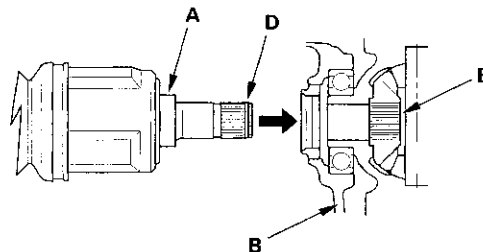


2. Apply 0.5—1.0 g (0.02—0.04 oz) of the supplied grease to the whole splined surface (A) of the right driveshaft. After applying grease, remove the grease from the splined grooves at intervals of 2—3 splines and from the set ring groove (B) so that air can bleed from the intermediate shaft.

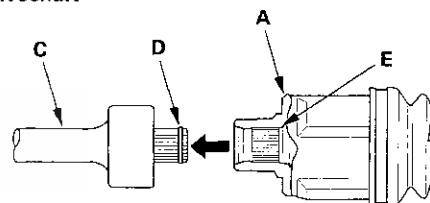


3. Clean the areas where the driveshaft contacts the differential thoroughly with solvent or brake cleaner, and dry with compressed air. Insert the inboard end (A) of the driveshaft into the differential (B) or intermediate shaft (C) until the new set ring (D) locks in the groove (E).

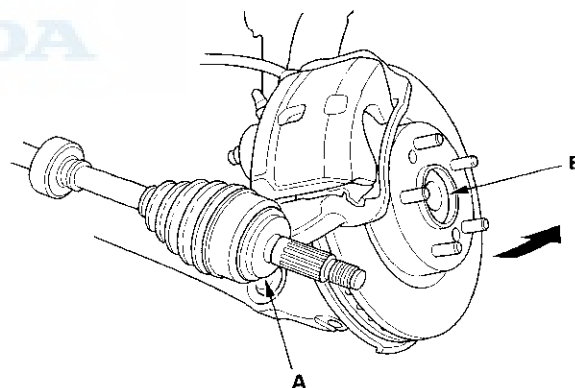
Left driveshaft



Right driveshaft



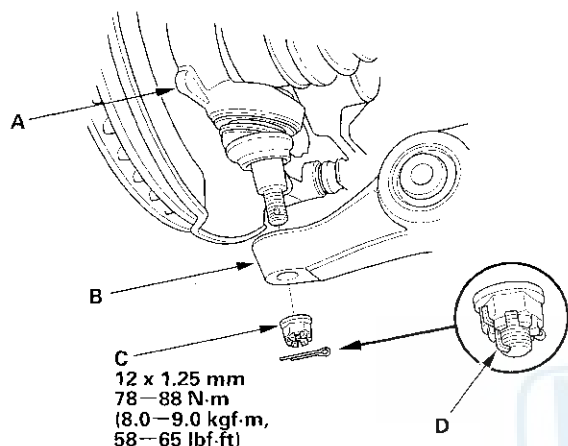
4. Install the outboard joint (A) into the front hub (B).



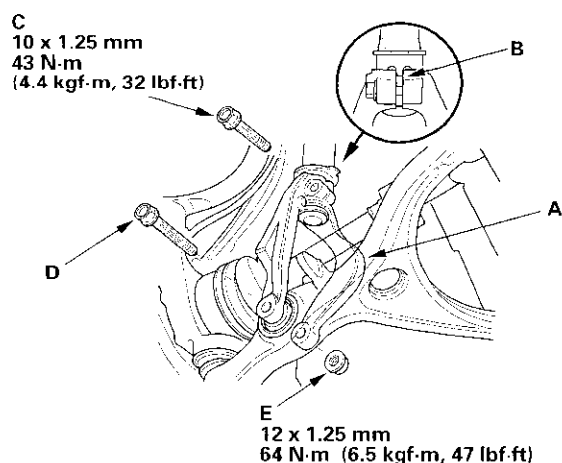


5. Install the knuckle (A) onto the lower arm (B). Wipe off the grease before tightening the nut at the ball joint. Torque the castle nut (C) to the lower torque specification, then tighten it only far enough to align the slot with the pin hole. Do not align the nut by loosening it.

NOTE: Make sure the ball joint boot is not damaged or cracked.

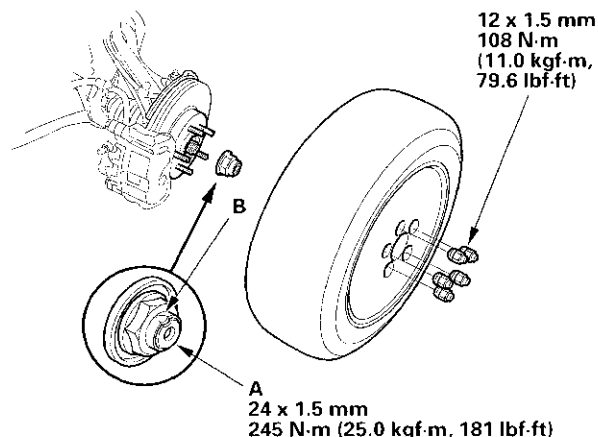


6. Install the new cotter pin (D) into the pin hole, and bend the cotter pin as shown.
7. Install the damper fork (A) over the driveshaft and onto the lower arm. Install the damper in the damper fork so the aligning tab (B) is aligned with the slot in the damper fork. Loosely install the flange bolt (C).



8. Loosely install the flange bolt (D) and a new self-locking nut (E).

9. Install a new spindle nut (A), then tighten the nut. After tightening, use a drift to stake the spindle nut shoulder (B) against the driveshaft.

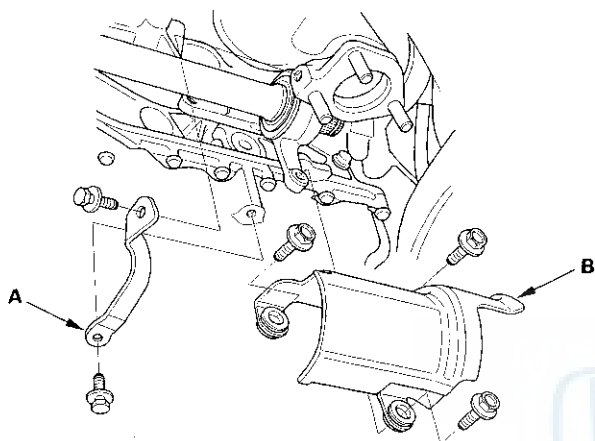


10. Clean the mating surfaces of the brake disc and the front wheel, then install the front wheel with the wheel nuts.
11. Turn the front wheel by hand, and make sure there is no interference between the driveshaft and surrounding parts.
12. Tighten the flange bolts and the self-locking nut with the vehicle's weight on the damper.
13. Refill the automatic transmission with recommended automatic transmission fluid (see page 14-231).
14. Check the front wheel alignment, and adjust it if necessary (see page 18-7).

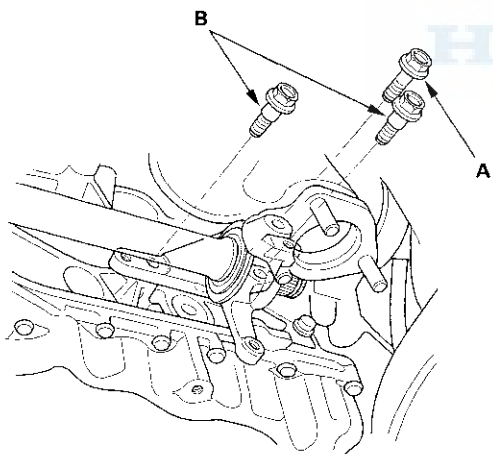
Driveline/Axle

Intermediate Shaft Removal

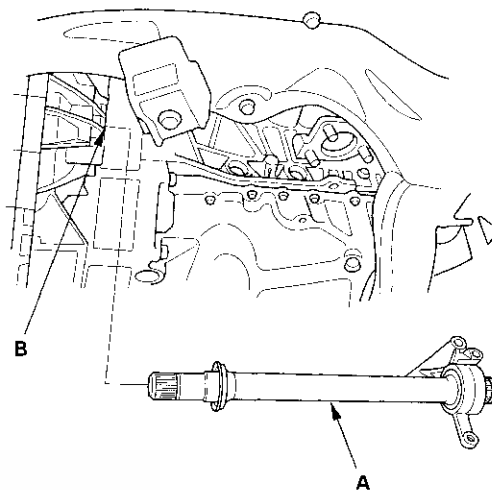
1. Drain the automatic transmission fluid. Reinstall the drain plug with a new washer (see page 14-231).
2. Remove the right driveshaft (see page 16-3).
3. Remove exhaust pipe A (see step 41 on page 5-7).
4. Remove the exhaust pipe bracket (A) and heat shield (B).



5. Remove the flange bolt (A) and two dowel bolts (B).



6. Remove the intermediate shaft (A) from the differential. Hold the intermediate shaft horizontally until it is clear of the differential to prevent damage to the differential oil seal (B).



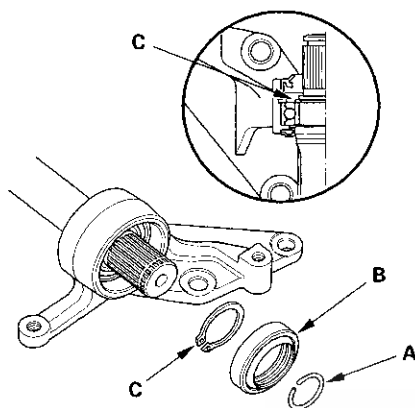


Intermediate Shaft Disassembly

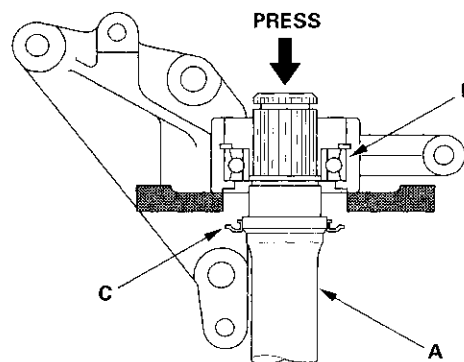
Special Tools Required

- Oil seal driver 07947-SB00100
- Half shaft base 07NAF-SR30101

1. Remove the set ring (A), outer seal (B), and external snap ring (C).



2. Press the intermediate shaft (A) out of the intermediate shaft bearing (B) using a press. Be careful not to damage the metal rings (C) on the intermediate shaft during disassembly.

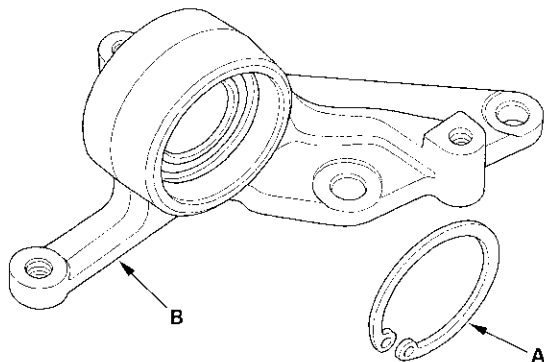


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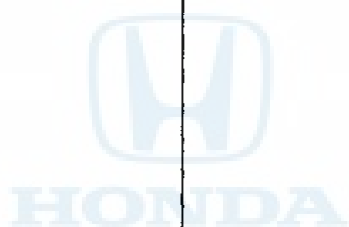
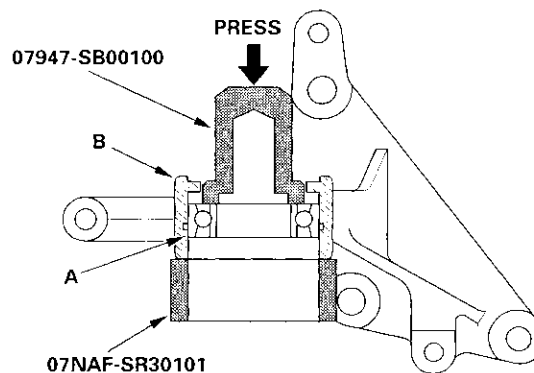
Driveline/Axle

Intermediate Shaft Disassembly (cont'd)

3. Remove the internal snap ring (A) from the bearing support (B).



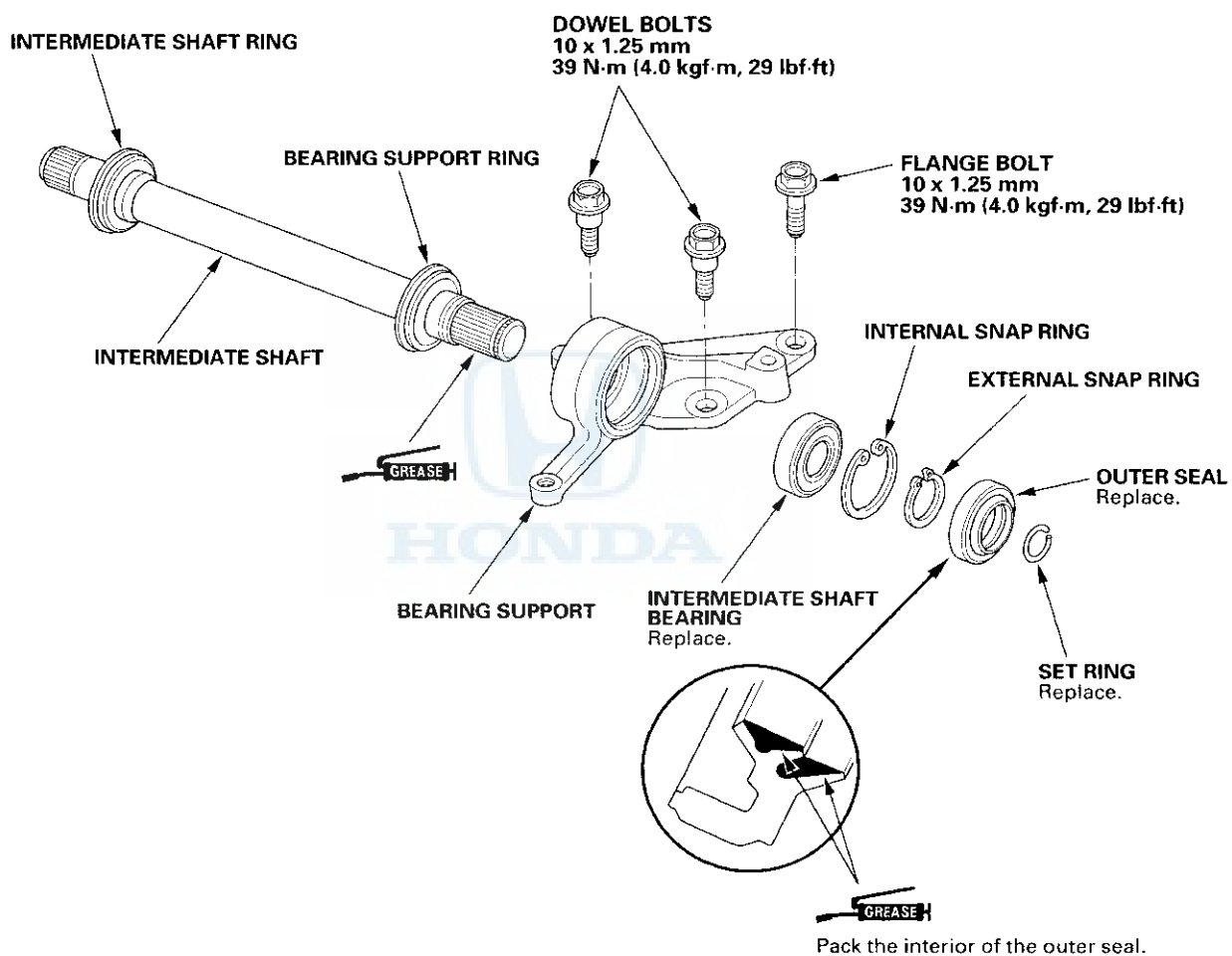
4. Press the intermediate shaft bearing (A) out of the bearing support (B) using the special tools and a press.





Intermediate Shaft Reassembly

Exploded View



(cont'd)

Driveline/Axle

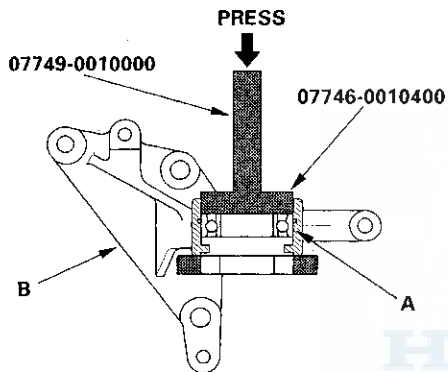
Intermediate Shaft Reassembly (cont'd)

Special Tools Required

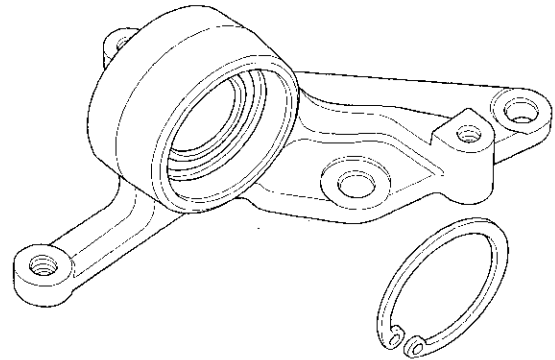
- Driver 07749-0010000
- Attachment, 52 x 55 mm 07746-0010400
- Attachment, 35 mm I.D. 07746-0030400
- Oil seal driver 07GAD-PH70201

NOTE: Refer to the Exploded View as needed during this procedure.

1. Clean the disassembled parts with solvent, and dry them with compressed air. Do not wash the rubber parts with solvent.
2. Press the intermediate shaft bearing (A) into the bearing support (B) using the special tools and a press.

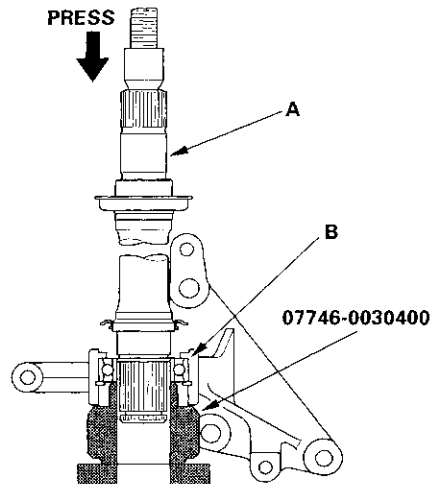


3. Install, then seat the internal snap ring in the groove of the bearing support.

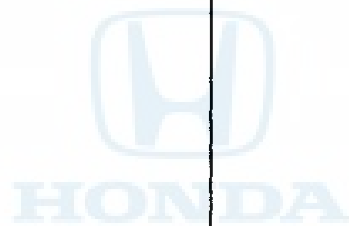
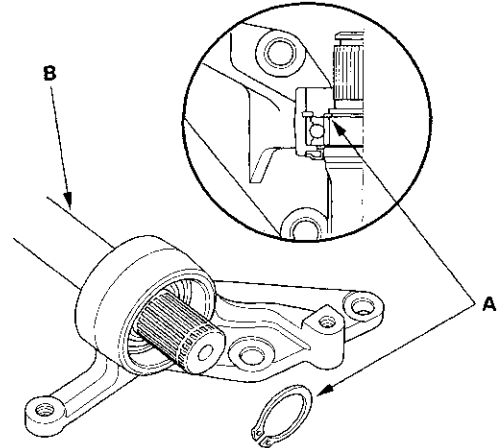




4. Press the intermediate shaft (A) into the shaft bearing (B) using the special tool and a press.



5. Install, then seat the external snap ring (A) in the groove of the intermediate shaft (B).

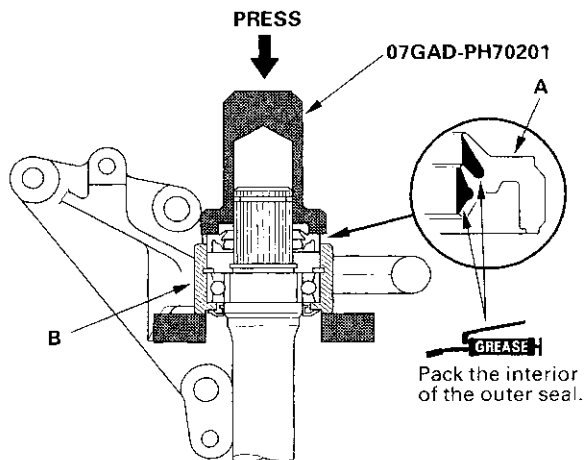


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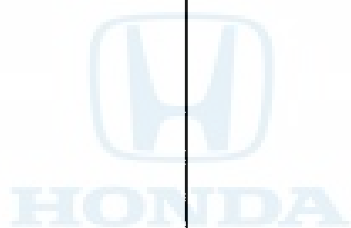
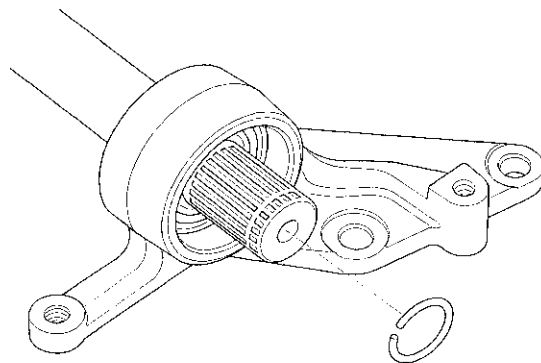
Driveline/Axle

Intermediate Shaft Reassembly (cont'd)

6. Install the outer seal (A) into the bearing support (B) using the special tool and a press.



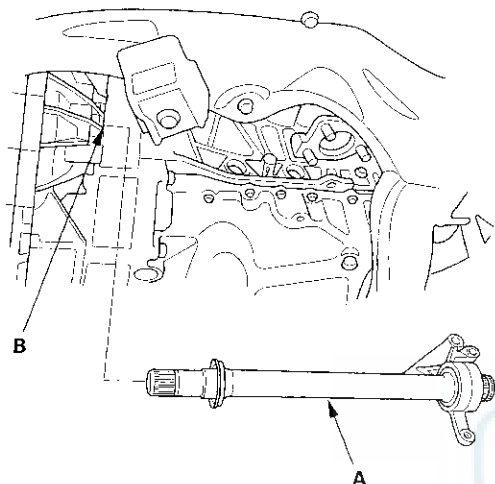
7. Install the set ring.



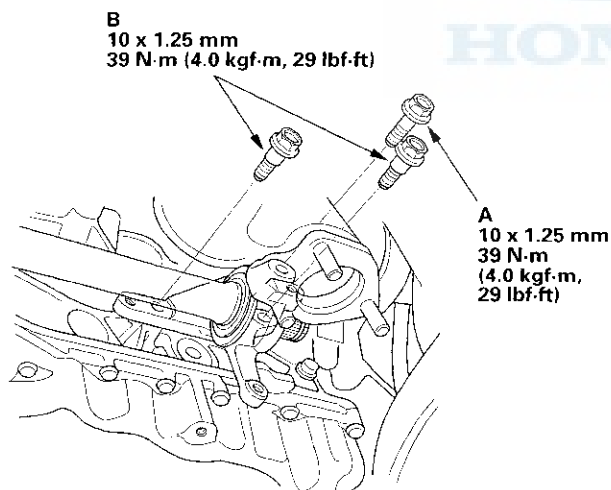


Intermediate Shaft Installation

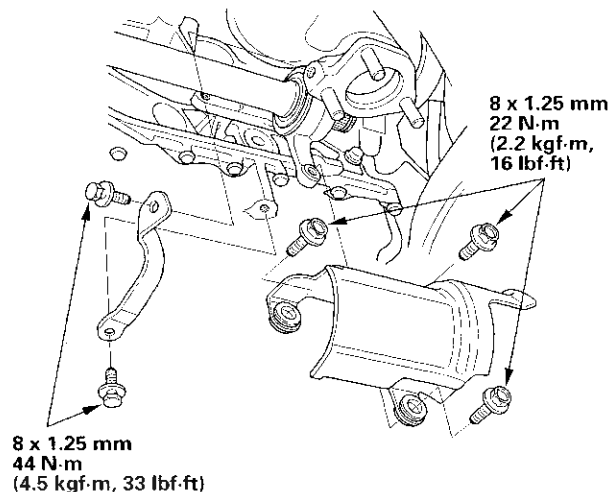
1. Use solvent or brake cleaner to thoroughly clean the areas where the intermediate shaft (A) contacts the transmission (differential), and dry them with compressed air. Insert the intermediate shaft assembly into the differential. Hold the intermediate shaft horizontally to prevent damage to the differential oil seal (B).



2. Install the flange bolt (A) and two dowel bolts (B).



3. Install the heat shield (A) and exhaust pipe bracket (B).



4. Install exhaust pipe A (see step 21 on page 5-14).
5. Install the right driveshaft (see page 16-18).
6. Refill the transmission with automatic transmission fluid (see page 14-231).

Steering

Steering

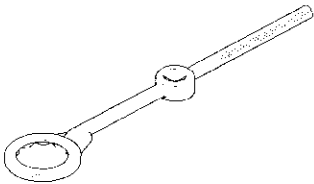
Special Tools	17-2
Component Location Index	17-3
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Power Assist Check	17-4
Steering Linkage and Gearbox Inspection	17-5
Steering Wheel Removal	17-6
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Steering Lock Replacement	17-13
Rack Guide Adjustment	17-14
Electrical Power Steering (EPS)	17-15



Steering

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07MAA-SL00200	Locknut Wrench, 43 mm	1

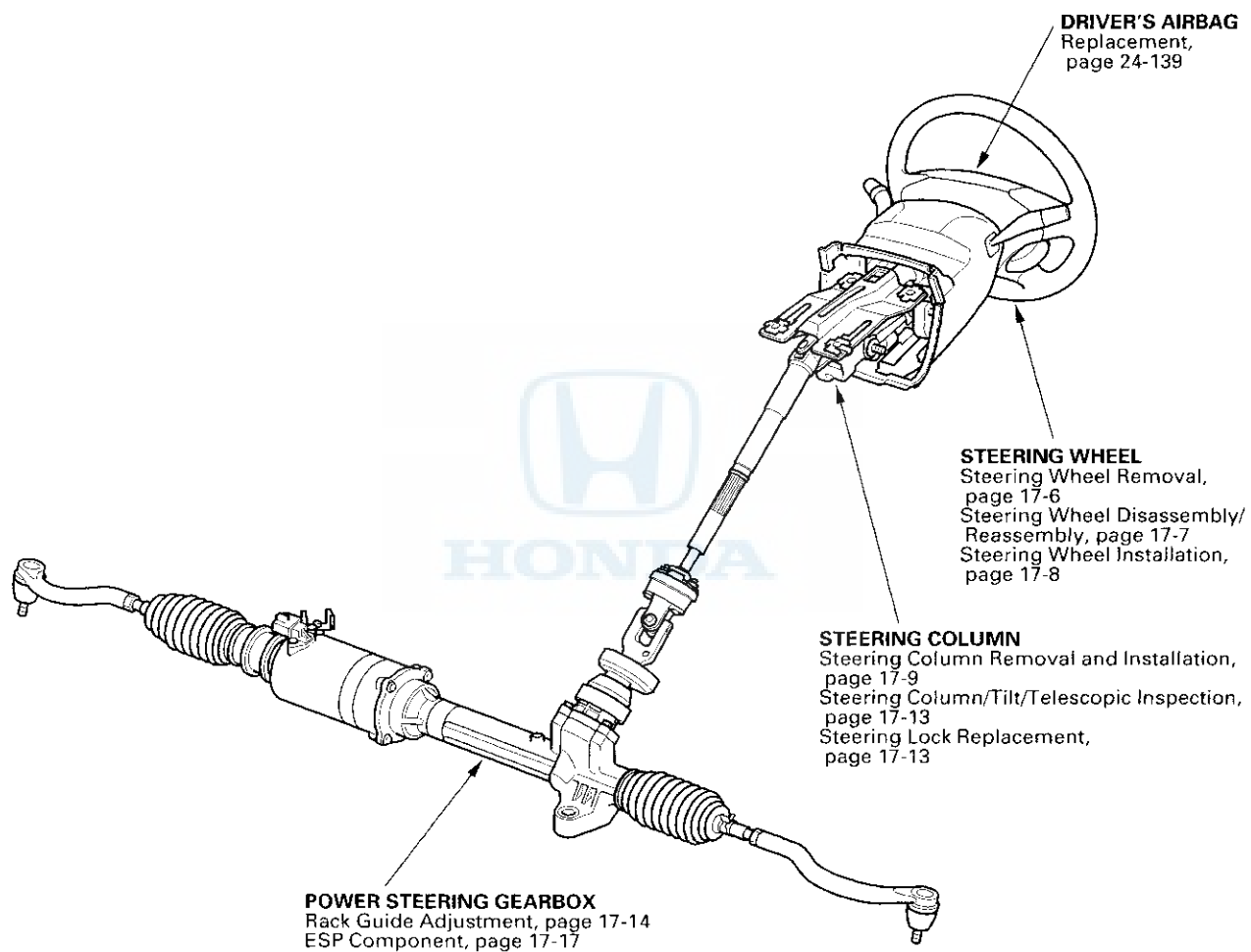


①





Component Location Index

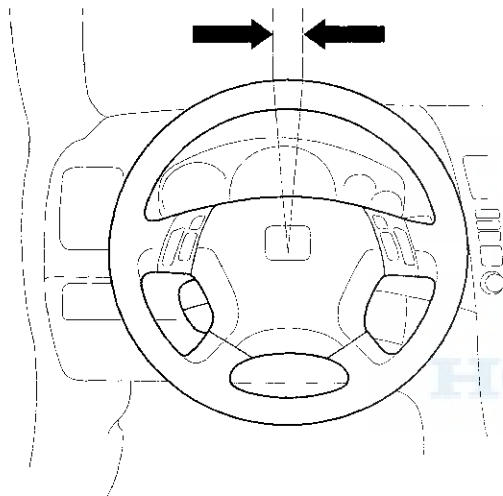


Steering

Steering Wheel Rotational Play Check

1. Turn the front wheels to the straight ahead position.
2. Measure how far you can turn the steering wheel left and right without moving the front wheels.
 - If the play is within the limit, the gearbox and linkage are OK.
 - If the play exceeds the limit, adjust the rack guide (see page 17-14). If the play is still excessive after rack guide adjustment, inspect the steering linkage and gearbox (see page 17-5).

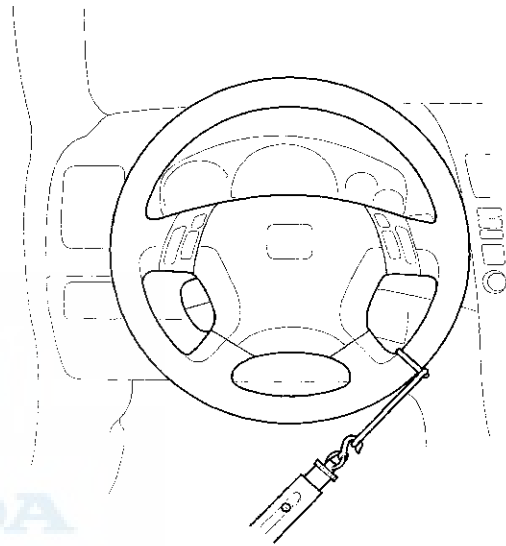
Rotational play: 0–10 mm (0–0.39 in.)



Power Assist Check

NOTE: This test should be done with original equipment tires and wheels at the correct tire pressure.

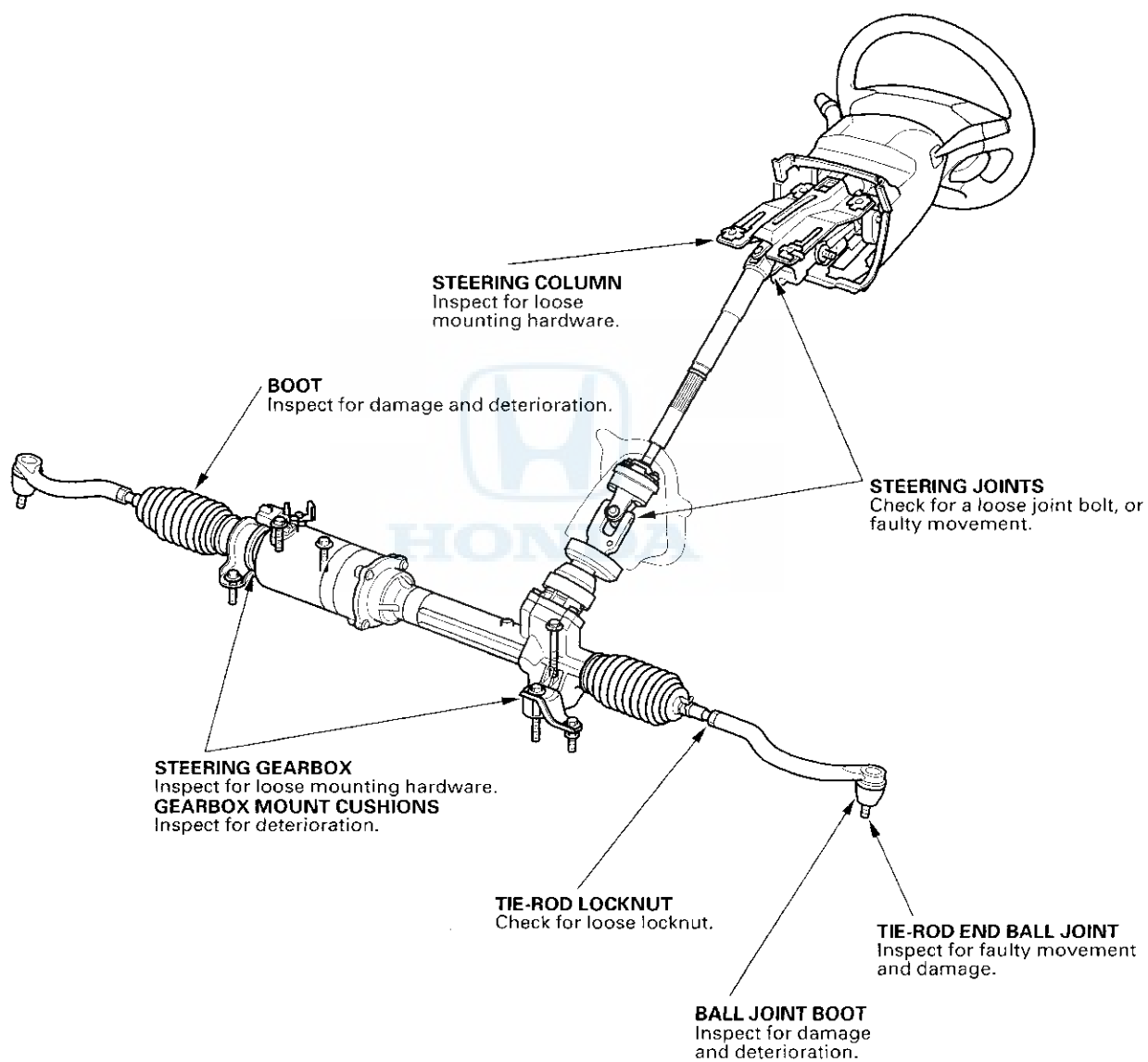
1. Start the engine, and let it idle.
2. Attach a commercially available spring scale to the steering wheel. With the engine idling and the vehicle on a clean, dry floor, pull the scale as shown, and read it as soon as the tires begin to turn.



3. If the scale reads no more than 29 N (3.0 kgf, 6.6 lbf), the power assist is OK. If it reads more, check these items:
 - Steering linkage (see page 17-5)
 - Rack guide adjustment (see page 17-14)
 - EPS system (see page 17-18)



Steering Linkage and Gearbox Inspection

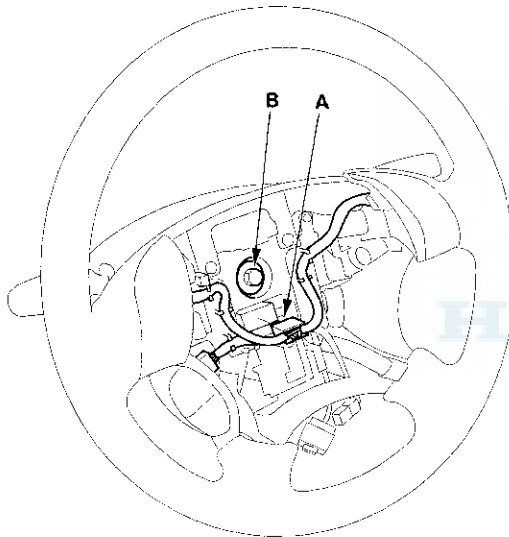


Steering

Steering Wheel Removal

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

1. Make sure you have the anti-theft codes for the radio and the navigation system (if equipped), then write down the XM radio channel presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Align the front wheels straight ahead, then remove the driver's airbag from the steering wheel (see page 24-139).
4. Disconnect the steering switch connector (A).

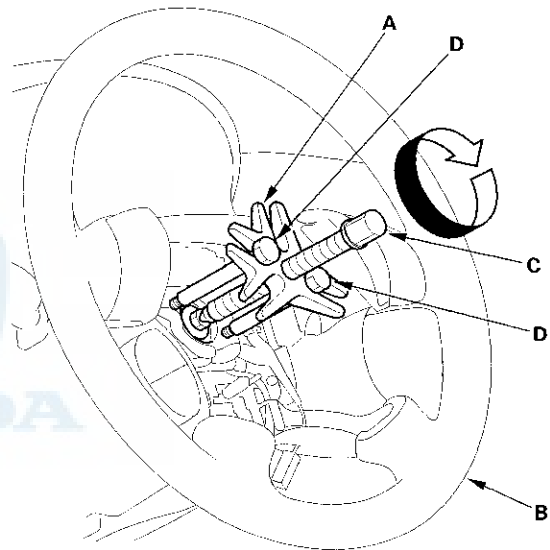


5. Loosen the steering wheel bolt (B).

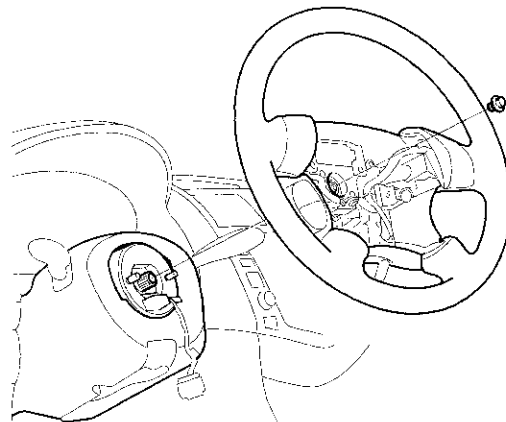
6. Install a commercially available steering wheel puller (A) on the steering wheel (B). Free the steering wheel from the steering column shaft by turning the pressure bolt (C) of the puller.

Note these items when removing the steering wheel:

- Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.
- If you thread the puller bolts (D) into the wheel hub more than five threads, the bolts will hit the cable reel and damage it. To prevent this, install a pair of jam nuts five threads up on each puller bolt.

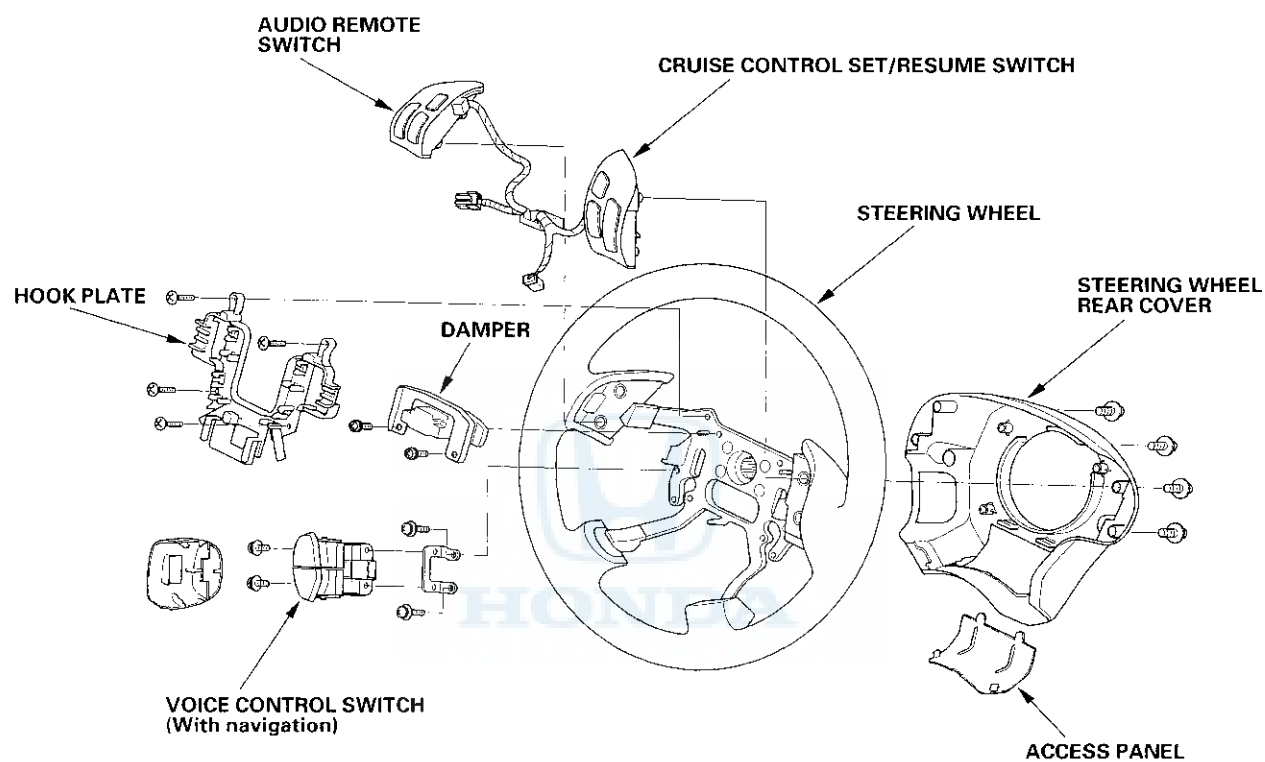


7. Remove the steering wheel puller, then remove the steering wheel bolt and steering wheel from the steering column.





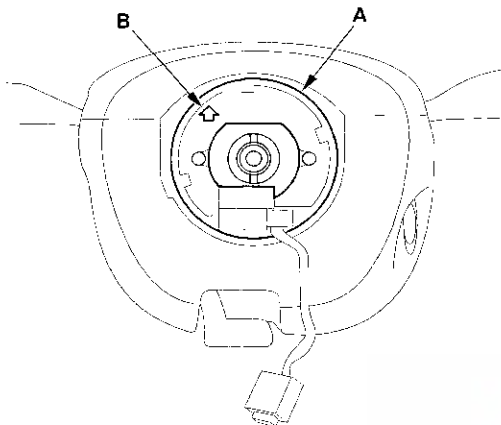
Steering Wheel Disassembly/Reassembly



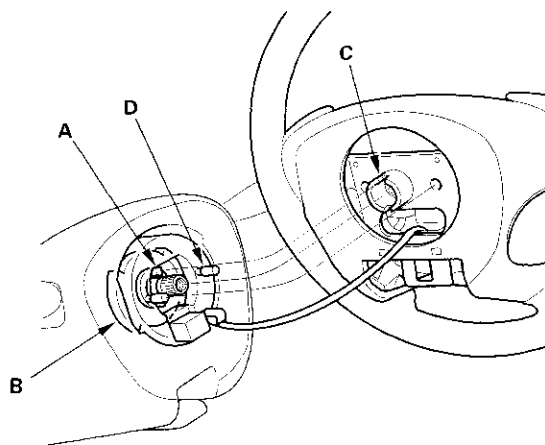
Steering

Steering Wheel Installation

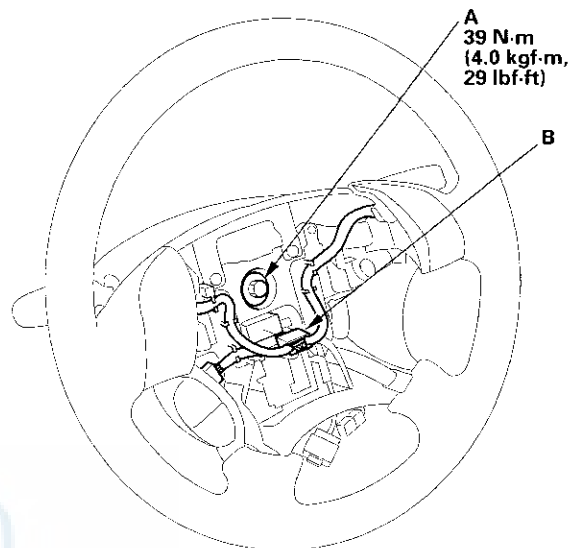
1. Before installing the steering wheel, make sure the front wheels are aligned straight ahead, then center the cable reel (A). Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise about three full turns. The arrow mark (B) on the cable reel label point should point straight up.



2. Position the two tabs (A) of the turn signal cancelling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



3. Install the steering wheel bolt (A) and tighten it to the specified torque. Connect the steering switch connector (B). Make sure the wire harness is routed and fastened properly.



4. Install the driver's airbag (see page 24-139).
5. Reconnect the negative cable to the battery and do the following items:

NOTE: If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

- Power window control unit reset procedure (see page 22-200).
- Enter the anti-theft codes for the radio and the navigation system, then enter the XM radio channel presets.
- Set the clock.
- Verify cruise control, audio remote, navigation voice control, and turn signal switch operation.
- Make sure the steering wheel is centered.

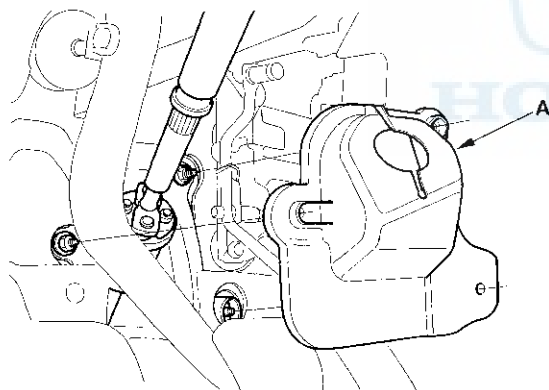


Steering Column Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

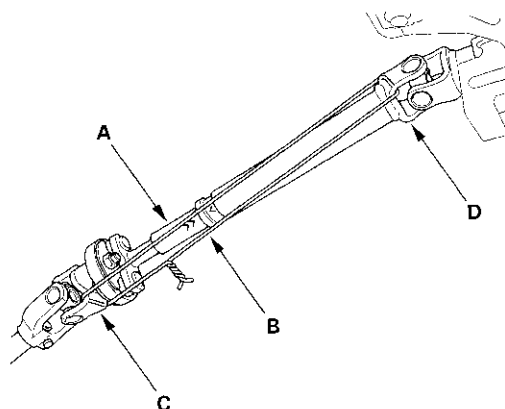
Removal

1. Make sure you have the anti-theft codes for the radio and the navigation system (if equipped), then write down the XM radio channel presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Remove the driver's airbag assembly and the steering wheel (see page 17-6).
4. Remove the column covers.
5. Remove the driver's dashboard lower cover (see page 20-67).
6. Remove the driver's under cover (see page 20-67).
7. Remove the steering joint cover A.



8. Release the tilt/telescopic lever, and adjust the steering column to full tilt up position, and to the full telescopic in position.
9. Tighten the tilt/telescopic lever.

10. Hold the slider shaft (A) on the column with a piece of wire (B) between the joint yoke (C) of the slider shaft and joint yoke (D) of the upper shaft to prevent the slider shaft from pulling out.



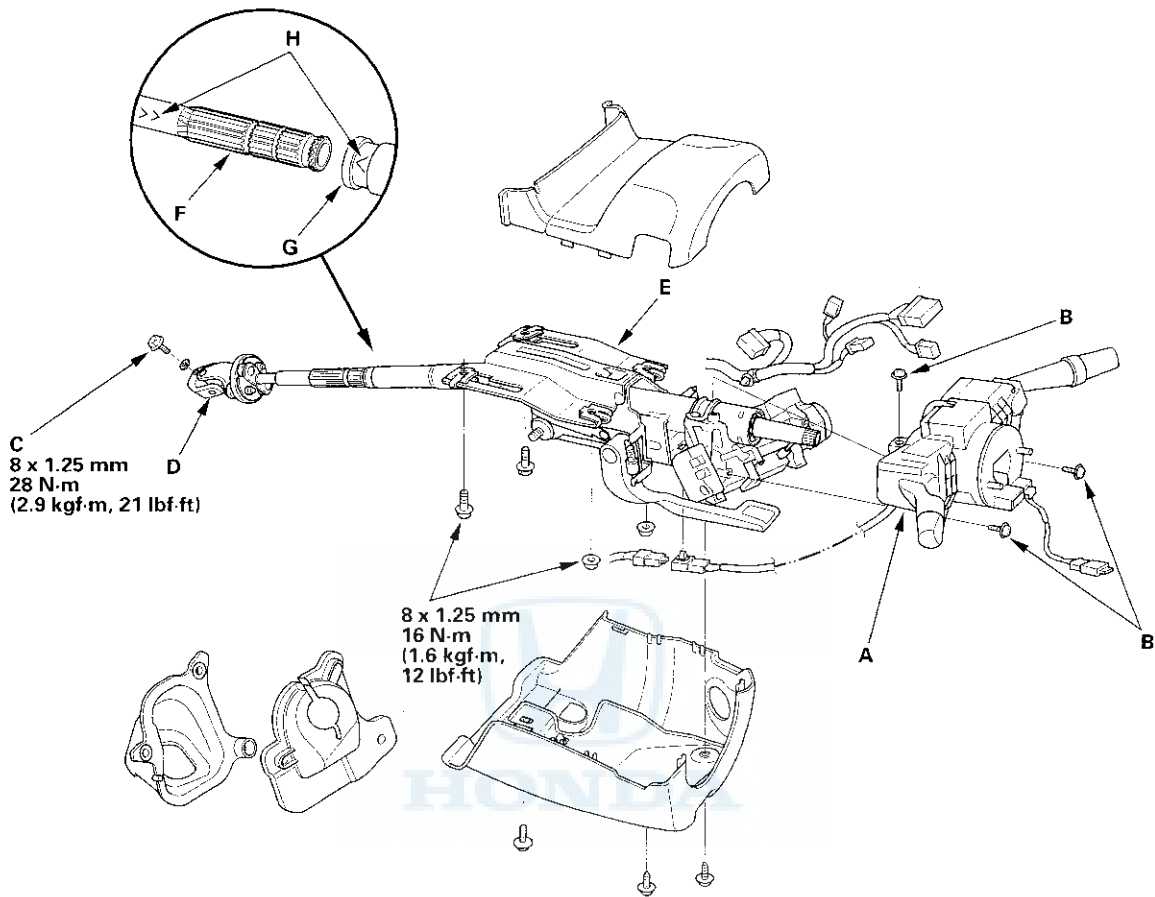
11. Release the tilt/telescopic lever, and adjust the steering column to the full telescopic out position, then tighten the tilt/telescopic lever.

(cont'd)

Steering

Steering Column Removal and Installation (cont'd)

12. Disconnect the wire harness connectors from the combination switch assembly (A).



13. Remove the combination switch assembly from the steering column shaft by removing the screws (B).
14. Disconnect the connectors from the ignition switch, and release the wire harness clips from the steering column.
15. Remove the steering joint bolt (C), then disconnect the steering joint (D) from the pinion shaft.
16. Remove the steering column (E) by removing the attaching nuts and bolts. If the lower slide shaft (F) is removed, slip it into the upper shaft (G) by aligning the stamped marks (H).



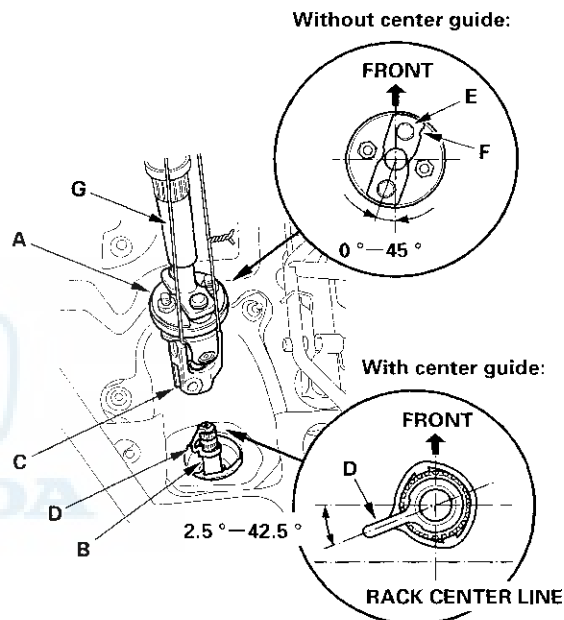
Installation

1. Install the steering column in the reverse order of removal, and note these items:
 - Make sure the wires are not caught or pinched by any parts.
 - Take care not to let the sliding capsules fall out of position during column installation.
2. Steering joint connection; center the steering rack within its stroke.

3. Install the steering column joint (A) on to the pinion shaft (B).

NOTE:

- Pinion shaft with center guide; install the steering joint by aligning the slit (C) of the steering joint with the tab (D) of the center guide. Position the angle of the center guide as shown if necessary.
- Pinion shaft without center guide; position the steering column joint so the bolt (E) near to the notch (F) is within the range shown.



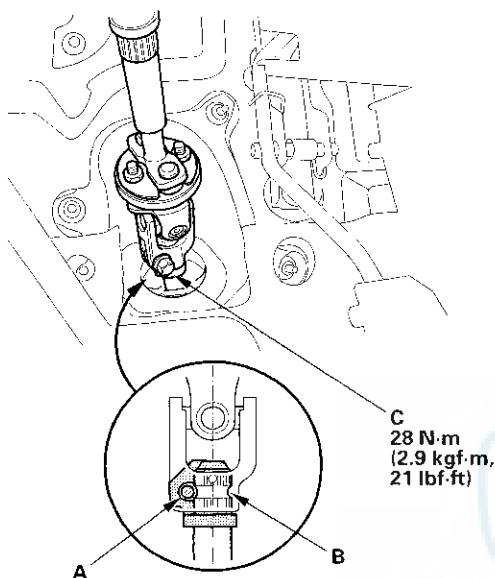
4. With the rack in the straight ahead driving position, cut the wire (G) and slip the lower end of the steering joint on to the pinion shaft.

(cont'd)

Steering

Steering Column Removal and Installation (cont'd)

5. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Be sure that the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure that the steering joint is fully seated. Tighten the steering joint bolt to the specified torque.



6. Make sure the all connectors are properly connected, then install the steering wheel (see page 17-8).

7. Reconnect the negative cable to the battery and do the following items:

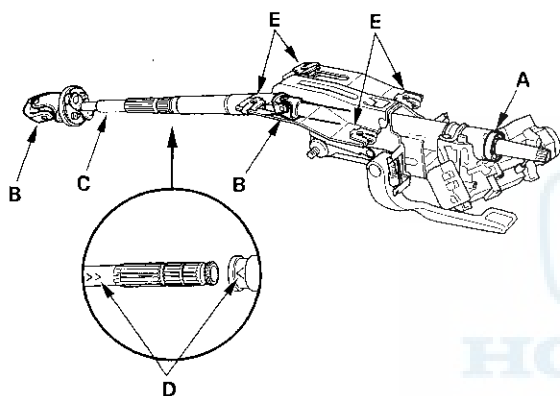
NOTE: If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

- Power window control unit reset procedure (see page 22-200).
- Enter the anti-theft codes for the radio and the navigation system, then enter the XM radio channel presets.
- Set the clock.
- Verify cruise control, audio remove, navigation voice control, and turn signal switch operation.
- Make sure the steering wheel is centered.



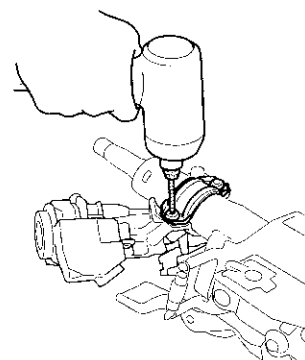
Steering Column/Tilt/Telescopic Inspection

- Check the steering column ball bearing (A) and the steering joint bearings (B) for play and proper movement. If any bearing is noisy or has excessive play, replace the steering column as an assembly.
- Check the lower slide shaft (C) for smooth movement in and out. If the lower slide shaft is removed, slip it into the upper shaft by aligning the stamped marks (D). If it sticks or binds, replace the steering column as an assembly.
- Check the sliding capsules (E) for distortion or breakage. If there is distortion or breakage, replace the steering column as an assembly.
- Check the tilt mechanism and telescopic mechanism for movement and damage.

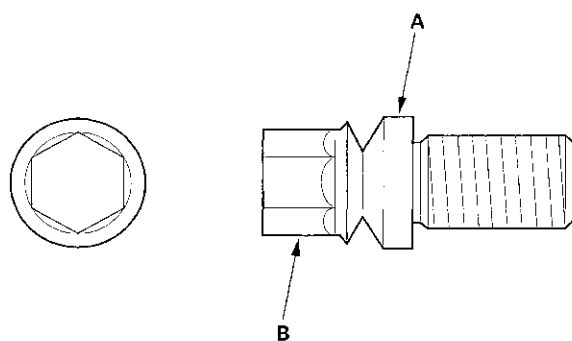


Steering Lock Replacement

1. Remove the steering column (see page 17-9).
2. Center-punch each of the two shear bolts, and drill their heads off with a 5 mm (3/16 in.) drill bit. Be careful not to damage the switch body when removing the shear bolts.



3. Remove the shear bolts from the switch body.
4. Install the switch body without the key inserted.
5. Loosely tighten the new shear bolts.
6. Insert the ignition key, and check for proper operation of the steering wheel lock and that the ignition key turns freely.
7. Tighten the shear bolts (A) until the hex heads (B) twist off.



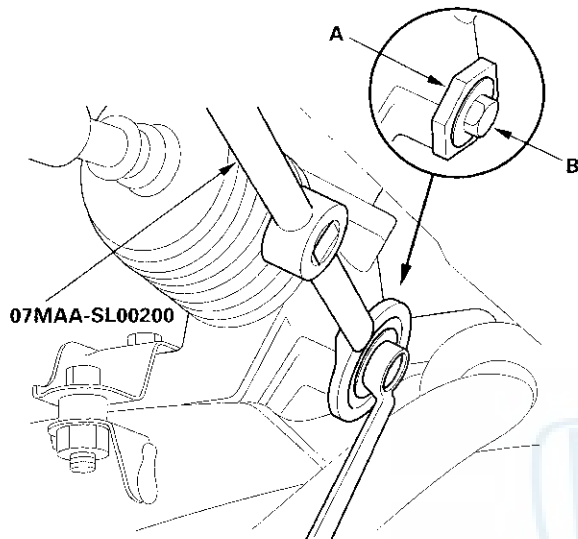
Steering

Rack Guide Adjustment

Special Tools Required

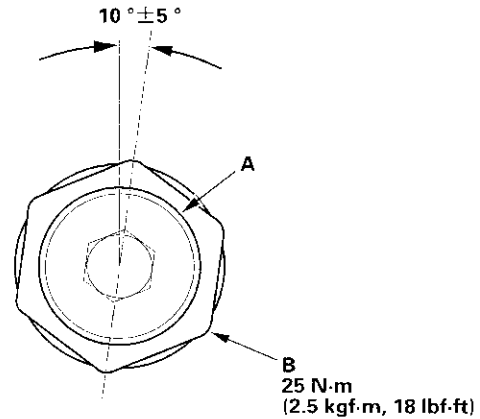
Locknut wrench, 43 mm 07MAA-SL00200

1. Set the wheels in the straight ahead position.
2. Loosen the rack guide screw locknut (A) with the special tool, then remove the rack guide screw (B).



3. Loosely install the rack guide screw on the steering gearbox.

4. Tighten the rack guide screw (A) to 25 N·m (2.5 kgf·m, 18 lbf·ft), then loosen it.



5. Retighten the rack guide screw to 5.9 N·m (0.6 kgf·m, 4 lbf·ft), then back it off to the specified angle.

Specified return angle: $10^{\circ} \pm 5^{\circ}$

6. Hold the rack guide screw stationary with a wrench, and tighten the locknut by hand until it's fully seated.
7. Install the special tool on the locknut (B), and hold the rack guide screw stationary with a wrench. Tighten the locknut an additional 30° with the special tool.
8. Check for unusual steering effort through the complete turning range.
9. Check the steering wheel rotation play (see page 17-4) and the power assist (see page 17-4).

Navigation Tools: Click on the “Table of Contents”
below, or use the Bookmarks to the left.

Steering

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Electrical Power Steering (EPS) Components

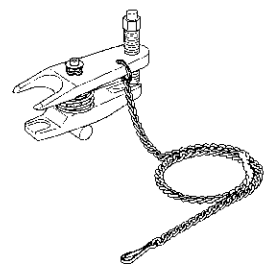
Special Tools	17-16
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EPS Components

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
②	07965-SA50500	Front Hub Dis/Assembly Tool	1



①

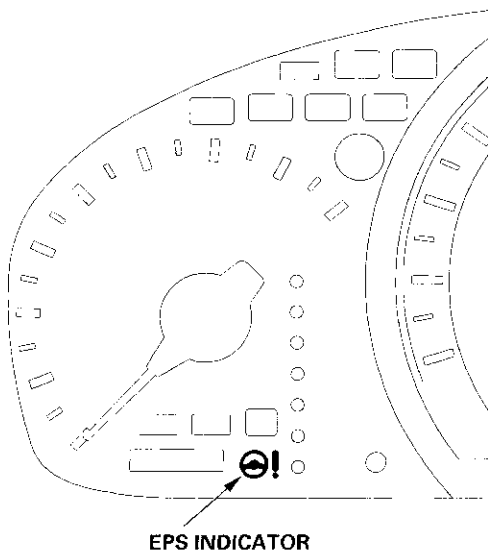
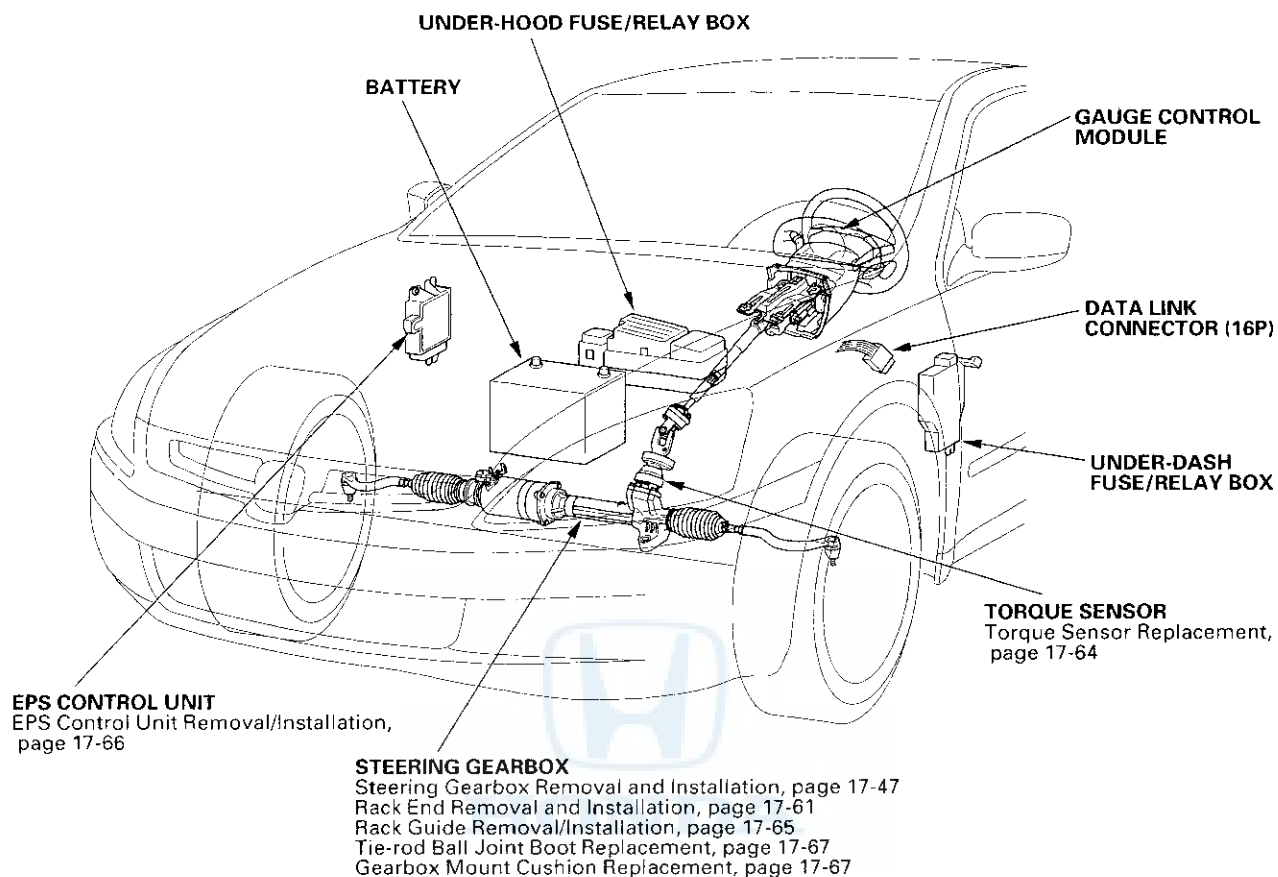


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Component Location Index



EPS Components

General Troubleshooting Information

EPS Indicator

Under normal conditions, the EPS indicator comes on when the ignition switch is turned to the ON (II) position, then goes off after the engine is started. This indicates that the LED and its circuit are operating correctly. If there is a failure in the system after the engine is started, the EPS indicator will stay on, and the power assist is turned off.

When EPS indicator comes on, the control unit memorizes the DTC. In this case, the control unit will not activate the EPS system after the engine starts again, but it keeps the EPS indicator on.

When DTC 11, 12 or 13 is stored in the control unit, the EPS indicator will stay on until the DTC is erased. When a problem is detected and the EPS indicator comes on, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal. Even though the system is operating normally, the EPS indicator will come on under the following conditions:

- The vehicle speed decreases abruptly from 12 mph (20 km/h) or more (by applying brake), and it is less than 1 mph (1 km/h) and engine speed is 2,000 rpm or above for 5 seconds (continuously) after the abrupt deceleration.
- While turning the steering wheel with the vehicle speed of 1 mph (1 km/h) or less for 20 seconds, and the engine speed is 2,000 rpm or above for at least 10 seconds.
- When the engine speed is 500 rpm or less, and the vehicle is travelling at a speed of 6 mph (10 km/h) or more for about 3 seconds.

To determine the actual cause of the problem, question the customer about the conditions during which the problem occurred, taking the above conditions into consideration.

Diagnostic Trouble Code (DTC)

- If the CPU cannot be activated, or it fails, the EPS indicator comes on, but the DTC is not memorized.
- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the most recent DTC is written over the prior DTC, therefore only one occurrence is memorized.
- The lowest DTC is indicated first. The DTCs are indicated in ascending order, not in the order that they occurred.
- The DTCs are memorized in the EEPROM (non-volatile memory) therefore the memorized DTCs cannot be erased by disconnecting the battery. Perform the specified procedures to clear DTCs.

Self-diagnosis

Self-diagnosis can be classified into two categories:

- Initial diagnosis: Performed right after the engine starts and until the EPS indicator goes off.
- Regular diagnosis: Performed right after the initial diagnosis until the ignition switch is turned OFF.

The EPS control unit performs the following functions when a problem is detected by self-diagnosis:

1. Turns on the EPS indicator.
2. Memorizes the DTC.
3. Stops power assist and manual steering operation resumes.

NOTE:

- When DTC 23 (a problem with the circuit for engine speed signal) is detected, the power assist will return to normal when the vehicle speed is 6 mph (10 km/h) or above.
- For DTCs 21, 22 and 23 the EPS indicator will go off automatically, and the system returns to normal.



Restriction on Power Assist Operation

Repeated extreme steering force, such as turning the steering wheel continuously back-and-forth with the vehicle stopped, causes an increase of power consumption in the EPS motor. The increase of electric current causes the motor to heat up. Because this heat adversely affects the system, the control unit monitors the electric current of the motor.

When the control unit detects heat build-up in the motor, it reduces the electric current to the motor gradually to protect the system, and it restricts the power assist operation. The EPS indicator does not come on during this function.

When steering torque is not applied to the steering wheel, or when the ignition is turned off and the motor cools, the control unit will restore the power assist gradually until it's fully restored (after about 8 minutes).

Torque Sensor Neutral Position

The EPS control unit stores the torque sensor neutral position in the EEPROM. Memorize the torque sensor neutral position whenever the gearbox is removed and installed, or when the torque sensor or EPS control unit is replaced.

NOTE: The torque sensor neutral position is not effected when erasing the DTCs.

How to Troubleshoot DTCs

The troubleshooting flowchart procedures assume that the cause of the problem is still present and the EPS indicator is still on. Following the flowchart when the EPS indicator does not come on can result in incorrect diagnosis.

The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the EPS indicator came on, such as during EPS control, after EPS control, when the vehicle was at a certain speed, etc.
2. When the EPS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor terminal contact, etc., in the affected circuit before you start troubleshooting.
3. After troubleshooting, clear the DTC and test-drive the vehicle. Be sure the EPS indicator does not come on.

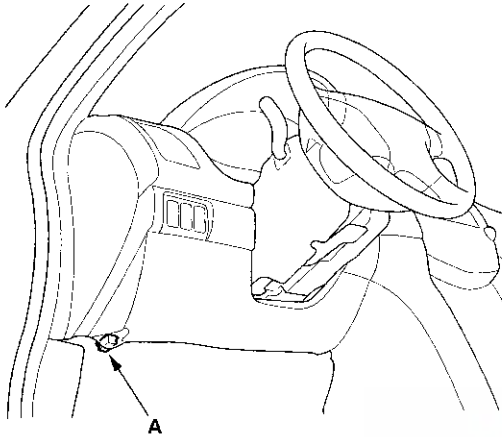
(cont'd)

EPS Components

General Troubleshooting Information (cont'd)

How to Retrieve DTCs

1. With the ignition switch OFF, connect the HDS (Honda diagnostic system) to the data link connector (DLC) (A) located under the dash on the driver's side of the vehicle.

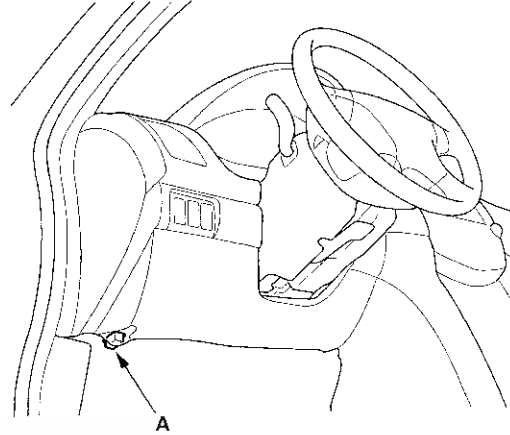


2. Turn the ignition ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC troubleshooting.

NOTE: See the HDS Help menu for specific instructions.

How to Clear DTCs

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) located under the dash on the driver's side of the vehicle.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

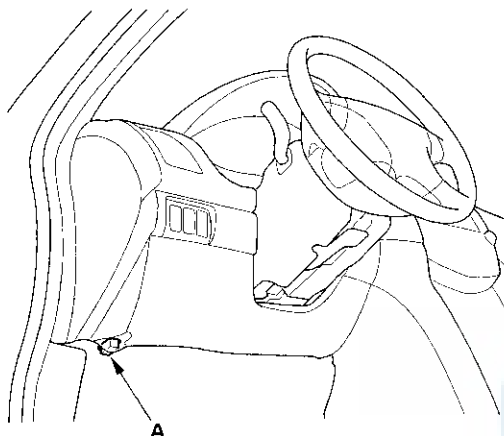
NOTE: See the HDS Help menu for specific instructions.



Memorizing the Torque Sensor Neutral Position

The torque sensor neutral position must be memorized whenever the gearbox is removed or installed, or when the torque sensor or EPS control unit is replaced. Note that the torque sensor neutral position is not affected when erasing the DTC.

1. With the ignition switch OFF, connect the HDS to the data link connector (DLC) (A) located under the dash on the driver's side of the vehicle.



2. Turn the ignition switch ON (II), then memorize the torque sensor neutral position by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

EPS Components

DTC Troubleshooting Index

DTC	Detection Item	Note
1	Power relay stuck ON	(see page 17-29)
2	Fail-safe relay stuck ON	(see page 17-29)
3	Lower FET (Motor drive transistor) stuck ON	(see page 17-29)
4	Upper FET (Motor drive transistor) stuck ON	(see page 17-30)
5	Open in the motor wire harness	(see page 17-31)
11	Difference of high voltage and lower voltage on the torque sensor	(see page 17-33)
12	A problem with voltage for torque sensor PVF	(see page 17-35)
13	A problem with average of voltage for torque sensor VS1 and VS2	(see page 17-33)
14	Open or short to body ground in the torque sensor circuit	(see page 17-35)
	A problem with the torque sensor initial	(see page 17-35)
19	No writing the torque sensor neutral position.	(see page 17-37)
21	A problem with the voltage for IG1	(see page 17-37)
22	Excessive change of the vehicle speed sensor signal	(see page 17-38)
	A problem with average for vehicle speed and engine speed	(see page 17-38)
23	A problem with the circuit for engine speed signal	(see page 17-38)
27	A problem with the ATP NP signal input	(see page 17-40)
30	A problem with the submicrocomputer	(see page 17-41)
31	A problem with the initial current sensor offset	(see page 17-41)
32	A problem with the main current sensor offset	(see page 17-41)
33	A problem with the current sensor	(see page 17-41)
34	A problem with the main microcomputer	(see page 17-41)
35	A problem with the submicrocomputer	(see page 17-41)
36	A problem with the change of the motor voltage	(see page 17-41)
37	A problem with the motor voltage	(see page 17-42)
38	A problem with the thermistor signal	(see page 17-41)
50	A problem with the CPU in the EPS control unit	(see page 17-44)
51		



Symptom Troubleshooting Index

Symptom	Diagnostic procedure
EPS indicator does not come on	EPS Indicator Circuit Troubleshooting (see page 17-44)
EPS indicator does not go off, and no DTCs are stored	EPS Indicator Circuit Troubleshooting (see page 17-44)
EPS indicator is not on, no DTCs are stored, but there is no power assist	<ol style="list-style-type: none">1. Check the motor + (RED) wire between the EPS control unit and the motor for a short to ground. Repair as needed.2. If the motor + (RED) wire is OK, replace the steering gearbox (short in the motor).3. Check the power and ground connections at the EPS control unit.

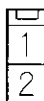


EPS Components

System Description

EPS Control Unit Inputs and Outputs for Connector A (2P)

EPS CONTROL UNIT CONNECTOR A (2P)

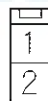


Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions (Ignition Switch ON (II))	Voltage
1	BLU	M— (Motor minus)	Drives the actuator motor	1—GND	—	—
2	RED	M+ (Motor plus)	Drives the actuator motor	2—GND	—	—

EPS Control Unit Inputs and Outputs for Connector B (2P)

EPS CONTROL UNIT CONNECTOR B (2P)



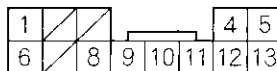
Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions (Ignition Switch ON (II))	Voltage
1	WHT	+B (Plus battery)	Power source for the actuator motor	1—GND	At all times	Battery voltage
2	BLK	PG (Power ground)	Ground for the actuator motor	2—GND	—	—



EPS Control Unit Inputs and Outputs for Connector C (13P)

EPS CONTROL UNIT CONNECTOR C (13P)

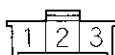


Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Measurement		
				Terminals	Conditions (Ignition Switch ON (II))	Voltage
1	BLK	GND2 (Ground 2)	Ground for the EPS control unit	—	—	—
4	BLU	K-LINE (Data link connector)	Communicates with HDS	4—GND	HDS not connected	5 V
5	BLK	GND1 (Ground 1)	Ground for the EPS control unit	—	—	—
6	YEL	IG1 (Ignition 1)	Power source for activating the system	6—GND	Ignition switch ON (II) Ignition switch OFF	Battery voltage 0 V
8	RED/YEL	ATP NP	Detects A/T gear position switch N or P position signal	8—GND	In N or P position In except N or P position	0 V Battery voltage
9	BLU/RED	NEP (Engine pulse)	Detects tachometer signal	9—GND	Start the engine	3 V or less—6 V or more
10	BLU	VSP (Vehicle speed pulse)	Detects vehicle speed signal from the speedometer	10—GND	Turn the front wheel	Battery voltage
11	YEL	WLP (Warning)	Drives the EPS indicator	11—GND	Start the engine Ignition switch OFF	Battery voltage 0 V
12	BRN	SCS (Service check signal)	Detects service check connector signal	12—GND	SCS not grounded	Battery voltage
13	BLU/YEL	PSW (Power steering signal)	Provides idle speed-up signal to the PCM	13—GND	Start the engine and turn the steering wheel to full lock	Battery voltage for 1 second

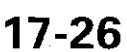
EPS Control Unit Inputs and Outputs for Connector D (3P)

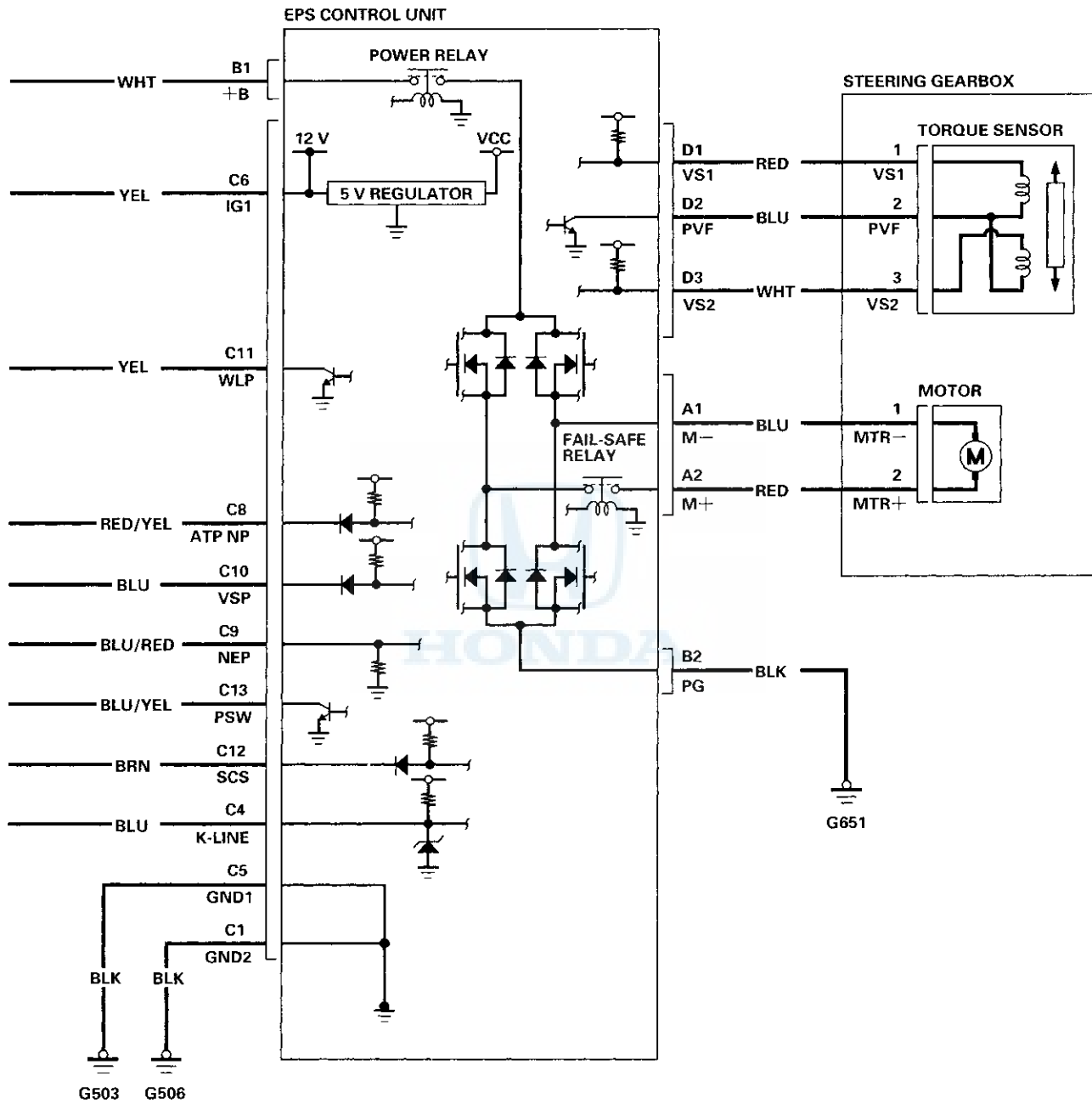
EPS CONTROL UNIT CONNECTOR D (3P)



Wire side of female terminals

Terminal number	Wire color	Terminal sign (Terminal name)	Description	Terminals	Measurement	
					Conditions (Ignition Switch ON (II))	Voltage
1	RED	VS1 (voltage sensor 1)	Detects torque sensor signal	—	—	—
2	BLU	PVF (Voltage fade)	Drives the torque sensor	—	—	—
3	WHT	VS2 (Voltage sensor 2)	Detects torque sensor signal	—	—	—



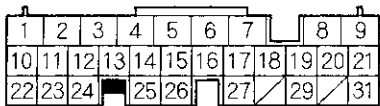


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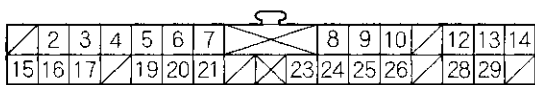
EPS Components

Circuit Diagram (cont'd)

PCM CONNECTOR A (31P)



GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

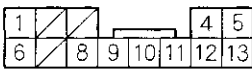
EPS CONTROL UNIT
CONNECTOR A (2P)



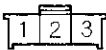
EPS CONTROL UNIT
CONNECTOR B (2P)



EPS CONTROL UNIT
CONNECTOR C (13P)



EPS CONTROL UNIT
CONNECTOR D (3P)

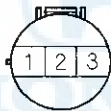


Wire side of female terminals

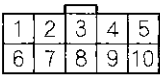
MOTOR 2P
CONNECTOR



TORQUE SENSOR 3P CONNECTOR



TRANSMISSION RANGE
SWITCH 10P CONNECTOR



Wire side of female terminals

DATA LINK CONNECTOR (16P)



Terminal side of female terminals



DTC Troubleshooting

DTC 1: Power Relay Stuck ON

DTC 2: Fail-safe Relay Stuck ON

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Wait at least 10 seconds.

Does the EPS indicator come on and DTC 1 or DTC 2 indicated?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

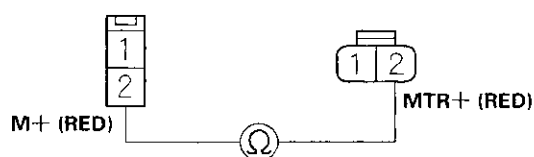
NO—The system is OK at this time. ■

DTC 3: Lower FET Stuck ON

1. Disconnect EPS control unit connector A (2P) and the motor 2P connector.
2. Check for continuity between EPS control unit connector A (2P) terminal No. 2 and motor 2P connector terminal No. 2.

EPS CONTROL UNIT
CONNECTOR A (2P)

MOTOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

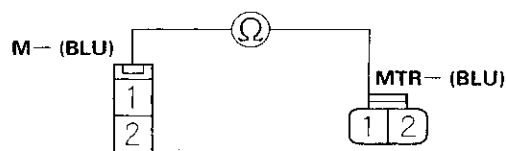
YES—Go to step 3.

NO—Repair open in the wire between EPS control unit and motor. ■

3. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and motor 2P connector terminal No. 1.

EPS CONTROL UNIT
CONNECTOR A (2P)

MOTOR 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 4.

NO—Repair open in the wire between EPS control unit and motor. ■

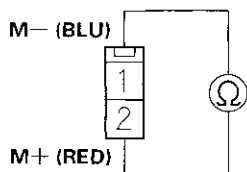
(cont'd)

EPS Components

DTC Troubleshooting (cont'd)

4. Check for continuity between EPS control unit connector A (2P) terminals No. 2 and No. 1.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the EPS control unit terminals A1 and A2. ■

NO—Check for loose terminals and poor connections at the motor and the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

DTC 4: Upper FET Stuck ON

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Turn the steering wheel from lock-to-lock several times, and wait 10 seconds or more.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Stop the engine, and verify the DTC.

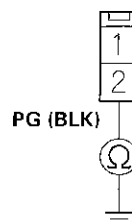
Is DTC 4 indicated?

YES—Go to step 6.

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

6. Turn the ignition switch OFF, then disconnect EPS control unit connector B (2P).
7. Check for continuity between EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Repair open in the wire between the EPS control unit and the body ground (G651). ■



DTC 5: Open In The Motor Wire Harness

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Turn the steering wheel to right or left, and wait 10 seconds or more.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Stop the engine, and verify the DTC.

Is DTC 5 indicated?

YES—Go to step 6.

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

6. Turn the ignition switch OFF.
7. Check the No. 22 (EPS) (70 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

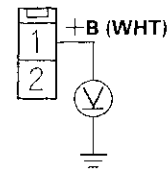
YES—Go to step 8.

NO—Replace the fuse and recheck. ■

8. Disconnect EPS control unit connector B (2P).

9. Measure the voltage between EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

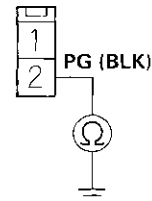
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the No. 22 (EPS) (70 A) fuse and EPS control unit. ■

10. Check for continuity between EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the EPS control unit and the body ground (G651). ■

11. Disconnect EPS control unit connector A (2P) and the motor 2P connector.

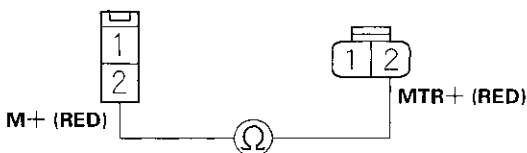
(cont'd)

EPS Components

DTC Troubleshooting (cont'd)

12. Check for continuity between EPS control unit connector A (2P) terminal No. 2 and motor 2P connector terminal No. 2.

EPS CONTROL UNIT CONNECTOR A (2P) MOTOR 2P CONNECTOR



Wire side of female terminals

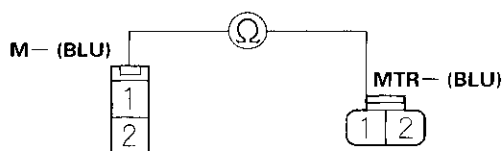
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between EPS control unit and motor. ■

13. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and motor 2P connector terminal No. 1.

EPS CONTROL UNIT CONNECTOR A (2P) MOTOR 2P CONNECTOR



Wire side of female terminals

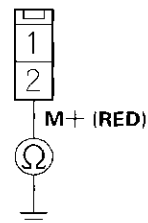
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between EPS control unit and motor. ■

14. Check for continuity between EPS control unit connector A (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

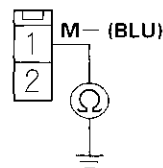
Is there continuity?

YES—Repair short to ground in the wire between EPS control unit and motor. ■

NO—Go to step 15.

15. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between EPS control unit and motor. ■

NO—Check for loose terminals and poor connections at the motor and the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■



DTC 11, 13: Torque Sensor

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.

Does the EPS indicator come on?

YES—Go to step 4.

NO—The system is OK at this time. ■

4. Stop the engine, and verify the DTC.

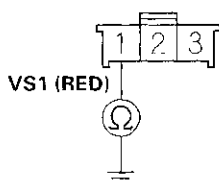
Is DTC 11 or 13 indicated?

YES—Go to step 5.

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

5. Turn the ignition switch OFF, then disconnect EPS control unit connector D (3P).
6. Check for continuity between EPS control unit connector D (3P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR D (3P)



Wire side of female terminals

Is there continuity?

YES—Go to step 7.

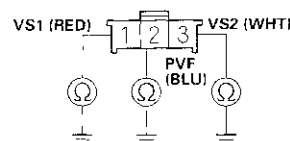
NO—Go to step 10.

7. Disconnect the torque sensor 3P connector.

8. Check for continuity between the appropriate EPS control unit connector D (3P) terminal and body ground (see table).

Terminal name	EPS control unit connector D terminal No.
VS1	1
PVF	2
VS2	3

EPS CONTROL UNIT CONNECTOR D (3P)



Wire side of female terminals

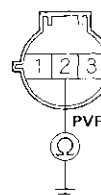
Is there continuity?

YES—Repair short to ground in the appropriate wire between the torque sensor and the EPS control unit. ■

NO—Go to step 9.

9. On the sensor side, check for continuity between the torque sensor 3P connector terminal No. 2 and body ground.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the torque sensor (see page 17-64). ■

NO—The system is OK at this time. Check for loose terminals and poor connections at the torque sensor and the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

(cont'd)

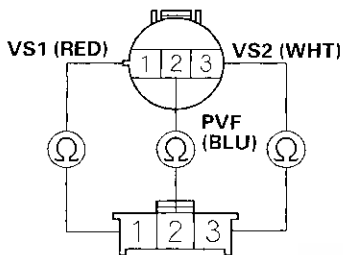
EPS Components

DTC Troubleshooting (cont'd)

10. Check for continuity between the appropriate EPS control unit connector D (3P) terminal and torque sensor 3P connector terminal (see table).

Terminal name	Torque Sensor terminal No.	EPS control unit D terminal No.
VS1	1	1
PVF	2	2
VS2	3	3

TORQUE SENSOR 3P CONNECTOR



EPS CONTROL UNIT CONNECTOR D (3P)

Wire side of female terminals

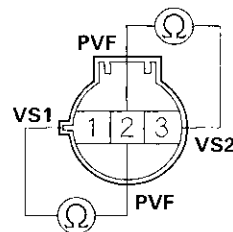
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the appropriate torque sensor and EPS control unit. ■

11. On the sensor side, measure resistance between torque sensor 3P connector terminals No. 1 and No. 2, and between terminals No. 2 and No. 3.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is the resistance between 12 – 14 Ω (at 68 °F (20 °C))?

YES—The system is OK at this time. Check for loose terminals and poor connections at the torque sensor and the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Replace the torque sensor (see page 17-64). ■



DTC 12: Torque Sensor PVF

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Wait at least 10 seconds.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Stop the engine, and verify the DTC.

Is DTC 12 indicated?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

DTC 14: Torque Sensor (Resistance)

DTC 14: Torque Sensor Initial

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Turn the steering wheel fully to the left, and hold it in that position for 10 seconds or more.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Stop the engine, and verify the DTC.

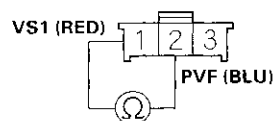
Is DTC 14 indicated?

YES—Go to step 6.

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

6. Turn the ignition switch OFF, then disconnect the torque sensor 3P connector and EPS control unit connector D (3P).
7. Check for continuity between the EPS control unit connector D (3P) terminals No. 1 and No. 2.

EPS CONTROL UNIT CONNECTOR D (3P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the EPS control unit terminals D1 and D2. ■

NO—Go to step 8.

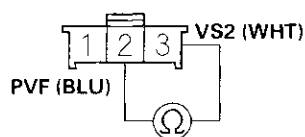
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EPS Components

DTC Troubleshooting (cont'd)

8. Check for continuity between EPS control unit connector D (3P) terminals No. 2 and No. 3.

EPS CONTROL UNIT CONNECTOR D (3P)



Wire side of female terminals

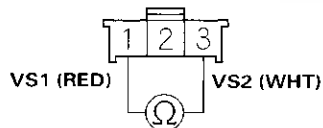
Is there continuity?

YES—Repair short in the wire between the EPS control unit terminals D2 and D3. ■

NO—Go to step 9.

9. Check for continuity between EPS control unit connector D (3P) terminals No. 1 and No. 3.

EPS CONTROL UNIT CONNECTOR D (3P)



Wire side of female terminals

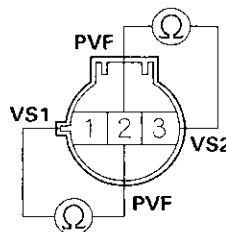
Is there continuity?

YES—Repair short in the wire between the EPS control unit terminals D1 and D3. ■

NO—Go to step 10.

10. On the sensor side, measure resistance between torque sensor 3P connector terminals No. 1 and No. 2, and between terminals No. 2 and No. 3.

TORQUE SENSOR 3P CONNECTOR



Terminal side of male terminals

Is the resistance between 12–14 Ω (at 68 °F (20 °C))?

YES—The system is OK at this time. Check for loose terminals and poor connections at the torque sensor and the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Replace the torque sensor (see page 17-64). ■



DTC 19: No Writing the Torque Sensor Neutral Position

The EPS control unit stores the torque sensor neutral position in the EEPROM. Memorize the torque sensor neutral position whenever the gearbox is removed and installed, or when the torque sensor or EPS control unit is replaced.

NOTE: The torque sensor neutral position is not effected when erasing the DTCs.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.

Does the EPS indicator come on?

YES—Go to step 4.

NO—The system is OK at this time. ■

4. Stop the engine, and verify the DTC.

Is DTC 19 indicated?

YES—Do memorizing the torque sensor neutral position (see page 17-21). ■

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

DTC 21: Voltage For IG1

1. Check the No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

NOTE: All indicators except the charging system indicator will not come on when the No. 21 (7.5 A) fuse is blown.

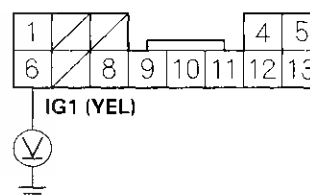
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse and recheck. ■

2. Disconnect EPS control unit connector C (13P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between EPS control unit connector C (13P) terminal No. 6 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Repair open in the wire between the No. 21 (7.5 A) fuse in the under-dash fuse/relay box and EPS control unit. If the wire is OK, check for an open circuit inside the under-dash fuse/relay box. ■

EPS Components

DTC Troubleshooting (cont'd)

DTC 22: Vehicle Speed Signal

DTC 23: Engine Speed Signal

NOTE:

- If the MIL indicator stays on, troubleshoot the PGM-FI system first.
- The vehicle speed decreases abruptly from 12 mph (20 km/h) or more (by applying brake), and it is less than 1 mph (1 km/h) and engine speed is 2,000 rpm or above for 5 seconds (continuously) after the abrupt deceleration.
- While turning the steering wheel with the vehicle speed of 1 mph (1 km/h) or less for 20 seconds, and the engine speed is 2,000 rpm or above for at least 10 seconds.
- When the engine speed is 500 rpm or less, and the vehicle is travelling at a speed of 6 mph (10 km/h) or more for about 3 seconds.

1. Start the engine and check the tachometer.

Is the tachometer working correctly?

YES—Go to step 2.

NO—Perform the gauge self-diagnostic function (see page 22-226). If the tachometer is OK, go to step 2.

2. Turn the ignition switch OFF, and restart the engine.
3. Test-drive the vehicle, and watch the EPS indicator.

Does the EPS indicator come on?

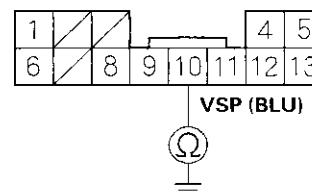
YES—Go to step 4.

NO—The system is OK at this time. ■

4. Turn the ignition switch OFF, then disconnect the EPS control unit connector C (13P) and PCM connector A (31P).

5. Check for continuity between EPS control unit connector C (13P) terminal No. 10 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Is there continuity?

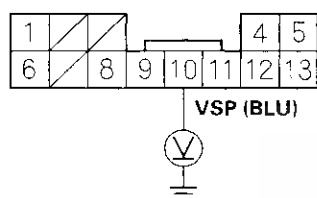
YES—Repair short to ground in the wire between PCM and EPS control unit. ■

NO—Go to step 6.



6. Connect the PCM connector A (31P).
7. Block the rear wheels and raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
8. Turn the ignition switch ON (II).
9. Block the right front wheel, and slowly rotate the left front wheel and measure the voltage between EPS control unit connector C (13P) terminal No. 10 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Does the voltage pulse 0–12 V?

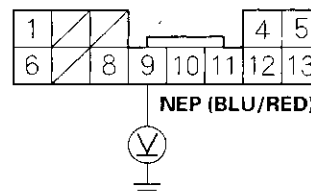
YES—Go to step 10.

NO—Repair open in the wire between the EPS control unit and the PCM. ■

10. Turn the ignition switch OFF.

11. Start the engine, and let it idle.
12. Measure the voltage between the EPS control unit connector C (13P) terminal No. 9 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Is there voltage pulses 3 V or less—6 V or more?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Check for loose terminals or poor connections at the PCM. If necessary, substitute a known-good PCM and recheck. ■

EPS Components

DTC Troubleshooting (cont'd)

DTC 27: ATP-NP Signal Input

NOTE: If the DTC 22 is stored at the same time as DTC 27, do the DTC 22 troubleshooting first, then recheck for DTC 27.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS..
3. Start the engine.
4. Test-drive the vehicle for more than 60 seconds, vehicle speed at 13 mph (20 km/h) or more.
5. Stop the engine, and verify the DTC.

Is the DTC 27 indicated?

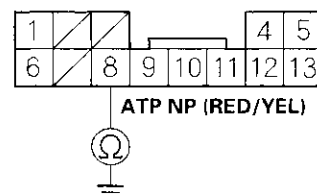
YES—Go to step 6.

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

6. Turn the ignition switch OFF, then disconnect EPS connector C (13P) and transmission range switch 10P connector.

7. Check for continuity between EPS control unit connector C (13P) terminal No. 8 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

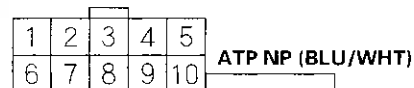
Is there continuity?

YES—Repair short to ground in the wire between the EPS control unit and the transmission range switch. ■

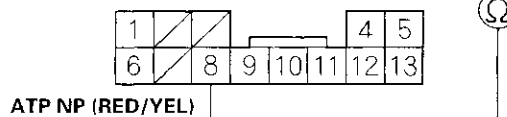
NO—Go to step 8.

8. Check for continuity between transmission range switch 10P connector terminal No. 10 and EPS control unit connector C (13P) terminal No. 8.

TRANSMISSION RANGE SWITCH 10P CONNECTOR



EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Is there continuity?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Repair an open in the wire between the EPS control unit and transmission range switch. ■



DTC 30, 31, 32, 33, 34, 35, 38: EPS Control Unit Internal Circuit

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Wait at least 10 seconds.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Stop the engine, and verify the DTC.

Is DTC 30, 31, 32, 33, 34, 35 or 38 indicated?

YES—Check for loose terminals and poor connections at EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

DTC 36: Change of the Motor Voltage

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Turn the steering wheel to right or left, and wait 10 seconds or more.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Stop the engine, and verify the DTC.

Is DTC 36 indicated?

YES—Go to step 6.

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

6. Turn the ignition switch OFF.
7. Check the No. 22 (EPS) (70 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Go to step 8.

NO—Replace the fuse and recheck. ■

8. Disconnect EPS control unit connector B (2P).

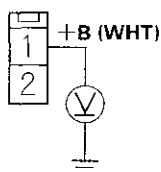
(cont'd)

EPS Components

DTC Troubleshooting (cont'd)

9. Measure the voltage between EPS control unit connector B (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals and poor connections at EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Repair open in the wire between No. 22 (EPS) (70 A) fuse in the under-hood fuse/relay box and EPS control unit. ■

DTC 37: Motor Voltage

1. Check the No. 22 (EPS) (70 A) fuse in the under-hood fuse/relay box.

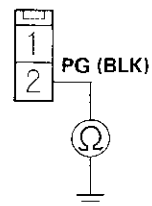
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse and recheck. ■

2. Check for continuity between EPS control unit connector B (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR B (2P)



Wire side of female terminals

Is there continuity?

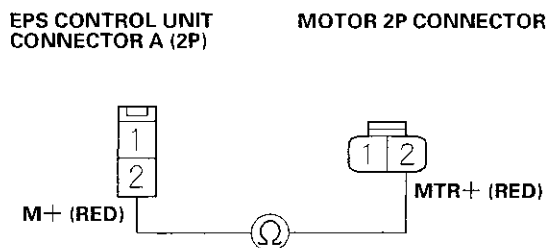
YES—Go to step 3.

NO—Repair open in the wire between the EPS control unit and body ground (G651). ■

3. Disconnect EPS control unit connector A (2P) and the motor 2P connector.



4. Check for continuity between EPS control unit connector A (2P) terminal No. 2 and motor 2P connector terminal No. 2.



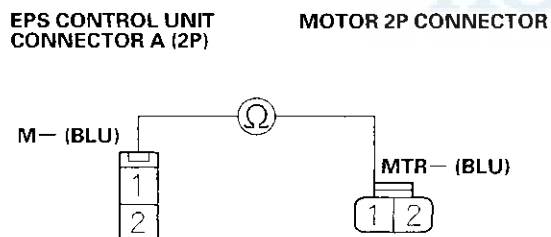
Wire side of female terminals

Is there continuity?

YES—Go to step 5.

NO—Repair open in the wire between EPS control unit and motor. ■

5. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and motor 2P connector terminal No. 1.



Wire side of female terminals

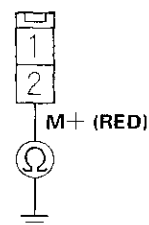
Is there continuity?

YES—Go to step 6.

NO—Repair open in the wire between EPS control unit and motor. ■

6. Check for continuity between EPS control unit connector A (2P) terminal No. 2 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

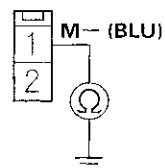
Is there continuity?

YES—Repair short to ground in the wire between EPS control unit and motor. ■

NO—Go to step 7.

7. Check for continuity between EPS control unit connector A (2P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR A (2P)



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between EPS control unit and motor. ■

NO—Check for loose terminals and poor connections at the motor and the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

EPS Components

DTC Troubleshooting (cont'd)

DTC 50, 51: Central Processing Unit (CPU)

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Wait at least 10 seconds.

Does the EPS indicator come on?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Verify the DTC.

Is DTC 50 or 51 indicated?

YES—Check for loose terminals and poor connections at the EPS control unit. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Perform the appropriate troubleshooting for the DTC indicated. ■

EPS Indicator Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Start the engine, and watch the EPS indicator.

Does the EPS indicator come on?

YES—If the EPS indicator comes on and goes off, it's OK. If the EPS indicator stays on or blinks, go to step 11.

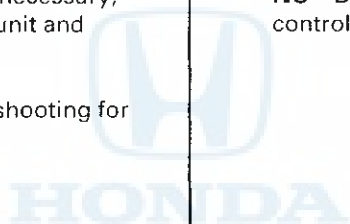
NO—Go to step 3.

3. Turn the ignition switch OFF, then ON (II) again, and watch the brake system indicator.

Does the brake system indicator come on?

YES—Go to step 4.

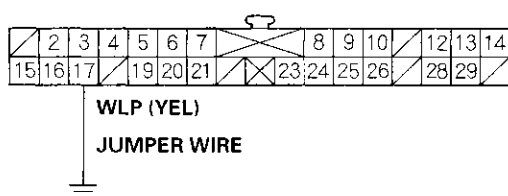
NO—Do the self-diagnosis function for gauge control module (see page 22-226). ■





4. Connect gauge control module connector (30P) terminal No. 17 to body ground with a jumper wire.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

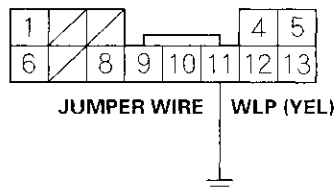
Does the EPS indicator come on?

YES—Go to step 5.

NO—Go to gauge control module troubleshooting (see page 22-226). ■

5. Turn the ignition switch OFF.
6. Disconnect EPS control unit connector C (13P).
7. Turn the ignition switch ON (II).
8. Connect EPS control unit connector C (13P) terminal No. 11 and body ground with a jumper wire.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

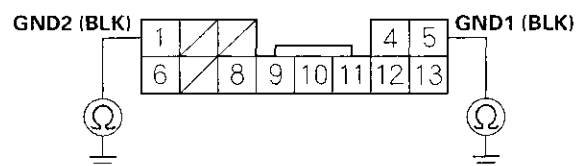
Does the EPS indicator come on?

YES—Go to step 9.

NO—Repair open in the wire between gauge control module and EPS control unit. ■

9. Check for continuity between body ground and EPS control unit connector C (13P) terminals No. 1 and No. 5 individually.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

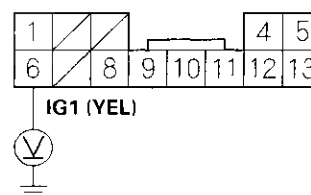
Is there continuity?

YES—Go to step 10.

NO—Repair open in the wires between EPS control unit and body ground (G503, G506). ■

10. Measure the voltage between EPS control unit connector C (13P) terminal No. 6 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Is there battery voltage?

YES—Check for loose terminals and poor connectors at the EPS control unit and gauge control module. If necessary, substitute a known-good EPS control unit and recheck. ■

NO—Repair open in the wire between No. 21 (7.5 A) fuse in the under-dash fuse/relay box and EPS control unit. ■

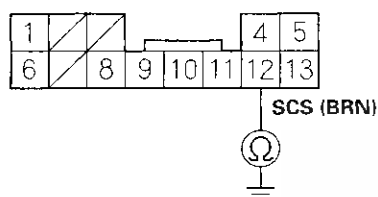
(cont'd)

EPS Components

EPS Indicator Circuit Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Disconnect EPS control unit connector C (13P).
13. Disconnect the connectors from the following units.
 - PCM A (31P)
 - ABS control unit
 - SRS unit
14. Check for continuity between EPS control unit connector C (13P) terminal No. 12 and body ground.

EPS CONTROL UNIT CONNECTOR C (13P)



Wire side of female terminals

Is there continuity?

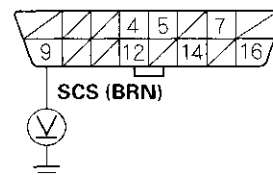
YES—Repair short to ground in the SCS circuit. ■

NO—Go to step 15.

15. Connect EPS control unit connector C (13P).
16. Turn the ignition switch ON (II).

17. Measure the voltage between data link connector (16P) terminal No. 9 and body ground.

DATA LINK CONNECTOR (16P)



Terminal side of female terminals

Is there about 6 V?

YES—Go to step 18.

NO—Repair open in the wire between data link connector (16P) and EPS control unit. ■

18. Turn the ignition switch OFF.
19. Reconnect all connectors.
20. Disconnect EPS control unit connector C (13P).
21. Turn the ignition switch ON (II), and start the engine.

Does the EPS indicator go off?

YES—Go to step 22.

NO—Repair short to ground in the wire between gauge control module and EPS control unit. ■

22. Troubleshoot the gauge control module (see page 22-226).

Is it normal?

YES—Check for loose terminals and poor connections at EPS control unit and gauge control module. If necessary substitute a known-good EPS control unit and recheck. ■

NO—Replace the gauge control module. ■



Steering Gearbox Removal and Installation

Special Tools Required

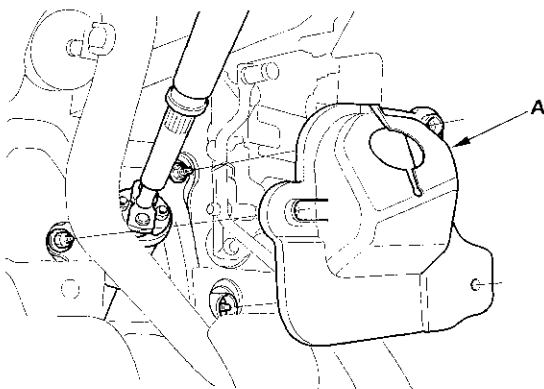
- Ball joint remover, 28 mm 07MAC-SL0A202
- Subframe adapter EQS02C000016 *
- * Available through the Honda Tool and Equipment program 888-424-6857

Removal

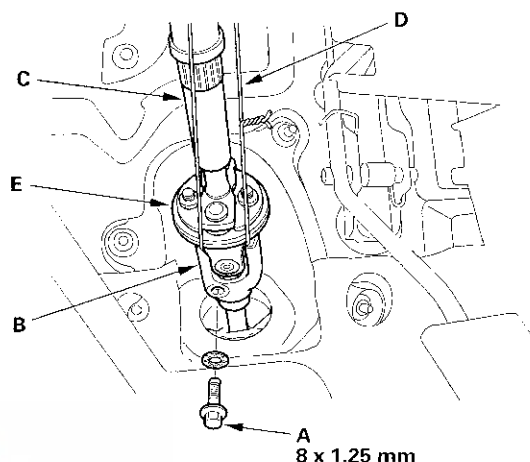
Note these items during removal:

- Using solvent and a brush to wash any oil and dirt off the end of the gearbox. Avoid any electrical parts. Blow dry with compressed air.
- Make sure to remove the steering wheel before disconnecting the steering joint to avoid damaging the cable reel.

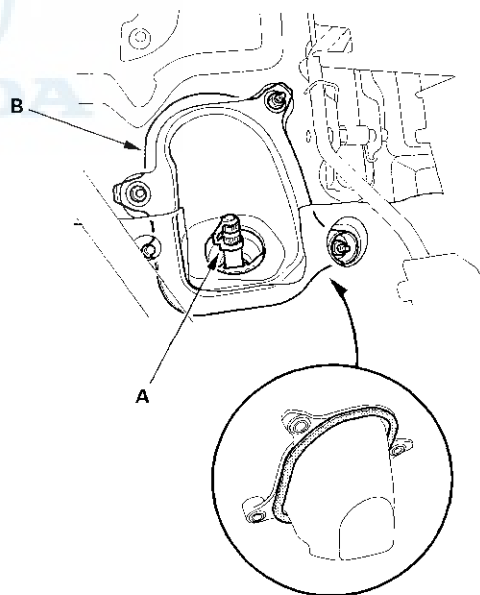
1. Make sure you have the anti-theft codes for the radio and the navigation system (if equipped), then write down the XM radio channel presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Raise the front of vehicle, and support it with safety stands in the proper locations (see page 1-7).
4. Remove the front wheels.
5. Remove the steering wheel (see page 17-6).
6. Remove the driver's under cover (see page 20-67).
7. Remove the steering joint cover A.



8. Remove the steering joint bolt (A), and disconnect the steering joint (B) toward the column. Hold the slider shaft (C) on the column with a piece of wire (D) between the joint yoke (E) on the slider shaft to the joint yoke on the upper shaft (see page 17-9).



9. Remove the center guide (A), and discard it.



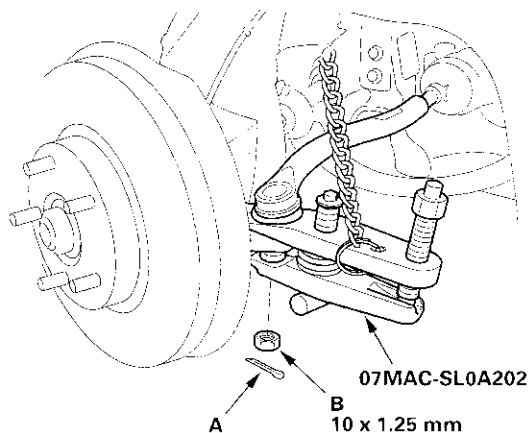
10. Remove the steering joint cover B. Be careful not to damage the mating surface on the joint cover B and pinion shaft grommet.

(cont'd)

EPS Components

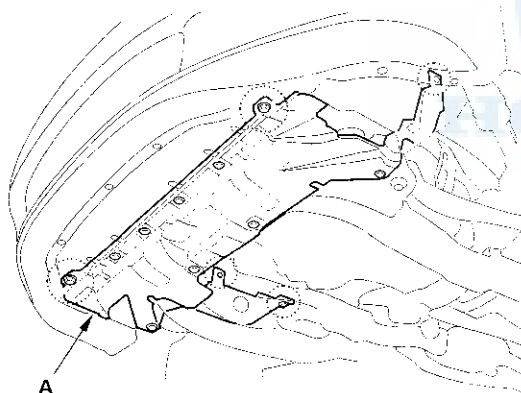
Steering Gearbox Removal and Installation (cont'd)

11. Remove and discard the cotter pin (A) from the tie-rod ball joint nut (B), and loosen the nut.

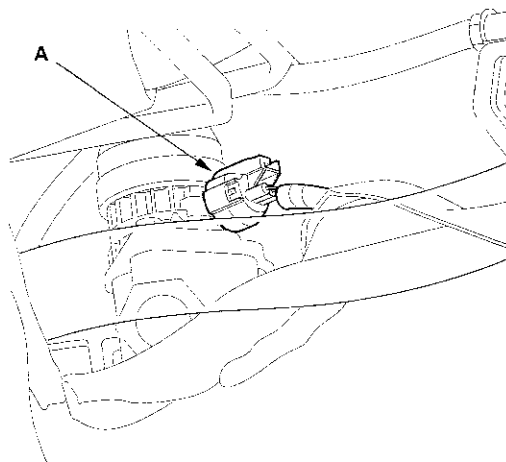


12. Separate the tie-rod ball joint and knuckle using the special tool (see page 18-12).

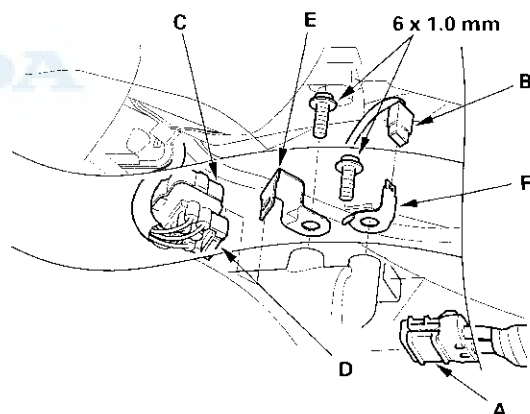
13. Remove the splash shield (A).



14. Disconnect the torque sensor 3P connector (A) from the steering gearbox.



15. Disconnect the motor 2P connector (A) and the ground terminal (B) from passenger's side of the steering gearbox, and wrap the connectors with vinyl tape to avoid the contamination from grease or water.



16. Remove the connector (C) pushing the tab (D) from the connector stay (E).

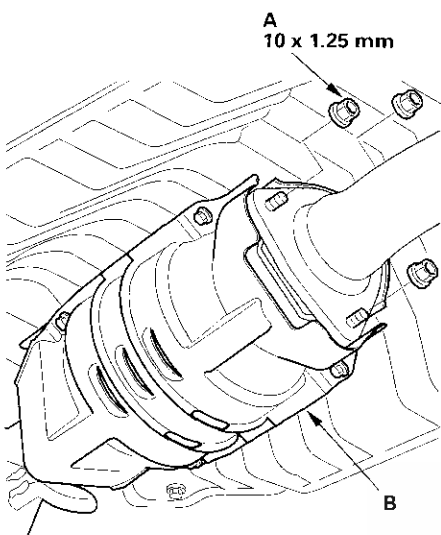
NOTE: Do not disconnect the connector.

17. Remove the ground male terminal (F) and the connector stay.



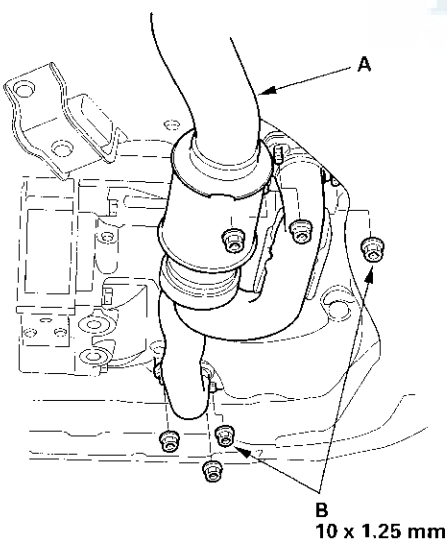
18. Remove the self-locking nuts (A) on the under-floor threeway catalytic converter (TWC) (B).

NOTE: Use new self-locking nuts on reassembly.

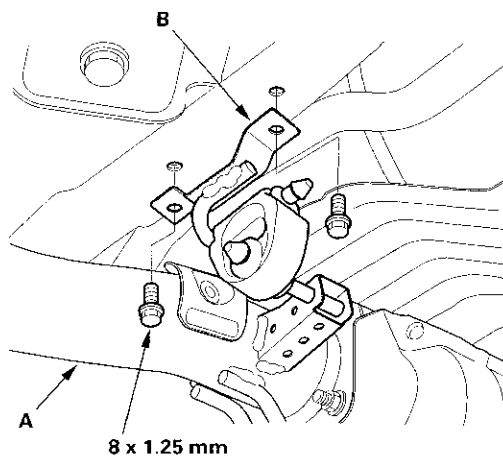


19. Remove the self-locking nuts (B) on the front of the exhaust pipe A.

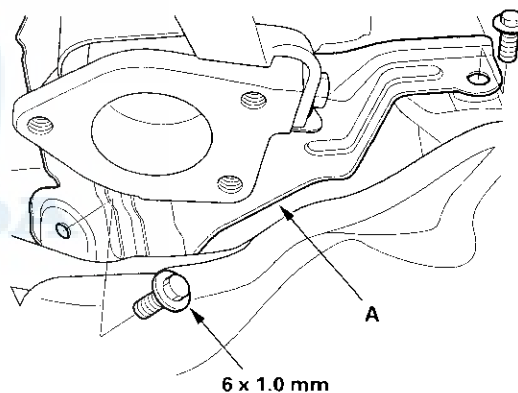
NOTE: Use new self-locking nuts on reassembly.



20. Remove the exhaust pipe A mount (B), then remove the exhaust pipe A with the TWC.



21. Remove the P/S heat baffle plate (A).

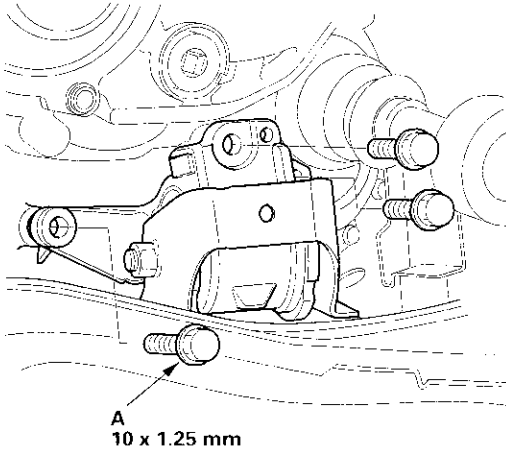


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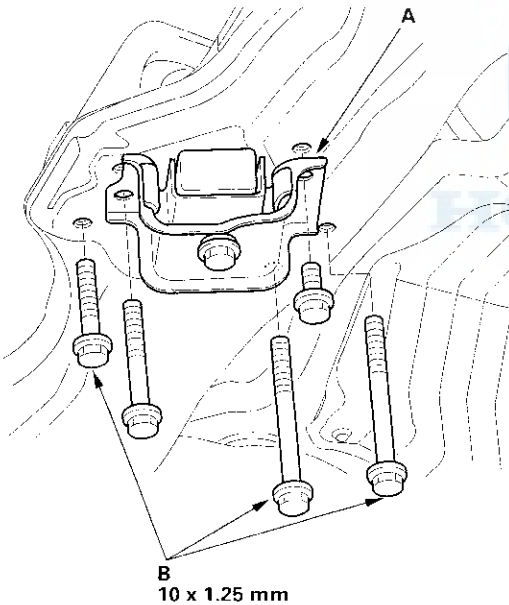
EPS Components

Steering Gearbox Removal and Installation (cont'd)

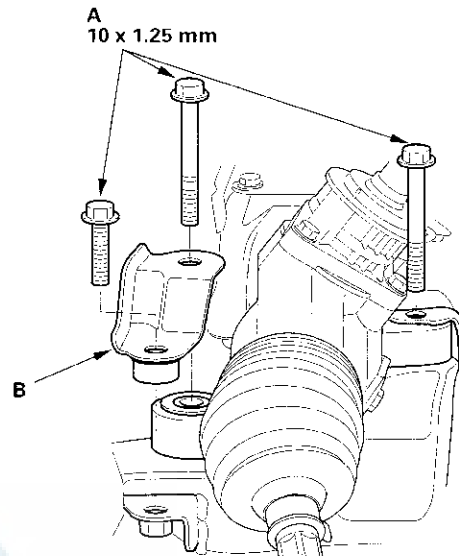
22. Remove the transmission lower mount bolts (A).



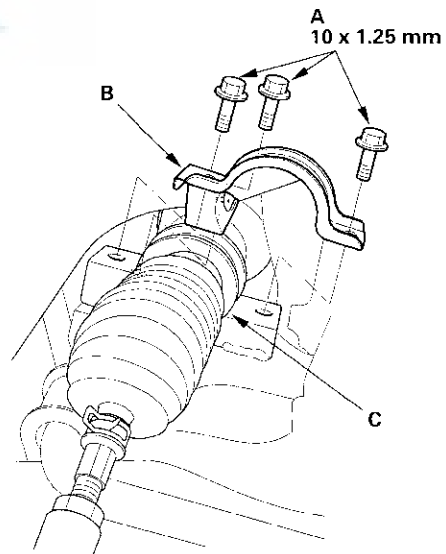
23. Remove the subframe rear damper (A), and rear engine mount base mounting bolts (B).



24. Remove the steering gearbox mounting bolts (A) on driver's side of the gearbox, and remove the mounting bracket (B).

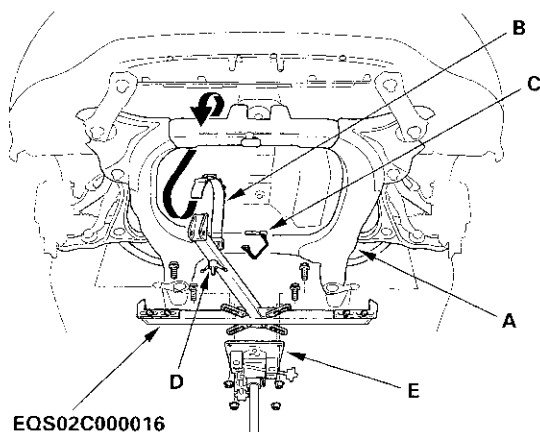


25. Remove the steering gearbox mounting bolts (A) from the passenger's side of the gearbox, then remove the gearbox mounting bracket (B) and cushion (C).

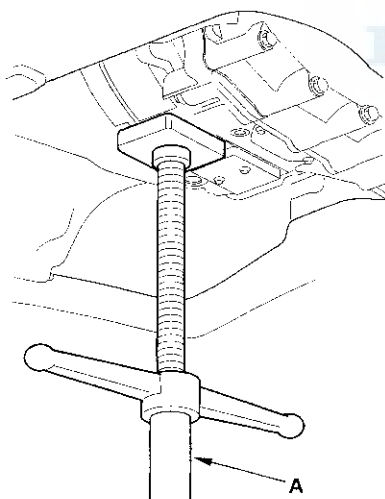




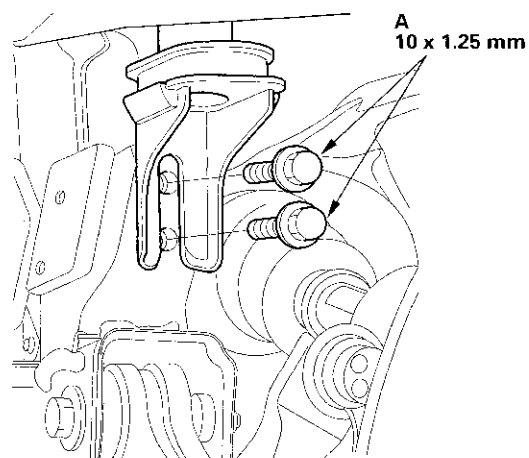
26. Attach the front subframe adapter to the subframe (A) by hanging the belt (B) over the front of the subframe, then install the lockpin (C) and tighten the wingnut (D).



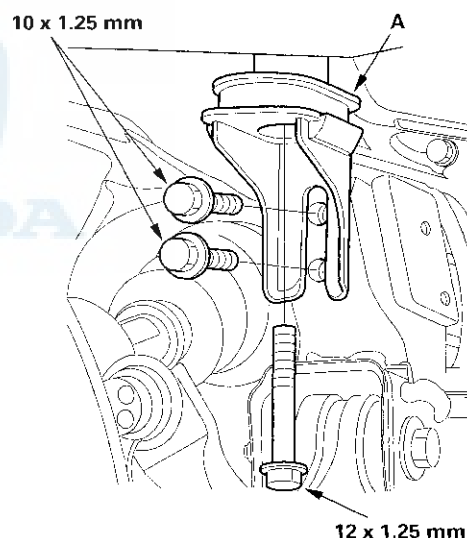
27. Raise the jack (E) and line up the slots in the arms with the bolt holes on the corner of the jack base, then attach them with bolts securely.
28. Support the engine and the transmission with the jack stand (A).



29. Remove the subframe right middle mounting bolts (A).



30. Remove the subframe left middle mounting (A).

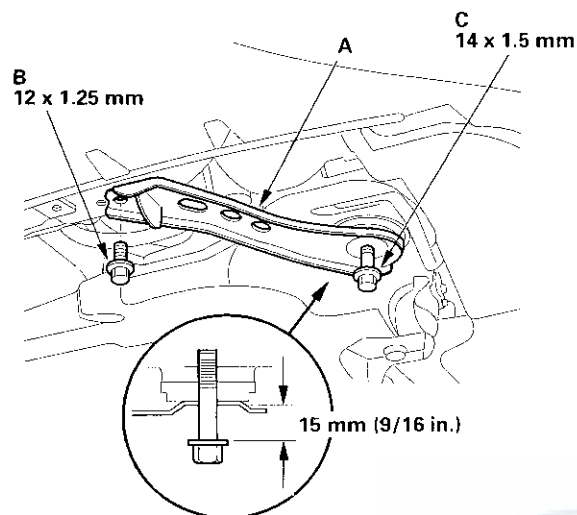


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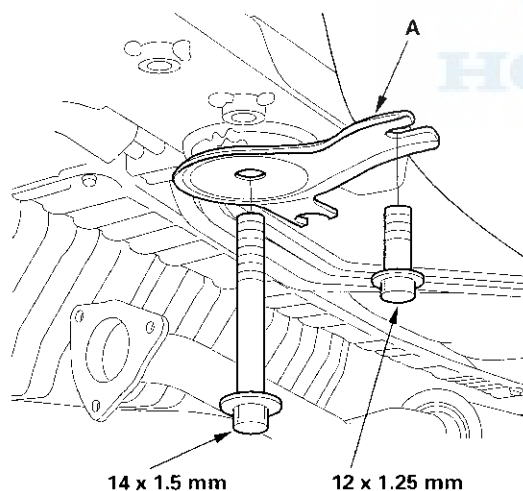
EPS Components

Steering Gearbox Removal and Installation (cont'd)

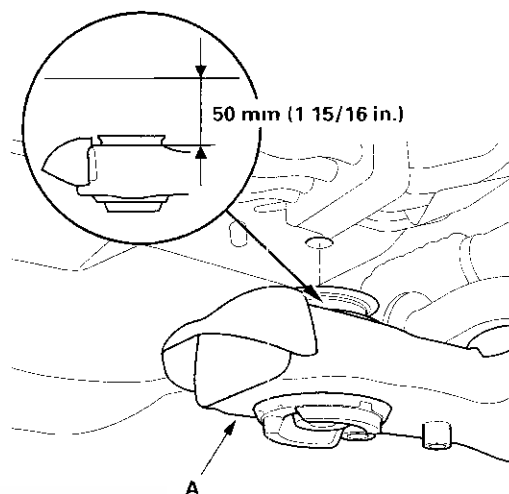
31. Remove the subframe front bracket (A) mounting bolts (B), and loosen the flange bolts (C) about 15 mm (9/16 in.) from the mounting surface on both sides of the vehicle.



32. Remove the subframe rear bracket (A) on the right and left of the vehicle from the subframe.

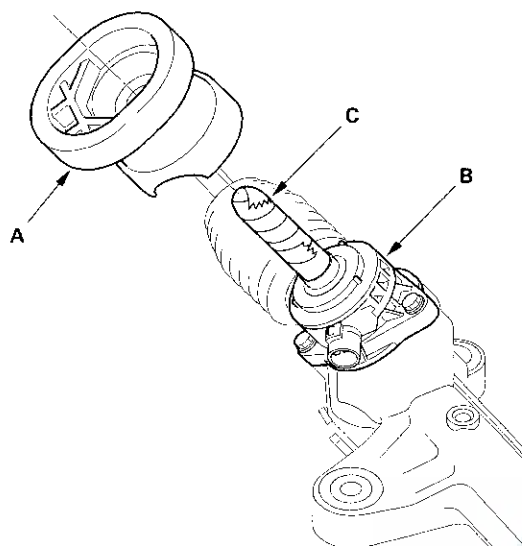


33. Slowly, lower the jack supporting the subframe (A) with the special tool until the subframe has dropped about 50 mm (1 15/16 in.).

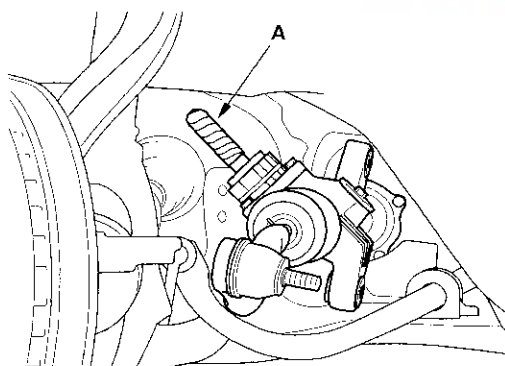




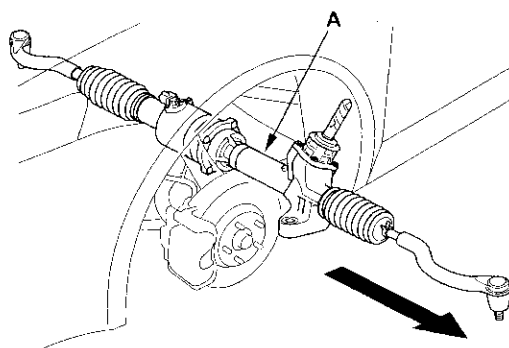
34. Move the steering gearbox toward the front, and remove the pinion shaft grommet (A) from the top of the torque sensor (B).



35. Apply vinyl tape (C) to the splines on the pinion shaft.
36. Move the steering gearbox to the driver's side, and rotate it so the pinion shaft (A) points toward the front of the vehicle.



37. Carefully move the steering gearbox (A) as an assembly toward the driver's side of the vehicle until the pinion shaft clears the wheelwell opening. Be careful not to damage the brake lines with the pinion shaft.



38. Remove the gearbox through the wheelwell opening on the driver's side. Be careful not to damage these parts due to interference with the edge of the wheelwell opening when extracting and inserting the steering gearbox.

- Torque sensor housing
- Boots
- Serrations of the pinion shaft
- Motor 2P connector
- Tie-rod end ball joint boots

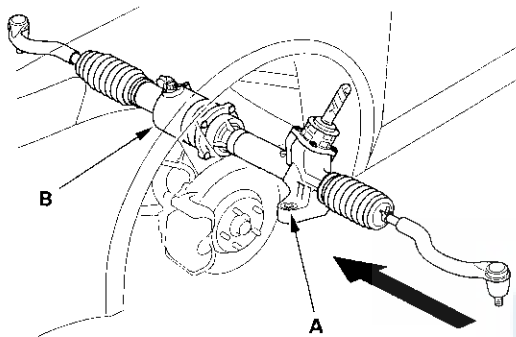
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EPS Components

Steering Gearbox Removal and Installation (cont'd)

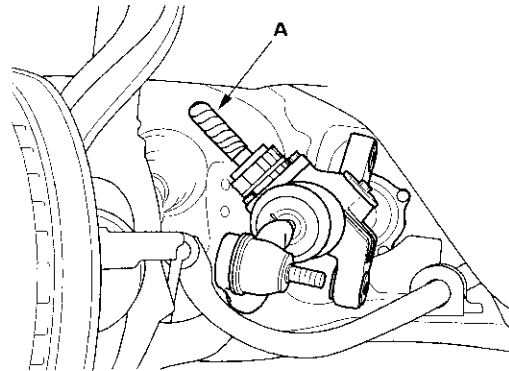
Installation

1. Before installing the steering gearbox, make sure that no fluid or grease is on the mating surface of the gearbox and the front subframe. To prevent the gearbox mounting bolts from loosening after the installation, remove the fluid or grease from the mount cushions and bolt holes.
2. Apply a mild soap and water solution to both sides of the mount cushion mating surfaces (A).

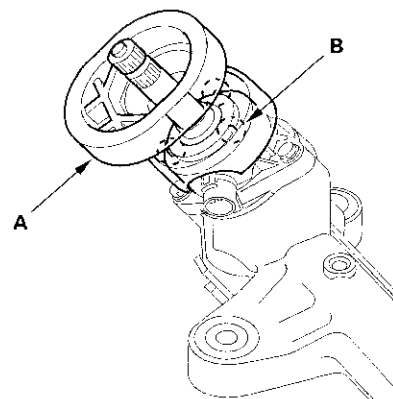


3. Pass the motor (B) of the steering gearbox through the wheelwell opening on the driver's side.

4. Carefully move the steering gearbox toward the passenger's side until the pinion shaft clears the wheelwell opening on the body.
5. Rotate the steering gearbox so the pinion shaft (A) points upward.



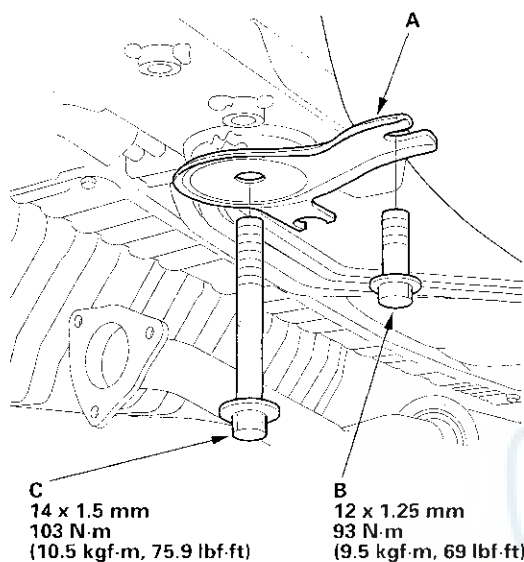
6. Continue moving the gearbox toward the passenger's side until the steering gearbox is in position. Make sure the torque sensor 3P connector and motor 2P connector are routed above the gearbox.
7. Remove the vinyl tape from pinion shaft, and install the pinion shaft grommet (A). Align the slots in the pinion shaft grommet with the lug portions (B) on the torque sensor housing.



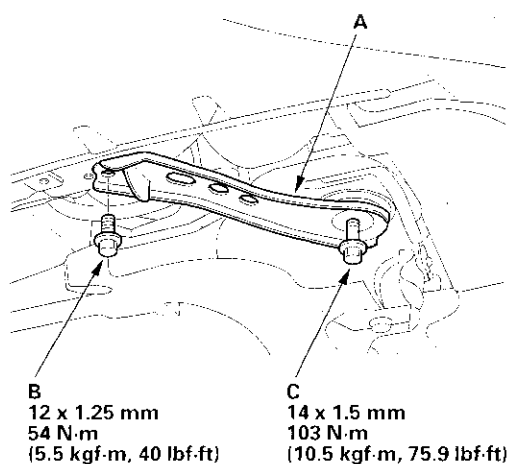


8. Raise the jack supporting the front subframe with the special tool until the subframe is in position (see page 20-134).

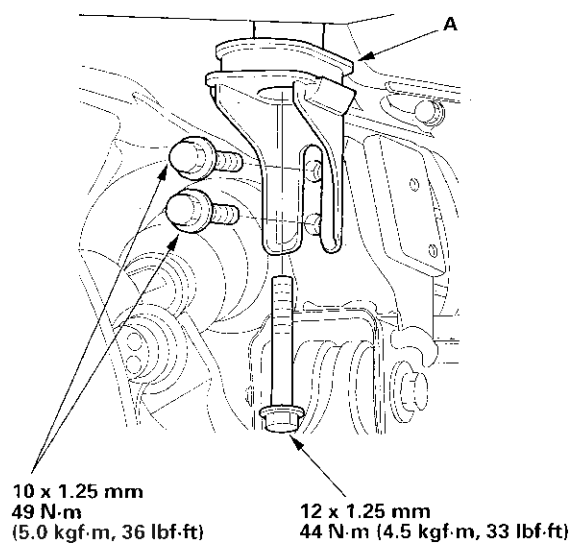
9. Install the subframe rear bracket (A). Tighten the 12 mm flange bolts (B) and 14 mm bolts (C) to the specified torque on the both sides of the vehicle.



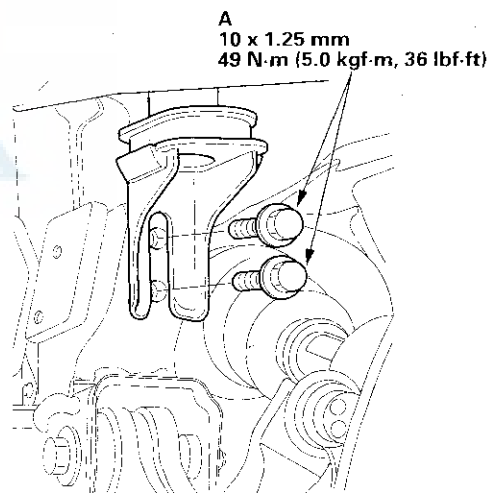
10. Install the subframe front bracket (A) with the bracket mounting bolts (B), then tighten the flange bolts (C) to the specified torque on both sides of the vehicle.



11. Install the subframe left mid mount (A).



12. Install the subframe right mid mount bolts (A).

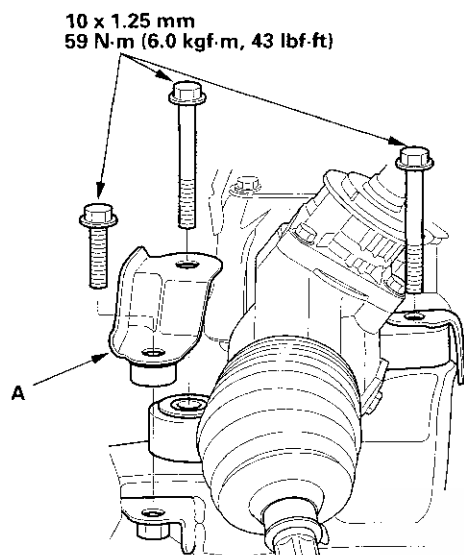


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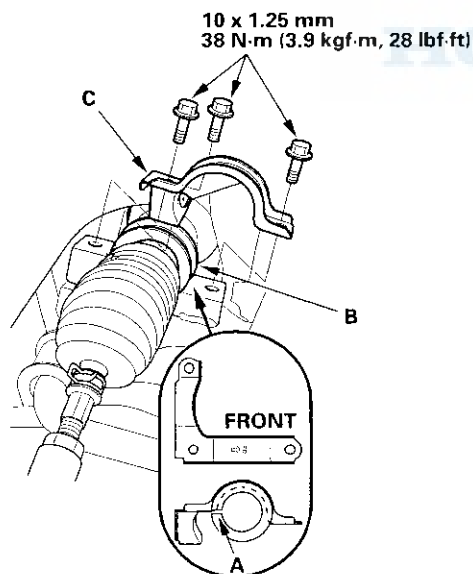
EPS Components

Steering Gearbox Removal and Installation (cont'd)

13. Loosely install the mounting bracket (A) and gearbox mounting bolts on the driver's side of the gearbox.

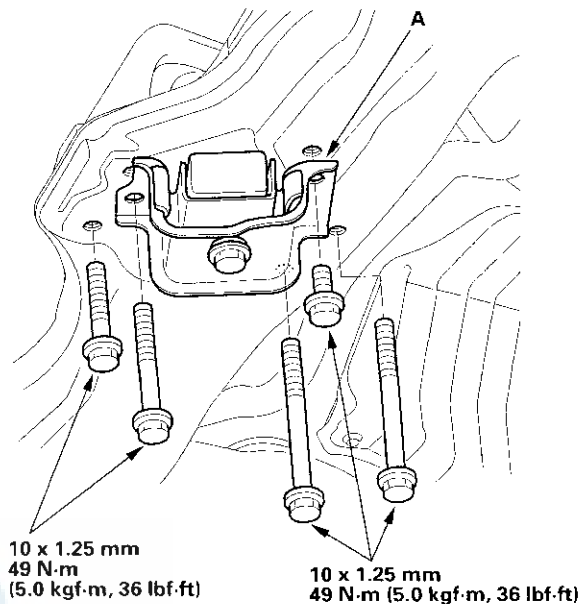


14. Position the cutout (A) on the mounting cushion (B) as shown, and install it on the passenger's side of the gearbox securely.

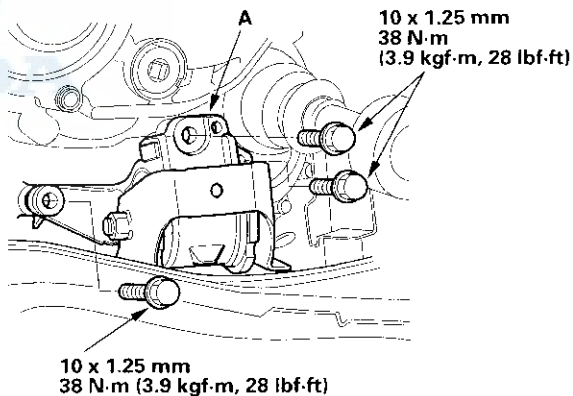


15. Install the gearbox mounting bracket (C) over the mounting cushion.
16. Tighten the flange bolts on both sides of the gearbox to the specified torque alternately in two or more steps.

17. Install the rear engine mount base mounting bolts and subframe rear damper (A).



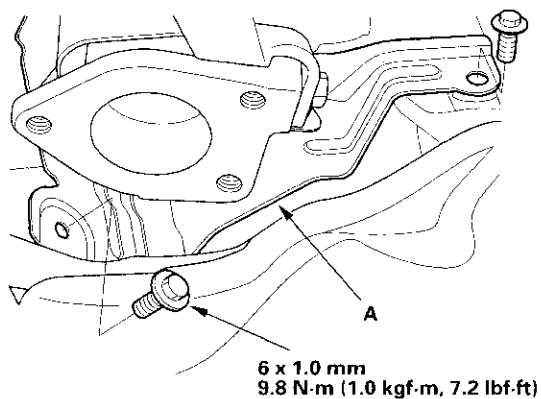
18. Install the transmission lower mount (A).



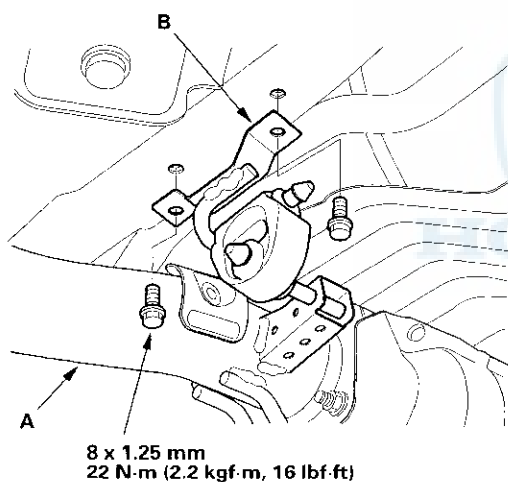
19. Lower the jack stand, and tighten the mounting bolts to the specified torque.



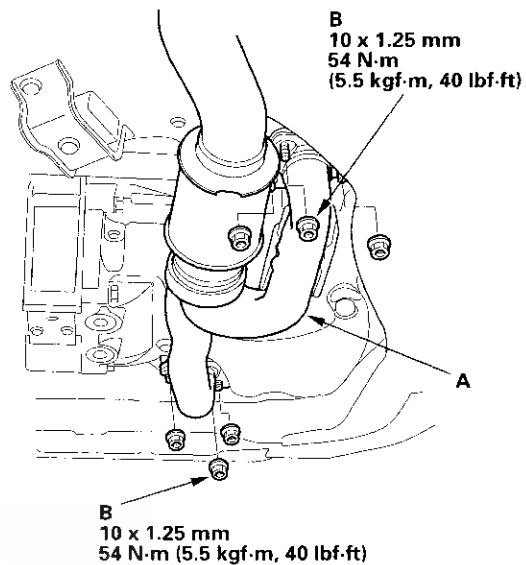
20. Install the P/S heat baffle plate (A).



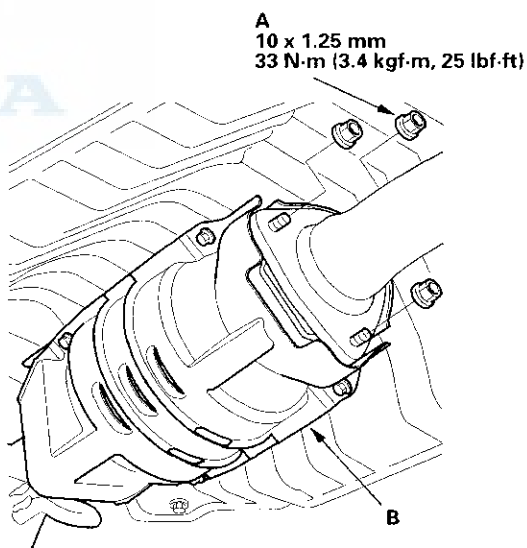
21. Install the exhaust pipe A mount (B), with the exhaust pipe A and the three way catalytic converter (TWC).



22. Install the new the self-locking nuts (B) on the front of the exhaust pipe A.



23. Install the new self-locking nuts (A) on the under-floor the threeway catalytic converter (TWC) (B).

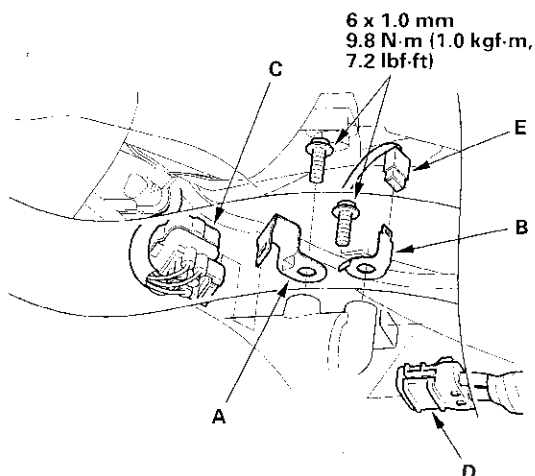


(cont'd)

EPS Components

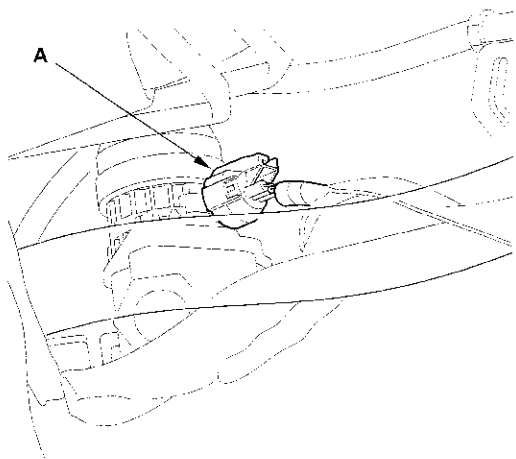
Steering Gearbox Removal and Installation (cont'd)

24. Install the connector stay (A) and the ground male terminal (B) to the steering gearbox, and install the connector (C) to the connector stay.

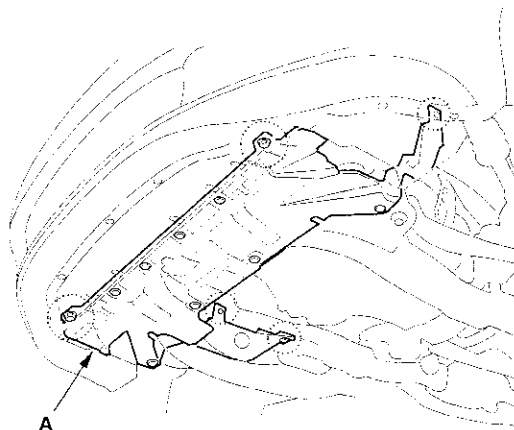


25. Remove the vinyl tape, then connect the motor 2P connector (D) and ground terminal (E) to the steering gearbox. Make sure to push the motor 2P connector until you hear a click so that the connector is secured.

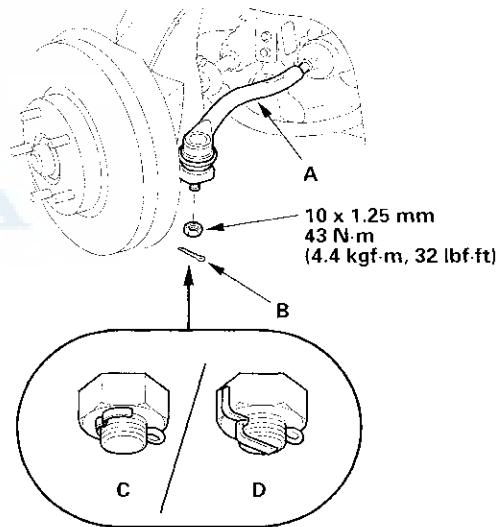
26. Connect the torque sensor 3P connector (A) to the steering gearbox. Make sure to push the connector until you hear a click so that the connector is secured.



27. Install the splash shield (A).



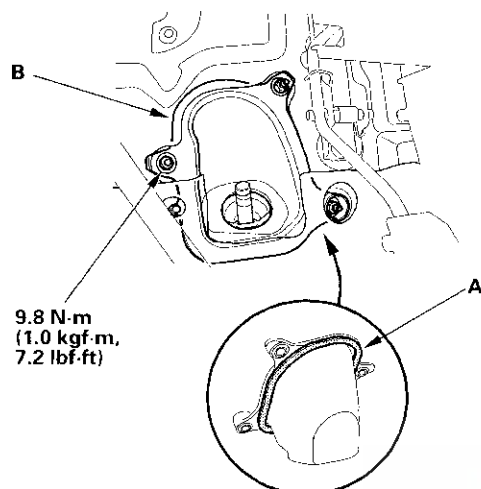
28. Wipe off any grease from the ball joint tapered section and threads. Then reconnect the tie-rod end (A) to the knuckle arms.



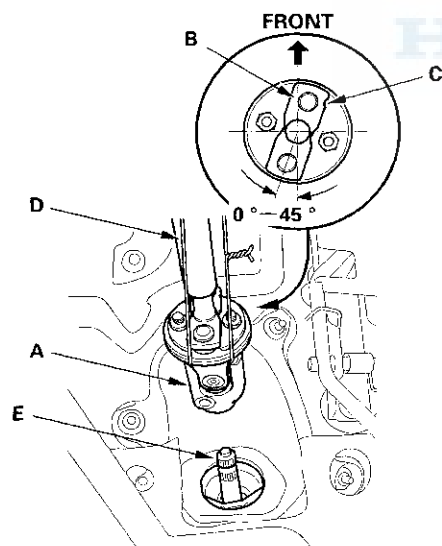
29. Install the tie-rod end ball joint nut, and tighten it to the specified torque. Then install the new cotter pin (B), and bend it as shown (C) or (D).



30. Install the new cover seal (A) all the way around in the steering joint cover B. Make sure there are no wrinkles in the seal, then install the steering joint cover B.

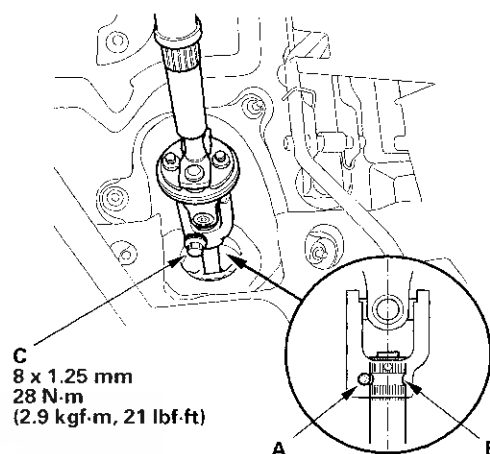


31. Center the steering rack within its stroke.
32. Position the steering column joint (A) so the bolt (B) near to the notch (C) is within the range shown.

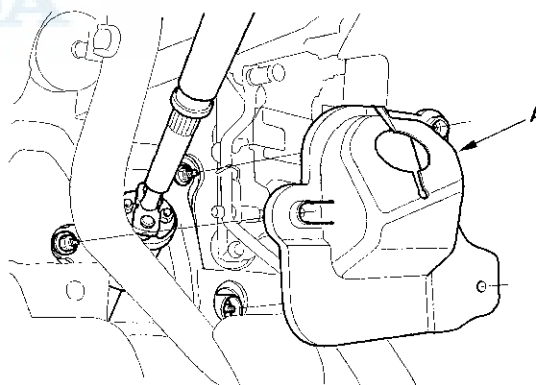


33. With the rack in the straight ahead driving position, cut the wire (D) and slip the lower end of the steering joint on to pinion shaft (E).

34. Align the bolt hole (A) on the steering joint with the groove (B) around the pinion shaft, and loosely install the joint bolt (C). Make sure the joint bolt is securely in the groove in the pinion shaft. Pull on the steering joint to make sure the steering joint is fully seated.



35. Tighten the steering joint bolt to the specified torque.
36. Install the steering joint cover A.



37. Install the front wheel, then set the wheels in the straight ahead position.

(cont'd)

EPS Components

Steering Gearbox Removal and Installation (cont'd)

38. Install the steering wheel (see page 17-8).
39. Holding the tires raised off the ground (lifted up), check for the following symptoms by turning the steering wheel fully to the right and left several times.

Symptom	Probable cause
Rubbing sound coming from the lower steering column area.	Steering column joint is contacting the cover.
Grating sound from the lower steering column area, or a rough feeling during steering.	Poor engagement of the pinion shaft serrations.
Noise from around the steering wheel during steering.	Poor engagement of the SRS cable reel with the steering wheel, or a damaged cable reel.

40. Reconnect the negative cable to the battery and do the following items:

NOTE: If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

- Power window control unit reset procedure (see page 22-200).
- Enter the anti-shaft codes for the radio and the navigation system, then enter the customer's XM radio channel presets.
- Set the clock.
- Verify cruise control, auto remote, navigation voice control, and turn signal switch operation.
- Make sure the steering wheel is centered.
- Do the memorizing the torque sensor neutral position (see page 17-21).

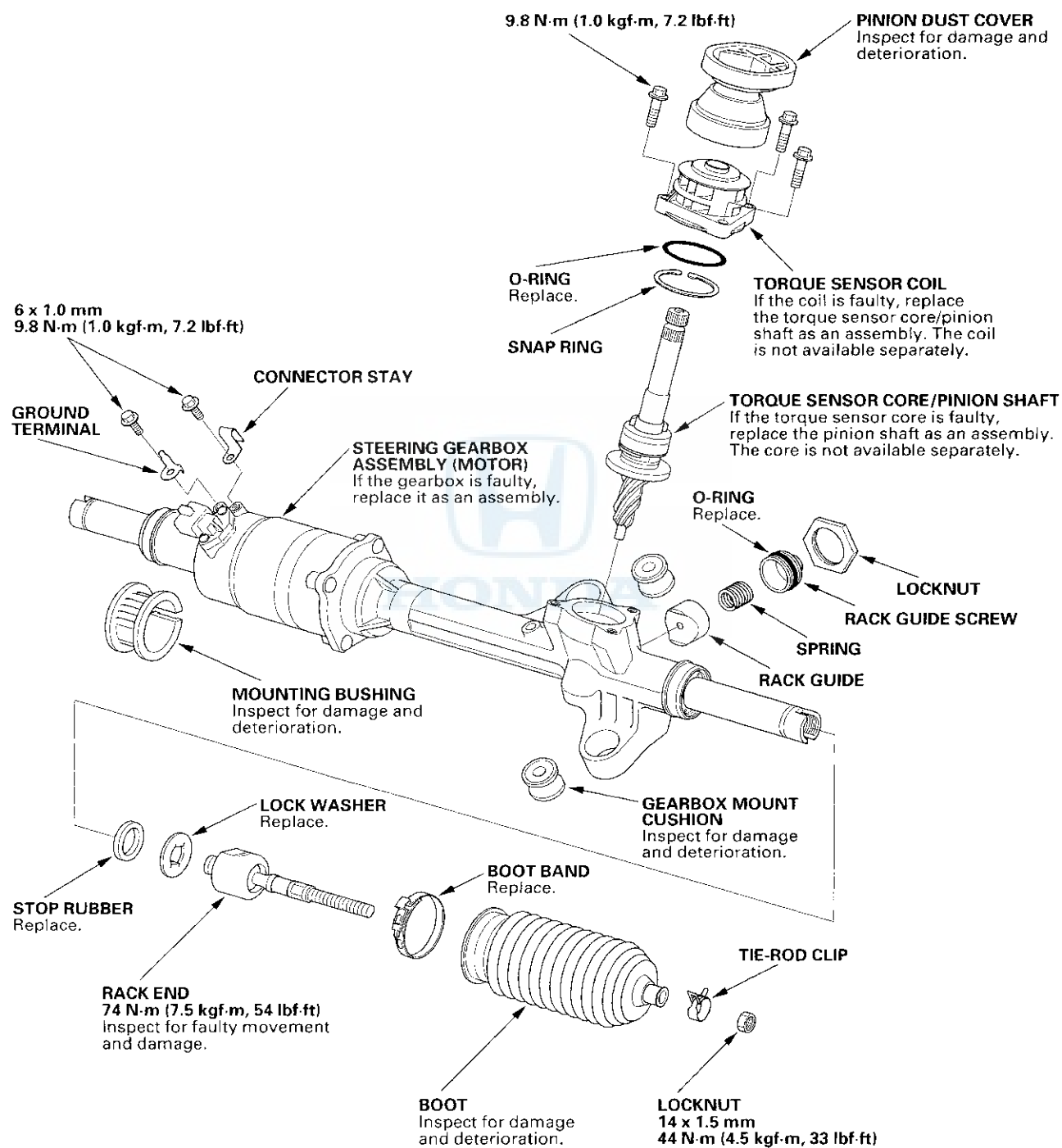
41. After installation, perform the following checks:

- Start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.
- Check the steering wheel spoke angle. If steering spoke angles to the right and left are not equal (steering wheel and rack are not centered), correct the engagement of the joint/pinion shaft serrations, then adjust the front toe by turning the tie-rod ends, if necessary.
- Check the front toe inspection (see page 18-7).



Rack End Removal and Installation

Exploded view



(cont'd)

EPS Components

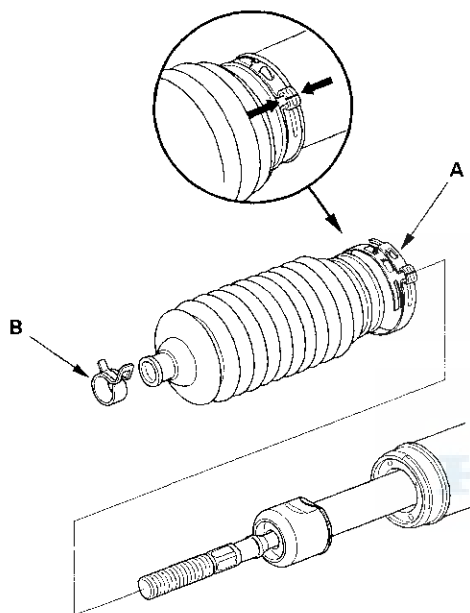
Rack End Removal and Installation (cont'd)

Removal

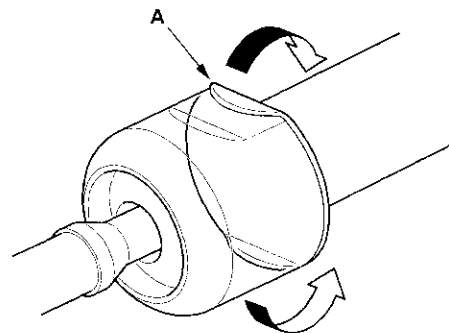
Note these items during removal/installation:

- Do not allow dust, dirt, or other foreign materials to enter the gearbox.
- Do not disassemble the steering gearbox assembly (motor). If the motor is faulty, replace steering gearbox as an assembly.

1. Remove the boot bands (A) and discard them. Remove the tie-rod clips (B), and pull the boots away from the ends of the gearbox.

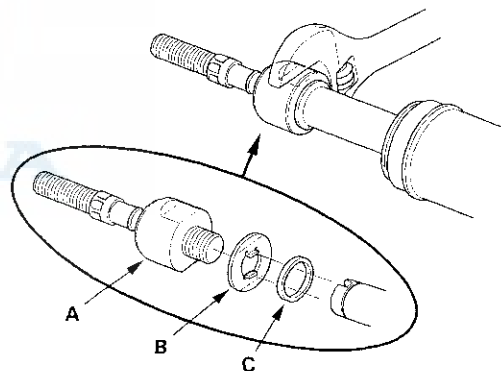


2. Unbend the lock washer (A).



3. Unscrew both rack ends (A) with a wrench. Be careful not to damage the rack shaft surface with the wrench. Remove the rack end, lock washer (B) and stop rubber (C) discard them.

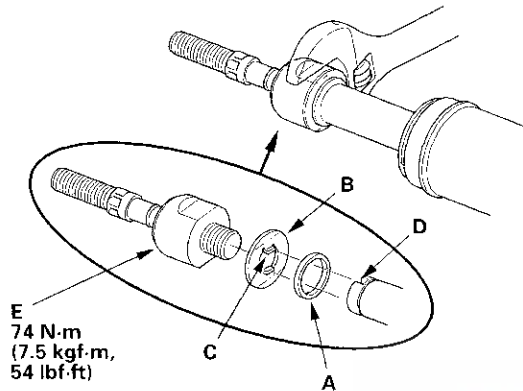
NOTE: Hold the flat surfaces of the rack shaft on the pinion shaft side with another wrench.



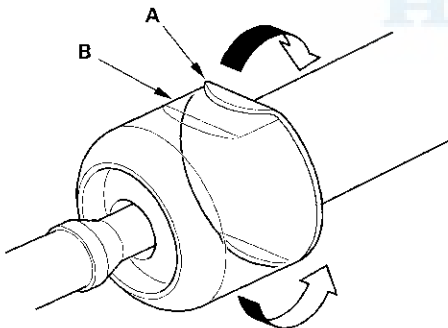


Installation

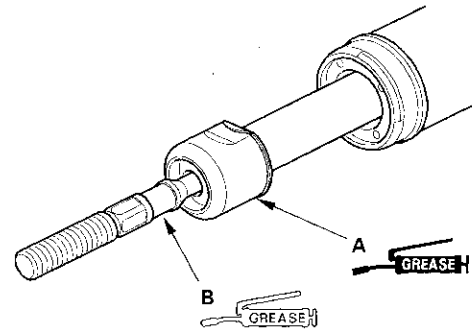
1. Install the new stop rubber (A) and lock washer (B) on the rack shaft. Align the lock washer tabs (C) with slots (D) in the rack shaft. Install the rack end (E) while holding with lock washer in place. Repeat this step for the other side of the rack shaft.



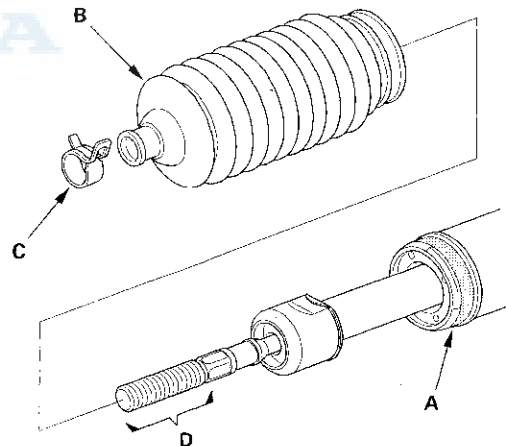
2. Tighten both rack ends. Be careful not to damage the rack shaft surface with the wrench.
3. Bend the lock washer (A) back against the flat spots (B) on the rack end ball joint housing.



4. Apply multipurpose grease to the circumference of the rack end joint housing (A) and lock washer.



5. Apply a light coat of silicone grease to the boot fitting grooves (B) on the rack ends.
6. Center the steering rack within its stroke.
7. Clean off the any grease or contamination from the boot installation grooves (A) around on the gearbox housing. Install the boots (B) on the rack ends with the tie-rod clips (C), and fit the boot end in the installation grooves in the housing properly.



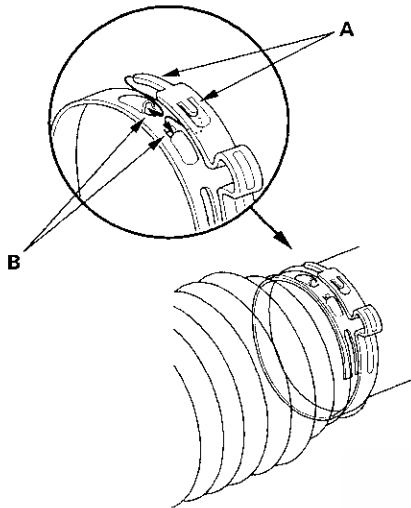
8. After installing the boots, wipe the grease off the thread section (D) of rack end.

(cont'd)

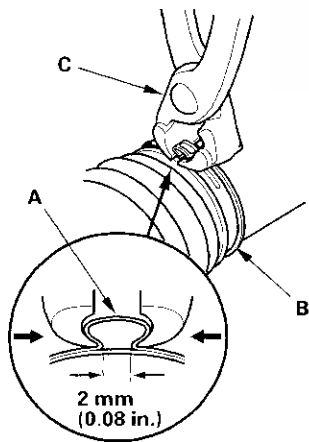
EPS Components

Rack End Removal and Installation (cont'd)

9. Install the new boot bands by aligning the tabs (A) with holes (B) of the band.



10. Close the ear portion (A) of the band (B) with commercially available pincers, Oetiker 1098 or equivalent (C).



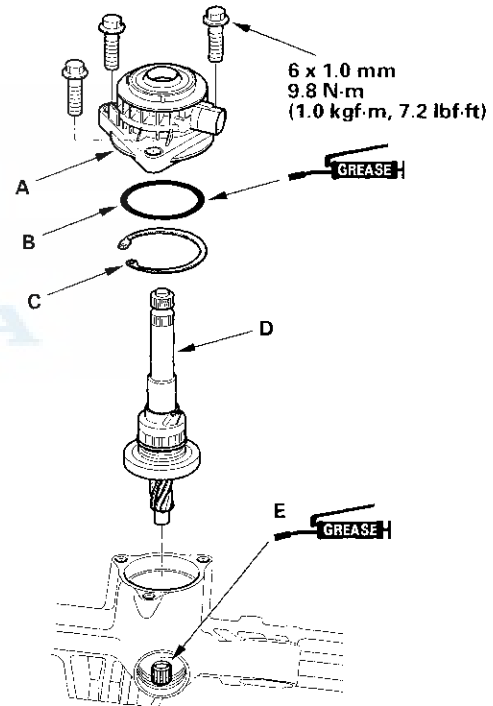
11. Slide the rack shaft right and left to be certain that the boots are not deformed or twisted.

Torque Sensor Replacement

Note these items during replacement:

- Do not allow dust, dirt, or other foreign materials to enter the gearbox.
- Do not try to disassemble the torque sensor coil and torque sensor core. If the sensor core are faulty, replace the pinion shaft as an assembly.
- If the torque sensor (pinion shaft assembly) is replaced, the EPS control unit must memorize the torque sensor neutral position (see page 17-21).

1. Remove the steering gearbox (see page 17-47).
2. Center the steering rack within its stroke.
3. Remove the rack guide (see page 17-65).
4. Remove the torque sensor coil (A) and O-ring (B).



5. Remove the snap ring (C), then remove the torque sensor core/pinion shaft (D).
6. Apply grease to the needle bearing (E) in the gearbox housing.

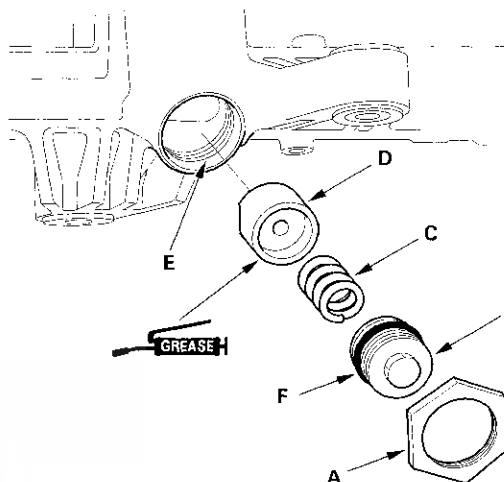


Rack Guide Removal/Installation

7. Install the torque sensor core/pinion shaft assembly on the gearbox housing by engaging the gear, then install the snap ring.
8. Coat the new O-ring with grease, and carefully fit it on the gearbox housing, then install the torque sensor coil.
9. Install and tighten the 6 mm flange bolts to the specified torque.
10. Install the rack guide.
11. Reinstall the steering gearbox (see page 17-54).
12. Adjust the rack guide screw (see page 17-14).

NOTE: During removal/installation, do not allow dust, dirt, or other foreign materials to enter the gearbox.

1. Remove the steering gearbox (see page 17-47).
2. Loosen the locknut (A), then remove the rack guide screw (B), spring (C), and rack guide (D).

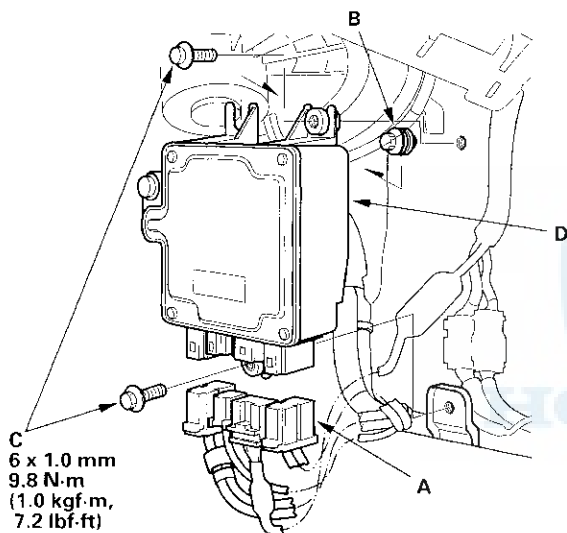


3. Apply multipurpose grease to the sliding surface of the rack guide, and install it onto the gearbox housing. Wipe the grease off the threaded section (E) of the housing.
4. Replace the O-ring (F), and carefully fit it on the rack guide screw groove.
5. Position the spring, and loosely install the rack guide screw and lockout.
6. Adjust the rack guide screw (see page 17-14). After adjusting, check that the rack moves smoothly by sliding the rack right and left.

EPS Components

EPS Control Unit Removal/Installation

1. Make sure you have the anti-theft codes for the radio and the navigation system (if equipped), then write down the XM radio channel presets.
2. Make sure the ignition switch is OFF, then disconnect the negative cable from the battery.
3. Remove the passenger's dashboard lower cover (see page 20-72).
4. Remove the passenger's side kick panel (see page 20-45).
5. Disconnect the EPS control unit connectors (A).



6. Loosen the flange bolt (B), and remove the flange bolts (C).
7. Remove the EPS control unit (D).

8. Install the EPS control unit in the reverse order of removal.
9. Reconnect the negative cable to the battery and do the following items:

NOTE: If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

- Power window control unit reset procedure (see page 22-200).
 - Enter the anti-theft codes for the radio and the navigation system, then enter the XM radio channel presets.
 - Set the clock.
 - If the EPS control unit is replaced, the EPS control unit must memorize the torque sensor neutral position (see page 17-21).
10. After installation, start the engine, and let it idle. Turn the steering wheel from lock-to-lock several times. Check that the EPS indicator does not come on.

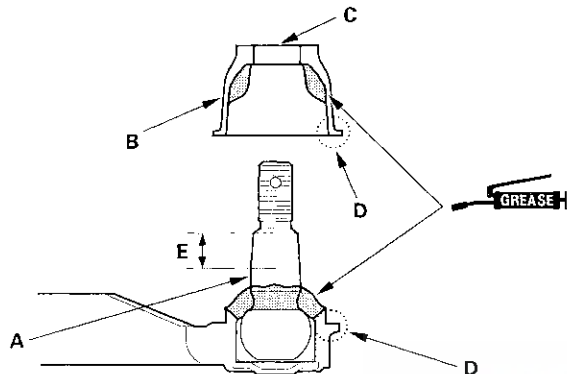


Tie-rod Ball Joint Boot Replacement

Special Tools Required

Front hub dis/assembly tool 07965-SA50500

1. Remove the boot from the tie-rod end, and wipe the old grease off the ball pin.
2. Pack the lower area of the ball pin (A) with fresh multipurpose grease.

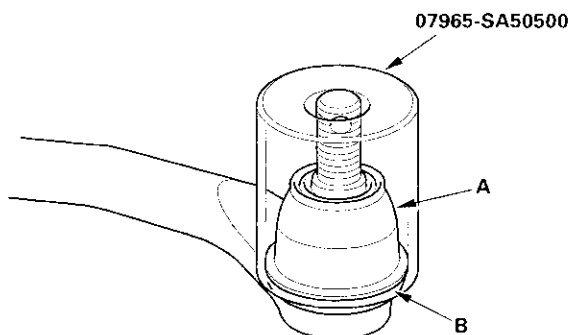


3. Pack the interior of the new boot (B) and lip (C) with fresh multipurpose grease.

Note these items when installing new grease:

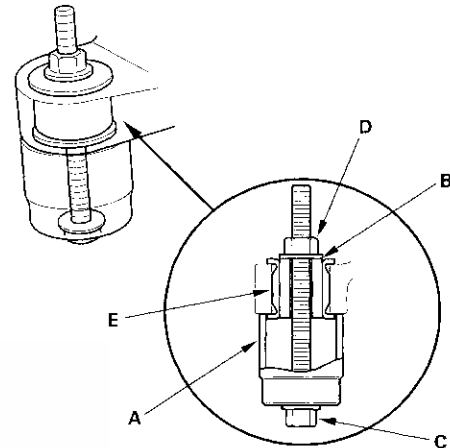
- Keep grease off the boot mounting area (D) and the tapered section (E) of the ball pin.
- Do not allow dust, dirt, or other foreign materials to enter the boot.

4. Install the new boot (A) using the special tool. The boot must not have a gap at the boot installation sections (B). After installing the boot, check the ball pin tapered section for grease contamination, and wipe it if necessary.

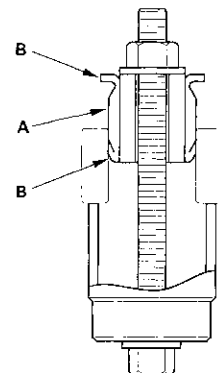


Gearbox Mount Cushion Replacement

1. Remove the steering gearbox (see page 17-47).
2. Position the 34 mm socket wrench (A) on the flange part of the gearbox housing with a washer (B), 10 x 105 mm flange bolt (C) and the 10 mm nut (D) as shown.



3. Hold the nut with a wrench, and tighten the flange bolt with another wrench. Remove the gearbox mount cushion (E).
4. Apply a mild soap and water solution to the new gearbox mount cushion surface (A), then place it on the gearbox mounting cushion hole.



5. Position the 34 mm socket wrench on the flange part of the gearbox housing with a washer, flange bolt, and the nut as shown.
6. Install the gearbox mount cushion by tightening the nut until the mount cushion edges (B) properly fit on the gearbox flange surface.

Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

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Front Suspension

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Rear Suspension

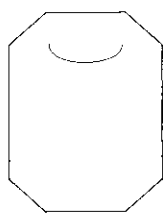
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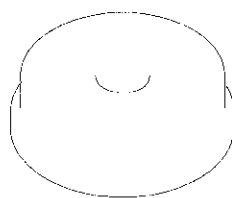
Front and Rear Suspension

Special Tools

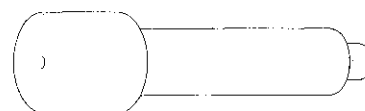
Ref. No.	Tool Number	Description	Qty
①	07AAF-SDAA100	Ball Joint Thread Protector, 12 mm	1
②	07GAD-SD40101	Attachment, 78 x 90 mm	1
③	07GAF-SD40100	Hub Dis/Assembly Tool, 42 mm	1
④	07GAG-SD40700	Ball Joint Boot Clip Guide	1
⑤	07MAC-SL0A202	Ball Joint Remover, 28 mm	1
⑥	07746-0010600	Attachment, 72 x 75 mm	1
⑦	07749-0010000	Driver	1
⑧	07965-SD90100	Support Base	1



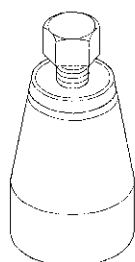
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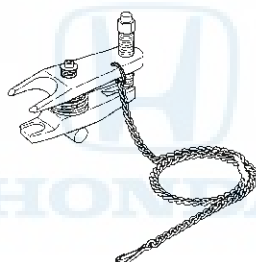
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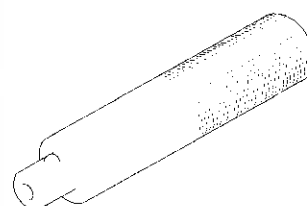
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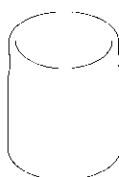
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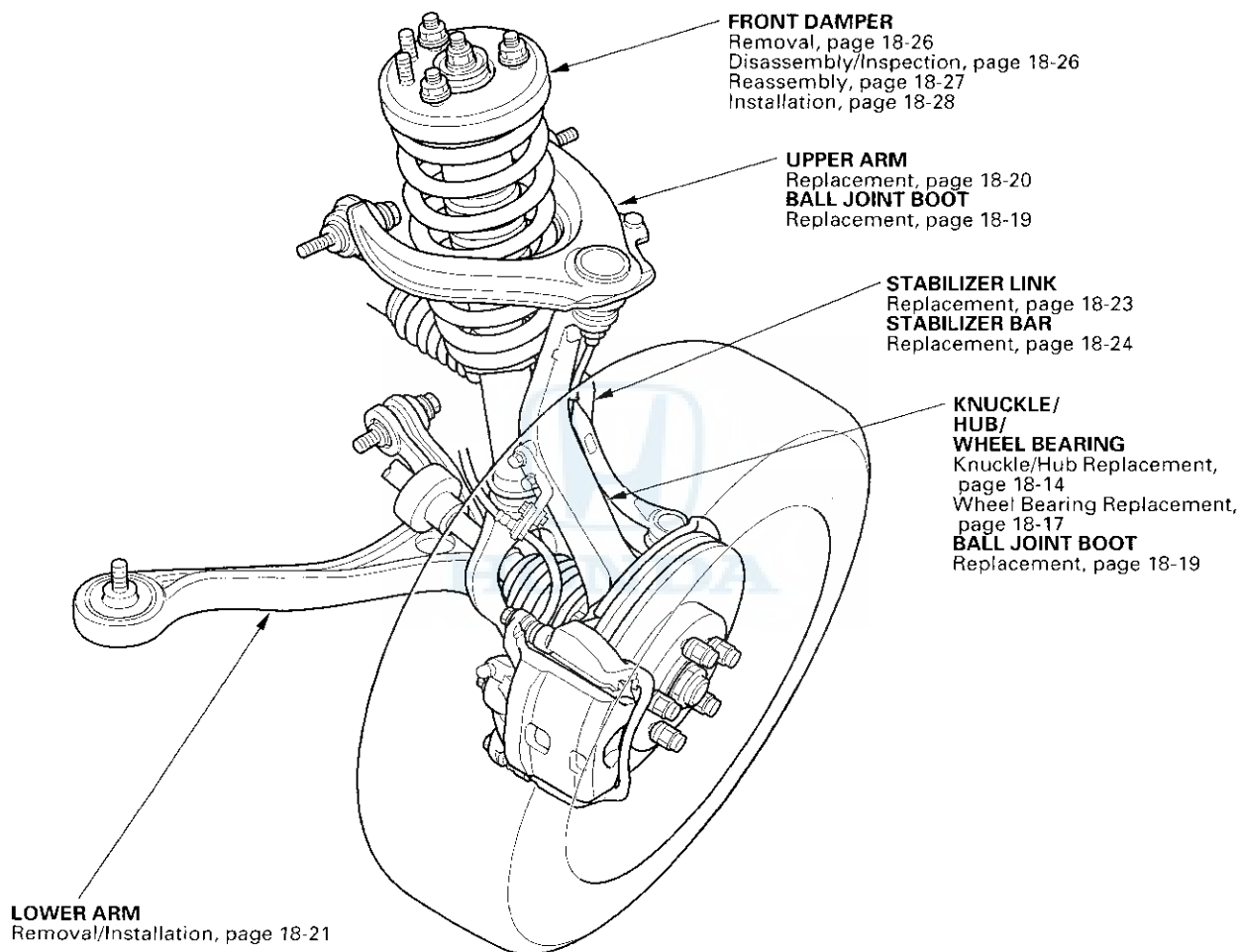


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Component Location Index

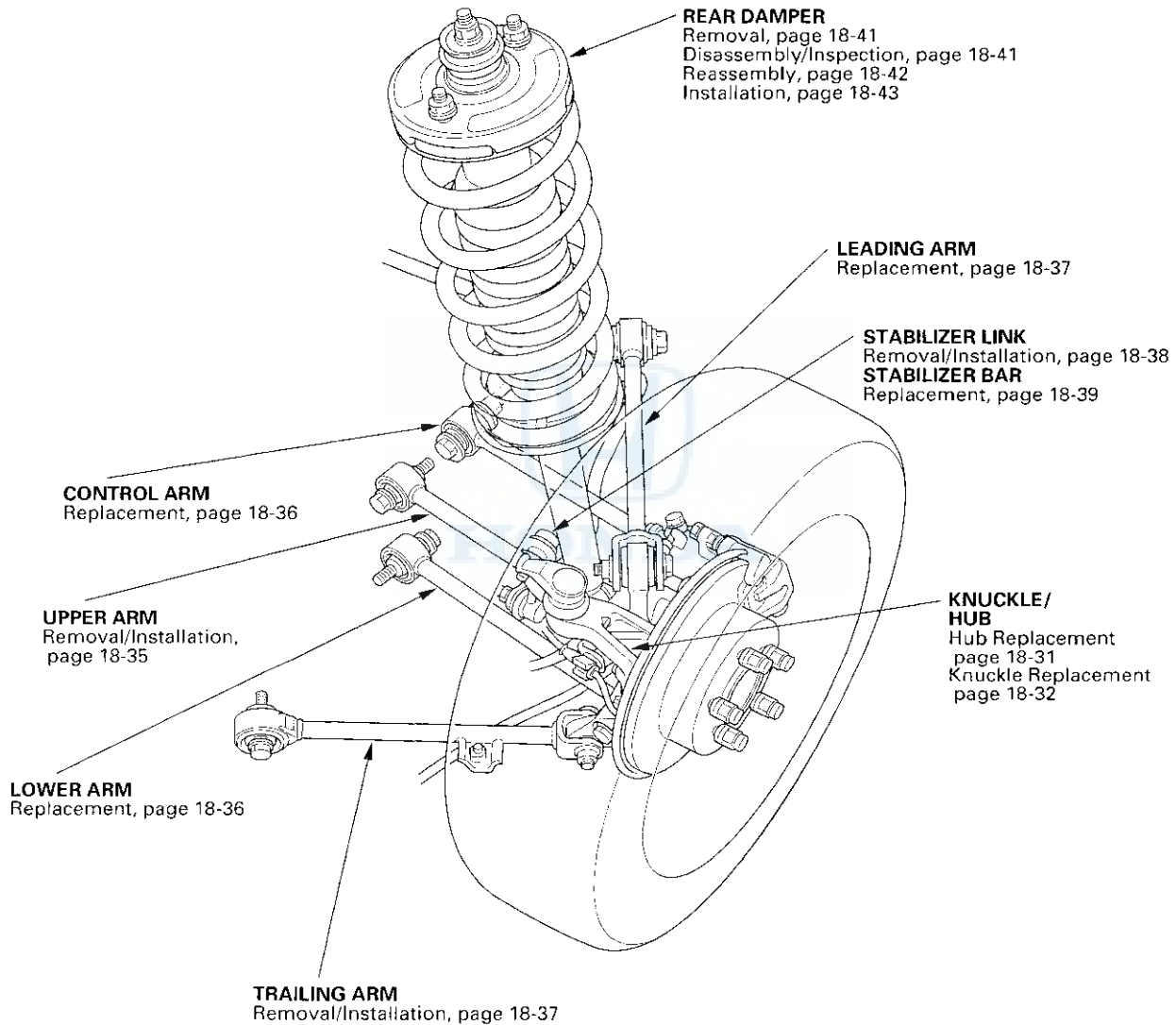
Front Suspension



Front and Rear Suspension

Component Location Index (cont'd)

Rear Suspension



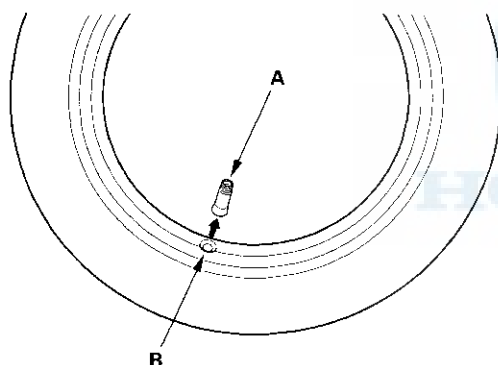


Tire Sealant Removal

NOTE:

- The tire inflator and temporary repair sealant are used on vehicles without a spare tire.
- The temporary repair sealant used to repair the tire must be removed before the tire is permanently repaired.
- The temporary repair sealant (once used or out-of-date) is considered hazardous waste, and must be disposed of in an environmentally safe manor (such as used engine oil and coolant). Check with your local regulations for proper disposal.
- The expiration date of the temporary repair sealant is printed on the label of the container.

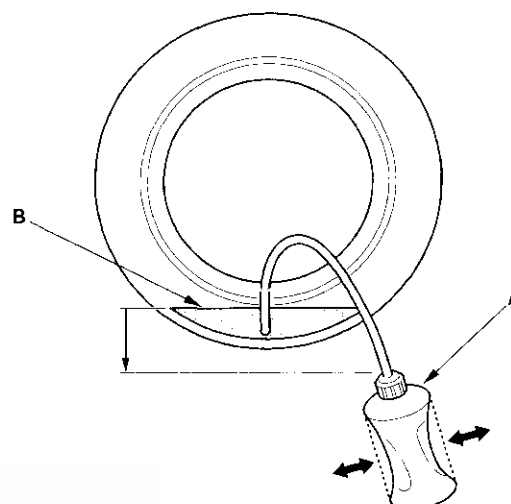
1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheel and deflate the tire.
3. Carefully cut off the valve (A) at its base, and push the remaining rubber portion of the valve into the tire.



4. Place the wheel and tire assembly up right with the tire valve hole at the 7 o'clock position.

NOTE: Be careful not to spill the tire sealant from the drain hole (B).

5. Use the empty bottle (A) to remove the tire sealant. Insert the tube into the tire through the drain hole, and stick it down until the end of the tube is immersed into the sealant (B).



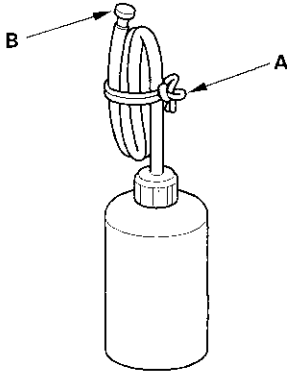
6. Set the empty bottle in a lower position than the tire and squeeze the bottle to siphon the tire sealant into the bottle. To completely empty the tire of sealant, carefully rock the wheel back and forth.

(cont'd)

Front and Rear Suspension

Tire Sealant Removal (cont'd)

7. Bundle the hose together (A) and make sure the cap (B) is installed on the end. Dispose of the bottle filled with tire sealant in the proper manner for hazardous waste. Check with your local regulations.



8. If you are repairing the tire for reuse, completely wipe out the inside of the tire, fix the flat, and install a new tire valve.

NOTE:

- Wipe the fluid sealant completely so that the beaded edge of the tire and the mating portion of the wheel rim and the bead are cleared.
- The damaged portion such as punctures may be filled with the fluid sealant, depending on the extent of the damage.



Wheel Alignment

The suspension can be adjusted for front and rear toe.

Pre-Alignment Checks

For proper inspection and adjustment of the wheel alignment, do these checks:

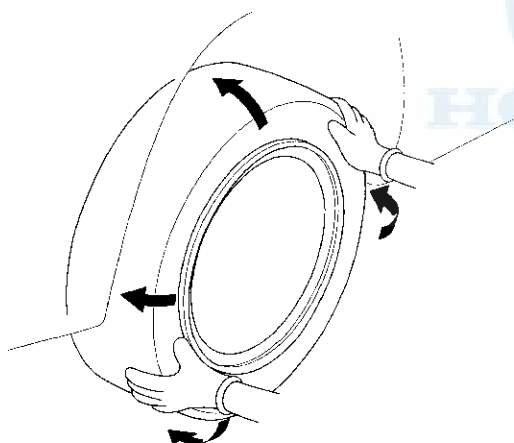
1. Release the parking brake to avoid an incorrect measurement.
2. Make sure the suspension is not modified.
3. Check the tire size and tire pressure.

Tire size:

Front/Rear: P215/60R16 94V

Tire pressure: 220 kPa (2.2 kgf/cm², 32 psi)

4. Check the runout of the wheels and tires (see page 18-10).
5. Check the suspension ball joints. (Hold a wheel with your hands, and move it up and down and right and left to check for wobbling.)



6. Bounce the vehicle up and down several times to stabilize the suspension.

Caster Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Check the caster angle.

Caster angle: 3° 15' ± 45'

2. If out of specification, check for bent or damaged suspension components.

(cont'd)

Front and Rear Suspension

Wheel Alignment (cont'd)

Camber Inspection

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Check the camber angle.

Camber angle:

Front: $0^{\circ}00' \pm 45'$

Maximum difference between the right and left side: $0^{\circ}45'$

Rear: $-1^{\circ}00' \pm 30'$

2. If out of specification, check for bent or damaged suspension components.

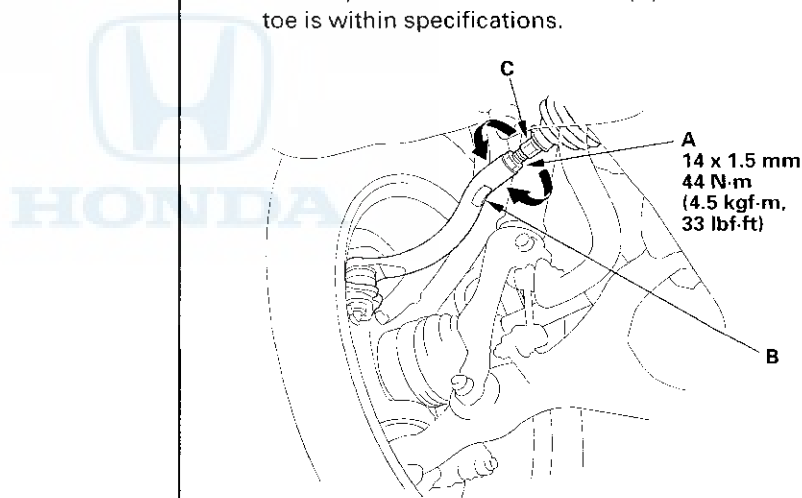
Front Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Center the steering wheel spokes and install a steering wheel holder tool.
2. Check the toe. The left and right side should be equal.

Front toe-in: 0 ± 2 mm ($0 \pm 1/16$ in.)

- If no adjustment is required, remove the alignment equipment.
 - If adjustment is required, go to step 3.
3. Loosen the tie-rod locknuts (A) while holding the flat surface sections (B) of the tie-rod end with a wrench, and turn both rack ends (C) until the front toe is within specifications.



4. After adjusting, tighten the tie-rod locknuts. Reposition the rack-rod boot if it is twisted or displaced.



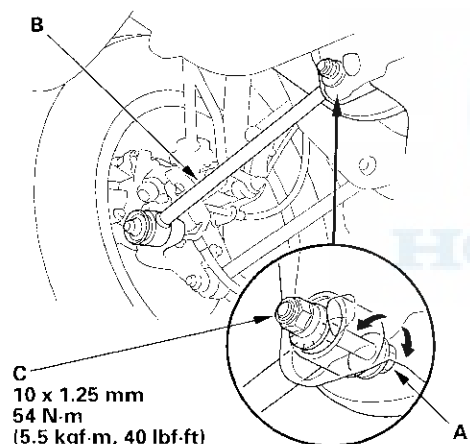
Rear Toe Inspection/Adjustment

Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Release the parking brake to avoid an incorrect measurement.
2. Check the toe.

Rear toe-in: 2 ± 2 mm ($1/16 \pm 1/16$ in.)

- If no adjustment is required, remove the alignment equipment.
 - If adjustment is required, go to step 3.
3. Hold the adjusting bolt (A) on the rear control arm (B), and loosen the self-locking nut (C).



4. Replace the self-locking nut with a new one, and lightly tighten it.

NOTE: Always use a new self-locking nut whenever it has been loosened.

5. Adjust the rear toe by turning the adjusting bolt until the toe is correct.
6. Tighten the self-locking nut while holding the adjusting bolt.

Turning Angle Inspection

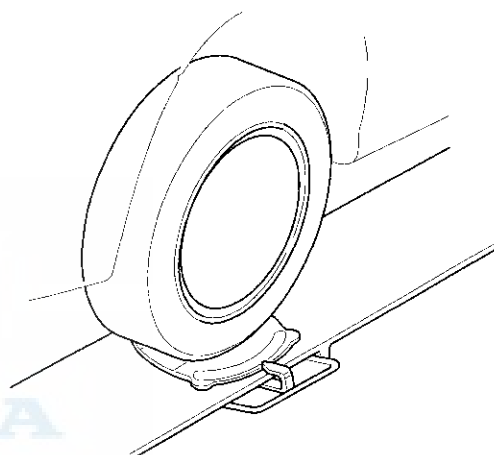
Use commercially available computerized four wheel alignment equipment to measure wheel alignment (caster, camber, toe, and turning angle). Follow the equipment manufacturer's instructions.

1. Turn the wheel right and left while applying the brake, and measure the turning angle of both wheels.

Turning angle:

Inward: $38^\circ 50' \pm 2^\circ$

Outward: $31^\circ 40'$ (reference)



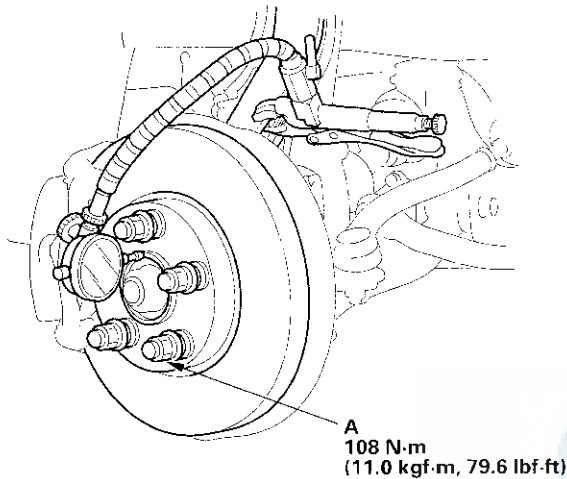
2. If the turning angle is not within the specifications, check for bent or damaged suspension components.

Front and Rear Suspension

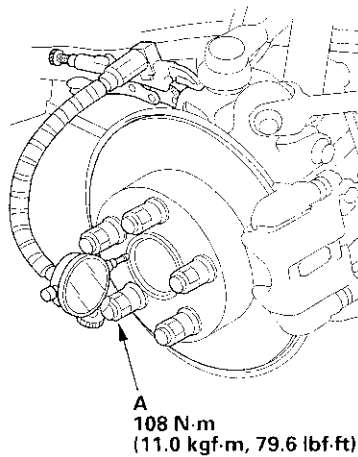
Wheel Bearing End Play Inspection

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheels, then reinstall the wheel nuts (A), and torque to the specified torque.

Front



Rear



3. Attach the dial gauge. Place the dial gauge against the hub flange.

Front/Rear:

Standard: 0—0.05 mm (0—0.002 in.)

4. Measure the bearing end play moving the brake disc inward and outward.
5. If the bearing end play measurement is more than the standard, replace the wheel bearing.

Wheel Runout Inspection

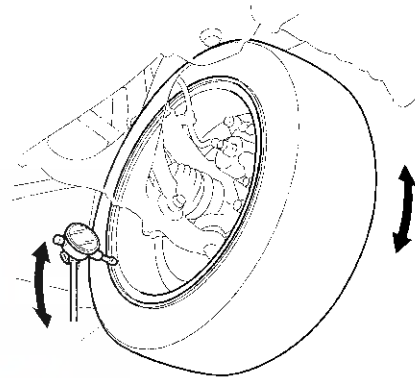
NOTE: When measuring the front wheel runout, turn the other side of the wheel slowly by hand.

1. Raise the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Check for a bent or deformed wheel.
3. Set up the dial gauge as shown, and measure the axial runout by turning the wheel.

Front and rear wheel axial runout:

Standard: 0—0.7 mm (0—0.03 in.)

Service limit: 2.0 mm (0.08 in.)



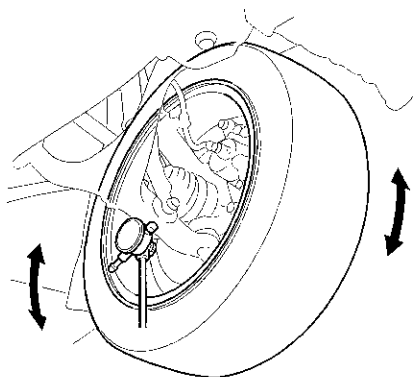


4. Reset the dial gauge to the position shown, and measure the radial runout.

Front and rear wheel radial runout:

Standard: 0—0.7 mm (0—0.03 in.)

Service limit: 1.5 mm (0.06 in.)



5. If the wheel runout is not within the specification, check the wheel bearing end play (see page 18-10), and make sure the mating surfaces on the brake disc or brake drum, and the inside of the wheel are clean.
6. If the bearing end play is within the specification but the wheel runout is more than the service limit, replace the wheel.

Front and Rear Suspension

Ball Joint Removal

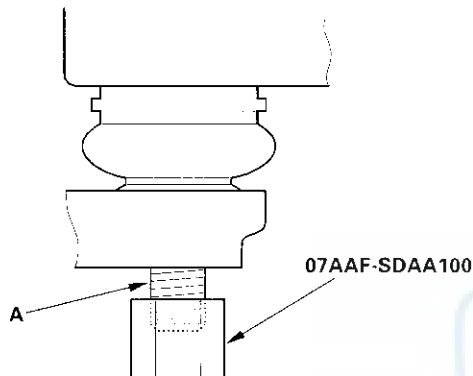
Special Tools Required

- Ball joint thread protector, 12 mm 07AAF-SDAA100
- Ball joint remover, 28 mm 07MAC-SL0A202

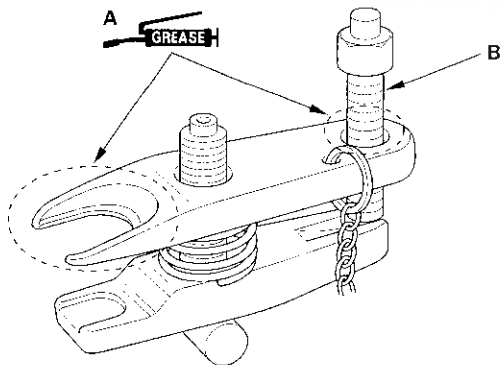
NOTICE

Always use a ball joint remover to disconnect a ball joint. Do not strike the housing or any other part of the ball joint connection to disconnect it.

1. Install the special tool onto the threads of the ball joint (A) by hand until it stops. To prevent damage to the threaded end of the ball joint pin.

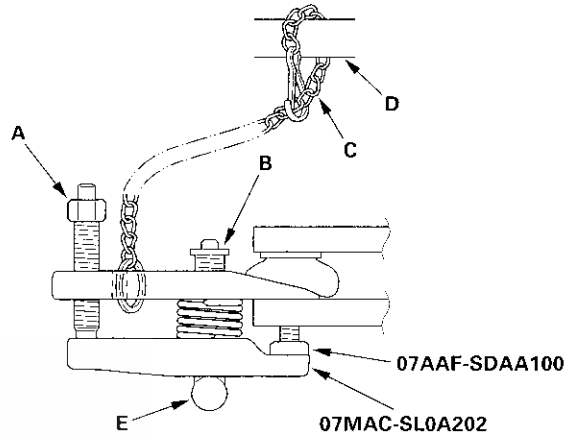


2. Apply grease to the special tool on the areas shown (A). This will ease installation of the tool and prevent damage to the pressure bolt (B) threads.



3. Loosen the pressure bolt (A), and install the special tools as shown. Insert the jaws carefully, making sure not to damage the ball joint boot. Adjust the jaw spacing by turning the adjusting bolt (B).

NOTE: Fasten the safety chain (C) securely to a suspension arm or the subframe (D). Do not fasten it to a brake line or wire harness.



4. After adjusting the adjusting bolt, make sure the head (E) of the adjusting bolt is in the position shown to allow the jaw to pivot.
5. With a wrench, tighten the pressure bolt until the ball joint pin pops loose from the ball joint pin hole. If necessary, apply penetrating type lubricant to loosen the ball joint pin.

NOTE: Do not use pneumatic or electric tools on the pressure bolt.

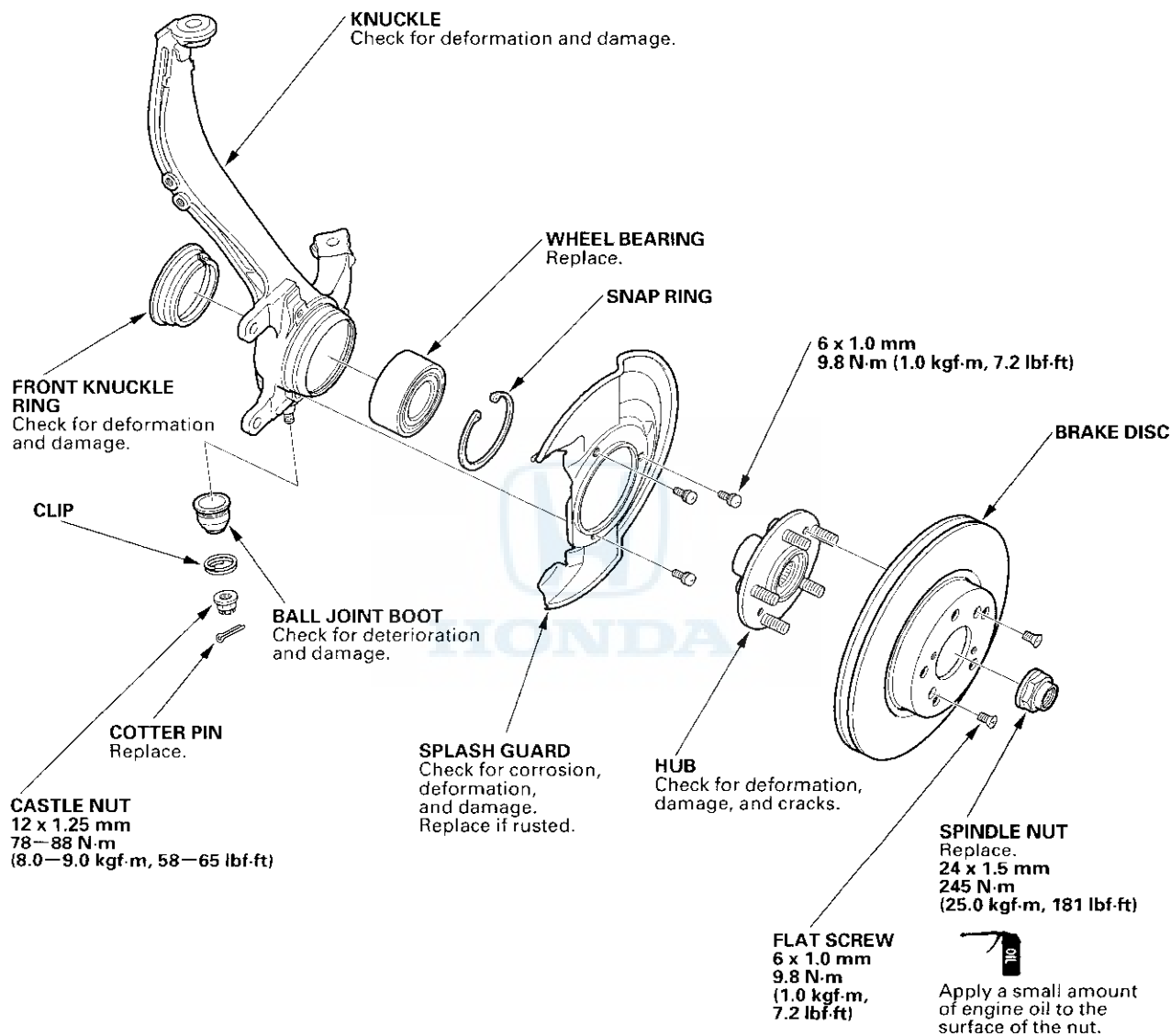
6. Remove the tool, then remove the nut from the end of the ball joint pin, and pull the ball joint out of the ball joint pin hole. Inspect the ball joint boot, and replace it if damaged.

Front Suspension



Knuckle/Hub/Wheel Bearing Replacement

Exploded View



(cont'd)

Front Suspension

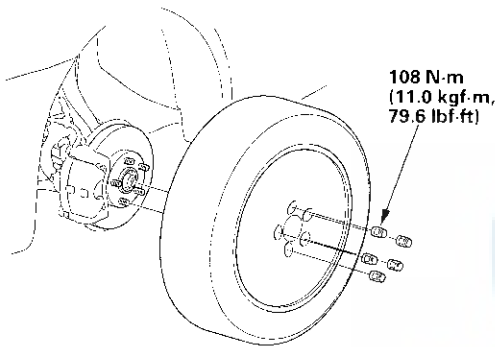
Knuckle/Hub/Wheel Bearing Replacement (cont'd)

Special Tools Required

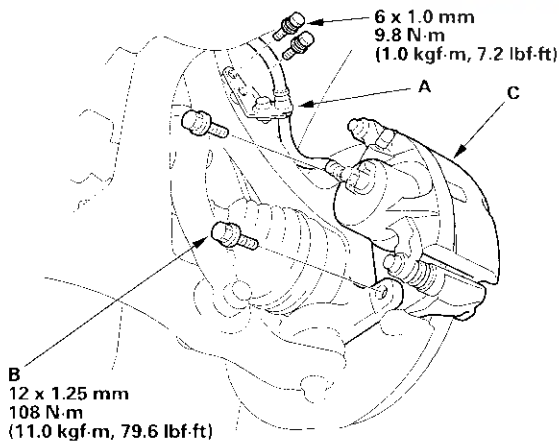
- Hub dis/assembly tool, 42 mm 07GAF-SD40100
- Ball joint remover, 28 mm 07MAC-SL0A202
- Attachment, 72 x 75 mm 07746-0010600
- Attachment, 78 x 90 mm 07GAD-SD40101
- Driver 07749-0010000
- Support base 07965-SD90100
- Ball joint thread protector, 12 mm 07AAF-SDAA100

Knuckle/Hub Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheel nuts and front wheel.

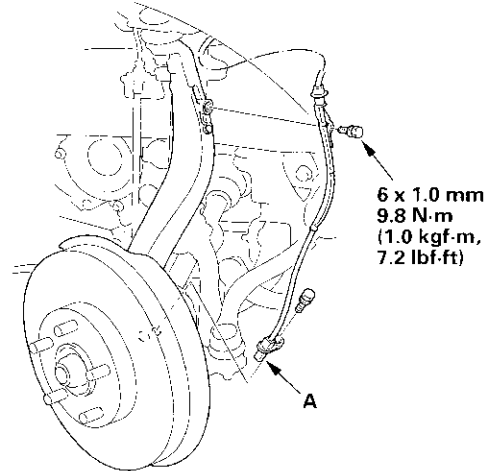


3. Remove the brake hose mounting bracket (A).

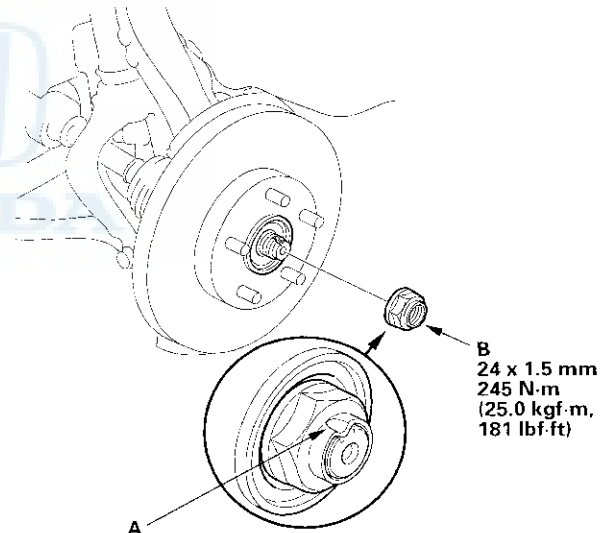


4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Remove the wheel sensor (A) from the knuckle. Do not disconnect the wheel sensor connector.

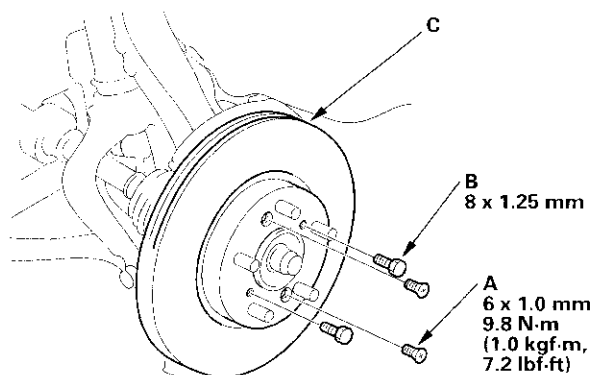


6. Raise the stake (A), and remove the spindle nut (B).





7. Remove the 6 mm brake disc retaining screws (A).

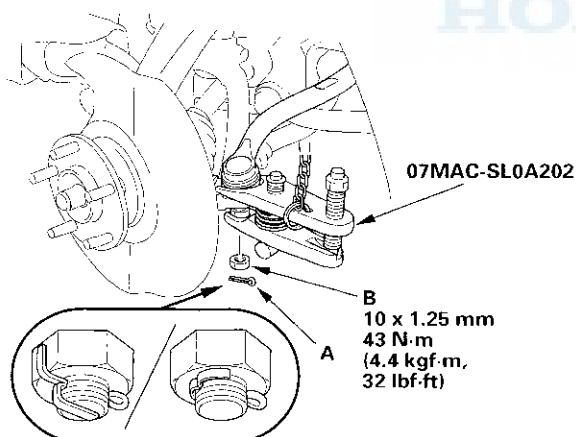


8. Screw two 8 x 1.25 mm bolts (B) into the disc to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively.

9. Remove the brake disc (C) from the hub.

10. Remove the cotter pin (A) from the tie-rod end ball joint, and loosen the nut (B).

NOTE: During installation, install the new cotter pin after tightening the nut, and bend its end as shown.

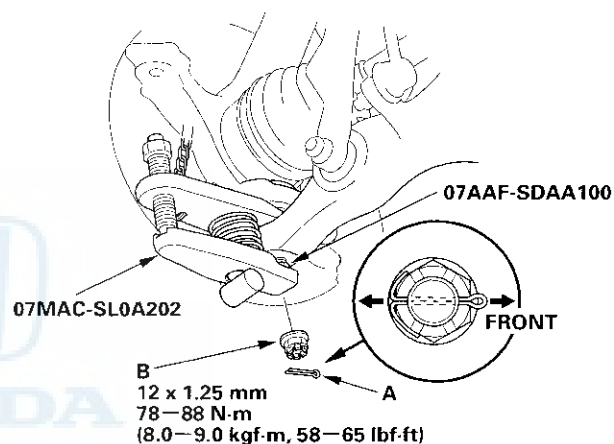


11. Disconnect the tie-rod end ball joint from the knuckle using the special tool (see page 18-12).

12. Remove the cotter pin (A) from the lower arm ball joint, and loosen the nut (B).

NOTE:

- To avoid damaging the ball joint, install the special tool on the threads of the ball joint.
- Be careful not to damage the ball joint boot when installing the remover.
- Do not force or hammer on the lower arm, or pry between the lower arm and the knuckle. You could damage the ball joint.
- Insert the new cotter pin into the ball joint pin hole from the front to the rear of the vehicle, and bend its end as shown.



13. Disconnect the lower arm ball joint from the lower arm using the special tools (see page 18-12).

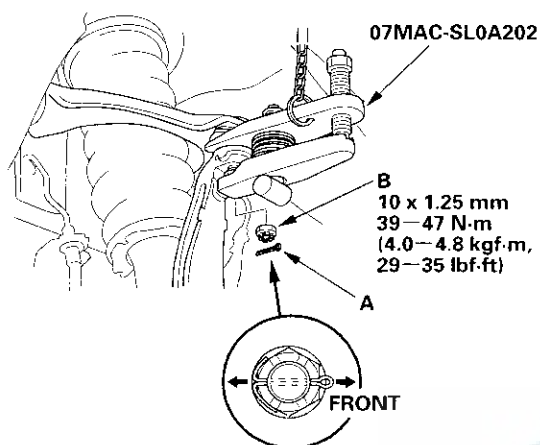
(cont'd)

Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

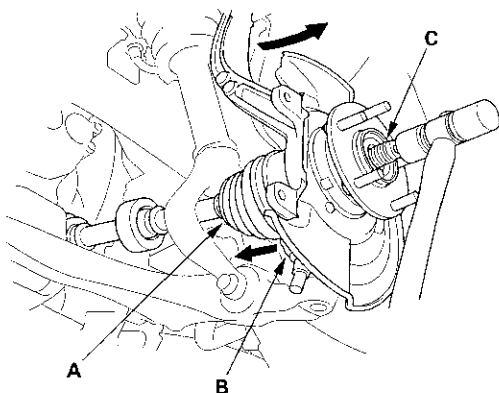
14. Remove the cotter pin (A) from the upper arm ball joint, and loosen the nut (B).

NOTE: During installation, insert the new cotter pin into the ball joint pin from the front to the rear of the vehicle, and bend its end as shown.



15. Disconnect the upper arm ball joint from the knuckle using the special tool (see page 18-12).
16. Remove the driveshaft outboard joint (A) from the knuckle (B) by tapping the driveshaft end (C) with a plastic hammer while drawing the hub outward, then remove the knuckle.

NOTE: Do not pull the driveshaft end outward. The inner driveshaft joint may come apart.



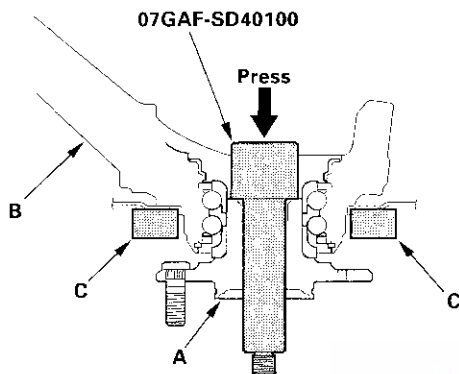
17. Install the knuckle/hub in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when installing the knuckle.
- Before connecting the lower arm ball joint to the lower arm, degrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, and the threaded section and mating surface of the castle nut.
- First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values. Do not place the jack against the ball joint pin of the knuckle.
- Tighten all mounting hardware to the specified torque values.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Install a new cotter pin on the castle nut after torquing.
- Use a new spindle nut on reassembly.
- Before installing the spindle nut, apply a small amount of engine oil to the seating surface of the nut. After tightening, use a drift to stake the spindle nut shoulder against the driveshaft.
- Before installing the brake disc, clean the mating surface of the front hub and the inside of the brake disc.
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
- Check the front wheel alignment, and adjust it if necessary (see page 18-7).

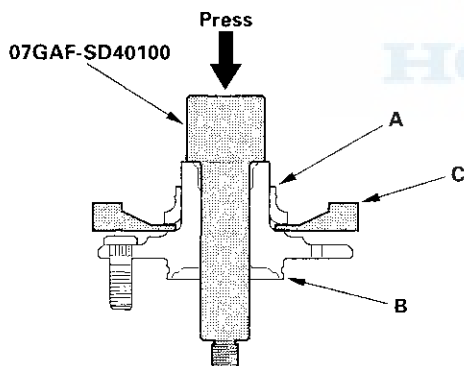


Wheel Bearing Replacement

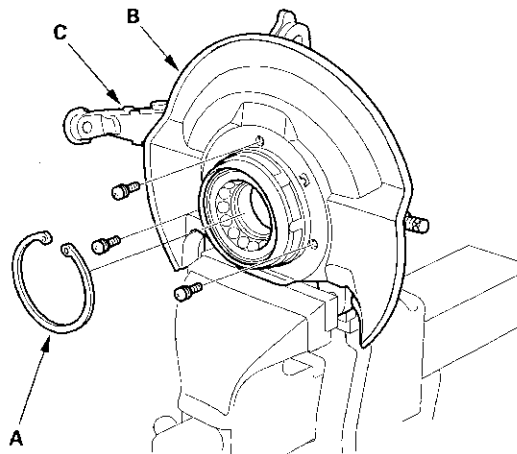
1. Separate the hub (A) from the knuckle (B) using the special tool and a hydraulic press. Hold the knuckle with the attachment (C) of the hydraulic press or equivalent tool. Be careful not to deform the splash guard. Hold onto the hub to keep it from falling when pressed clear.



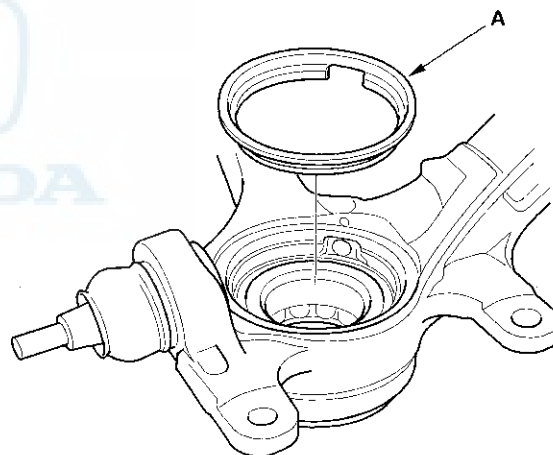
2. Press the wheel bearing inner race (A) off of the hub (B) using the special tool, commercially available bearing separator (C), and a press.



3. Remove the snap ring (A) and the splash guard (B) from the knuckle (C).



4. Check the front knuckle ring (A) for damage or deformation, and replace it if necessary.

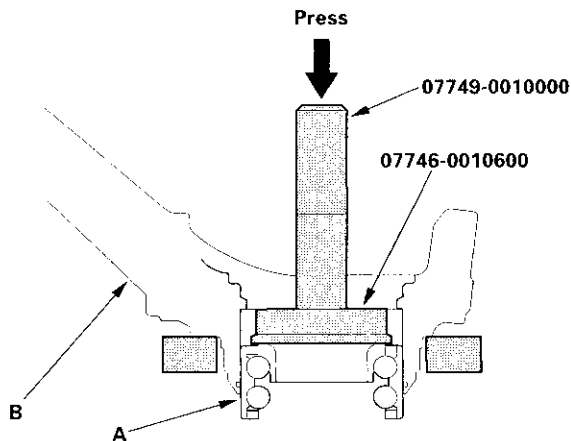


(cont'd)

Front Suspension

Knuckle/Hub/Wheel Bearing Replacement (cont'd)

5. Press the wheel bearing (A) out of the knuckle (B) using the special tools and a press.

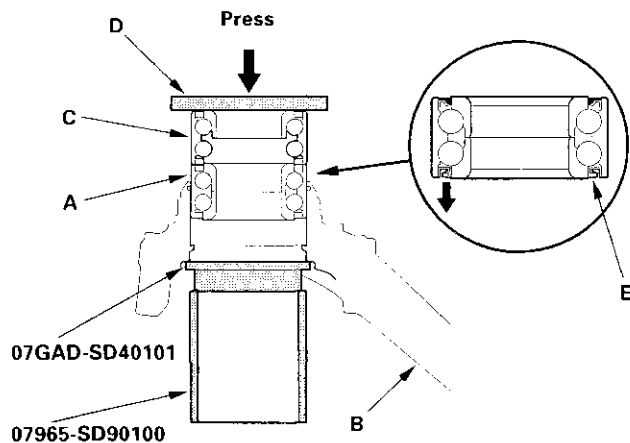


6. Wash the knuckle and hub thoroughly in high flash point solvent before reassembly.

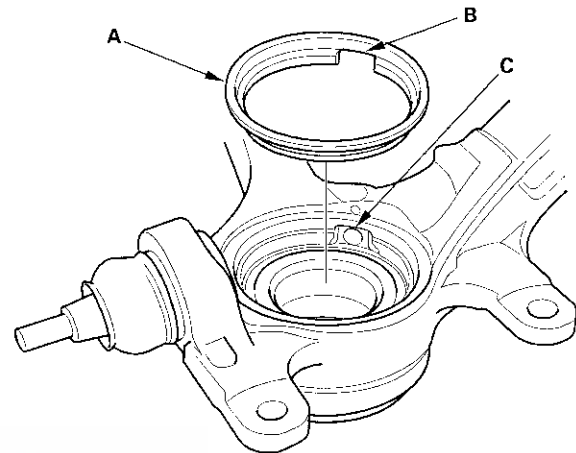
7. Press a new wheel bearing (A) into the knuckle (B) using the old bearing (C), a steel plate (D), the special tools, and a press.

NOTE:

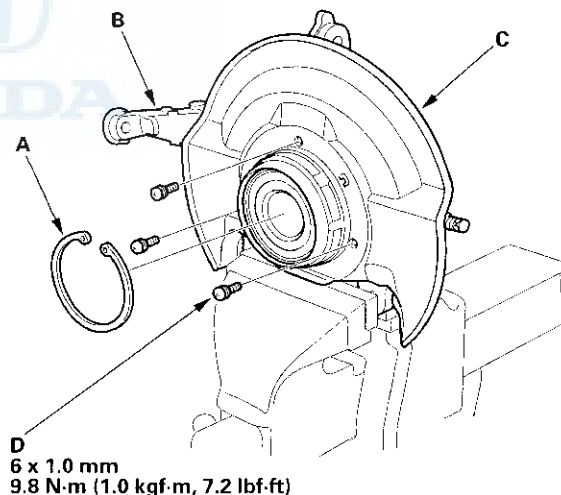
- Install the wheel bearing with the wheel sensor magnetic encoder (E) (brown color), toward the inside of the knuckle.
- Remove any oil, grease, dust, metal debris, and other foreign material from the encoder surface.
- Keep any magnetic tools away from the encoder surface.
- Be careful not to damage the encoder surface when you insert the wheel bearing.



8. Install the new front knuckle ring (A) on the inside of the knuckle by aligning the cutout portion (B) on the ring with the wheel sensor hole (C) in the knuckle. Be careful not to damage or deform the ring when installing it.



9. Install the snap ring (A) securely in the knuckle (B).

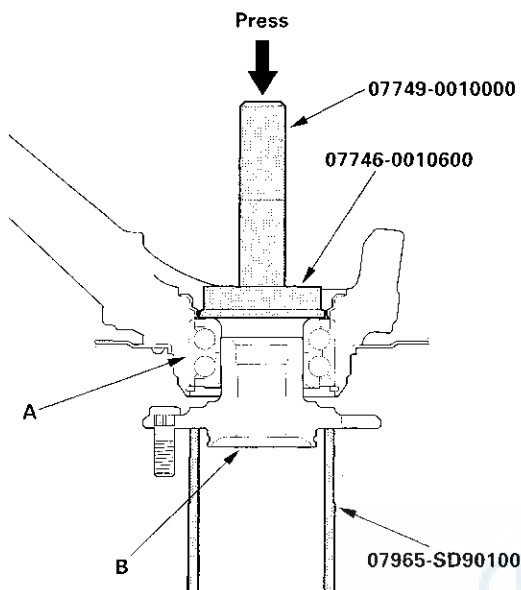


10. Install the splash guard (C), and tighten the screws (D) to the specified torque value.



Ball Joint Boot Replacement

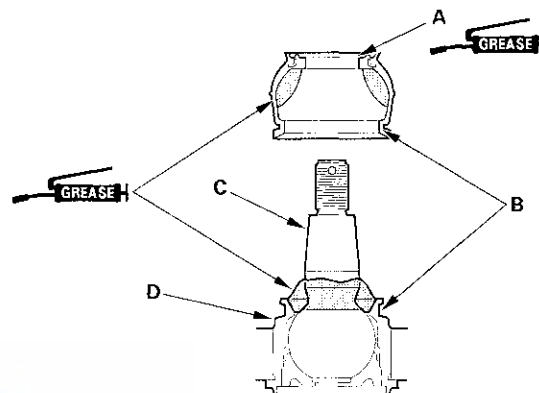
11. Press a wheel bearing (A) onto the hub (B) using the special tools and a press.



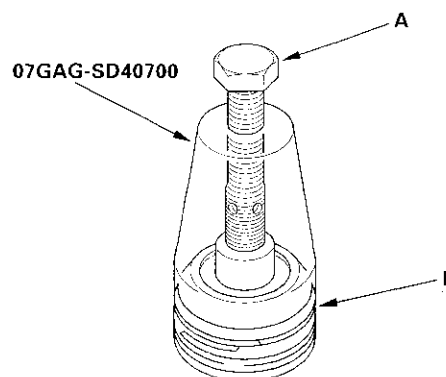
Special Tools Required

Ball joint boot clip guide 07GAG-SD40700

1. Remove the boot clip and the boot.
2. Pack the interior and lip (A) of a new boot with grease. Keep the grease off of the boot-to-knuckle mating surface (B).



3. Wipe the grease off the tapered portion of the pin (C), and pack fresh grease into the base (D). Do not let dirt, or other foreign materials get into the boot.
4. Install the boot on the ball joint, then squeeze it gently to force out any air.
5. Adjust the special tool with the adjusting bolt (A) until its base is just above the groove around the bottom of the boot. Then slide the clip (B) over the tool and into position on the boot.



6. After installing a boot, wipe any grease off the exposed portion of the ball joint pin.

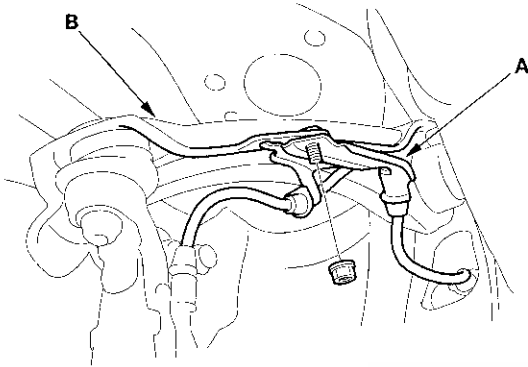
Front Suspension

Upper Arm Replacement

Special Tools Required

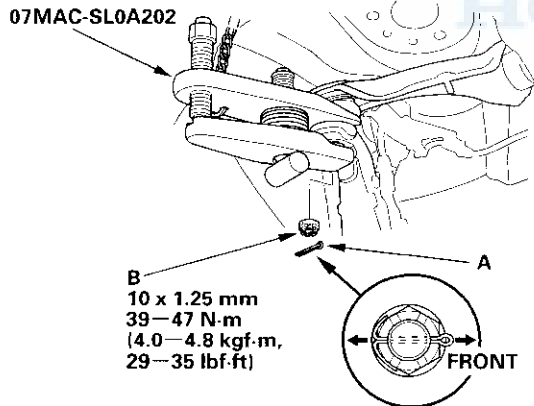
Ball joint remover, 28 mm 07MAC-SL0A202

1. Remove the front damper (see page 18-26).
2. Remove the wheel sensor bracket (A) from the upper arm (B).



3. Remove the cotter pin (A) from the upper arm ball joint, and loosen the nut (B).

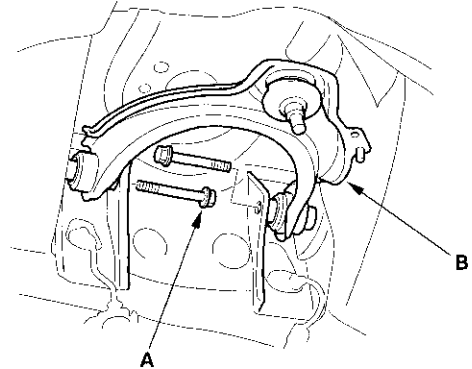
NOTE: During installation, insert the new cotter pin into the ball joint pin hole from the front to the rear of vehicle, and bend its end as shown.



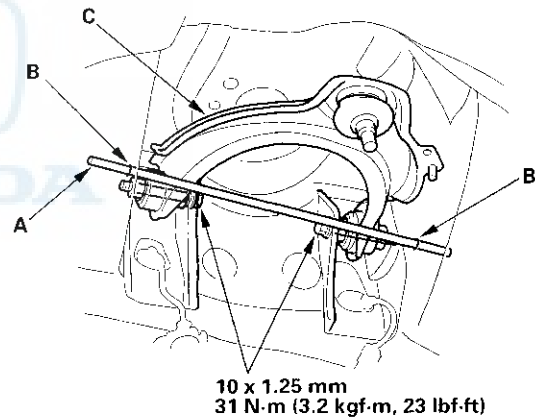
10 x 1.25 mm
39–47 N·m
(4.0–4.8 kgf·m,
29–35 lbf·ft)

4. Disconnect the upper arm ball joint from the knuckle using the special tool (see page 18-12).

5. Remove the upper arm mounting bolts (A), and remove the upper arm (B).



6. Install the upper arm by inserting a rod (A) of appropriate size (O.D. 6 mm/L: 300 mm) into the positioning holes (B), and place the upper arm (C) on the rod to position it before tightening the upper arm mounting bolts.



10 x 1.25 mm
31 N·m (3.2 kgf·m, 23 lbf·ft)



Lower Arm Removal/Installation

7. Install the remaining parts in the reverse order of removal, and note these items:

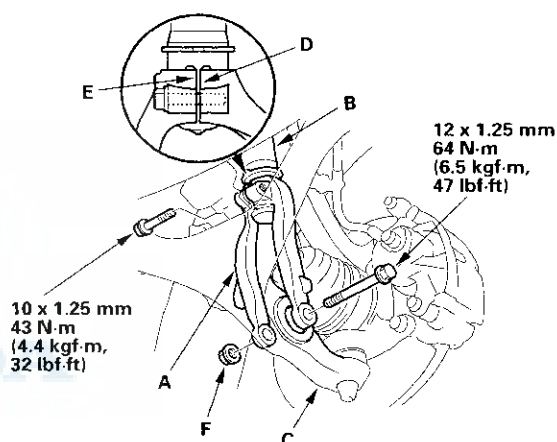
- Be careful not to damage the ball joint boot when installing the knuckle.
- First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values. Do not place the jack against the ball joint pin of the knuckle.
- Tighten all mounting hardware to the specified torque values.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Install a new cotter pin on the castle nut after torquing.
- Before installing the wheel, clean the mating surface on the brake disc and the inside of the wheel.
- Check the front wheel alignment, and adjust it if necessary (see page 18-7).

Special Tools Required

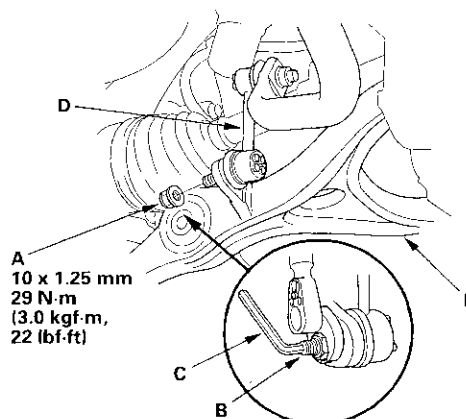
- Ball joint remover, 28 mm 07MAC-SL0A202
- Ball joint thread protector, 12 mm 07AAF-SDAA100

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. Remove the damper fork (A) from the damper (B) and lower arm (C).

NOTE: During installation, insert the damper fork into the damper lower end so the aligning tab (D) is aligned with the slot (E) in the damper fork. Replace the damper fork mounting nut (F) with a new one.



4. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the lower arm (E).



(cont'd)

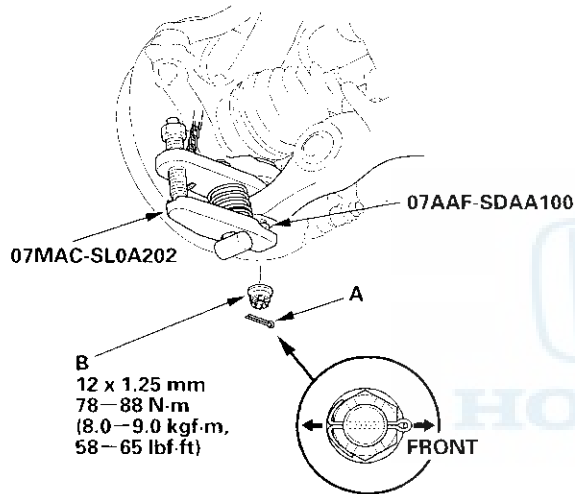
Front Suspension

Lower Arm Removal/Installation (cont'd)

5. Remove the cotter pin (A) from the lower arm ball joint castle nut (B), and remove the nut.

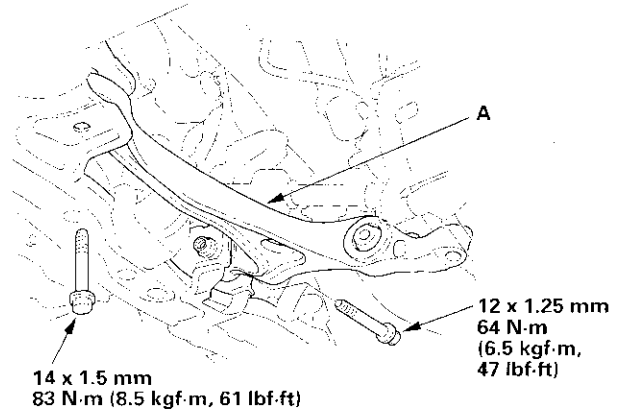
NOTE:

- To avoid damaging the ball joint, install the special tool on the threads of the ball joint.
- Be careful not to damage the ball joint boot when installing the remover.
- Do not force or hammer on the lower arm, or pry between the lower arm and knuckle. You could damage the ball joint.
- Insert the new cotter pin into the ball joint pin hole from the front to the rear of vehicle, and bend its end as shown.



6. Disconnect the lower arm ball joint from the knuckle using the special tools (see page 18-12).

7. Remove the flange bolts, and remove the lower arm (A).



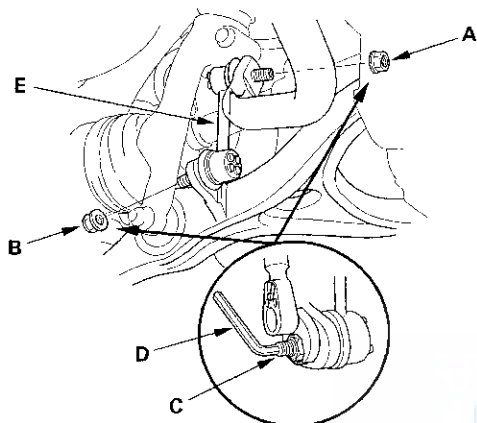
8. Install the lower arm in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when installing the knuckle.
- Before connecting the lower arm ball joint to the lower arm, degrease the threaded section and tapered portion of the ball joint pin, the lower arm connecting hole, and the threaded section and mating surface of the castle nut.
- First install all the components and lightly tighten the bolts and nuts, then raise the suspension to load it with the vehicle's weight before fully tightening to the specified torque values. Do not place the jack against the ball joint pin of the knuckle.
- Tighten all mounting hardware to the specified torque values.
- Torque the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the ball joint pin hole. Do not align the castle nut by loosening it.
- Install a new cotter pin on the castle nut after torquing.
- Before installing the wheel, clean the mating surface of the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-7).



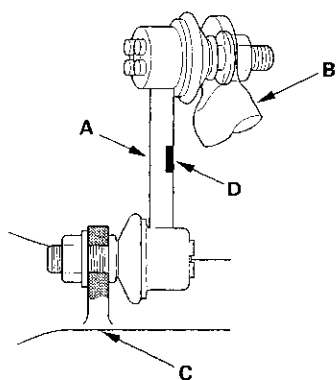
Stabilizer Link Replacement

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheels.
3. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), and remove the stabilizer link (E).



4. Install the stabilizer link (A) on the stabilizer bar (B) and lower arm (C) with the joint pins set at the center of their range of the movement.

NOTE: The left stabilizer link has a yellow paint mark (D), while the right stabilizer link has a white paint mark.



5. Install a new self-locking nut and flange nut, and lightly tighten them.

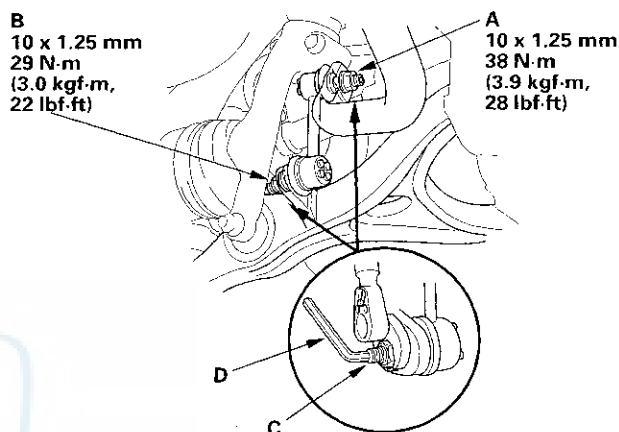
NOTE: Use a new self-locking nut on reassembly.

6. Place the floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight.

NOTICE

Do not place the jack against the ball joint pin of the knuckle.

7. Tighten the new self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pin (C) with a hex wrench (D).

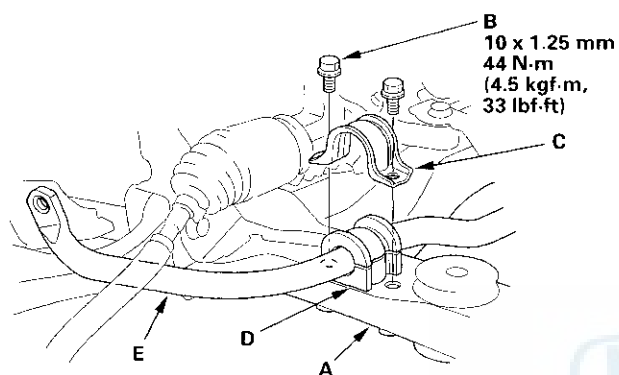


8. After 5 minutes of driving, tighten the self-locking nut again to the specified torque value.

Front Suspension

Stabilizer Bar Replacement

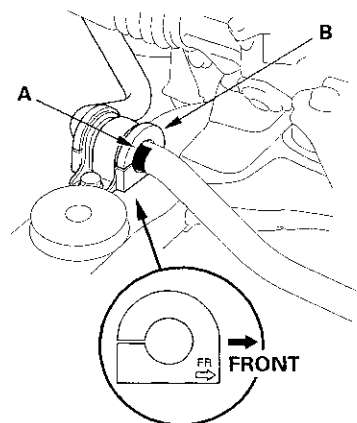
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheels.
3. Disconnect the stabilizer links from the stabilizer bar on the right and left (see page 18-23).
4. Remove the subframe (A) from the body (see page 20-134).



5. Remove the flange bolts (B) and bushing holders (C), then remove the bushings (D) and the stabilizer bar (E).

6. Install the stabilizer bar in the reverse order of removal, and note these items:

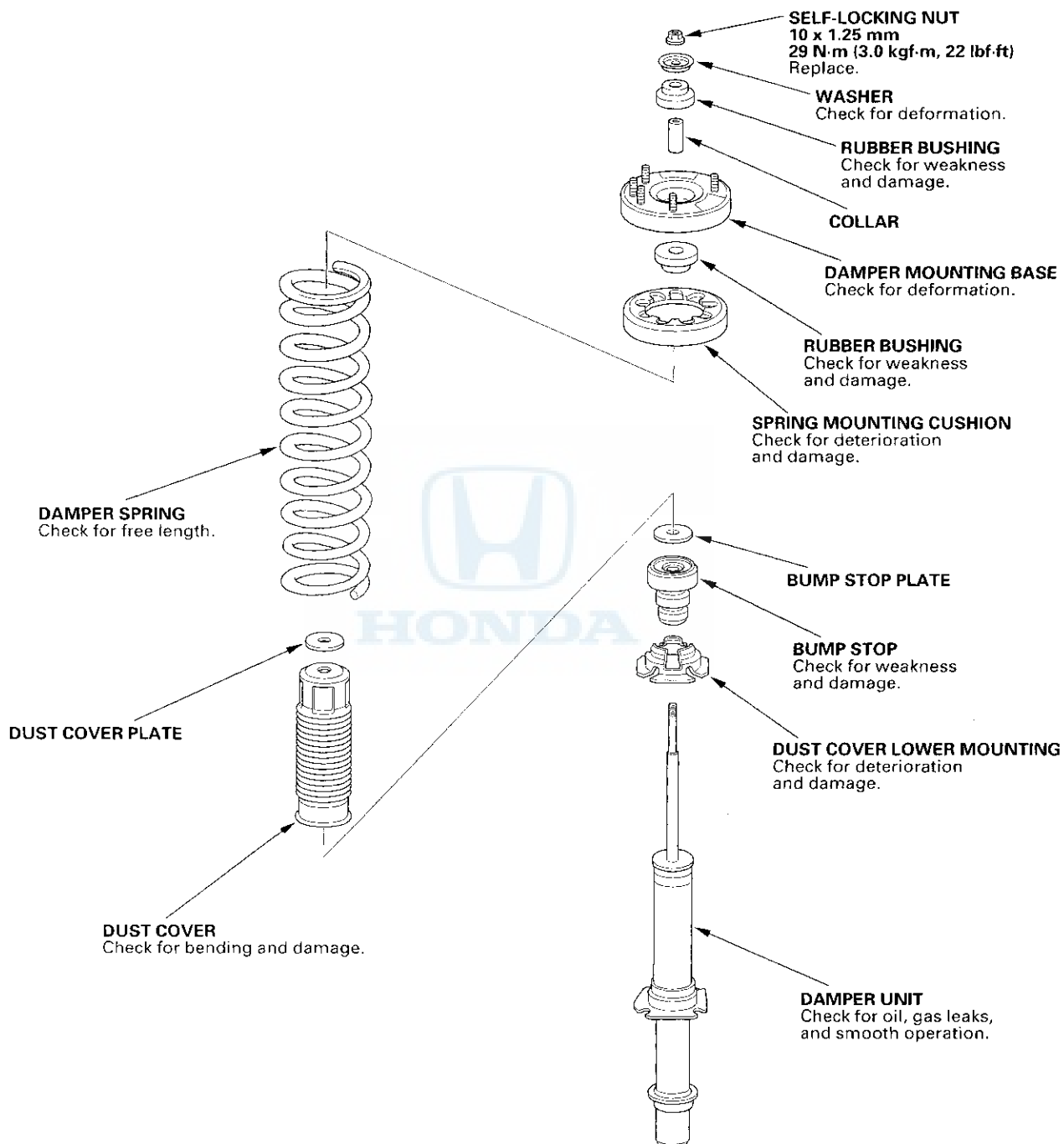
- Note the right and left direction of the stabilizer bar.
- Align the ends of the paint marks (A) on the stabilizer bar with each end of the bushings (B).
- Note the fore/aft direction of the bushing holders.
- Refer to Stabilizer Link Replacement to connect the stabilizer bar to the links (see page 18-23).





Damper/Spring Replacement

Exploded View



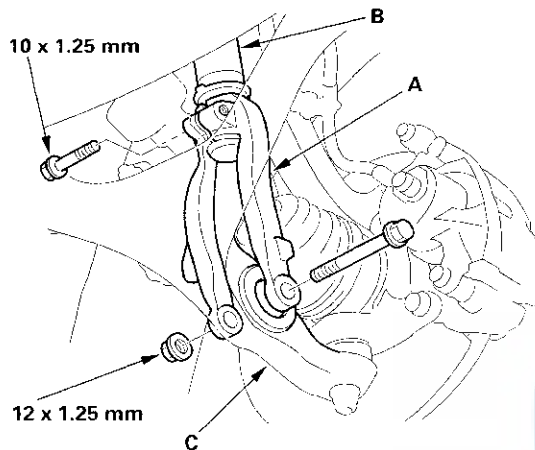
(cont'd)

Front Suspension

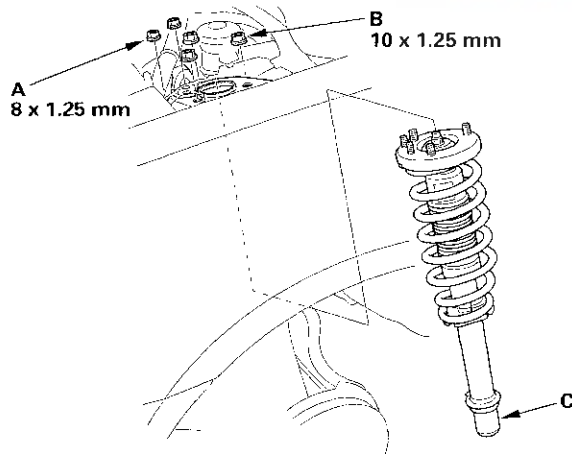
Damper/Spring Replacement (cont'd)

Removal

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the front wheel.
3. Remove the damper fork (A) from the damper (B) and lower arm (C).

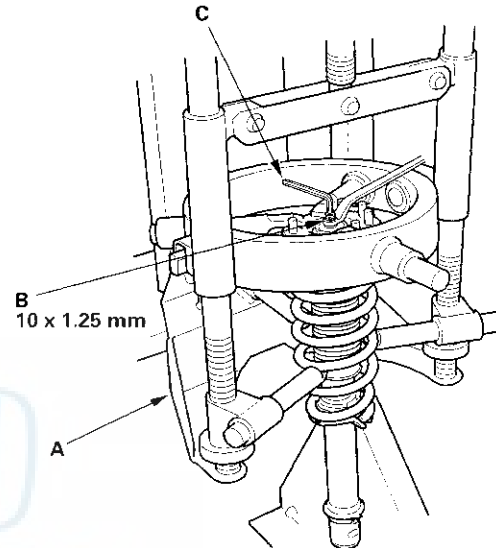


4. Remove the two 8 mm flange nuts (A) and three 10 mm flange nuts (B) from the top of the damper, and remove the damper assembly (C).



Disassembly/Inspection

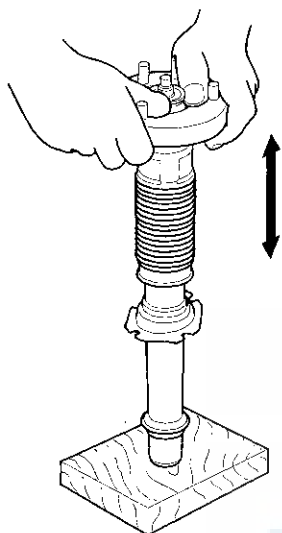
1. Compress the damper spring with commercially available strut spring compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft with a hex wrench (C). Do not compress the spring more than necessary to remove the nut.



2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.



3. Reassemble all the parts, except for the spring mounting cushion and spring.
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.

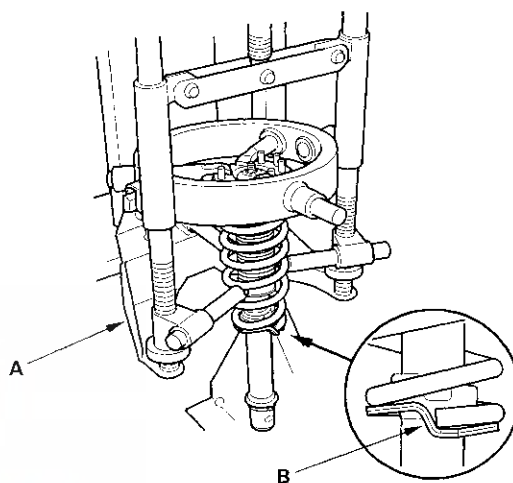


5. Check for oil leaks, abnormal noises, and binding during these tests.

Reassembly

NOTE: Refer to the Exploded View as needed.

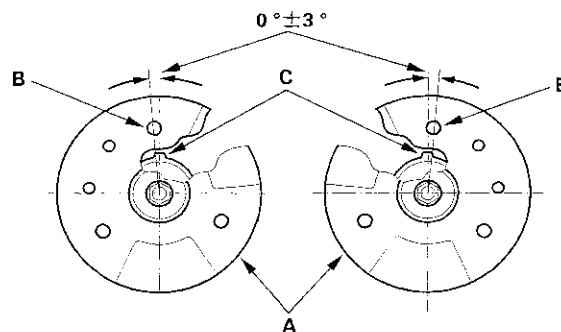
1. Assemble the damper disassembled parts except for the washer and self-locking nut.
2. Install the damper assembly on commercially available strut spring compressor (A), and compress the spring lightly.



3. Align the bottom of the spring and the stepped part (B) of the lower spring seat.
4. Position the damper mounting base (A) so the stud bolt (B) in it is aligned with the aligning tab (C) in the damper unit.

LEFT:

RIGHT:



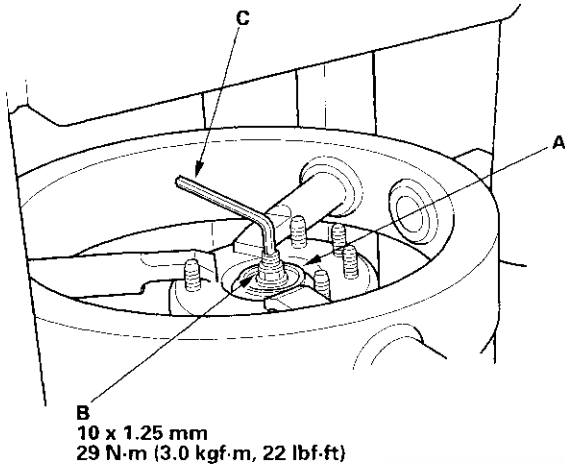
5. Compress the damper spring. Do not compress the spring excessively.

(cont'd)

Front Suspension

Damper/Spring Replacement (cont'd)

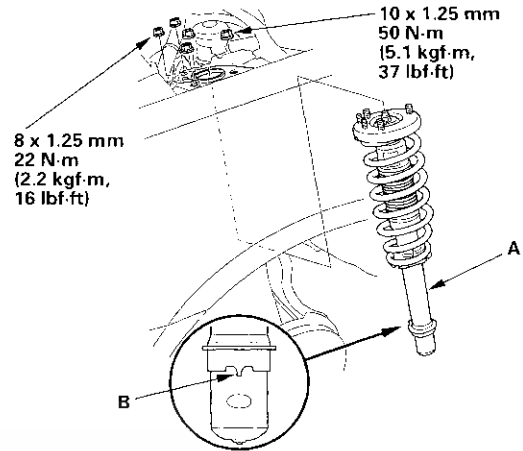
6. Install the washer (A) and a new 10 mm self-locking nut (B). Hold the damper shaft with a hex wrench (C), and tighten the 10 mm self-locking nut to the specified torque value.



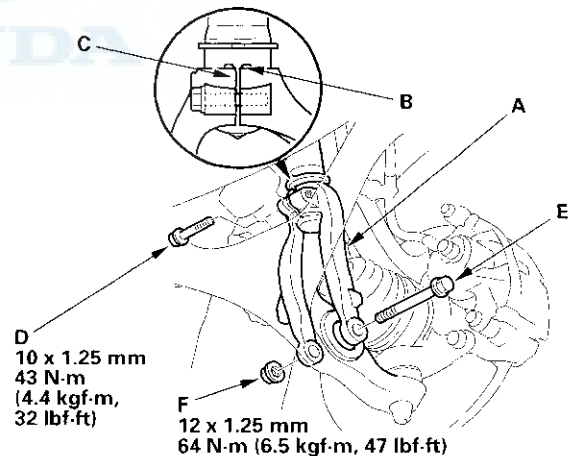
7. Remove the damper assembly from the strut spring compressor.

Installation

1. Position the damper assembly (A) in the body with the aligning tab (B) facing inside, then loosely install the flange nuts.



2. Install the damper fork (A) over the driveshaft and onto the lower arm. Install the front damper in the damper fork so the aligning tab (B) is aligned with the slot (C) in the damper fork.

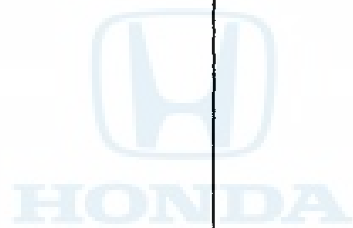


3. Loosely install the damper pinch bolt (D) into the damper fork.
4. Install the flange bolt (E) to the damper fork and lower arm, and lightly tighten the new damper fork mounting nut (F).

NOTE: Use a new damper fork mounting nut on reassembly.



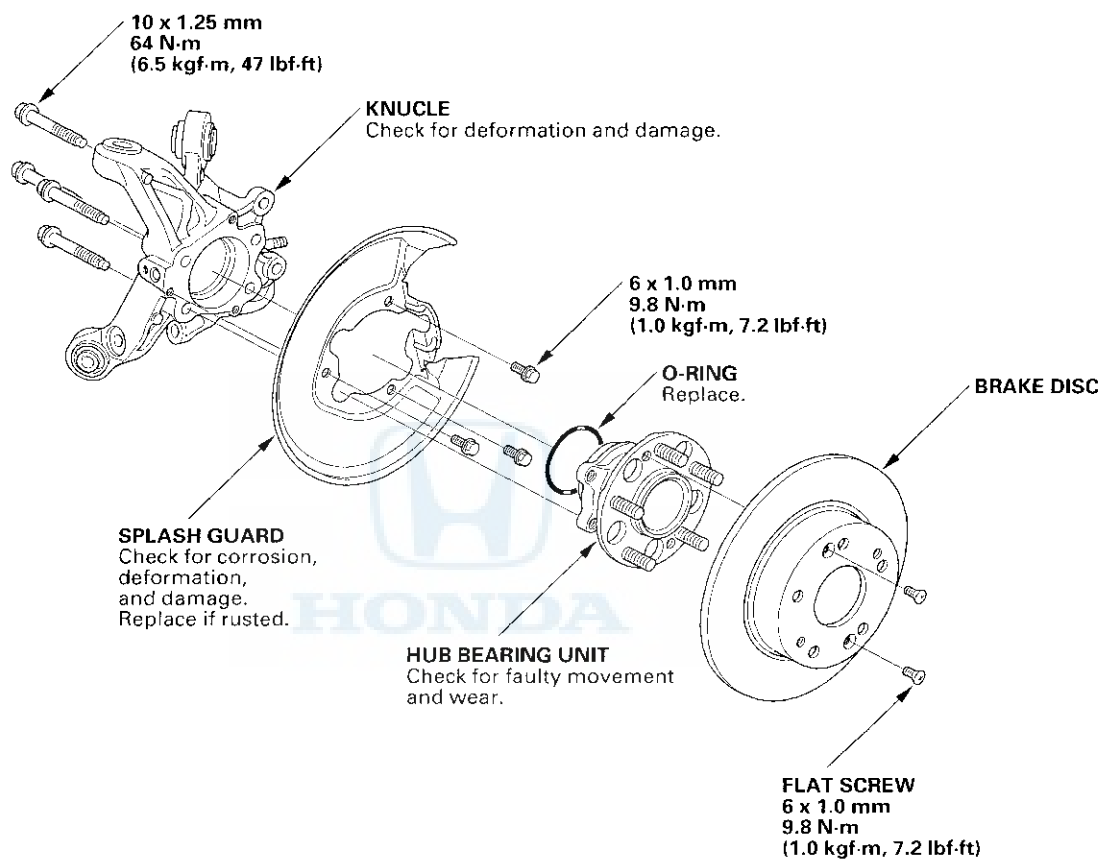
5. Place the floor jack under the lower arm, and raise the suspension to load it with the vehicle's weight.
6. Tighten the flange nuts on the top of the damper to the specified torque values.
7. Tighten the damper pinch bolts to the specified torque value.
8. Tighten the flange nut on the damper fork to the specified torque value.
9. Clean the mating surface of the brake disc and the inside of the wheel, then install the front wheel.



Rear Suspension

Knuckle/Hub Replacement

Exploded View



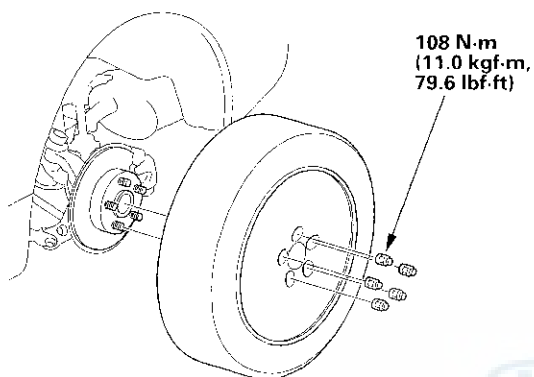


Special Tools Required

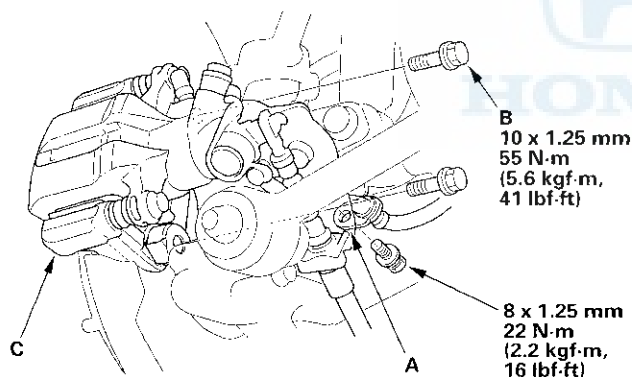
Ball joint remover, 28 mm 07MAC-SL0A202

Hub Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the wheel nuts, and rear wheel.

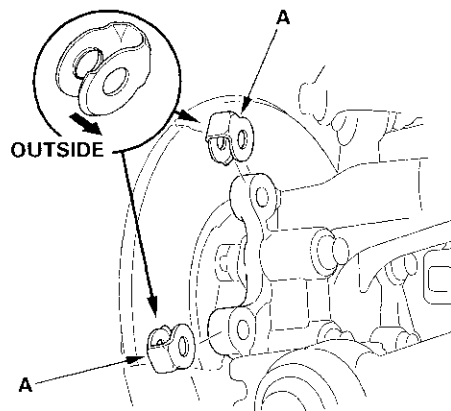


3. Remove the brake hose mounting bracket (A).

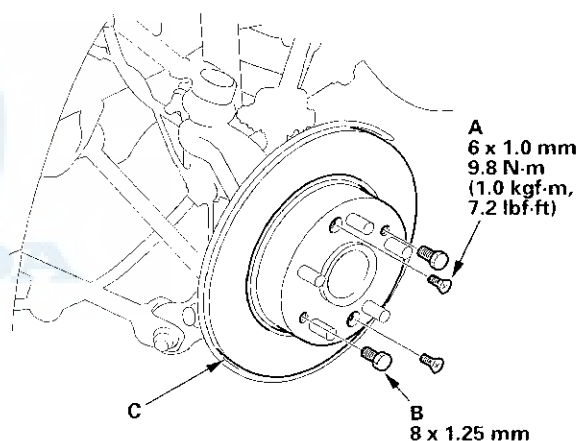


4. Remove the brake caliper bracket mounting bolts (B), and remove the caliper assembly (C) from the knuckle. To prevent damage to the caliper assembly or brake hose, use a short piece of wire to hang the caliper assembly from the undercarriage. Do not twist the brake hose with force.

5. Remove the two washers (A).



6. Remove the 6 mm brake disc retaining screws (A).



7. Screw two 8 x 1.25 mm bolts (B) into the disc to push it away from the hub. Turn each bolt two turns at a time to prevent cocking the disc excessively.

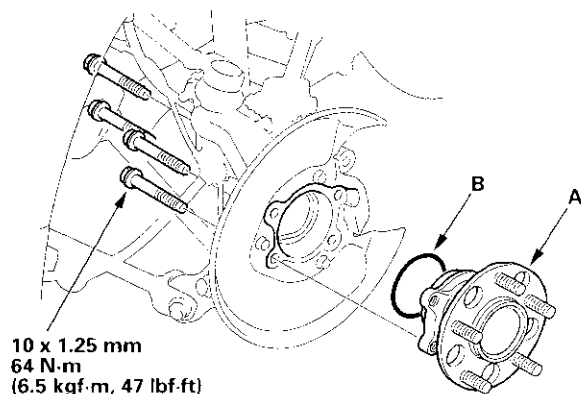
8. Remove the brake disc (C).

(cont'd)

Rear Suspension

Knuckle/Hub Replacement (cont'd)

9. Remove the hub bearing unit (A) and O-ring (B).

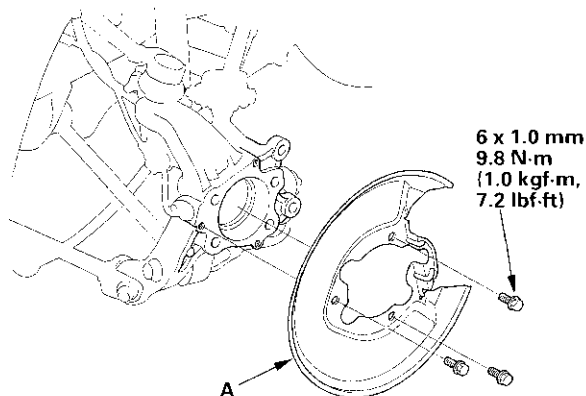


10. Install the hub bearing unit in the reverse order of removal, and note these items:

- Use a new O-ring on reassembly.
- Tighten all mounting hardware to the specified torque values.
- Before installing the brake disc, clean the matching surfaces of the hub bearing unit and brake disc.
- Before installing the wheel, clean the mating surfaces of the brake disc and the inside of the wheel.

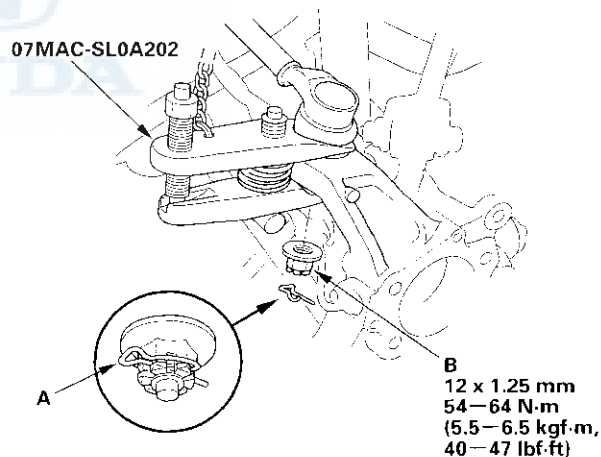
Knuckle Replacement

1. Remove the hub bearing unit.
2. Remove the splash guard (A).



3. Remove the clip (A) from the upper arm ball joint, and loosen the nut (B).

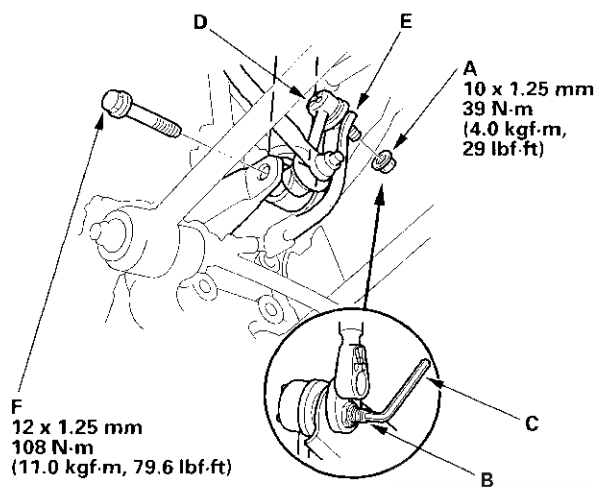
NOTE: During installation, install the new clip after tightening the nut as shown.



4. Disconnect the upper arm ball joint from the knuckle using the special tool (see page 18-12).

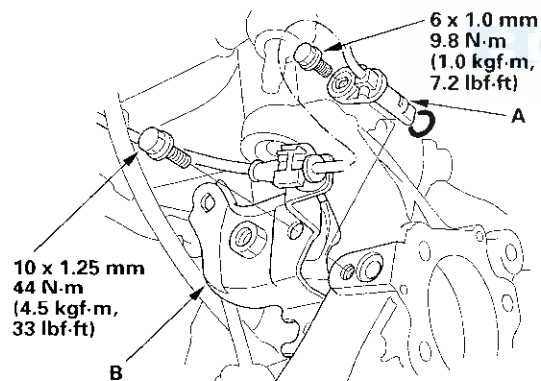


5. Remove the flange nut (A) while holding the joint pin (B) with a hex wrench (C), and disconnect the stabilizer link (D) from the stabilizer link bracket (E).



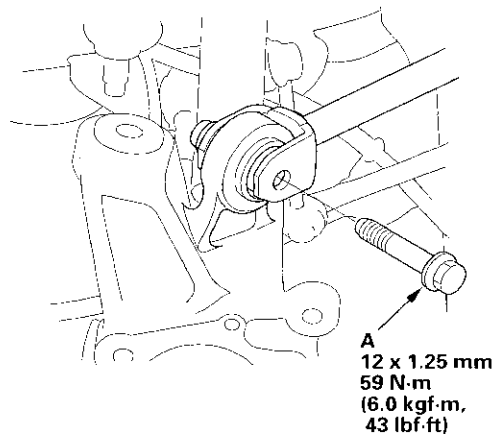
6. Remove the damper lower mounting bolt (F), and disconnect the damper from the knuckle.

7. Remove the wheel sensor (A) from the knuckle. Do not disconnect the wheel sensor connector.

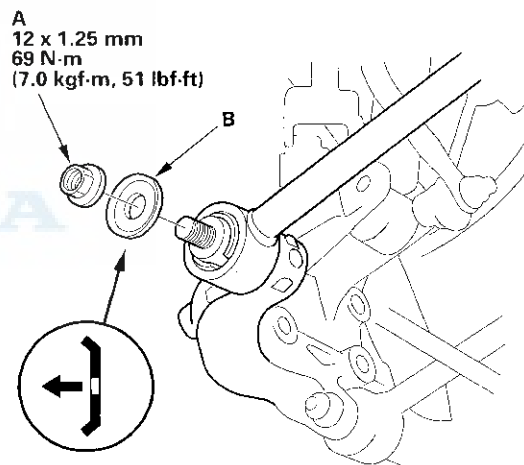


8. Remove the stabilizer link bracket (B) from the knuckle.

9. Remove the leading arm mounting bolt (A) from the knuckle.



10. Remove the control arm mounting nut (A) and washer (B).

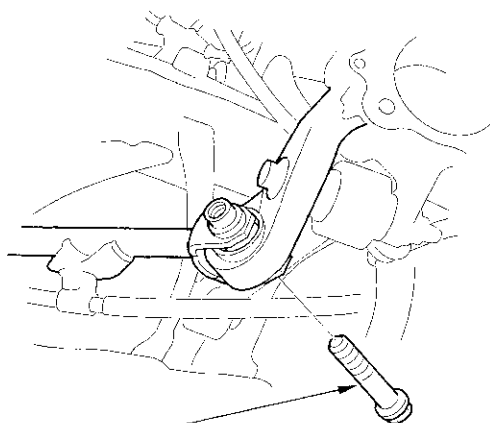


(cont'd)

Rear Suspension

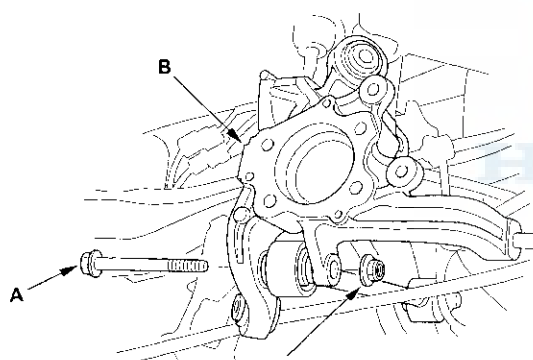
Knuckle/Hub Replacement (cont'd)

11. Remove the trailing arm mounting bolt (A) from the knuckle.



A
12 x 1.25 mm
59 N·m (6.0 kgf-m, 43 lbf-ft)

12. Remove the lower arm mounting bolt (A), and remove the knuckle (B).



12 x 1.25 mm
108 N·m (11.0 kgf-m, 79.6 lbf-ft)

13. Install the knuckle in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when connecting the upper arm to the knuckle.
- Use a new lower arm mounting nut and control arm mounting nut on reassembly.
- Tighten the castle nut to the lower torque value, then tighten it only far enough to align the slot with the hole in the stud. Do not align the castle nut by loosening it.
- Tighten all mounting hardware to the specified torque values.
- Before installing the wheel, clean the mating surface on the brake disc and the inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-7).



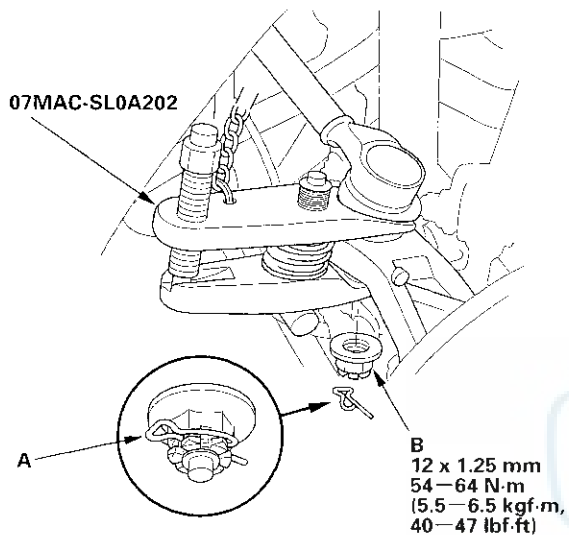
Upper Arm Removal/Installation

Special Tools Required

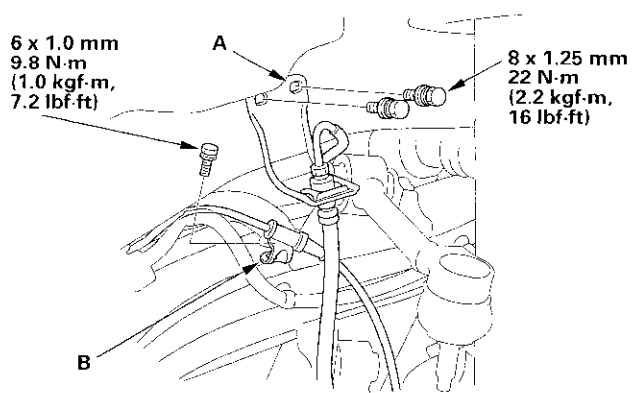
Ball joint remover, 28 mm 07MAC-SL0A202

1. Remove the lock pin (A) from the upper arm ball joint, and loosen the nut (B).

NOTE: During installation, install the new lock pin after tightening the nut as shown.

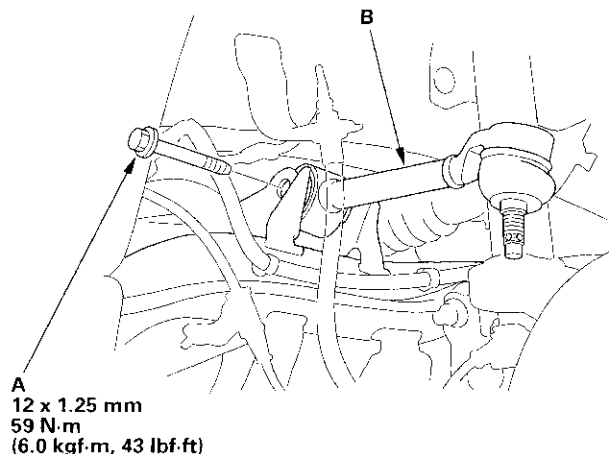


2. Disconnect the upper arm ball joint from the knuckle using the special tool (see page 18-12).
3. Remove the brake hose mounting bracket (A). Do not disconnect the brake line.



4. Remove the wheel sensor harness mounting bracket (B).

5. Remove the flange bolt (A), and remove the upper arm (B).



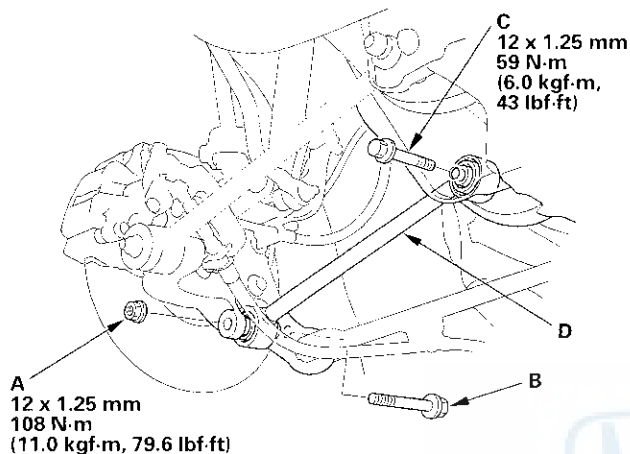
6. Install the upper arm in the reverse order of removal, and note these items:

- Be careful not to damage the ball joint boot when connecting the upper arm to the knuckle.
- Tighten all mounting hardware to the specified torque values.
- Tighten the castle nut to the lower torque specification, then tighten it only far enough to align the slot with the hole in the stud. Do not align the castle nut by loosening it.
- Before installing the wheel, clean the mating surface on the brake disc and inside of the wheel.
- Check the wheel alignment, and adjust it if necessary (see page 18-7).

Rear Suspension

Lower Arm Replacement

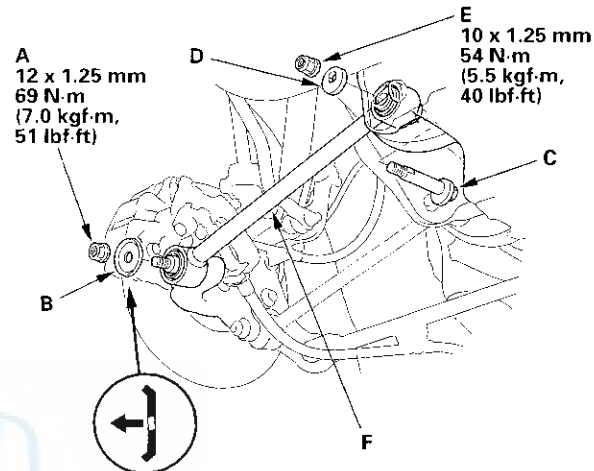
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the lower arm mounting nut (A) and mounting bolt (B) from the knuckle side.



4. Remove the flange bolt (C), and remove the lower arm (D).
5. Install the lower arm in the reverse order of removal, and note these items:
 - Use a new lower arm mounting nut on reassembly.
 - Tighten all mounting hardware to the specified torque values.
 - Before installing the wheel, clean the mating surface on the brake disc and inside of the wheel.
 - Check the wheel alignment, and adjust it if necessary (see page 18-7).

Control Arm Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the control arm mounting nut (A) and washer (B) from the knuckle side.

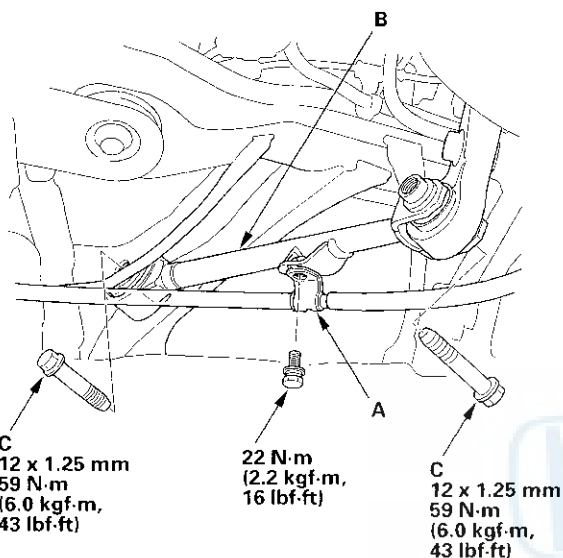


4. Mark the cam positions of the adjusting bolt (C) and adjusting cam (D), then remove the self-locking nut (E), and adjusting cam, and adjusting bolt. Discard the self-locking nut and control arm mounting nut.
5. Remove the control arm (F).
6. Install the control arm in the reverse order of removal, and note these items:
 - Align the cam positions of the adjusting bolt and adjusting cam with the marked positions when tightening.
 - Use a new self-locking nut and control arm mounting nut on reassembly.
 - Tighten all mounting hardware to the specified torque values.
 - Before installing the wheel, clean the mating surface on the brake disc and inside of the wheel.
 - Check the wheel alignment, and adjust it if necessary (see page 18-7).



Trailing Arm Removal/Installation

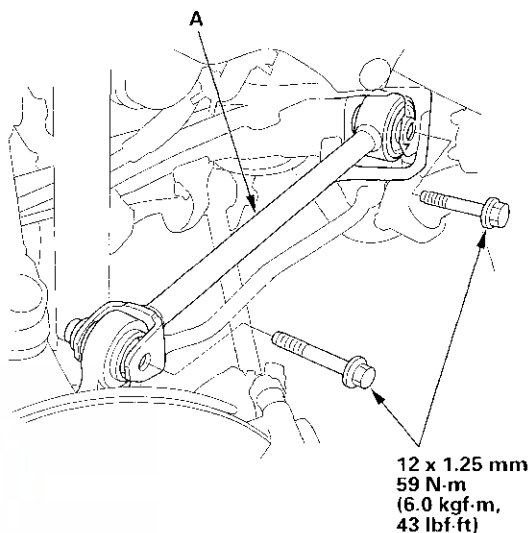
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the parking brake cable bracket (A) from the trailing arm (B).



4. Remove the mounting bolts (C), and remove the trailing arm.
5. Install the trailing arm in the reverse order of removal, and note these items:
 - Tighten all mounting hardware to the specified torque values.
 - Before installing the wheel, clean the mating surface on the brake disc and inside of the wheel.
 - Check the wheel alignment, and adjusting it if necessary (see page 18-7).

Leading Arm Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheel.
3. Remove the mounting bolts, and remove the leading arm (A).

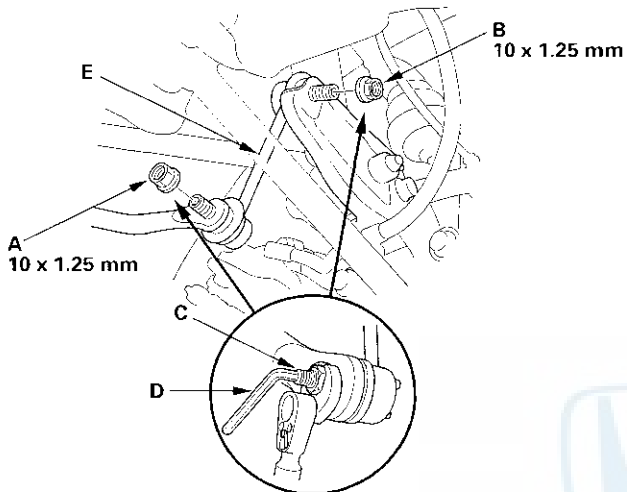


4. Install the leading arm in the reverse order of removal, and note these items:
 - Tighten all mounting hardware to the specified torque values.
 - Before installing the wheel, clean the mating surface on the brake disc and inside of the wheel.
 - Check the wheel alignment, and adjust it if necessary (see page 18-7).

Rear Suspension

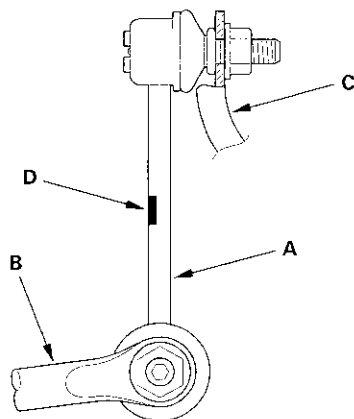
Stabilizer Link Removal/Installation

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheels.
3. Remove the self-locking nut (A) and flange nut (B) while holding the respective joint pin (C) with a hex wrench (D), and remove the stabilizer link (E).



4. Install the stabilizer link (A) on the stabilizer bar (B) and stabilizer link bracket (C) with the joint pins set at the center of their range of the movement.

NOTE: The left stabilizer link has a white paint mark (D), while the right stabilizer link has a yellow paint mark.

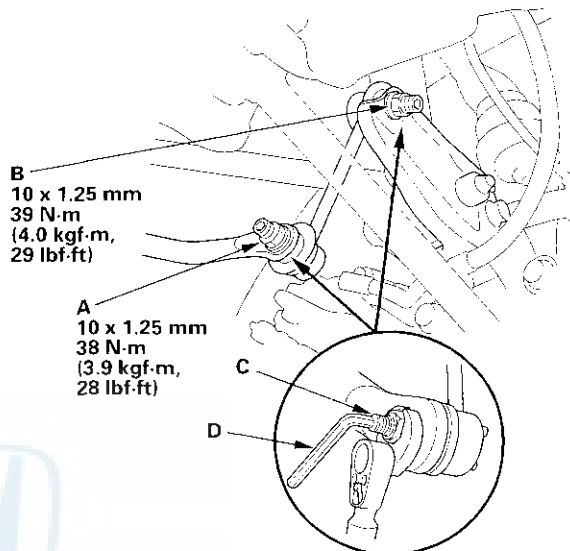


5. Install the new self-locking nut and flange nut, and lightly tighten them.

NOTE: Use a new self-locking nut on reassembly.

6. Place a jack under the knuckle, and raise the suspension to load it with the vehicle's weight.

7. Tighten the self-locking nut (A) and flange nut (B) to the specified torque values while holding the respective joint pins (C) with a hex wrench (D).

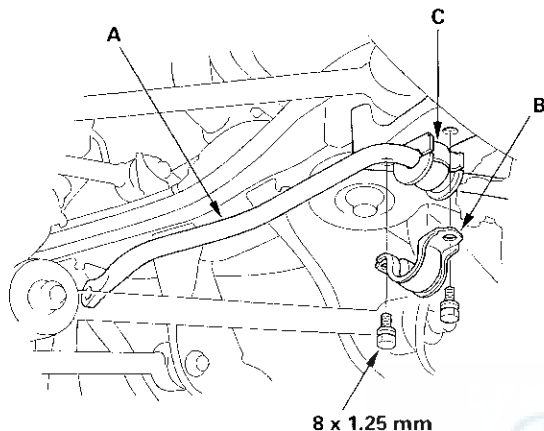


8. After 5 minutes of driving, tighten the self-locking nut again to the specified torque value.



Stabilizer Bar Replacement

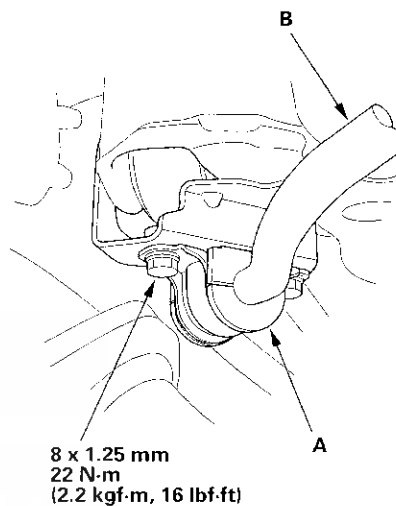
1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
2. Remove the rear wheels.
3. Disconnect the stabilizer links from the stabilizer bar (A) on the right and left (see page 18-38).



4. Remove the flange bolts and bushing holders (B), then remove the bushing (C) and the stabilizer bar.

5. Install the stabilizer bar in the reverse order of removal, and note these items:

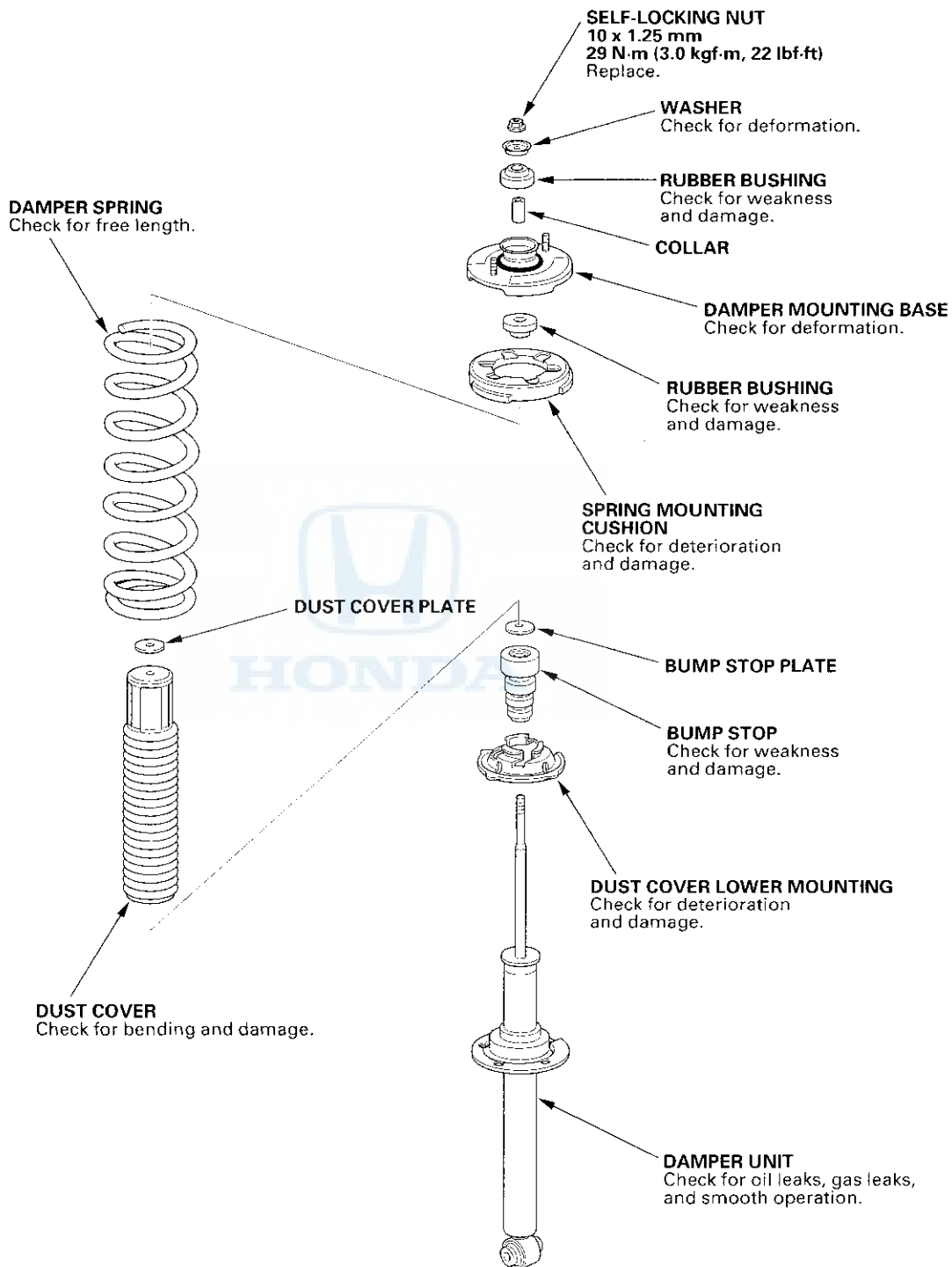
- Note the right and left direction of the stabilizer bar.
- Do not set the bushing (A) on the bent or curved part of the stabilizer bar (B).
- Refer to Stabilizer Link Replacement to connect the stabilizer to the links (see page 18-38).



Rear Suspension

Damper/Spring Replacement

Exploded View



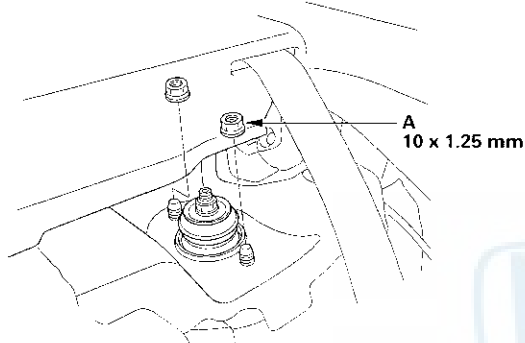


Special Tools Required

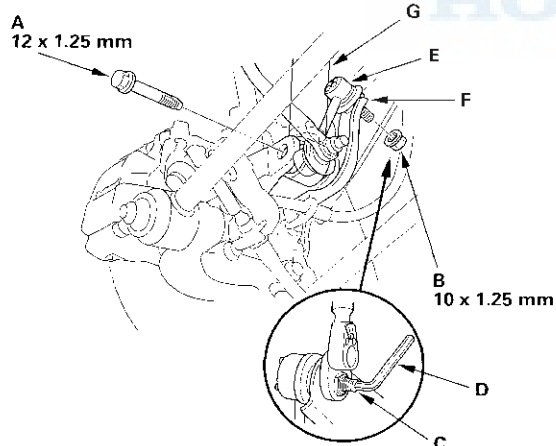
Strut spring compressor, Branick MST-580A or Model 7200 or equivalent, commercially available

Removal

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the rear wheel.
2. Remove the rear seat (see page 20-95).
3. Remove the two flange nuts (A).



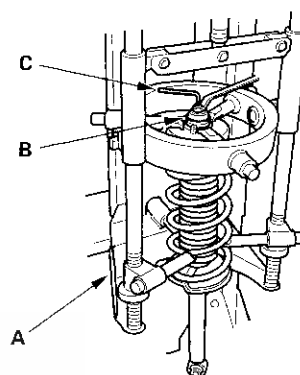
4. Remove the flange bolt (A) from the knuckle.



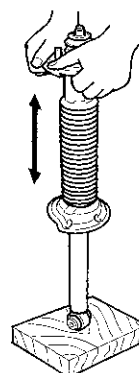
5. Remove the flange nut (B) while holding the joint pin (C) with a hex wrench (D), and disconnect the stabilizer link (E) from the stabilizer link bracket (F).
6. Lower the rear suspension, and remove the damper (G) from the vehicle. The left and right damper springs are different. Mark the springs L and R before you continue.

Disassembly/Inspection

1. Compress the damper spring with the commercially available strut spring compressor (A) according to the manufacturer's instructions, then remove the self-locking nut (B) while holding the damper shaft with a hex wrench (C). Do not compress the spring more than necessary to remove the self-locking nut.



2. Release the pressure from the strut spring compressor, then disassemble the damper as shown in the Exploded View.
3. Reassemble all parts, except the spring.
4. Compress the damper assembly by hand, and check for smooth operation through a full stroke, both compression and extension. The damper should extend smoothly and constantly when compression is released. If it does not, the gas is leaking and the damper should be replaced.



5. Check for oil leaks, abnormal noises, and binding during these tests.

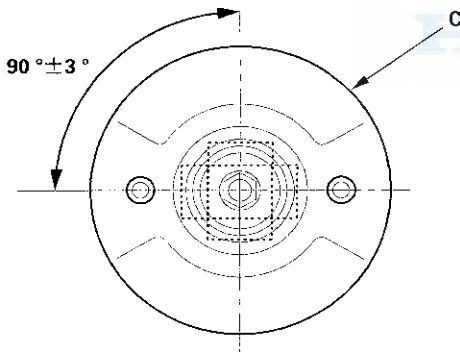
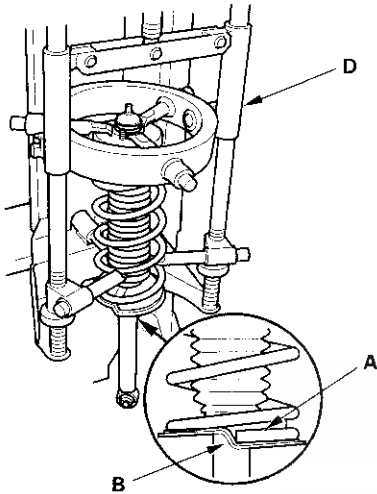
(cont'd)

Rear Suspension

Damper/Spring Replacement (cont'd)

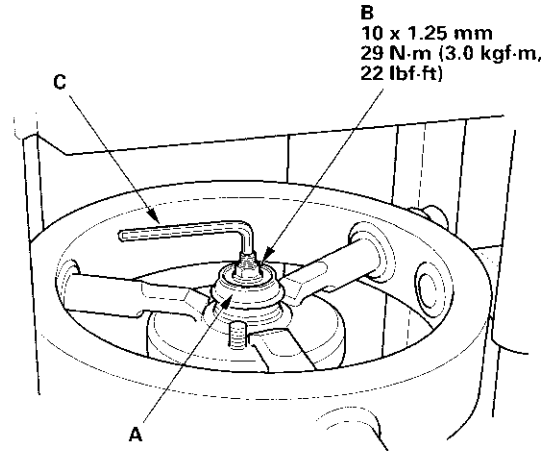
Reassembly

1. Install all parts except the self-locking nut and washer onto the damper unit by referring to the Exploded View. Align the bottom of the spring (A) and the stepped part of the lower spring seat (B), and align the damper mounting base (C) as shown.



2. Install the damper assembly on a commercially available strut spring compressor (D).
3. Compress the damper spring with the spring compressor.

4. Install the washer (A), and loosely install a new self-locking nut (B).

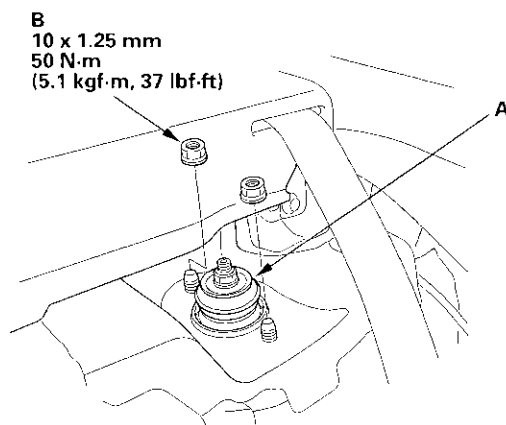


5. Hold the damper shaft with a hex wrench (C), and tighten the self-locking nut to the specified torque value.



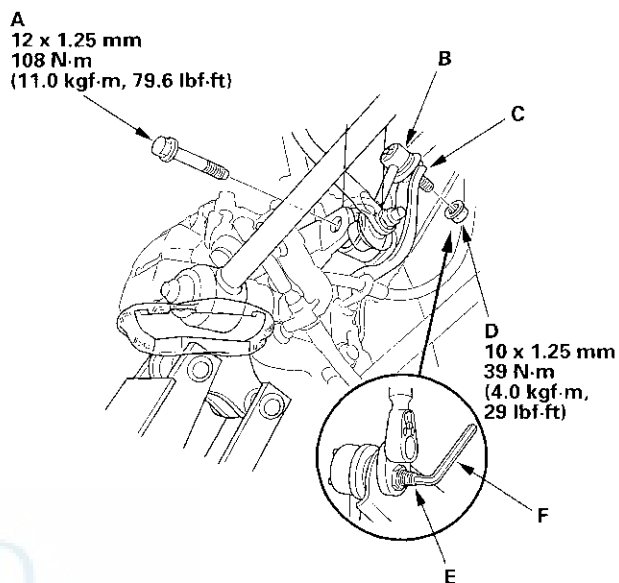
Installation

1. Lower the rear suspension, and position the damper (A) in the body.



2. Loosely install the flange nuts (B) onto the top of the damper.

3. Loosely install the flange bolt (A) on the bottom of the damper. Connect the stabilizer link (B) on the bracket (C), and loosely install the flange nut (D).



4. Raise the rear suspension with a floor jack load the vehicle's weight, and tighten the flange bolt to the specified torque value.
5. Tighten the flange nut while holding the joint pin (E) with a hex wrench (F).
6. Tighten the two flange nuts on top of the damper to the specified torque value.
7. Install the rear seat side bolster (see page 20-95).
8. Clean the mating surface of the brake disc and the inside of the wheel, then install the rear wheel.
9. Check the rear wheel alignment, and adjust it if necessary (see page 18-7).

Navigation Tools: Click on the “Table of Contents” below, or use the Bookmarks to the left.

Brakes

Conventional Brake Components

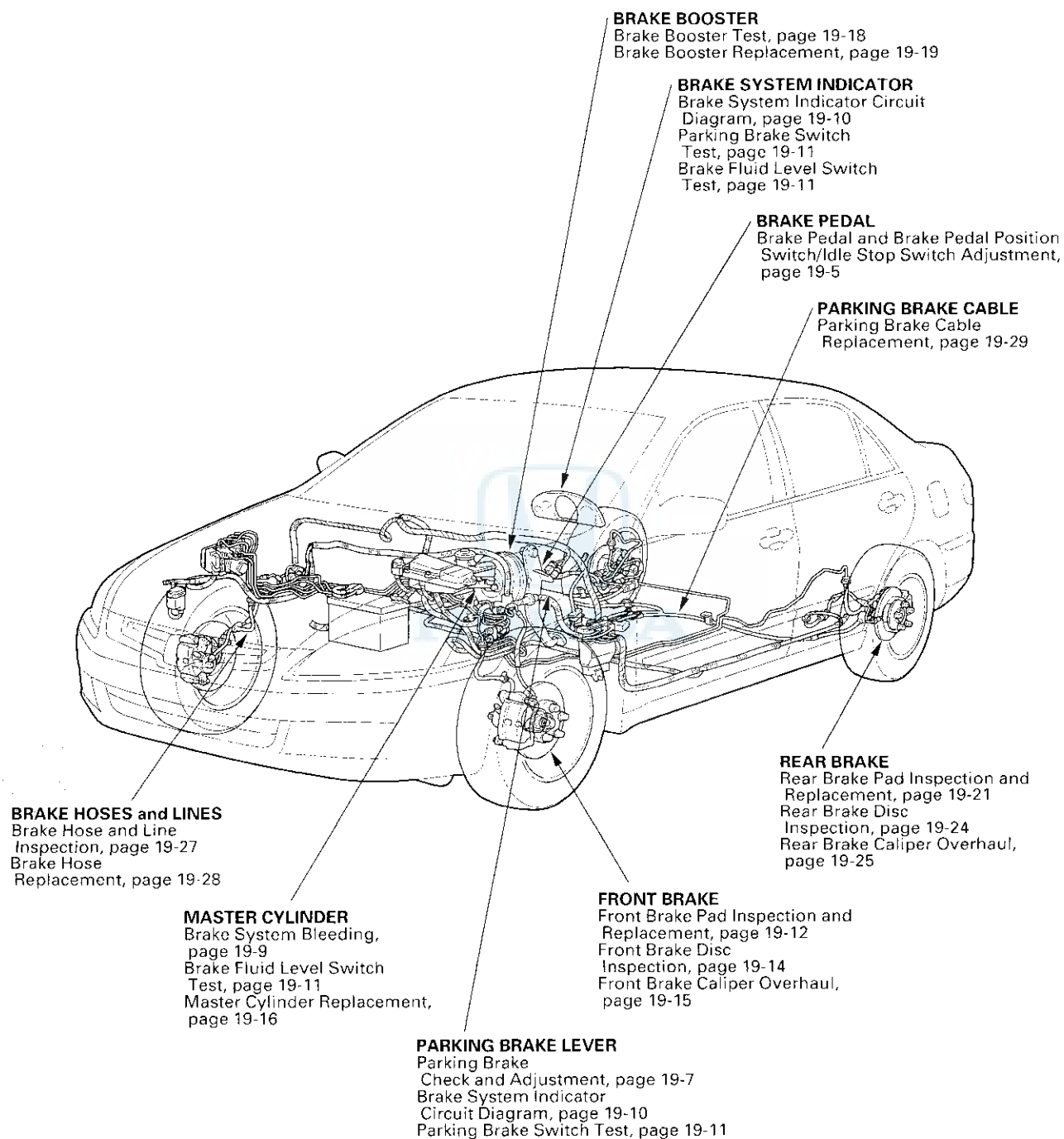
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Symptom Troubleshooting	19-4
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Parking Brake Check and Adjustment	19-7
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ABS/TCS (Anti-lock Brake System/ Traction Control System) Components 19-31



Conventional Brake Components

Component Location Index





Brake System Inspection and Test

Component Inspections:

Component	Procedure	Also check for:
Master Cylinder	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Reservoir or reservoir grommets• Line joints• Between master cylinder and booster	Bulging seal at reservoir cap. This is a sign of fluid contamination.
Brake Hoses	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Line joints and banjo bolt connections• Hoses and lines, also inspect for twisting or damage	Bulging, twisted, or bent lines.
Caliper	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Piston seal• Banjo bolt connections• Bleeder screw	Seized or sticking caliper pins.
ABS/TCS Modulator-Control Unit	Look for damage or signs of fluid leakage at: <ul style="list-style-type: none">• Line joints• Modulator	

Brake System Test

Brake pedal sinks/fades when braking

1. Start the engine, and let it warm up to operating temperature.
2. Attach a 50 mm (2 in.) piece of masking tape along the bottom of the steering wheel, and draw a horizontal reference mark across it.
3. With the transmission in Neutral, press and hold the brake pedal lightly (about the same pressure needed to keep an A/T-equipped vehicle from creeping), then release the parking brake.
4. While still holding the brake pedal, hook the end of the tape measure behind it. Then pull the tape up to the steering wheel, noting where the tape measure lines up with the reference mark you made on the masking tape.
5. Apply steady pressure to the brake pedal for 3 minutes.
6. Watch the tape measure.
 - If it moves less than 10 mm (3/8 in.), the master cylinder is OK.
 - If it moves more than 10 mm (3/8 in.), replace the master cylinder.

Conventional Brake Components

Symptom Troubleshooting

Rapid brake pad wear, vehicle vibration (after a long drive), or hard brake pedal

1. Drive the vehicle until the brakes drag or until the pedal is high and hard. This can take 20 or more brake pedal applications during an extended test-drive.
2. With the engine running, raise the vehicle on a lift, and spin all four wheels by hand.

Is there brake drag at any of the wheels?

YES—Go to step 3.

NO—Look for other causes of the pad wear, high pedal, or vehicle vibration. ■

3. Turn the engine off, pump the brake pedal to deplete the vacuum in the brake booster, and then spin the wheels again to check for brake drag.

Is there brake drag at any of the wheels?

YES—Go to step 4.

NO—Replace the brake booster (see page 19-19). ■

4. Without removing the brake lines, unbolt and separate the master cylinder from the booster, then spin the wheels to check for brake drag.

Is there brake drag at any of the wheels?

YES—Go to step 5.

NO—Check the brake pedal position switch adjustment and pedal free play (see page 19-5). ■

5. Loosen the hydraulic lines at the master cylinder, then spin the wheels to check for brake drag.

Is there brake drag at any of the wheels?

YES—Go to step 6.

NO—Replace the master cylinder (see page 19-16). ■

6. Loosen the bleeder screws at each caliper, then spin the wheels to check for brake drag (see page 19-9).

Is there brake drag at any of the wheels?

YES—Disassemble and repair the caliper on the wheel(s) with brake drag. ■

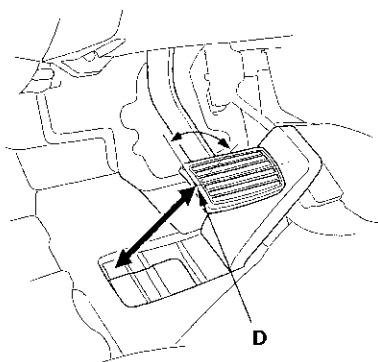
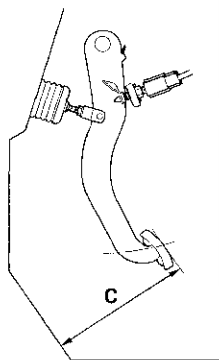
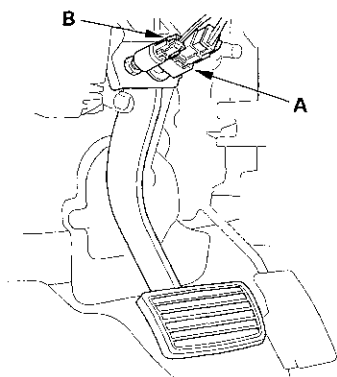
NO—Look for a bulging master cylinder cap seal, discolored or contaminated brake fluid in the master cylinder, or damaged brake lines. If any of these items are damaged, replace them. If all of these items are OK, replace the ABS/TCS modulator-control unit (see page 19-79). ■



Brake Pedal and Brake Pedal Position Switch/Idle Stop Switch Adjustment

Pedal Height

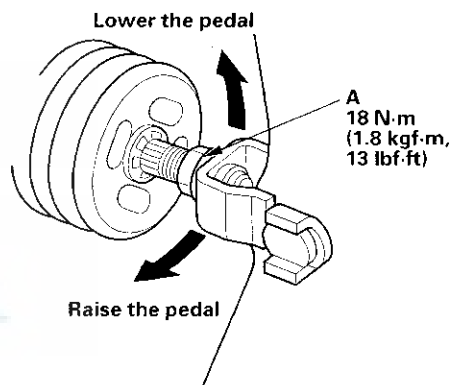
1. Turn the brake pedal position switch (A) counterclockwise, and pull it back until it is no longer touching the brake pedal.



2. Disconnect idle stop switch connector (B).
3. Turn the idle stop switch counterclockwise, and pull it back until it is no longer touching the brake pedal.
4. Lift up the carpet. At the insulator cutout, measure the pedal height (C) from the left side of the pedal pad (D).

Standard pedal height (with carpet removed):
177 mm (6 31/32 in.)

5. Loosen the pushrod locknut (A), and screw the pushrod in or out with pliers until the standard pedal height from the floor is reached. After adjustment, tighten the locknut firmly. Do not adjust the pedal height with the pushrod pressed.

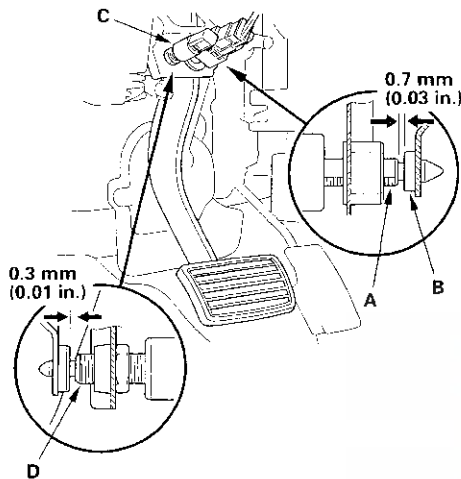


(cont'd)

Conventional Brake Components

Brake Pedal and Brake Pedal Position Switch/Idle Stop Switch Adjustment (cont'd)

6. Brake pedal position switch adjustment: Push in the brake pedal position switch until its plunger is fully pressed (threaded end (A) touching the pad (B) on the pedal arm). Then, turn the switch 45° clockwise to lock it. The gap between the brake pedal position switch and the pad is automatically adjusted 0.7 mm (0.03 in.) by locking the switch. Make sure the brake lights go off when the pedal is released.



7. Idle stop switch adjustment: Adjust the idle stop switch (C). Screw in the idle stop switch until its plunger is fully pressed (threaded end (D) is touching the pad on the pedal arm). Then back off the switch 1/4 turn to make 0.3 mm (0.01 in.) of clearance between the threaded end and the pad. Tighten the locknut firmly. Connect the idle stop switch connector. When finished, start the engine, and warm it up to normal operating temperature (the radiator fan comes on), then make sure the engine stops when the brake pedal is pressed.

NOTE:

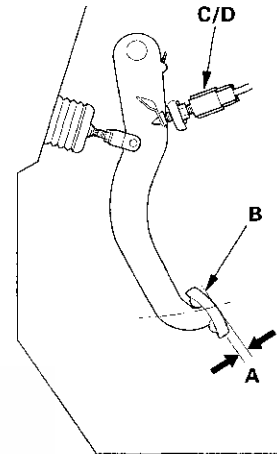
- When either the brake pedal position switch or the idle stop switch needs adjusting, both switches must be adjusted together to keep their functions synchronized. Always adjust the brake pedal position switch first, then adjust the idle stop switch; never adjust the switches independently.
- When the brake pedal is released, the brake pedal position switch is normally open and the idle stop switch is normally closed.

8. Check the brake pedal free play.

Pedal Free Play

1. With the engine off, inspect the play (A) on the pedal pad (B) by pushing the brake pedal by hand.

Free play: 0.5–2.0 mm (1/64–1/16 in.)



2. If the pedal free play is out of specification, adjust the brake pedal position switch (C) and idle stop switch (D). If the pedal free play is insufficient, it may result in brake drag.

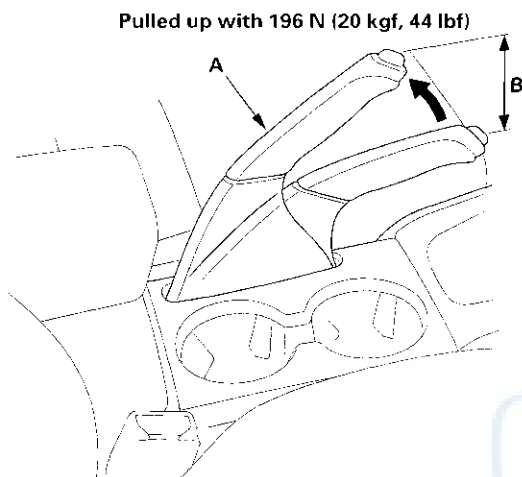


Parking Brake Check and Adjustment

Check

1. Pull the parking brake lever (A) with 196 N (20 kgf, 44 lbf) of force to fully apply the parking brake. The parking brake lever should be locked within the specified number of clicks (B).

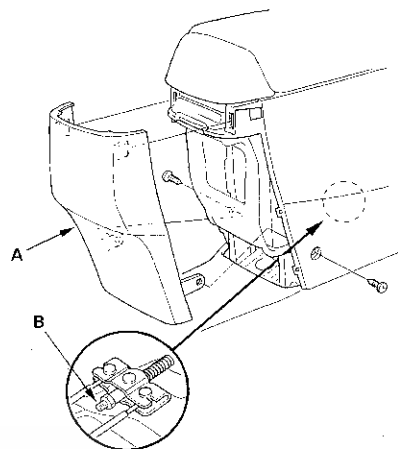
Lever locked clicks: 7 to 9



2. Adjust the parking brake if the lever clicks are not within the specification.

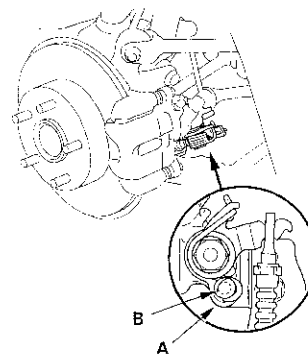
Adjustment

1. Release the parking brake lever fully.
2. Remove the center console rear cover (A).



3. Loosen the parking brake adjusting nut (B), start the engine, and press the brake pedal several times to set the self-adjusting brake before adjusting the parking brake.
4. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7).
5. Remove the rear wheels.
6. Make sure the parking brake arm (A) on the rear brake caliper contacts the brake caliper pin (B).

NOTE: The parking brake arm will only contact the brake caliper pin when the parking brake adjusting nut is loosened.

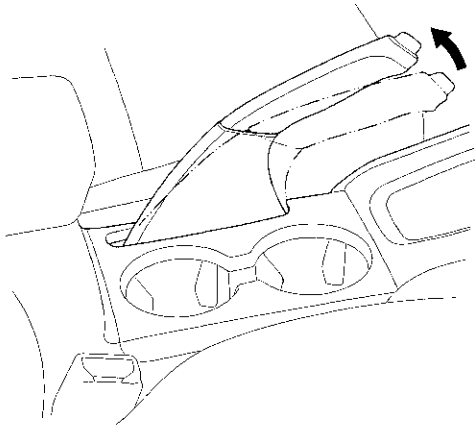


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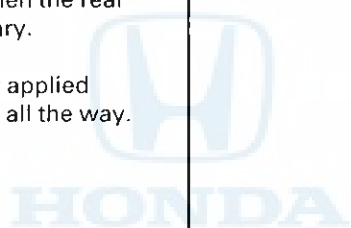
Conventional Brake Components

Parking Brake Check and Adjustment (cont'd)

7. Pull the parking brake lever one click.



8. Tighten the adjusting nut until the parking brakes drag slightly when the rear wheels are turned.
9. Release the parking brake lever fully, and check that the parking brakes do not drag when the rear wheels are turned. Readjust if necessary.
10. Make sure the parking brakes are fully applied when the parking brake lever is pulled all the way.
11. Install the center console rear cover.



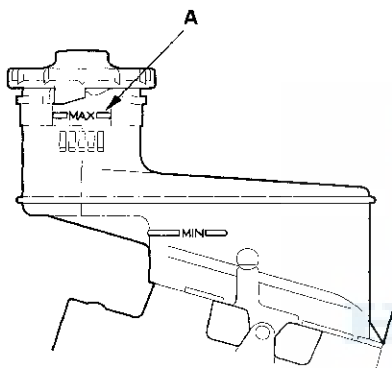


Brake System Bleeding

NOTE:

- Do not reuse the drained fluid.
- Always use Honda DOT 3 Brake Fluid. Using a non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not allow dirt or other foreign matter to contaminate the brake fluid.
- Do not spill brake fluid on the vehicle, it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.
- The reservoir on the master cylinder must be at the MAX (upper) level mark at the start of the bleeding procedure and checked after bleeding each brake caliper. Add fluid as required.

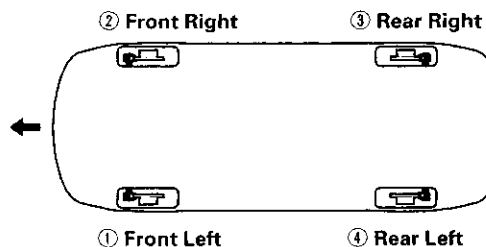
1. Make sure the brake fluid level in the reservoir is at the MAX (upper) level line (A).



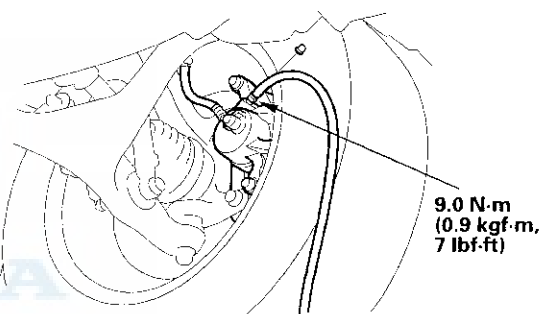
2. Attach a length of clear drain tube to the bleed screw.
3. Have someone slowly pump the brake pedal several times, then apply steady pressure.
4. Starting at the left-front, loosen the brake bleed screw to allow air to escape from the system. Then tighten the bleed screw securely.
5. Release the brake pedal.
6. Repeat steps 3—5 until air bubbles no longer appear in the fluid.

7. Repeat the procedure for each wheel in the sequence shown.

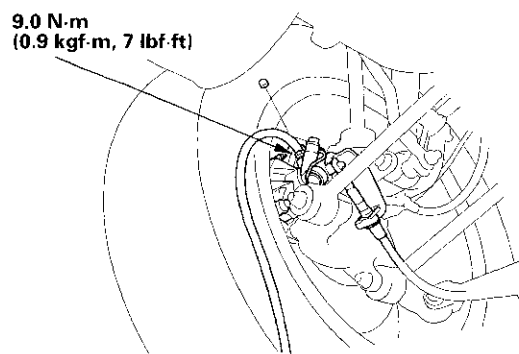
BLEEDING SEQUENCE:



Front



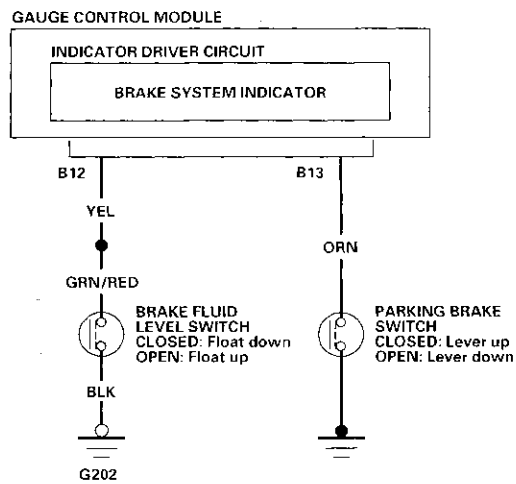
Rear



8. Refill the master cylinder reservoir to the MAX (upper) level line.

Conventional Brake Components

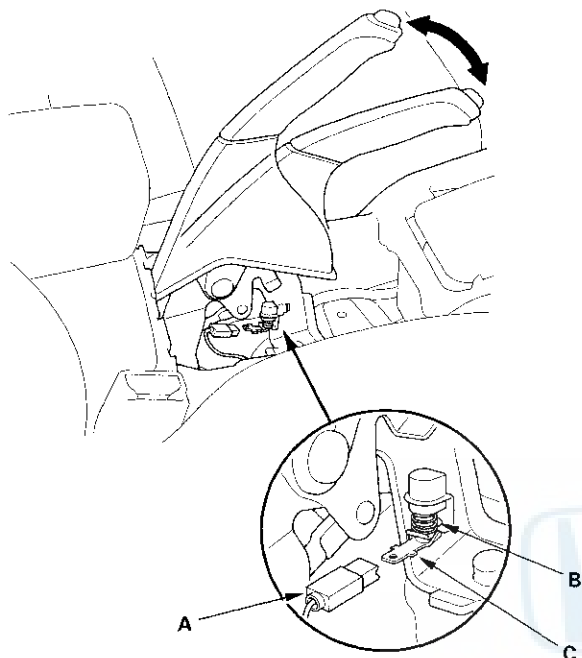
Brake System Indicator Circuit Diagram





Parking Brake Switch Test

1. Remove the center console (see page 20-62), and disconnect the connector (A) from the parking brake switch (B).



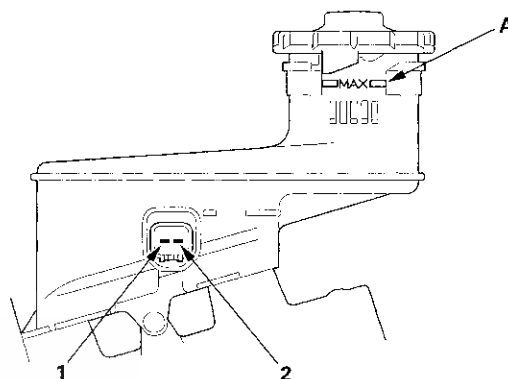
2. Check for continuity between the switch terminal (C) and body ground:

- With the brake lever up, there should be continuity.
- With the brake lever down, there should be no continuity.

Brake Fluid Level Switch Test

Check for continuity between the terminals (1 and 2) with the float in the down position and in the up position.

- Remove the brake fluid completely from the reservoir. With the float down, there should be continuity.
- Fill the reservoir with brake fluid to the MAX (upper) level (A). With the float up, there should be no continuity.



Conventional Brake Components

Front Brake Pad Inspection and Replacement

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Inspection

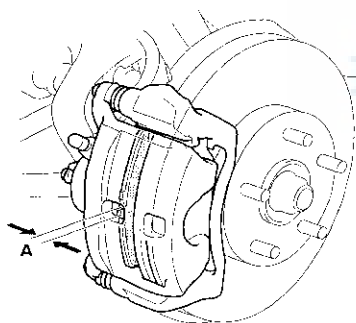
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the front wheels.
2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the backing plate.

Brake pad thickness:

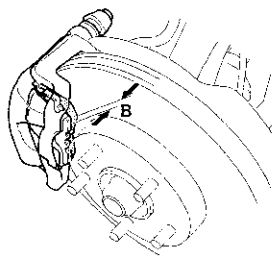
Standard: 10.5–11.5 mm (0.41–0.45 in.)

Service limit: 1.6 mm (0.06 in.)

Inner pad



Outer pad

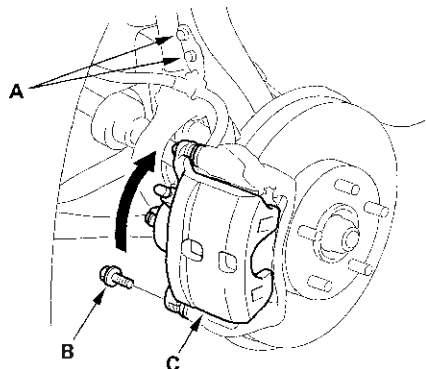


3. If the brake pad thickness is less than the service limit, replace all the front brake pads as a set.

Replacement

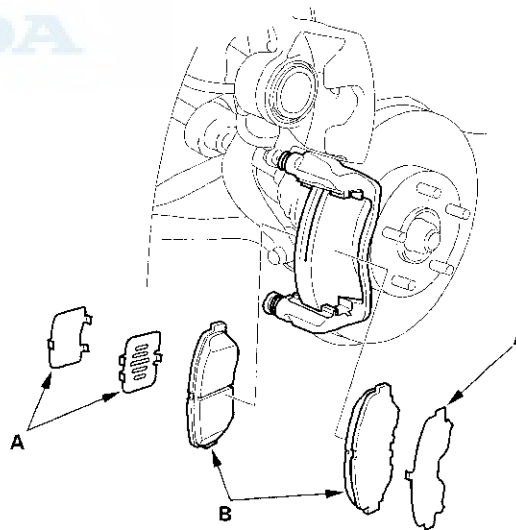
1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the front wheels.

2. Remove the brake hose mounting bolts (A).



3. Remove the flange bolt (B) and pivot the caliper (C) up out of the way. Check the brake hose and pin boots for damage and deterioration.

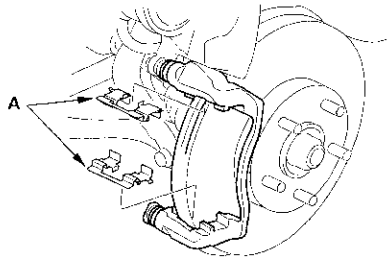
4. Remove the pad shims (A) and brake pads (B).



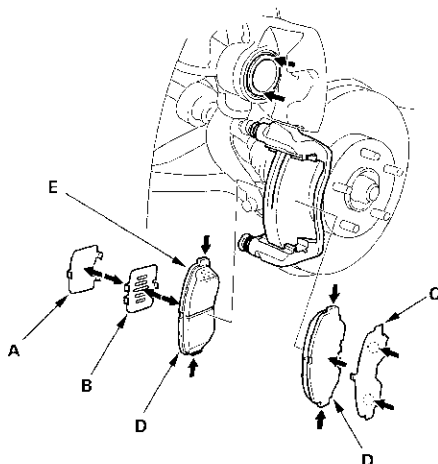
5. Check the hose and pin boots for damage and deterioration.



6. Remove the pad retainers (A), and check the caliper pin for free movement.

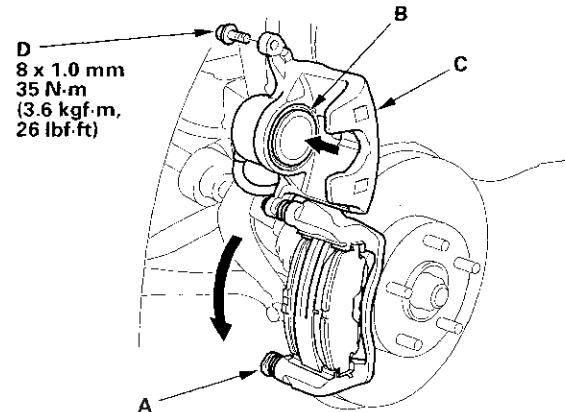


7. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.
8. Check the brake disc for damage and cracks.
9. Clean and install the pad retainers.
10. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the pad side of shim outer pad shim C, inner pad shim B, both sides of inner pad shim A, the back of brake pads (D), and to the other areas indicated by the arrows. Wipe excess assembly paste off the pad shims and brake pads. Contaminated brake discs and pads reduce stopping ability. Keep assembly paste off the brake discs and brake pad material.



11. Install the brake pads and pad shims correctly. Install the brake pads with the wear indicator (E) on top.
- If you are reusing the brake pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

12. Push in the piston (B) so the caliper will fit over the brake pads. Check the brake fluid level. The brake fluid may overflow if the reservoir is too full. Make sure the piston boot is in position to prevent damaging it when pivoting the caliper down.



13. Pivot the caliper (C) down into position. Install the flange bolt (D), and tighten it to the specified torque.
14. Install the brake hose mounting bolts, and tighten them to 9.8 N·m (1.0 kgf·m, 2.2 lbf·ft).
15. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

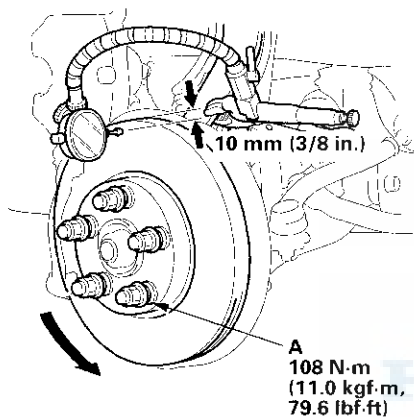
16. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Then test-drive the vehicle.

Conventional Brake Components

Front Brake Disc Inspection

Runout

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the front wheels.
2. Remove the brake pads (see page 19-12).
3. Inspect the brake disc surface for damage and cracks. Clean the brake disc thoroughly, and remove all rust.
4. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.



5. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (3/8 in.) from the outer edge of the brake disc.

Brake disc runout:

Service limit: 0.10 mm (0.004 in.)

6. If the brake disc is beyond the brake disc runout service limit, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

Max. refinish limit: 21.0 mm (0.83 in.)

NOTE:

- If the brake disc is beyond the service limit for refinishing, replace it (see step 7 on page 18-15).
- A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

Thickness and Parallelism

1. Raise the front of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the front wheels.
2. Remove the brake pads (see page 19-12).
3. Using a micrometer, measure brake disc thickness at eight points, approximately 45 ° apart and 10 mm (3/8 in.) in from the outer edge of the brake disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

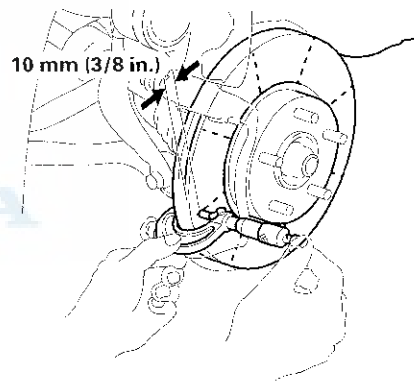
Brake disc thickness:

Standard: 22.9—23.1 mm (0.90—0.91 in.)

Max. refinishing limit: 21.0 mm (0.83 in.)

Brake disc parallelism: 0.015 mm (0.0006 in.) max.

NOTE: This is the maximum allowable difference between the thickness measurements.



4. If the smallest measurement is less than the max. refinishing limit, replace the brake disc (see step 7 on page 18-15).
5. If the brake disc is beyond the service limit for parallelism, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.



Front Brake Caliper Overhaul

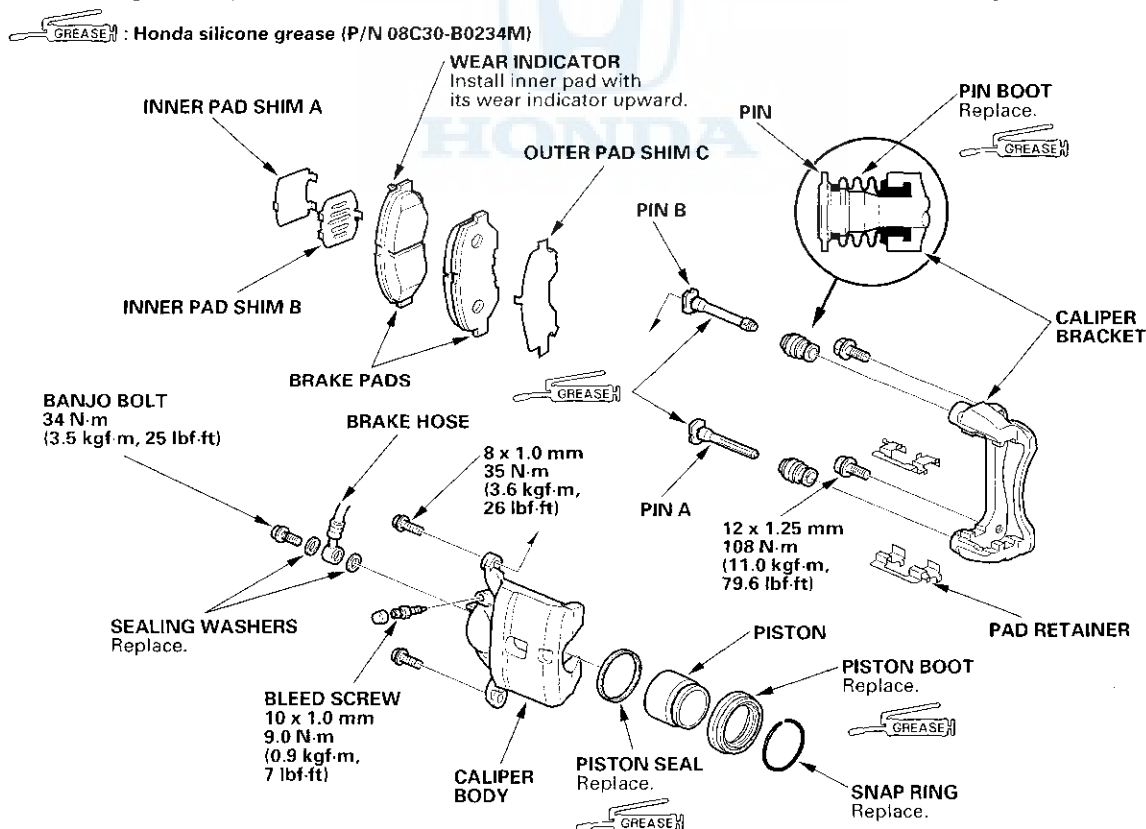
⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dust and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets in the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid. Use only clean Honda DOT 3 Brake Fluid from an unopened container. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



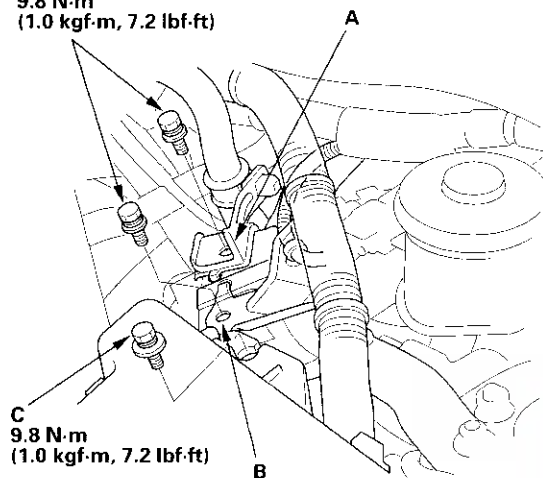
Conventional Brake Components

Master Cylinder Replacement

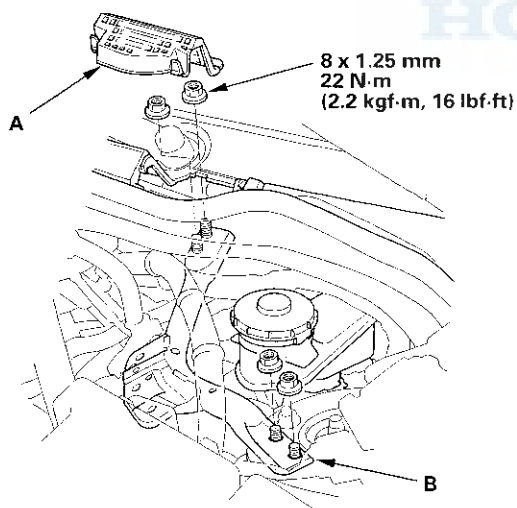
NOTE: Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid does contact the paint, wash it off immediately with water.

1. Remove the vacuum hose clamp (A), harness clamp (B), and the under-hood fuse/relay box mounting bolt (C) from the driver's side strut brace.

9.8 N·m
(1.0 kgf-m, 7.2 lbf-ft)

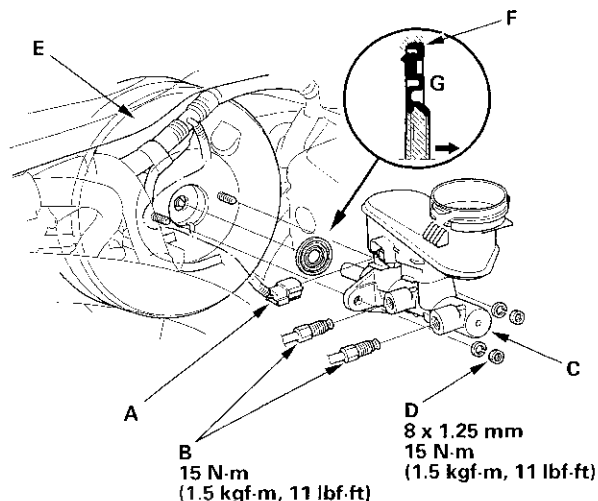


2. Remove the access panel (A), then remove the driver's side strut brace (B).



3. Remove the reservoir cap and brake fluid from the master cylinder reservoir.

4. Disconnect the brake fluid level switch connector (A).



5. Disconnect the brake lines (B) from the master cylinder (C). To prevent spills, cover the hose joints with rags or shop towels.

6. Remove the master cylinder mounting nuts (D) and washers.

7. Remove the master cylinder from the brake booster (E). Be careful not to bend or damage the brake lines when removing the master cylinder.

8. Remove the rod seal (F) from the master cylinder.

9. Install the master cylinder in the reverse order of removal, and note these items:

- Replace all the rubber parts with new ones whenever the master cylinder is removed.
- Use a new rod seal on reassembly.
- Coat the inner bore lip and outer circumference of the new rod seal with the Honda Silicone grease (P/N 08C30-B0234M).
- Install the rod seal onto the master cylinder with its grooved side (G) toward the master cylinder.
- Check the brake pedal height and free play after installing the master cylinder, and adjust it if necessary (see page 19-5).

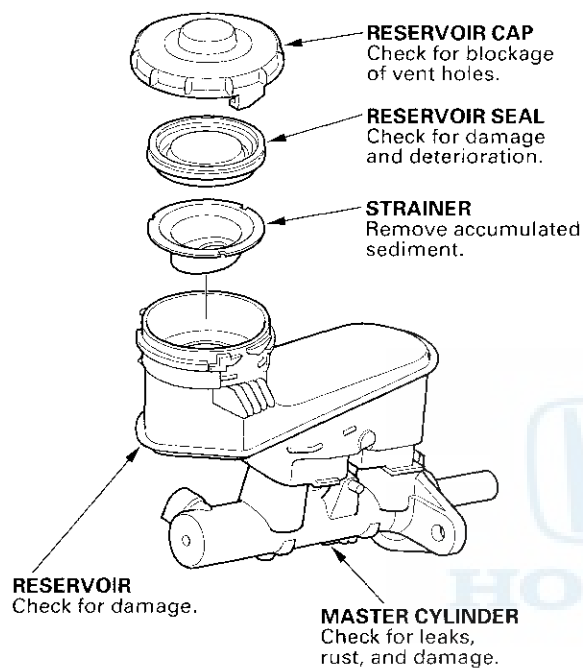
10. Bleed the system (see page 19-9).



Master Cylinder Inspection

NOTE:

- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Do not try to disassemble the master cylinder assembly. Replace the master cylinder assembly with a new part if necessary.
- Do not allow dirt or foreign matter to contaminate the brake fluid.



Conventional Brake Components

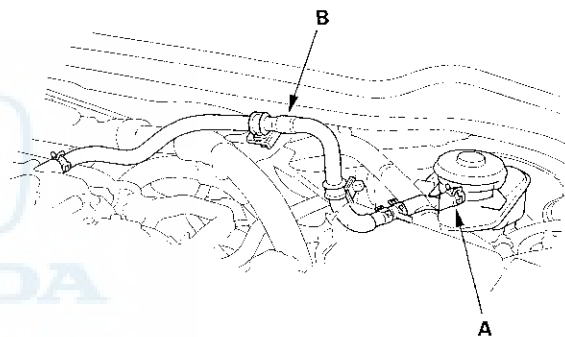
Brake Booster Test

Functional Test

1. With the engine stopped, press the brake pedal several times to deplete the vacuum reservoir, then press the brake pedal hard, and hold it for 15 seconds. If the brake pedal sinks, either the master cylinder is bypassing internally, or the brake system (master cylinder, lines, modulator, or caliper) is leaking.
2. Start the engine with the brake pedal pressed. If the pedal sinks slightly, the vacuum booster is operating normally. If the brake pedal height does not vary, the booster or check valve is faulty.
3. With the engine running, press the brake pedal lightly, and shift the transmission to the D position. Apply just enough pressure to hold back automatic transmission creep. If the brake pedal sinks more than 10 mm (3/8 in.) in 3 minutes, the master cylinder is faulty. A slight change in pedal height when the A/C compressor cycles on and off is normal. (The A/C compressor load changes the vacuum available to the booster.)

Leak Test

1. Press the brake pedal with the engine running, then stop the engine. If the brake pedal height does not vary while pressed for 30 seconds, the vacuum booster is OK. If the pedal rises, the booster is faulty.
2. Turn the engine off, and wait 30 seconds. Press the brake pedal several times using normal pressure. When the brake pedal is first pressed, it should be low. On consecutive applications, the pedal height should gradually rise. If the brake pedal position does not vary, check the booster check valve.
3. Disconnect the brake booster vacuum hose at the booster (A). The check valve (B) is built into the hose.

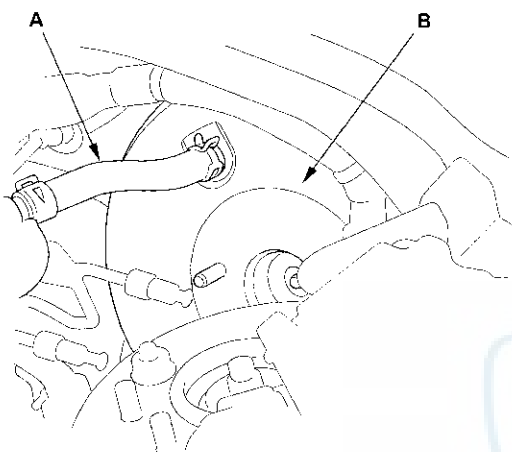


4. Start the engine, and let it idle. There should be vacuum available. If no vacuum is available, the check valve is not working properly. Replace the brake booster vacuum hose and check valve, and retest.
5. Start the engine, and then pinch the brake booster vacuum hose between the check valve and the booster.
6. Turn the engine off and wait 30 seconds. Press the brake pedal several times using normal pressure. When the brake pedal is first pressed, it should be low. On consecutive applications, the brake pedal height should gradually rise.
 - If the brake pedal position does not vary, replace the brake booster (see page 19-19).
 - If the brake pedal position varies, replace the brake booster vacuum hose/check valve assembly.



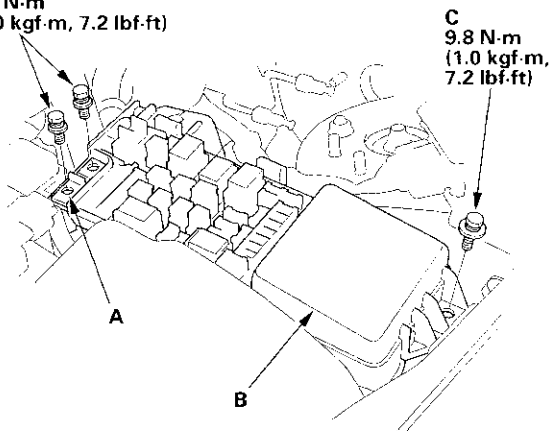
Brake Booster Replacement

1. Make sure you have the anti-theft codes for the radio and navigation system, then write down the frequencies for the radio and XM channel presets.
2. Disconnect the negative cable from the battery.
3. Remove the master cylinder (see page 19-16).
4. Disconnect the vacuum hose (A) from the brake booster (B).



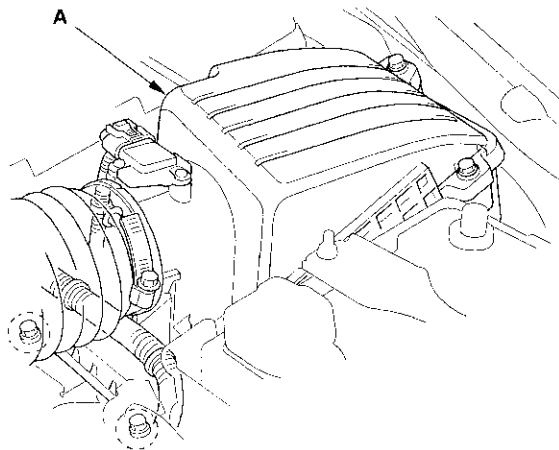
5. Remove the under-hood fuse/relay box cover.
6. Disconnect (+) terminals (A) of the under-hood fuse/relay box (B).

9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

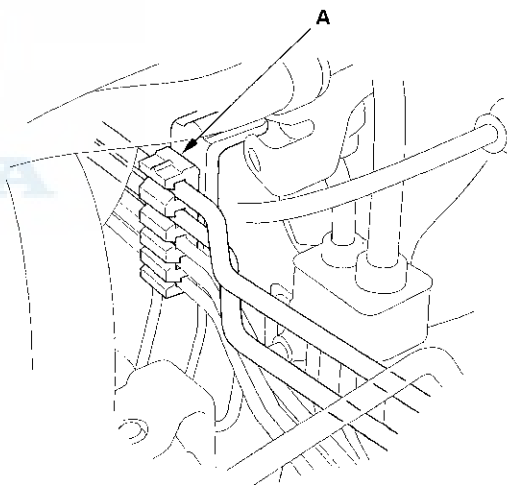


7. Remove the under-hood fuse/relay box mounting bolt (C), then remove the under-hood fuse/relay box from the body.

8. Remove the air cleaner assembly (A) (see page 11-382).



9. Remove the primary and secondary brake lines from the hose clamp (A).

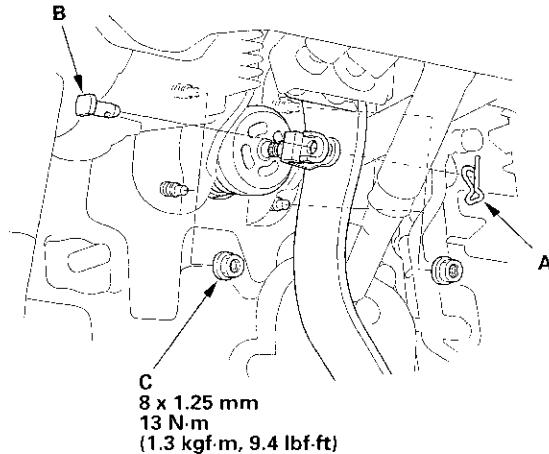


(cont'd)

Conventional Brake Components

Brake Booster Replacement (cont'd)

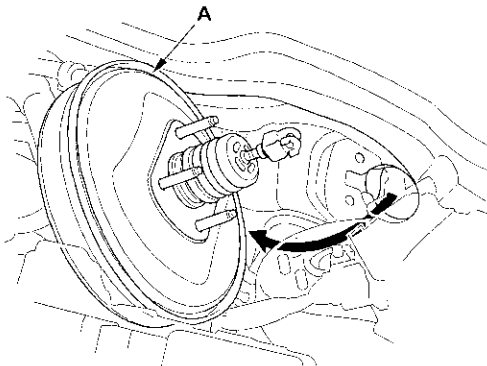
10. Remove the lock pin (A) and the joint pin (B), then disconnect the yoke from the brake pedal.



11. Remove the brake booster mounting nuts (C).
12. Remove the brake booster (A) from the engine compartment.

NOTICE

- Be careful not to damage the booster surfaces and threads of the booster stud bolts.
- Be careful not to bend or damage the brake lines.



13. Install the brake booster in the reverse order of removal, and note these items:

- After installing the brake booster and master cylinder, fill the reservoir with new brake fluid, bleed the brake system (see page 19-9), and adjust the brake pedal height and free play (see page 19-5).
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.
- Do the PCM idle learn procedure (see page 11-340).
- Do the power window control unit reset procedure (see page 22-200).
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's radio and XM channel presets.



Rear Brake Pad Inspection and Replacement

⚠ CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

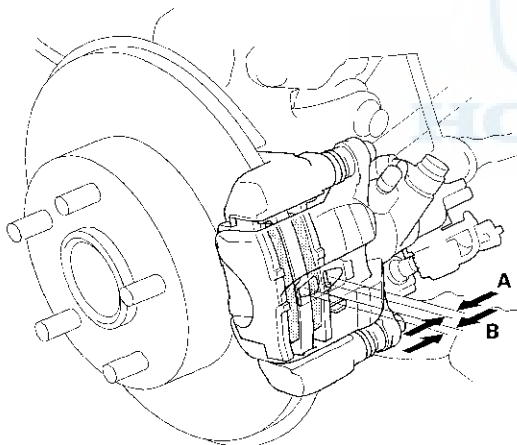
Inspection

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the rear wheels.
2. Check the thickness of the inner pad (A) and outer pad (B). Do not include the thickness of the brake pad backing plate.

Brake pad thickness:

Standard: 8.9—9.1 mm (0.35—0.36 in.)

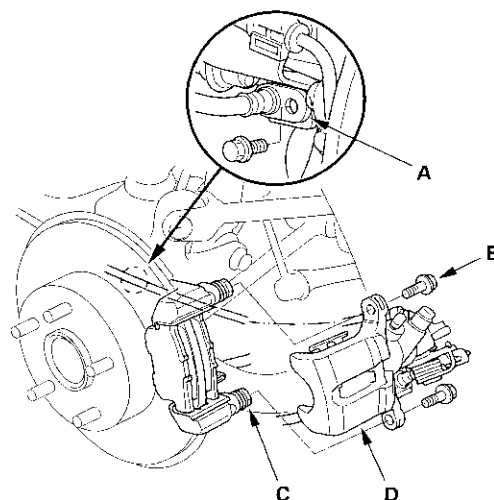
Service limit: 1.6 mm (0.06 in.)



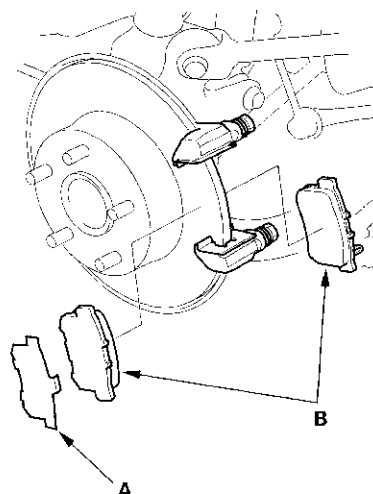
3. If the brake pad thickness is less than the service limit, replace all the pads as a set.

Replacement

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the rear wheels.
2. Remove the brake hose mounting bracket (A).



3. Remove the flange bolts (B) while holding the pin (C) with a wrench, being careful not to damage the pin boot, and remove the caliper (D). Check the hose and pin boots for damage and deterioration.
4. Remove the pad shim (A) and pads (B).

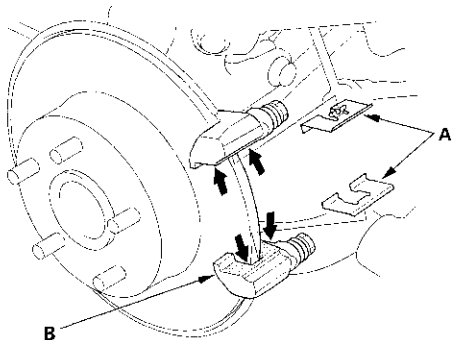


(cont'd)

Conventional Brake Components

Rear Brake Pad Inspection and Replacement (cont'd)

5. Remove the pad retainers (A).



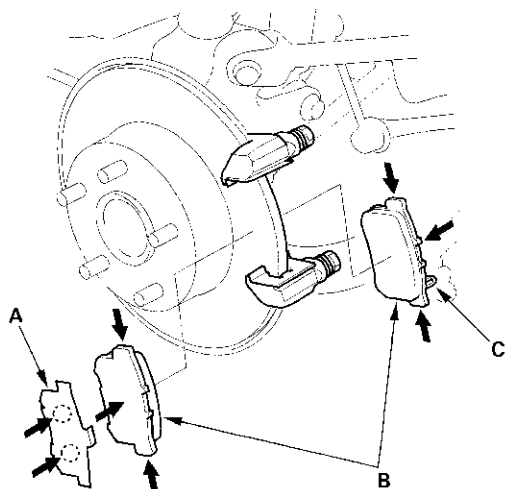
6. Clean the caliper thoroughly; remove any rust, and check for grooves and cracks.

7. Check the brake disc for damage and cracks.

8. Apply a thin coat of M-77 assembly paste (P/N 08798-9010) to the retainers on their mating surfaces indicated by the arrow against the caliper bracket (B).

9. Install the pad retainers. Wipe excess assembly paste off the retainers. Keep any assembly paste off the discs and pads.

10. Apply Molykote M-77 assembly paste (P/N 08798-9010) to both sides of the shim (A), the back of pads (B), and the other areas indicated by the arrows. Wipe excess assembly paste off the shims and pads. Contaminated brake discs or pads reduce stopping ability. Keep grease off the brake discs and pads.

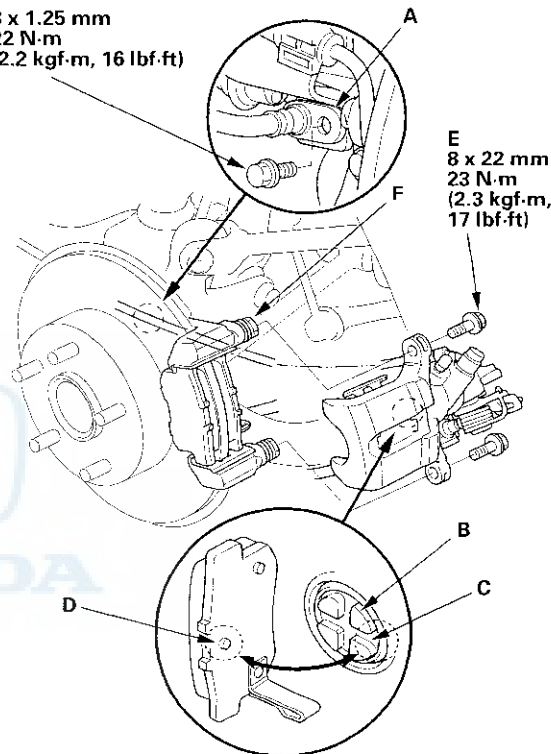


11. Install the brake pads and pad shims correctly. Install the pad with the wear indicator (C) on the inside.

If you are reusing the pads, always reinstall the brake pads in their original positions to prevent a momentary loss of braking efficiency.

12. Install the brake hose mounting bracket (A).

8 x 1.25 mm
22 N·m
(2.2 kgf·m, 16 lbf·ft)



13. Rotate the caliper piston (B) clockwise into the cylinder, then align the cutout (C) in the piston with the tab (D) on the inner pad by turning the piston back. Lubricate the boot with rubber grease to avoid twisting the piston boot. If the piston boot is twisted, back it out so it is positioned properly.

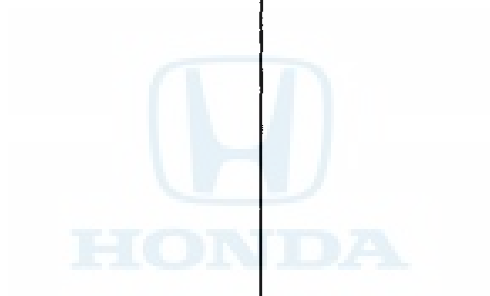
14. Install the caliper. Install the flange bolts (E), and tighten it to the specified torque while holding the pin (F) with a wrench. Be careful not to damage the pin boot.



15. Press the brake pedal several times to make sure the brakes work.

NOTE: Engagement of the brake may require a greater pedal stroke immediately after the brake pads have been replaced as a set. Several applications of the brake pedal will restore the normal pedal stroke.

16. After installation, check for leaks at hose and line joints or connections, and retighten if necessary. Then test-drive the vehicle.

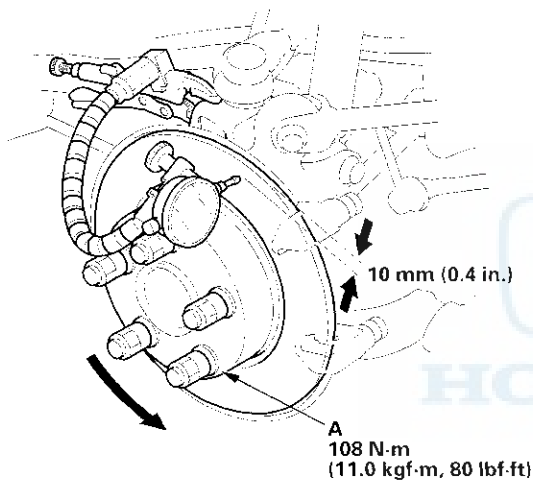


Conventional Brake Components

Rear Brake Disc Inspection

Runout

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the rear wheels.
2. Remove the brake pads (see page 19-21).
3. Inspect the brake disc surface for damage and cracks. Clean the disc thoroughly, and remove all rust.
4. Install suitable flat washers (A) and wheel nuts, and tighten the nuts to the specified torque to hold the brake disc securely against the hub.



5. Set up the dial gauge against the brake disc as shown, and measure the runout at 10 mm (0.4 in.) from the outer edge of the disc.

Brake disc runout:

Service limit: 0.15 mm (0.006 in.)

6. If the brake disc is beyond the brake disc runout service limit, refinish the brake disc with an on-car brake lathe. The Kwik-Lathe produced by Kwik-way Manufacturing Co. and the "Front Brake Disc Lathe" offered by Snap-on Tools Co. are approved for this operation.

Max. refinish limit: 8.0 mm (0.31 in.)

NOTE:

- If the brake disc is beyond the service limit for refinishing, replace it (see step 6 on page 18-31).
- A new disc should be refinished if its runout is greater than 0.10 mm (0.004 in.).

Thickness and Parallelism

1. Raise the rear of the vehicle, and support it with safety stands in the proper locations (see page 1-7). Remove the rear wheels.
2. Remove the brake pads (see page 19-21).
3. Using a micrometer, measure disc thickness at eight points, about 45 ° apart and 10 mm (0.4 in.) in from the outer edge of the disc. Replace the brake disc if the smallest measurement is less than the max. refinishing limit.

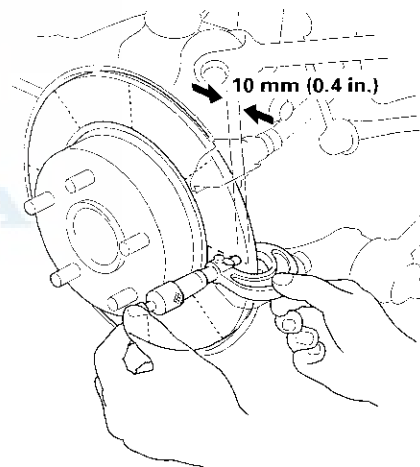
Brake disc thickness:

Standard: 8.9—9.1 mm (0.35—0.36 in.)

Max. refinishing limit: 8.0 mm (0.31 in.)

Brake disc parallelism: 0.015 mm (0.0006 in.) max.

NOTE: This is the maximum allowable difference between the thickness measurements.



4. If the brake disc is beyond the service limit for parallelism, refinish the brake disc.

NOTE: If the brake disc is beyond the service limit for refinishing, replace it (see step 6 on page 18-31).



Rear Brake Caliper Overhaul

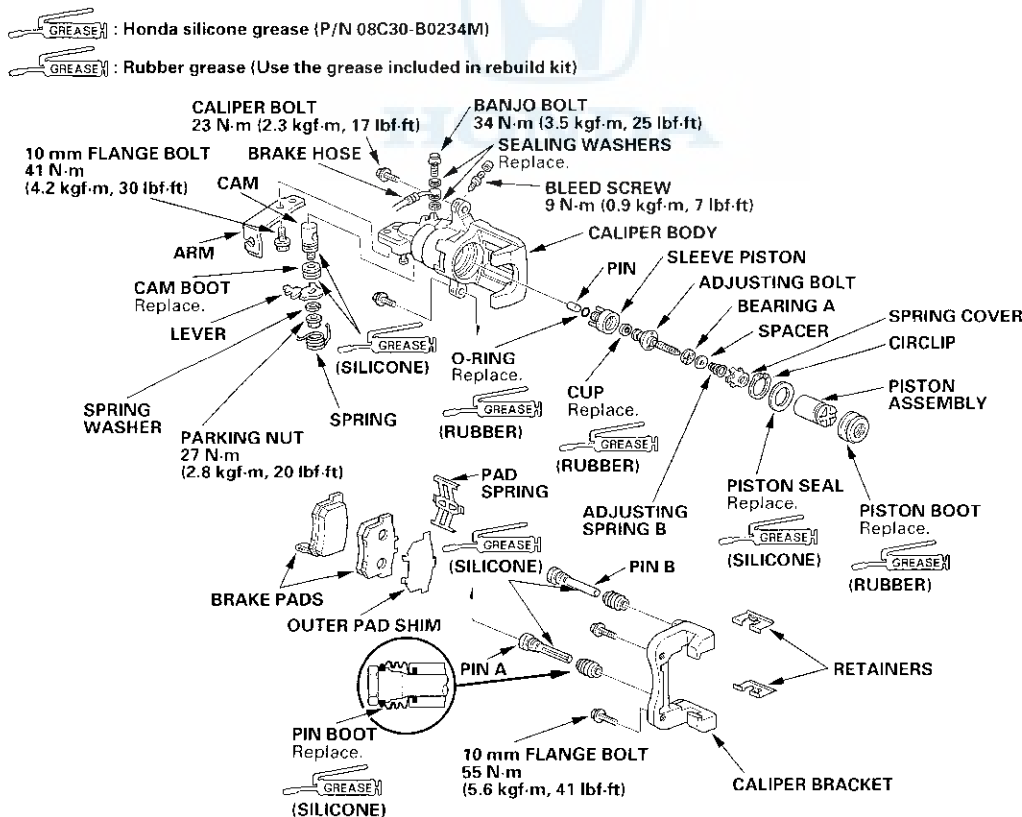
CAUTION

Frequent inhalation of brake pad dust, regardless of material composition, could be hazardous to your health.

- Avoid breathing dust particles.
- Never use an air hose or brush to clean brake assemblies. Use an OSHA-approved vacuum cleaner.

Remove, disassemble, inspect, reassemble, and install the caliper, and note these items:

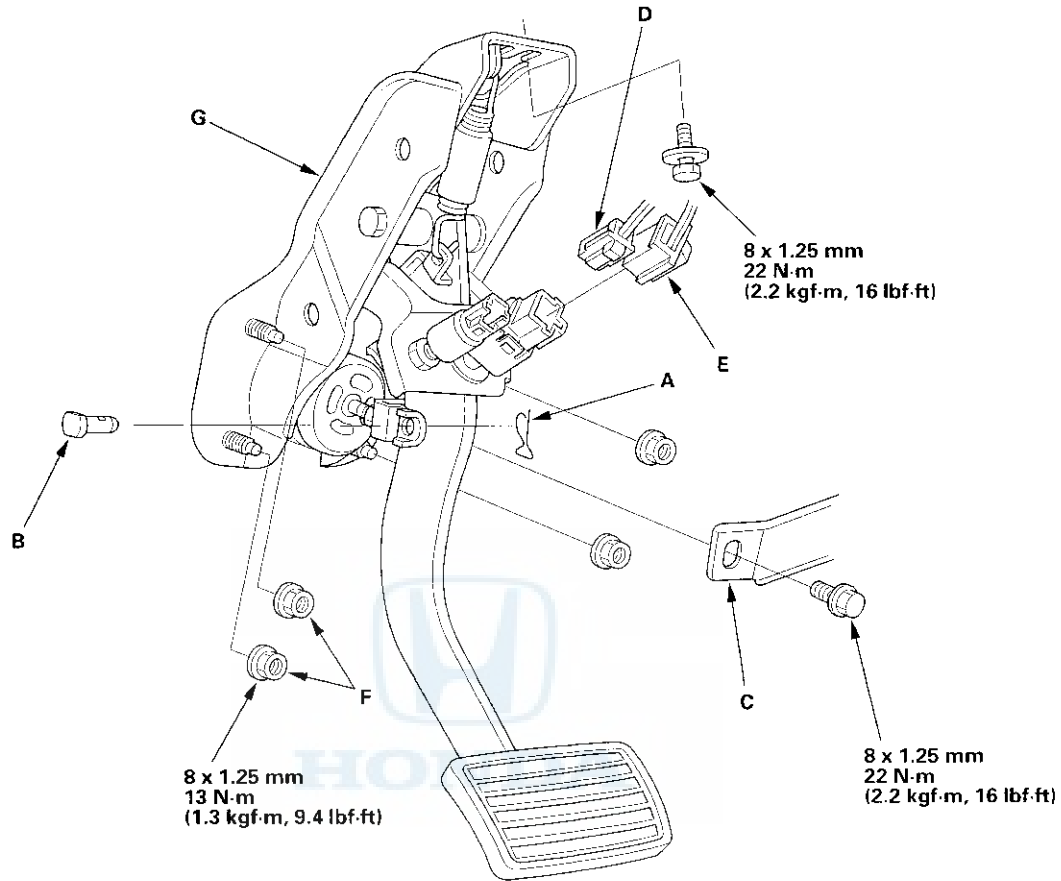
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping brake fluid, cover disconnected hose joints with rags or shop towels.
- Clean all parts in brake fluid and air dry; blow out all passages with compressed air.
- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones as specified in the illustration.
- Make sure no dirt or other foreign matter gets into the brake fluid.
- Make sure no grease or oil gets on the brake discs or pads.
- When reusing pads, always reinstall them in their original positions to prevent loss of braking efficiency.
- Do not reuse drained brake fluid.
- Always use Honda DOT 3 Brake Fluid. Non-Honda brake fluid can cause corrosion and shorten the life of the system.
- Do not mix different brands of brake fluid as they may not be compatible.
- Coat the piston, piston seal groove, and caliper bore with clean brake fluid.
- Replace all rubber parts with new ones whenever disassembled.
- After installing the caliper, check the brake hose and line for leaks, interference, and twisting.



Conventional Brake Components

Brake Pedal Replacement

1. Remove the lock pin (A) and joint pin (B).



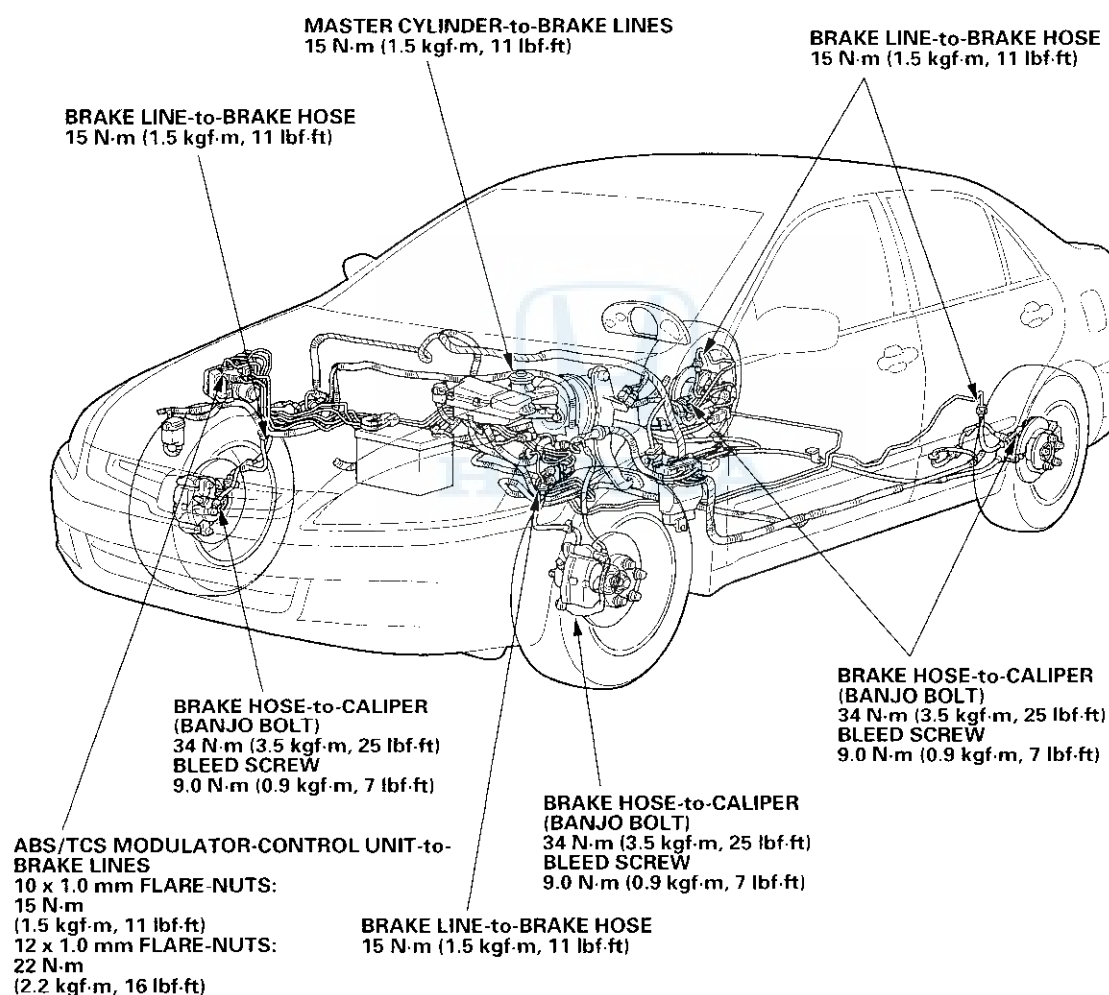
2. Remove the brake pedal bracket support member (C).
3. Disconnect idle stop switch connector (D).
4. Disconnect brake pedal position switch connector (E).
5. Remove the mounting nuts (F), then remove the brake pedal with bracket (G).
6. Install the brake pedal bracket in the reverse order of removal.
7. Do the brake pedal and brake pedal position switch/idle stop switch adjustment (see page 19-5).



Brake Hose and Line Inspection

1. Inspect the brake hoses for damage, deterioration, leaks, interference, and twisting.
2. Check the brake lines for damage, rusting, and leaks. Also check for bent brake lines.
3. Check for leaks at hose and line joints and connections, and retighten if necessary.
4. Check the master cylinder and ABS/TCS modulator-control unit for damage and leakage.

NOTE: Replace the brake hose clip whenever the brake hose is serviced.



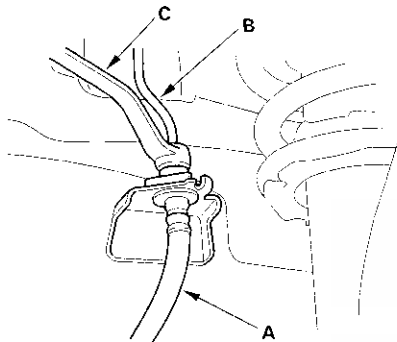
Conventional Brake Components

Brake Hose Replacement

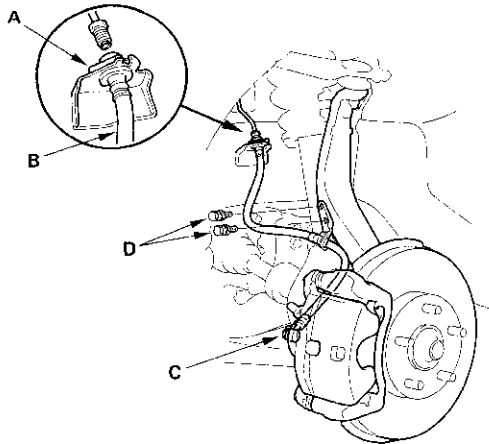
NOTE:

- Before reassembling, check that all parts are free of dirt and other foreign particles.
- Replace parts with new ones whenever specified to do so.
- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- To prevent dripping, cover disconnecting line joints with rags or shop towels.

1. Replace the brake hose (A) if the hose is twisted, cracked, or if it leaks.

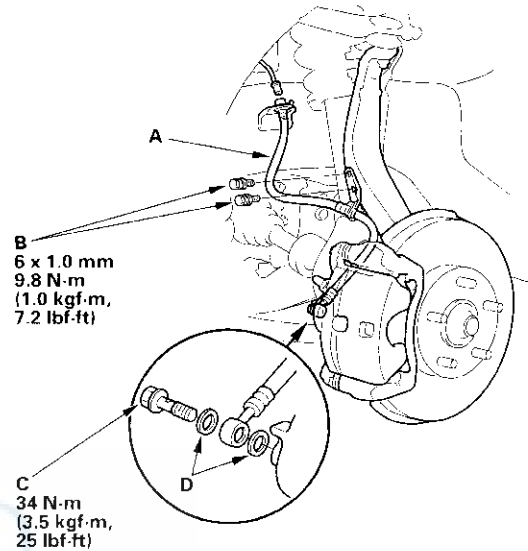


2. Disconnect the brake hose from the brake line (B) using a 10 mm flare-nut wrench (C).
3. Remove and discard the brake hose clip (A) from the brake hose (B).

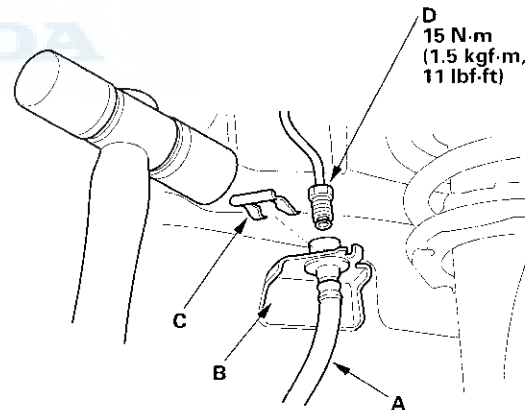


4. Remove the banjo bolt (C), and disconnect the brake hose from the caliper.
5. Remove the flange bolts (D) from the knuckle, then remove the brake hose.

6. Install the brake hose (A) on the knuckle with the flange bolts (B) first, then connect the brake hose to the caliper with the banjo bolt (C) and new sealing washers (D).



7. Install the brake hose (A) on the upper brake hose bracket (B) with a new brake hose clip (C).

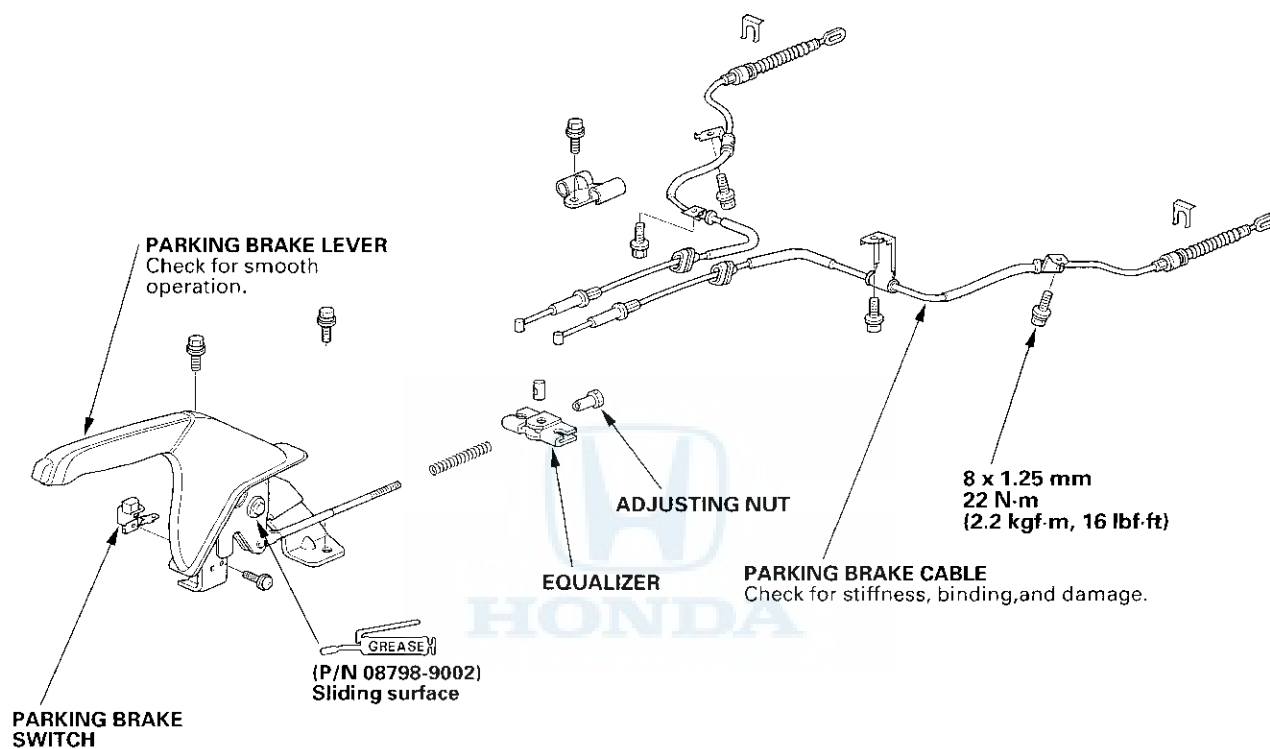


8. Connect the brake line (D) to the brake hose.
9. After installing the brake hose, bleed the brake system (see page 19-9).
10. Do the following checks:
 - Check the brake hose and line joint for leaks, and tighten if necessary.
 - Check the brake hoses for interference and twisting.



Parking Brake Cable Replacement

Exploded View

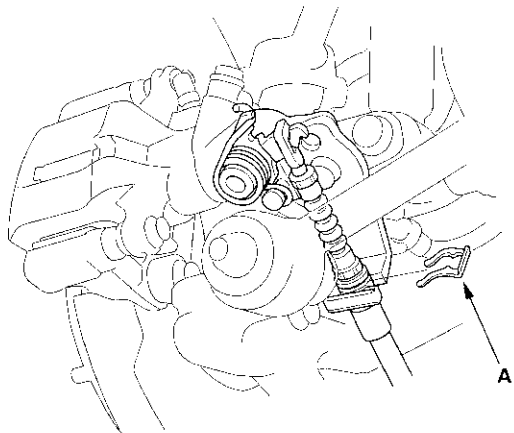


(cont'd)

Conventional Brake Components

Parking Brake Cable Replacement (cont'd)

1. Remove the clip (A) from the rear brake caliper.



2. Remove the parking brake cable from the rear brake caliper.
3. Reinstall the parking brake cable in the reverse order of removal, then adjust the parking brake (see page 19-7).



Navigation Tools: Click on the “Table of Contents”
below, or use the Bookmarks to the left.

Brakes

Conventional Brake Components 19-1

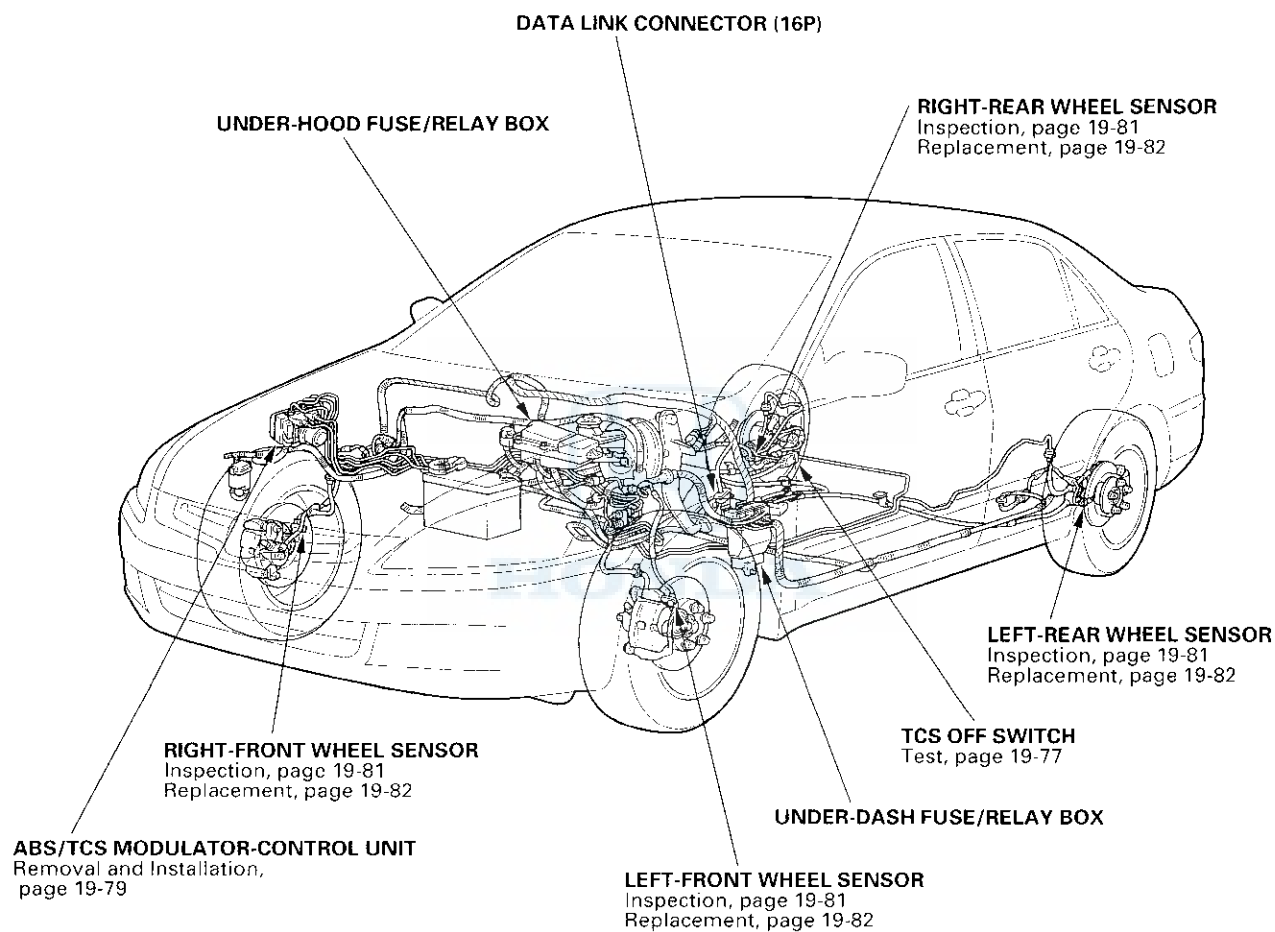
ABS/TCS (Anti-lock Brake System/ Traction Control System) Components

Component Location Index	19-32
General Troubleshooting Information	19-33
DTC Troubleshooting Index	19-36
Symptom Troubleshooting Index	19-37
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Circuit Diagram	19-50
DTC Troubleshooting	19-53
ABS Indicator Circuit Troubleshooting	19-69
Brake System Indicator Circuit Troubleshooting	19-71
TCS Indicator Circuit Troubleshooting	19-73
TCS Activation Indicator Circuit Troubleshooting	19-75
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ABS/TCS Components

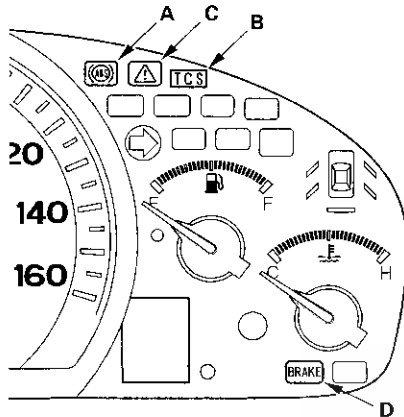
Component Location Index



General Troubleshooting Information

System Indicator

This system has four indicators; ABS indicator (A), TCS indicator (B), TCS activation indicator (C) and brake system indicator (D). When the system detects a problem, it illuminates the appropriate indicators. Depending on the failure, the ABS/TCS control unit determines which indicators are turned on.



- When ABS function is lost:
ABS indicator, TCS indicator and TCS activation indicator turn on.
- When TCS function is lost:
TCS indicator and TCS activation indicator turn on.
- When all functions are lost:
All four indicators turn on.
- When the gauge control module detects F-CAN circuit problem:
ABS indicator, TCS indicator and brake system indicator turn on.

ABS/TCS Indicator

- If the system is OK, the ABS and TCS indicators go off 2 seconds after turning the ignition switch ON (II).
- The ABS and TCS indicators come on when the ABS/TCS control unit detects a problem in the system. However, even though the system is operating properly, the indicator may come on under these conditions.
 - The vehicle goes into a spin.
 - The ABS or TCS continues to operate for a long time.
 - The vehicle is subject to an electrical signal disturbance.

To determine the actual cause of the problem, question the customer about the conditions when the problem occurred, taking the above conditions into consideration.

TCS Activation Indicator

- If the system is OK, the indicator goes off 2 seconds after turning the ignition switch ON (II).
- The indicator comes on if the TCS OFF switch is pressed after the ignition switch is turned ON (II).
- The indicator flashes while the TCS system is active.
- When a problem is detected and the ABS indicator comes on, but not the TCS indicator, there are cases when the indicator stays on until the ignition switch is turned OFF, and cases when the indicator goes off automatically when the system returns to normal.
 - DTC 61 or 62:
The ABS and TCS indicators go off automatically when the system returns to normal.
 - DTC 11, 13, 15, 17, 31, 32, 33, 34, 35, 36, 37, 38, 53, 54, 71, 81, 112, 121, 122, 123 or 124:
The ABS and TCS indicators stay on until the ignition switch is turned OFF whether or not the system returns to normal.
 - DTC 12, 14, 16, 18, 21, 22, 23, 24, 41, 42, 43, 44, 51 or 52:
The ABS indicator stays on until the system returns to normal and the vehicle is driven.
 - DTC 64, 65, 66, 68, 83, 84 or 86:
The TCS indicator stays on until the ignition switch is turned OFF whether or not the system returns to normal.

(cont'd)

ABS/TCS Components

General Troubleshooting Information (cont'd)

Diagnostic Trouble Code (DTC)

- The memory can hold any number of DTCs. However, when the same DTC is detected more than once, the more recent DTC is written over the earlier one. Therefore, when the same problem is detected repeatedly, it is memorized as a single DTC.
- The DTCs are indicated in ascending number order, not in the order they occur.
- The DTCs are memorized in the EEPROM (non-volatile memory). Therefore, the memorized DTCs cannot be canceled by disconnecting the battery. Do the specified procedures to clear the DTCs.

Self-diagnosis

- Self-diagnosis can be classified into two categories:
 - Initial diagnosis: Done right after the engine starts and until the ABS and TCS indicators go off.
 - Regular diagnosis: Done right after the initial diagnosis until the ignition switch is turned OFF.
- When a problem is detected by self-diagnosis, the ABS/TCS control unit shifts to fail-safe mode.

Kickback

The pump motor operates when the ABS is functioning, and the fluid in the reservoir is forced out to the master cylinder, causing kickback at the brake pedal.

Pump Motor

- The pump motor operates when the ABS or TCS is functioning.
- The ABS/TCS control unit checks the pump motor operating during initial diagnosis when the vehicle is driven over 12 mph (20 km/h) the first time after the ignition switch is turned ON (II). You may hear the motor operate at this time, but it is normal.

Brake Fluid Replacement/Air Bleeding

Brake fluid replacement and air bleeding procedures are identical to the procedures used on vehicles not equipped with ABS/TCS. To ease bleeding, start with the front wheels.

How to Troubleshoot DTCs

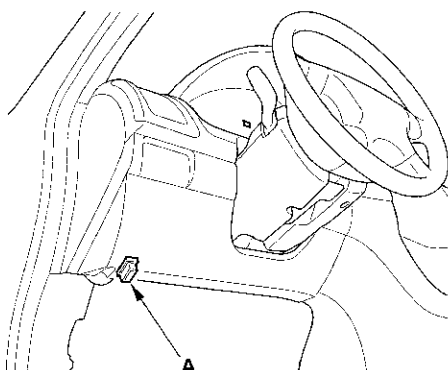
The troubleshooting procedures assume that the cause of the problem is still present and the ABS and/or TCS indicator is still on. Following the procedures when the ABS and/or TCS indicator does not come on can result in incorrect diagnosis.

The connector illustrations show the female terminal connectors with a single outline and the male terminal connectors with a double outline.

1. Question the customer about the conditions when the problem occurred, and try to reproduce the same conditions for troubleshooting. Find out when the ABS and/or TCS indicator came on, such as during ABS control, after ABS control, when vehicle speed was at a certain speed, etc.
2. When the ABS or TCS indicator does not come on during the test-drive, but troubleshooting is done based on the DTC, check for loose connectors, poor contact of the terminals, etc. before you start troubleshooting.
3. After troubleshooting, or repairs are done, clear the DTCs, and test-drive the vehicle. Make sure the ABS and TCS indicators do not come on.

How to Retrieve DTCs

1. With the ignition switch OFF, connect the Honda Diagnostic System (HDS) to the 16P data link connector (DLC) (A) under the left side of the dashboard.

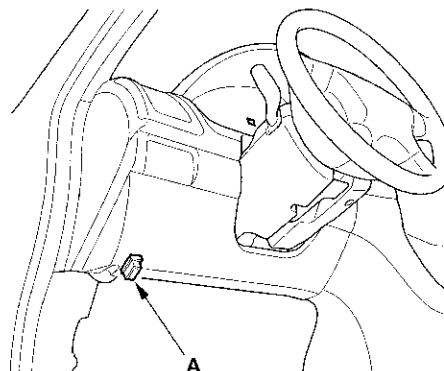


2. Turn the ignition switch ON (II), and follow the prompts on the HDS to display the DTC(s) on the screen. After determining the DTC, refer to the DTC Troubleshooting.

NOTE: See the HDS Help menu for specific instructions.

How to Clear DTCs

1. With the ignition switch OFF, connect the HDS to the 16P data link connector (DLC) (A) under the left side of the dashboard.



2. Turn the ignition switch ON (II), and clear the DTC(s) by following the screen prompts on the HDS.

NOTE: See the HDS Help menu for specific instructions.

3. Perform the TCS pressure sensor neutral position memorization (see page 19-78).

ABS/TCS Components

DTC Troubleshooting Index

DTC	Detection Item	Note
11	Right-front wheel sensor (open/short to body ground/short to power)	(see page 19-53)
12	Right-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-56)
13	Left-front wheel sensor (open/short to body ground/short to power)	(see page 19-53)
14	Left-front wheel sensor (electrical noise/intermittent interruption)	(see page 19-56)
15	Right-rear wheel sensor (open/short to body ground/short to power)	(see page 19-53)
16	Right-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-56)
17	Left-rear wheel sensor (open/short to body ground/short to power)	(see page 19-53)
18	Left-rear wheel sensor (electrical noise/intermittent interruption)	(see page 19-56)
21	Right-front magnetic encoder	(see page 19-57)
22	Left-front magnetic encoder	(see page 19-57)
23	Right-rear magnetic encoder	(see page 19-57)
24	Left-rear magnetic encoder	(see page 19-57)
31	ABS solenoid	(see page 19-58)
32	ABS solenoid	(see page 19-58)
33	ABS solenoid	(see page 19-58)
34	ABS solenoid	(see page 19-58)
35	ABS solenoid	(see page 19-58)
36	ABS solenoid	(see page 19-58)
37	ABS solenoid	(see page 19-58)
38	ABS solenoid	(see page 19-58)
41	Right-front wheel lock	(see page 19-58)
42	Left-front wheel lock	(see page 19-58)
43	Right-rear wheel lock	(see page 19-58)
44	Left-rear wheel lock	(see page 19-58)
51	Motor lock	(see page 19-59)
52	Motor stuck OFF	(see page 19-60)
53	Motor stuck ON	(see page 19-61)
54	ABS fail-safe relay	(see page 19-61)
61	Low +B-FSR voltage	(see page 19-62)
62	High +B-FSR voltage	(see page 19-62)
64	Sensor power voltage	(see page 19-62)
65	Brake fluid level	(see page 19-63)
66	TCS pressure sensor (inside of ABS/TCS modulator-control unit)	(see page 19-63)
68	Brake pedal position switch	(see page 19-64)
71	Different diameter tire	(see page 19-64)
81	Central Processing Unit (CPU)	(see page 19-65)
83	PCM	(see page 19-65)
84	TCS pressure sensor neutral position	(see page 19-66)
86	F-CAN communication	(see page 19-67)
107	TCS operation	(see page 19-67)
112	Internal power source stuck OFF	(see page 19-68)
121	TCS solenoid	(see page 19-69)
122	TCS solenoid	(see page 19-69)
123	TCS solenoid	(see page 19-69)
124	TCS solenoid	(see page 19-69)



Symptom Troubleshooting Index

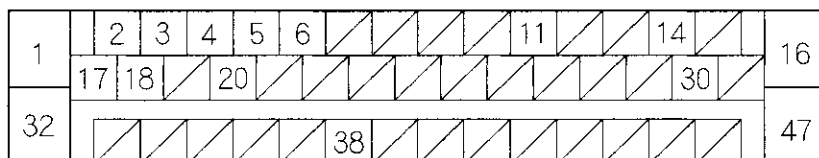
Symptom	Diagnostic procedure
ABS indicator does not come on	ABS Indicator Circuit Troubleshooting (see page 19-69)
ABS indicator does not go off, and no DTCs are stored	ABS Indicator Circuit Troubleshooting (see page 19-70)
Brake system indicator does not come on at bulb check and/or with parking brake applied	Brake System Indicator Circuit Troubleshooting (see page 19-71)
Brake system indicator does not go off, and no DTCs are stored	Brake System Indicator Circuit Troubleshooting (see page 19-72)
TCS indicator does not come on	TCS Indicator Circuit Troubleshooting (see page 19-73)
TCS indicator does not go off, and no DTCs are stored	TCS Indicator Circuit Troubleshooting (see page 19-73)
TCS activation indicator does not come on	TCS Activation Indicator Circuit Troubleshooting (see page 19-75)
TCS activation indicator does not go off, and no DTCs are stored	TCS Activation Indicator Circuit Troubleshooting (see page 19-75)



ABS/TCS Components

System Description

ABS/TCS Control Unit Inputs and Outputs for 47P Connector



Wire side of female terminals

Terminal number	Wire color	Terminal sign	Description	Measurement (Backprobe the ABS/TCS control unit 47P connector)		
				Terminals	Conditions	Voltage
1	WHT	+B-FSR	Power source for the fail-safe relay	1—GND	At all times	Battery voltage
2	YEL/ RED	RL +B	Detects left-rear wheel sensor signal	—	—	—
3	RED	RL-GND	Detects left-rear wheel sensor signal	—	—	—
4	BLU/ WHT	FL +B	Detects left-front wheel sensor signal	—	—	—
5	GRN/ YEL	RR +B	Detects right-rear wheel sensor signal	—	—	—
6	BLU/ YEL	RR-GND	Detects right-rear wheel sensor signal	—	—	—
11	BLU	DIAG	Communicates with HDS	—	—	—
14	WHT	CAN-H	CAN communication circuit	—	—	—
16	WHT/ RED	+B-MR	Power source for the motor relay	16—GND	At all times	Battery voltage



Terminal number	Wire color	Terminal sign	Description	Measurement (Backprobe the ABS/TCS control unit 47P connector)		
				Terminals	Conditions	Voltage
17	PNK	FR-GND	Detects right-front wheel sensor signal	_____	_____	_____
18	GRN/ BLK	FR +B	Detects right-front wheel sensor signal	_____	_____	_____
20	BRN/ WHT	FL-GND	Detects left-front wheel sensor signal	_____	_____	_____
30	RED	CAN-L	CAN communication circuit	_____	_____	_____
32	BLK	GND	Ground for the ABS/TCS modulator-control unit	32—GND	At all times	0 V
38	BLK/ RED	IG1	Power source for activating the system	38—GND	Ignition switch ON (II)	Battery voltage
47	BLK	MR-GND	Ground for the pump motor	47—GND	At all times	0 V



(cont'd)

ABS/TCS Components

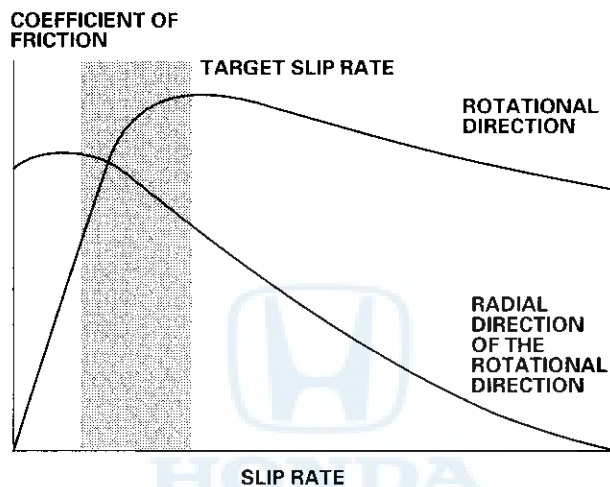
System Description (cont'd)

ABS Features

When the brake pedal is pressed while driving, the wheels can lock before the vehicle comes to a stop. In such an event, the maneuverability of the vehicle is reduced if the front wheels are locked, and the stability of the vehicle is reduced if the rear wheels are locked, creating an extremely unstable condition. The ABS precisely controls the slip rate of the wheels to ensure maximum grip force from the tires, and it thereby ensures maneuverability and stability of the vehicle.

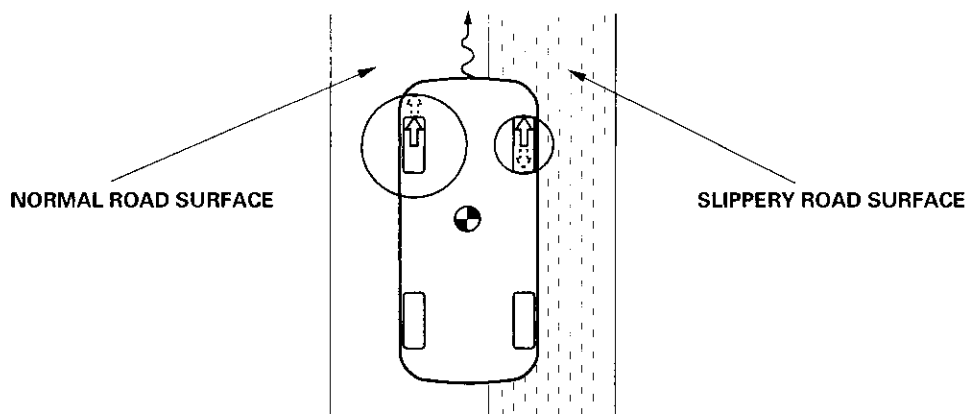
The ABS calculates the slip rate of the wheels based on the vehicle speed and the wheel speed, then it controls the brake fluid pressure to attain the target slip rate.

Grip Force of Tire and Road Surface



TCS Features

The TCS provides low-speed traction. When a drive wheel loses traction on a slippery road surface and starts to spin, the ABS/TCS modulator-control unit applies brake pressure to slow the spinning wheel. At that time, the ABS/TCS control unit sends an engine retard signal to the PCM to prevent damage to the transmission.

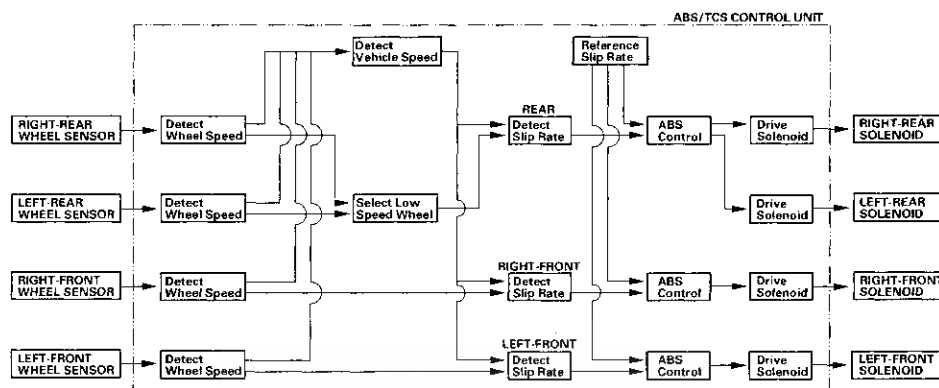


ABS Main Control

The ABS/TCS control unit detects the wheel speed based on the wheel sensor signals it receives, then calculates the vehicle speed based on the detected wheel speed. The control unit detects the vehicle speed during deceleration based on the rate of deceleration.

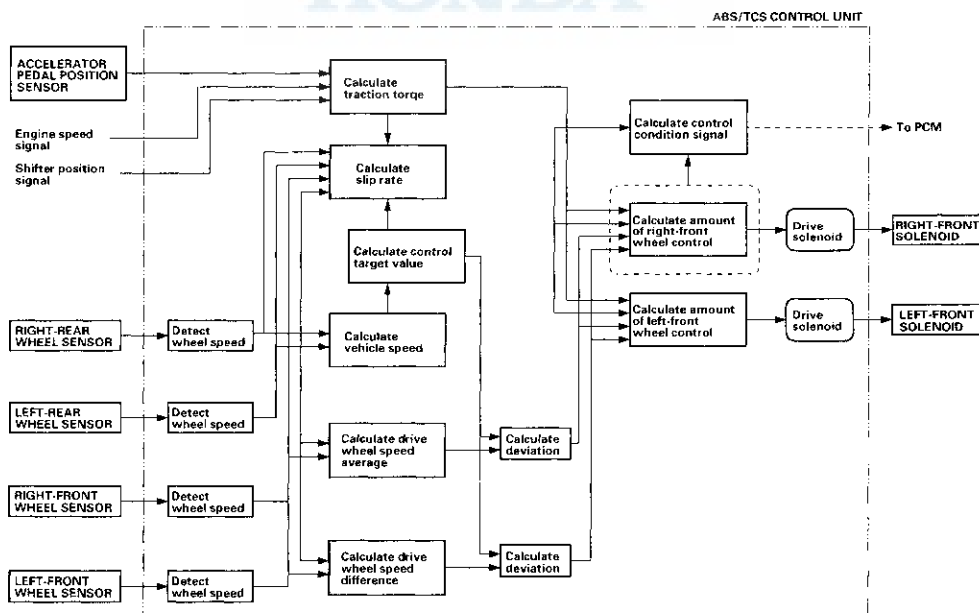
The ABS/TCS control unit calculates the slip rate of each wheel, and it transmits the control signal to the modulator unit solenoid valve when the slip rate is high.

The pressure reduction control has three modes: Pressure reducing, pressure retaining, and pressure intensifying.



TCS Main Control

The ABS/TCS control unit controls the TCS based on signal inputs from the accelerator pedal position sensor, engine speed, shifter position, and the wheel sensors. In addition, the ABS/TCS control unit sends an engine retard request signal to the PCM if necessary. The pressure intensifying control has three modes: Pressure intensifying, pressure retaining, and pressure reducing.



(cont'd)

ABS/TCS Components

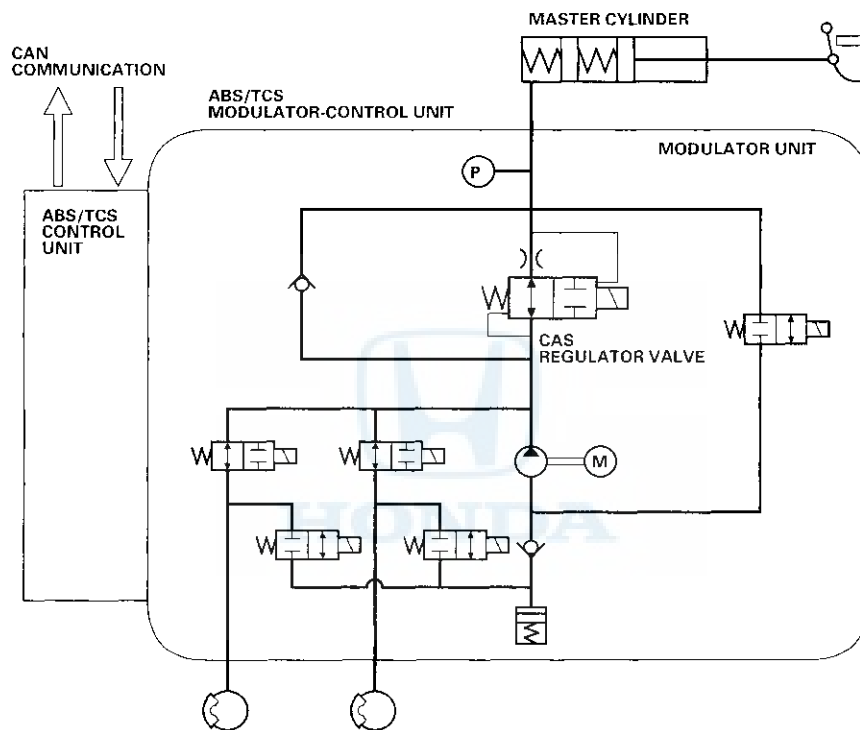
System Description (cont'd)

Creep Aid System (CAS)

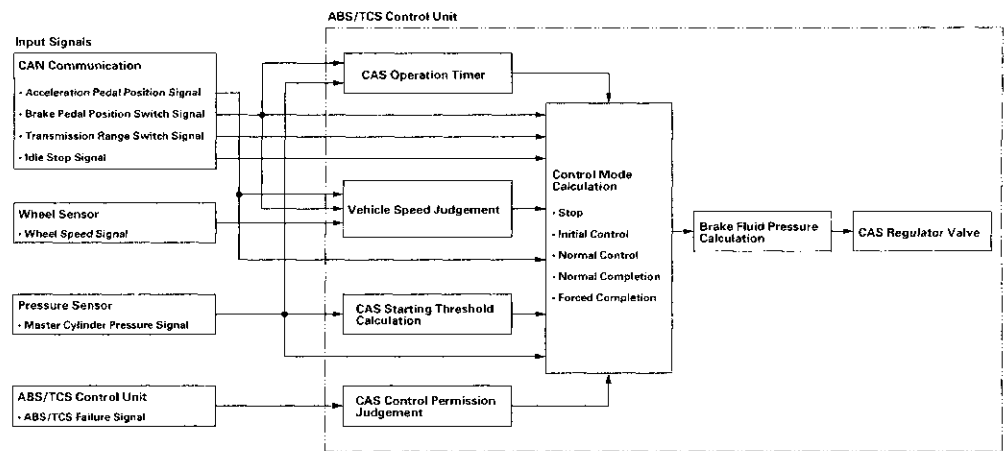
The CAS keeps the brakes applied during auto idle stop. This prevents the vehicle from rolling forward or backward while the driver releases the brake pedal (to press the accelerator pedal) and the engine starts.

When the master cylinder pressure is reduced rapidly with the vehicle stopped in auto idle stop, the ABS/TCS modulator-control unit drives the CAS regulator valve in the ABS/TCS modulator-control unit to retain the brake fluid pressure for the brake calipers. The brake fluid pressure is reduced gradually while the CAS regulator valve is operating.

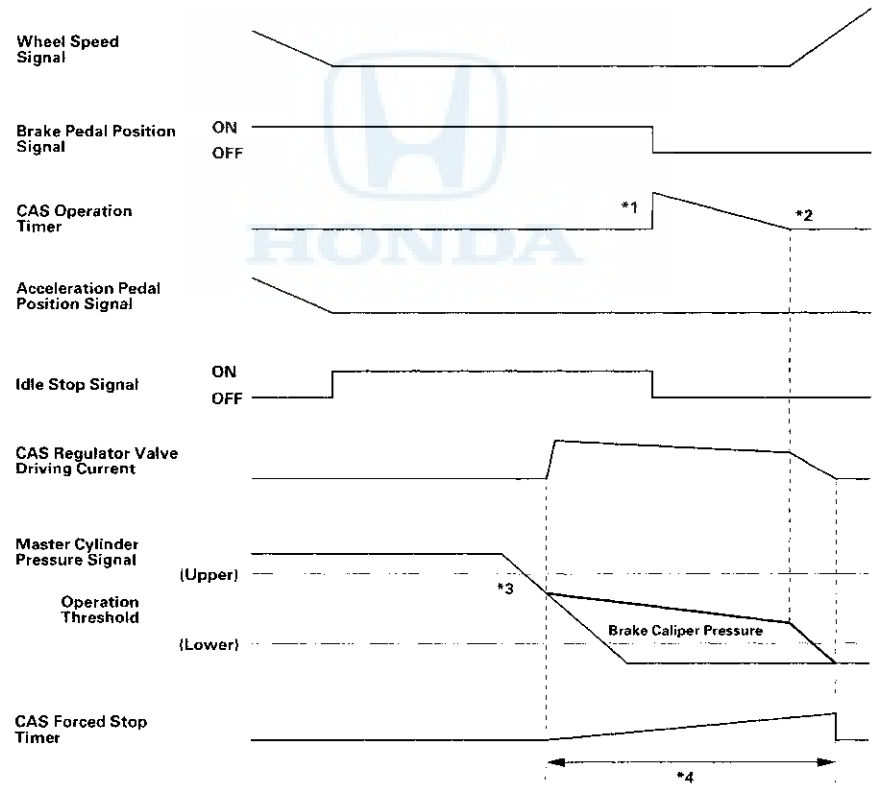
The CAS stops controlling the brake fluid pressure when the brake fluid pressure is less than the specified value or specified operation period of the CAS regulator valve elapses.



System Control Diagram



CAS Control Time Table



- *1: The timer is set when the brake position signal is OFF, or the master cylinder pressure is lower than the threshold.
- *2: The CAS operation is completed.
- *3: When the master cylinder pressure is reduced rapidly, and drops lower than the upper threshold, the CAS regulator valve is driven.
- *4: The CAS system stops operation to protect the ABS/TCS modulator-control unit after a specified time period, even if the system is still operating.

(cont'd)

ABS/TCS Components

System Description (cont'd)

Self-Diagnosis

- The ABS/TCS control unit is equipped with a main CPU and a monitor IC. They check each other for problems.
- The CPUs also check the circuit of the system.
- When a problem is detected by self-diagnosis, the ABS/TCS control unit turns on the appropriate indicator(s).

DTC	Detection Item	ABS indicator	Brake system indicator	TCS indicator	TCS activation indicator
11, 13, 15, 17	Wheel sensor (open/short to body ground/short to power)	ON	ON or OFF	ON	ON
12, 14, 16, 18	Wheel sensor (electrical noise/intermittent interruption)	ON	ON or OFF	ON	ON
21, 22	Magnetic encoder	ON	ON or OFF	ON	ON
23, 24	Magnetic encoder	ON	ON or OFF	ON	ON
31, 32, 33, 34, 35, 36, 37, 38	ABS solenoid	ON	ON	ON	ON
41, 42, 43, 44	Wheel lock	ON	ON or OFF	ON	ON
51	Motor lock	ON	OFF	ON	ON
52	Motor stuck OFF	ON	OFF	ON	ON
53	Motor stuck ON	ON	OFF	ON	ON
54	ABS fail-safe relay	ON	ON	ON	ON
61	Low +B-FSR voltage	ON	ON or OFF	ON	ON
62	High +B-FSR voltage	ON	ON	ON	ON
64	Sensor power voltage	OFF	OFF	ON	ON
65	Brake fluid level	OFF	OFF	ON	ON
66	TCS pressure sensor (inside of ABS/TCS modulator-control unit)	OFF	OFF	ON	ON
68	Brake pedal position switch	OFF	OFF	ON	ON
71	Different diameter tire	ON or OFF	ON or OFF	ON	ON
81	Central Processing Unit (CPU)	ON	ON	ON	ON
83	PCM	OFF	OFF	ON	ON
84	TCS pressure sensor neutral position	OFF	OFF	ON	ON
86	F-CAN communication	OFF	OFF	ON	ON
107	TCS operation	OFF	OFF	OFF	ON
112	Internal power source stuck OFF	ON	ON	ON	ON
121, 122, 123, 124	TCS solenoid	ON	ON	ON	ON

On-board Diagnosis Function

The ABS and TCS can be diagnosed with the HDS.

The ALB Checker cannot be used with this system. For air bleeding, and checking wheel sensor signals, use the HDS. See the HDS Help menu for specific operating instructions.

Modulator Unit

The modulator unit consists of the inlet solenoid valve, outlet solenoid valve, TCS normally open (NO) solenoid valve, TCS normally closed (NC) solenoid valve, reservoir, pump, pump motor, and the damping chamber. The modulator controls the caliper fluid pressure directly. It is a circulating-type modulator because the brake fluid circulates through the caliper, the reservoir, and the master cylinder. The hydraulic control has three modes: Pressure intensifying, pressure retaining, and pressure reducing. The hydraulic circuit is an independent four channel type, one channel for each wheel.

ABS Control

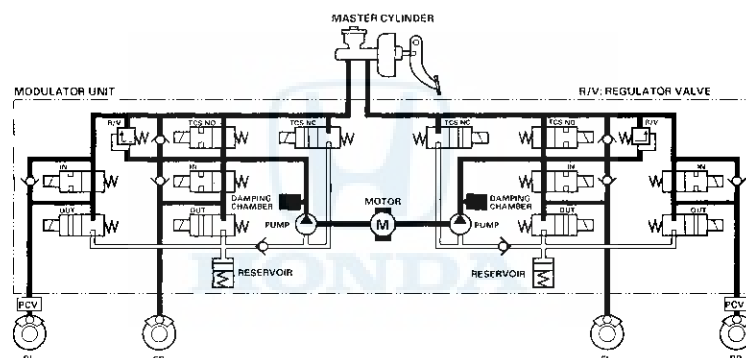
Pressure intensifying mode

TCS NO valve open, TCS NC valve closed, inlet valve open, outlet valve closed. Master cylinder fluid is pumped out to the caliper.

Pump motor

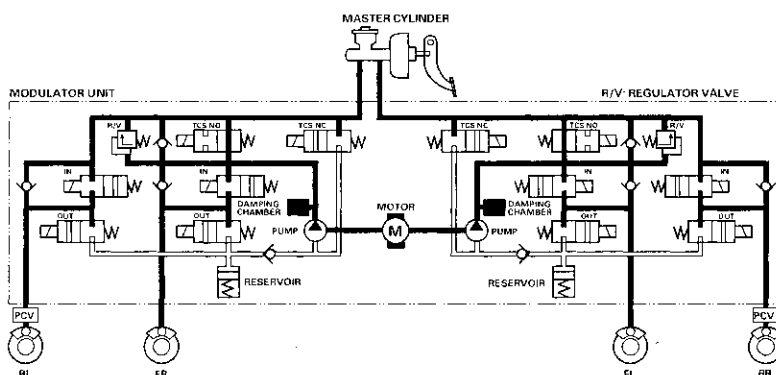
When starting the pressure reducing mode, the pump motor is ON. When stopping ABS operation, the pump motor is OFF.

The reservoir fluid is pumped out by the pump, through the damping chamber, to the master cylinder.



Pressure retaining mode

TCS NO valve open, TCS NC valve closed, inlet valve closed, outlet valve closed. Caliper fluid is retained by the inlet valve and outlet valve.



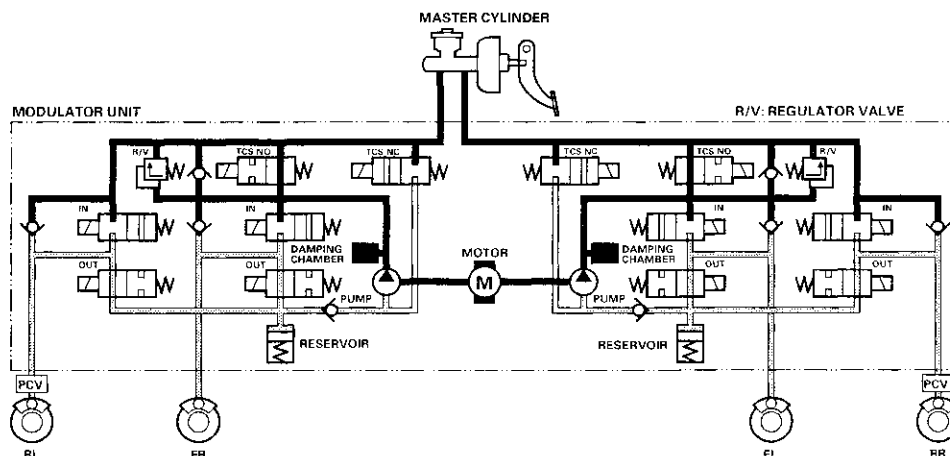
(cont'd)

ABS/TCS Components

System Description (cont'd)

Pressure reducing mode

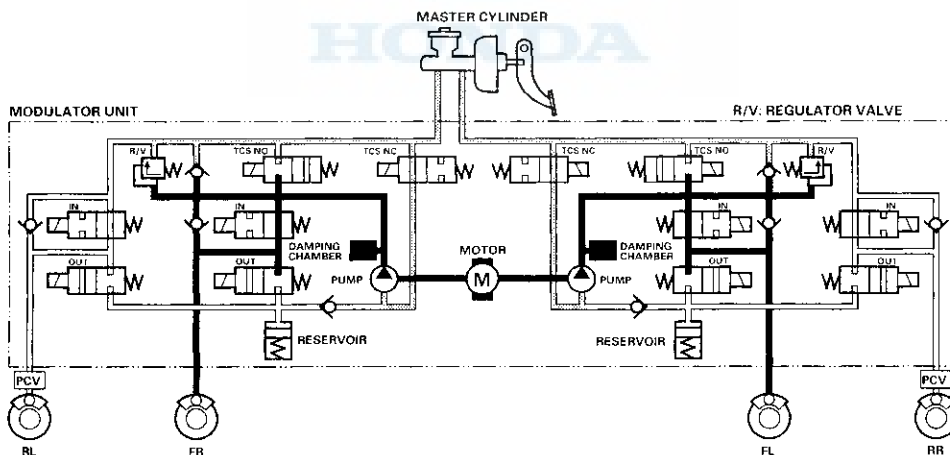
TCS NO valve open, TCS NC valve closed, inlet valve closed, outlet valve open.
Caliper fluid flows through the outlet valve to the reservoir.



TCS Control

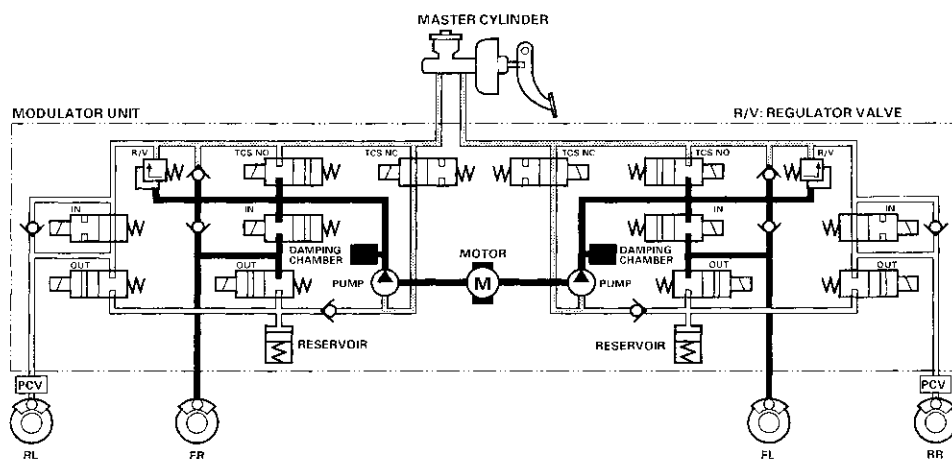
Pressure intensifying mode

TCS NO valve closed, TCS NC valve open, inlet valve open, outlet valve closed, pump motor ON.
The reservoir and master cylinder fluid is pumped out by the pump, through the damping chamber, to the front caliper.



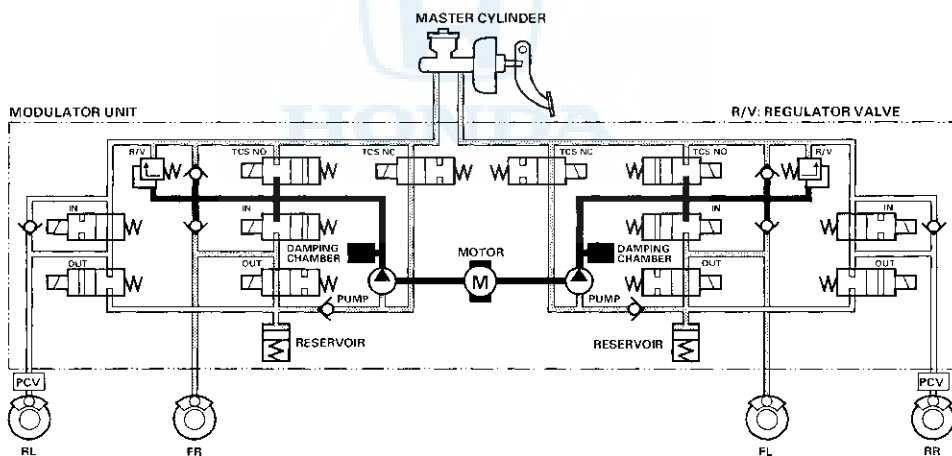
Pressure retaining mode

TCS NO valve closed, TCS NC valve open, inlet valve closed, outlet valve closed, pump motor ON.
Front caliper fluid is retained by the inlet valve and outlet valve.



Pressure reducing mode

TCS NO valve closed, TCS NC valve open, inlet valve closed, outlet valve open, pump motor ON.
Caliper fluid flows through the outlet valve to the reservoir.



(cont'd)

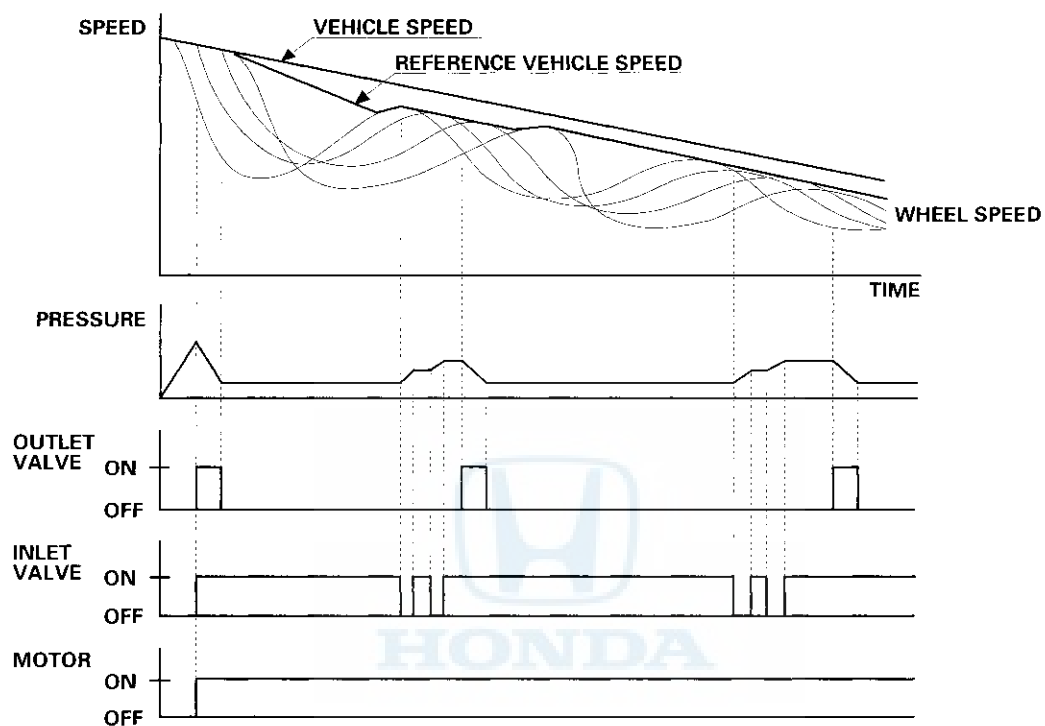
ABS/TCS Components

System Description (cont'd)

Wheel Sensor

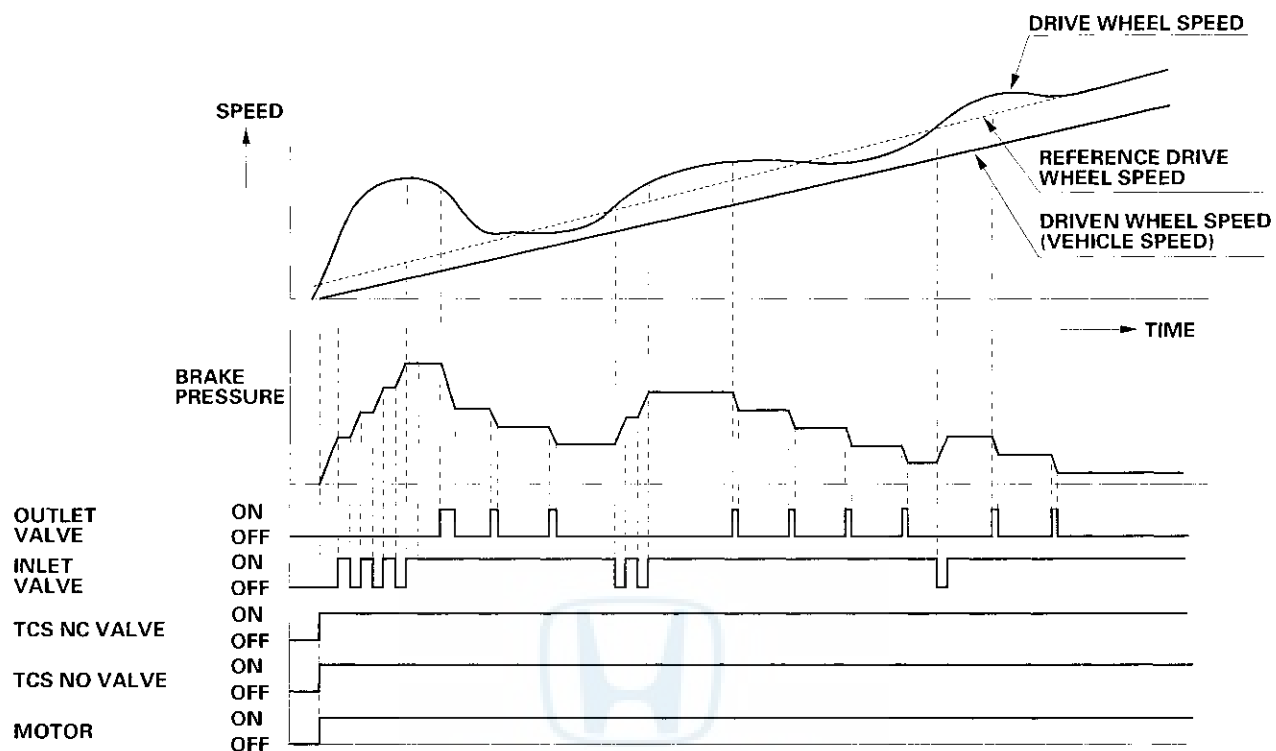
The wheel sensors are the magnetic contactless type. The wheel sensors detect changing of magnetic polarity on the magnetic encoder. The ABS/TCS control unit calculates the wheel speed based on signals sent from the wheel sensor.

Wheel Speed and Modulator Control (ABS)



When the wheel speed drops sharply below the vehicle speed, the outlet valve opens momentarily to reduce the caliper fluid pressure. The pump motor starts at this time. As the wheel speed is restored, the inlet valve opens momentarily to increase the caliper fluid pressure.

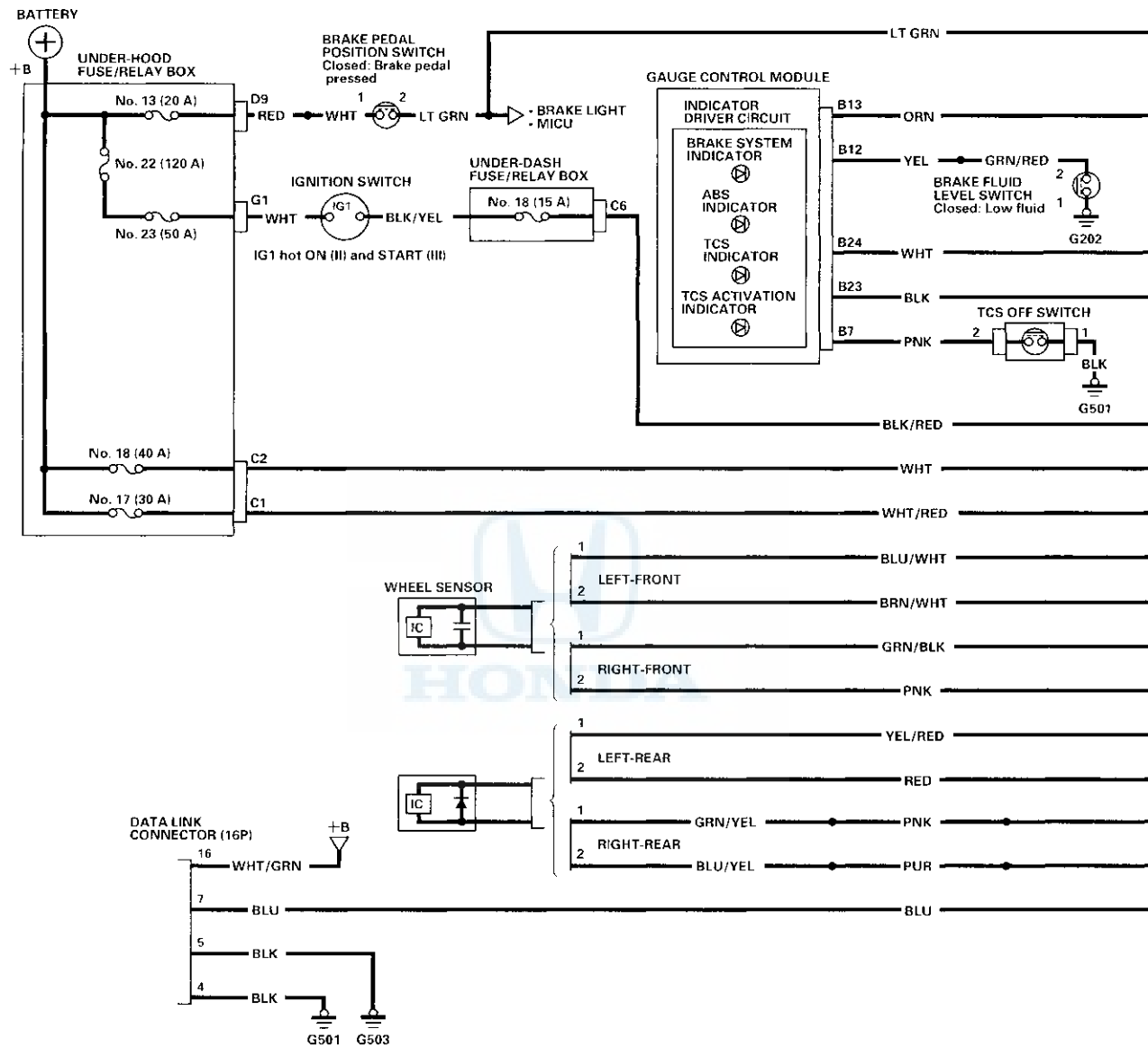
Wheel Speed and Modulator Control (TCS)

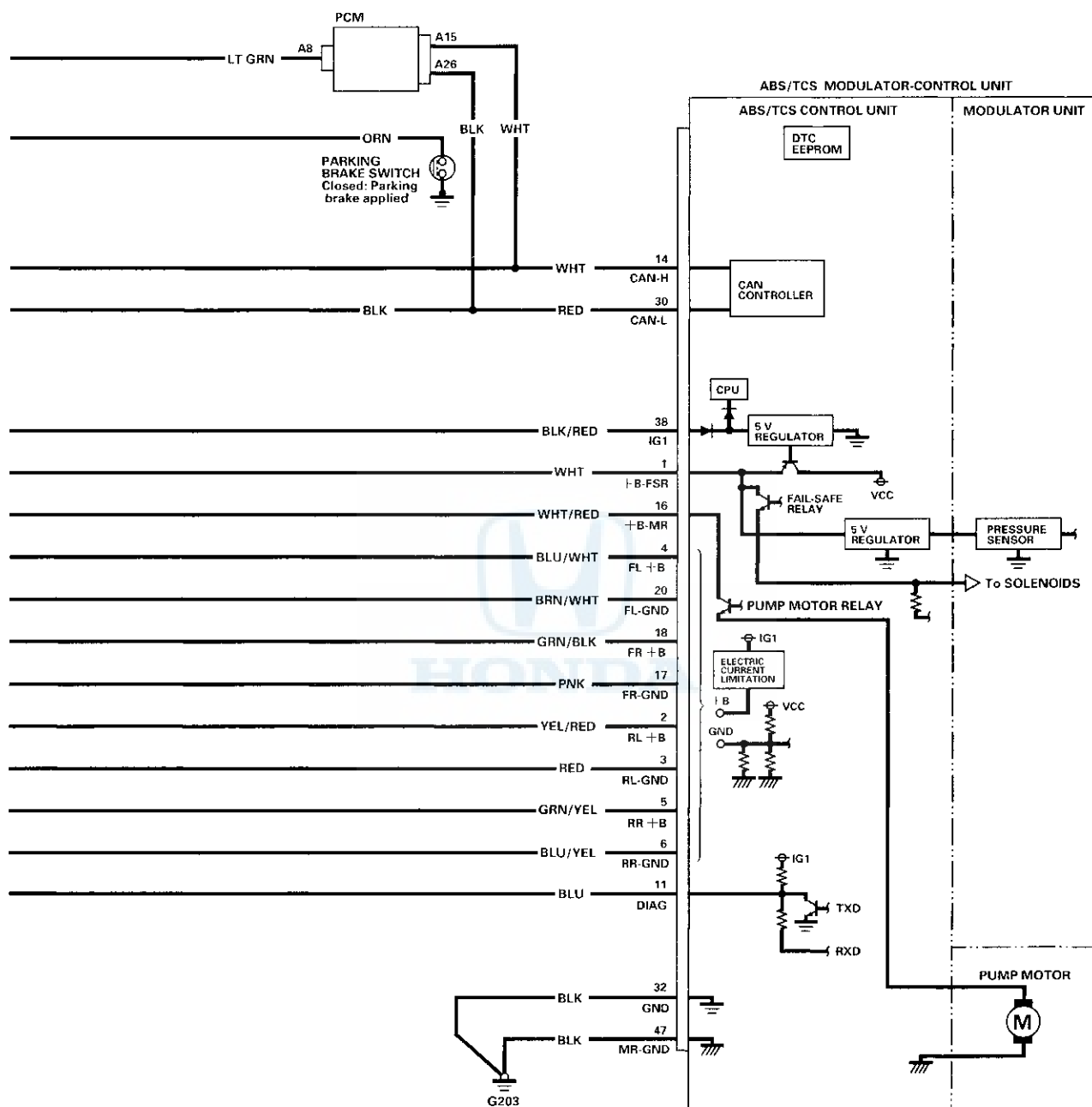


When the front wheel speed rises sharply above the vehicle speed, the TCS NC valve opens, the TCS NO valve closes, and the pump motor starts to intensify the front caliper fluid pressure. When the wheel speed drops, the front inlet valve closes momentarily to retain the front caliper fluid pressure. When the wheel speed drops further, the front outlet valve opens momentarily to reduce the front caliper fluid pressure.

ABS/TCS Components

Circuit Diagram





(cont'd)

ABS/TCS Components

Circuit Diagram (cont'd)

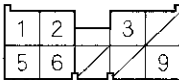
UNDER-HOOD FUSE/RELAY BOX
CONNECTOR C (2P)



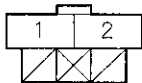
UNDER-HOOD FUSE/RELAY BOX
CONNECTOR G (2P)



UNDER-HOOD FUSE/RELAY BOX
CONNECTOR D (9P)



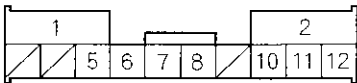
BRAKE PEDAL POSITION
SWITCH 4P CONNECTOR



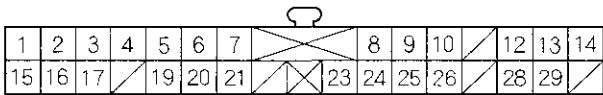
BRAKE FLUID LEVEL SWITCH
2P CONNECTOR



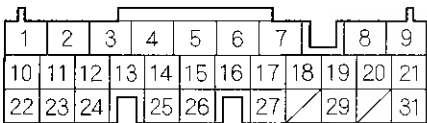
UNDER-DASH FUSE/RELAY BOX
CONNECTOR C (12P)



GAUGE CONTROL MODULE CONNECTOR B (30P)



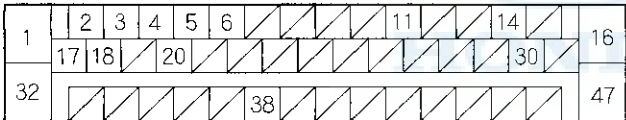
PCM CONNECTOR A (31P)



TCS OFF SWITCH 5P CONNECTOR

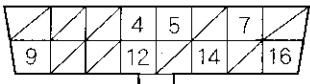


ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

DATA LINK CONNECTOR (16P)



Terminal side of female terminals

WHEEL SENSOR 2P CONNECTOR
FRONT/REAR



Terminal side of male terminals



DTC Troubleshooting

DTC 11, 13, 15, 17: Wheel Sensor (Open/Short to Body Ground/Short to Power)

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the ABS indicator come on?

YES—Go to step 5.

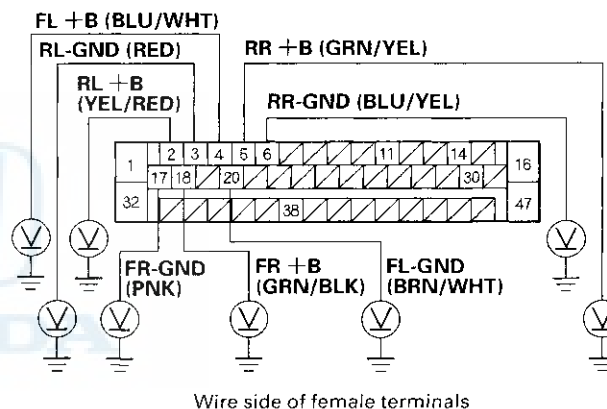
NO—Intermittent failure, the system is OK at this time. Check for loose or poor connections. ■

5. Disconnect the ABS/TCS control unit 47P connector.
6. Start the engine.

7. Measure the voltage between body ground and the appropriate wheel sensor +B and GND terminals of the ABS/TCS control unit 47P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR-GND: No. 17
13 (Left-front)	FL +B: No. 4	FL-GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR-GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL-GND: No. 3

ABS/TCS CONTROL UNIT 47P CONNECTOR



Is there battery voltage?

YES—Repair short to power in the wire between the ABS/TCS modulator-control unit and the appropriate wheel sensor. ■

NO—Go to step 8.

8. Turn the ignition switch OFF.

(cont'd)

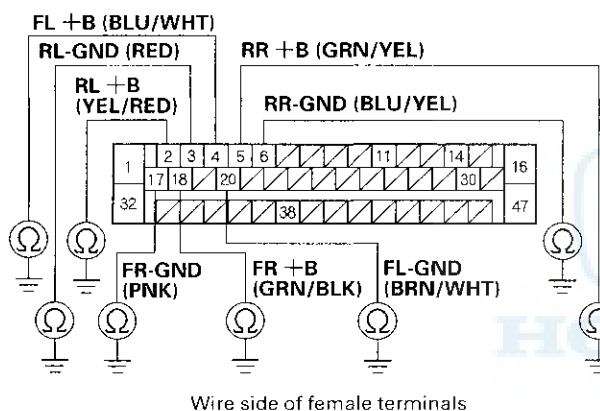
ABS/TCS Components

DTC Troubleshooting (cont'd)

9. Check for continuity between body ground and the appropriate wheel sensor +B and GND terminals of the ABS/TCS control unit 47P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR-GND: No. 17
13 (Left-front)	FL +B: No. 4	FL-GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR-GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL-GND: No. 3

ABS/TCS CONTROL UNIT 47P CONNECTOR



Is there continuity?

YES—Go to step 10.

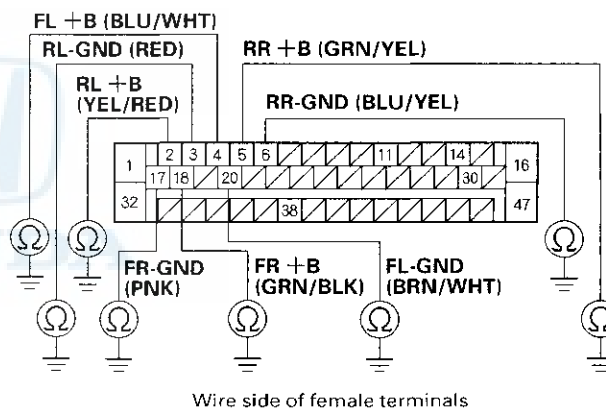
NO—Go to step 12.

10. Disconnect the appropriate wheel sensor 2P connector.

11. Check for continuity between body ground and the appropriate wheel sensor +B and GND terminals of the ABS/TCS control unit 47P connector individually (see table).

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR-GND: No. 17
13 (Left-front)	FL +B: No. 4	FL-GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR-GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL-GND: No. 3

ABS/TCS CONTROL UNIT 47P CONNECTOR



Is there continuity?

YES—Repair short to body ground in the wire between the ABS/TCS modulator-control unit and the wheel sensor. ■

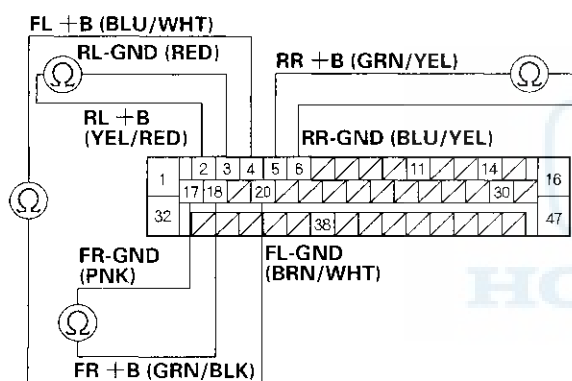
NO—Replace the wheel sensor (see page 19-82). ■

12. Disconnect the appropriate wheel sensor 2P connector.

13. Check for continuity between the appropriate wheel sensor +B and GND terminals of the ABS/TCS control unit 47P connector (see table), then recheck for continuity between the same terminals after reversing the positive tester probe and negative tester probe.

DTC	Appropriate Terminal	
	+B	GND
11 (Right-front)	FR +B: No. 18	FR-GND: No. 17
13 (Left-front)	FL +B: No. 4	FL-GND: No. 20
15 (Right-rear)	RR +B: No. 5	RR-GND: No. 6
17 (Left-rear)	RL +B: No. 2	RL-GND: No. 3

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there continuity in both directions?

YES—Go to step 14.

NO—Check for a loose ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

14. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

DTC	Appropriate Wheel Sensor
11	Right-front
13	Left-front
15	Right-rear
17	Left-rear

15. Clear the DTC using the HDS (see page 19-35).

16. Disconnect the HDS from the 16P DLC.

17. Turn the ignition switch OFF, then turn it ON (II) again. Test-drive the vehicle at speeds above 19 mph (30 km/h).

Does the ABS indicator come on?

YES—Check for a loose ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Replace the original wheel sensor (see page 19-82). ■

ABS/TCS Components

DTC Troubleshooting (cont'd)

DTC 12, 14, 16, 18: Wheel Sensor (Electrical Noise/Intermittent Interruption)

NOTE: If the ABS indicator comes on because of electrical noise, the indicator goes off when you test-drive the vehicle at 19 mph (30 km/h).

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the ABS indicator come on?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. ■

5. Check the appropriate wheel sensor, and magnetic encoder (see page 19-81).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

Are they OK?

YES—Go to step 6.

NO—Reinstall or replace the appropriate wheel sensor, and magnetic encoder. ■

6. Disconnect the ABS/TCS control unit 47P connector.

7. Check for continuity between the appropriate wheel sensor GND terminal and other wheel sensor GND terminals of the ABS/TCS control unit 47P connector (see table).

DTC	Appropriate Terminal	Other Terminals		
12	FR-GND: No. 17	No. 20	No. 6	No. 3
14	FL-GND: No. 20	No. 17	No. 6	No. 3
16	RR-GND: No. 6	No. 17	No. 20	No. 3
18	RL-GND: No. 3	No. 17	No. 20	No. 6

ABS/TCS CONTROL UNIT 47P CONNECTOR

1	2	3	4	5	6					11		14		16
	17	18		20								30		
32								38						47

Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the appropriate wheel sensor and the other wheel sensor. ■

NO—Go to step 8.



8. Substitute a known-good wheel sensor for the appropriate wheel sensor (see table).

DTC	Appropriate Wheel Sensor
12	Right-front
14	Left-front
16	Right-rear
18	Left-rear

9. Clear the DTC using the HDS (see page 19-35).
10. Disconnect the HDS from the 16P DLC.
11. Turn the ignition switch OFF, then turn it ON (II) again.
12. Test-drive the vehicle.

Does the ABS indicator come on?

YES—Check for a loose ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Replace the original wheel sensor (see page 19-82). ■

DTC 21, 22, 23, 24: Magnetic Encoder

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Test-drive the vehicle at 19 mph (30 km/h) or more.

Does the ABS indicator come on, and are DTCs 21, 22, 23, and/or 24 indicated?

YES—Go to step 4.

NO—The system is OK at this time. ■

4. Check the appropriate wheel sensor/encoder (see table) (see page 19-81).

DTC	Appropriate Wheel Sensor
21	Right-front
22	Left-front
23	Right-rear
24	Left-rear

Are the sensor and encoder OK?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Clean and reinstall or replace the magnetic encoder. ■

ABS/TCS Components

DTC Troubleshooting (cont'd)

DTC 31, 32, 33, 34, 35, 36, 37, 38: ABS Solenoid

1. Clear the DTC using the HDS (see page 19-35).
2. Turn the ignition switch ON (II).
3. Verify the DTC.

Does the ABS indicator come on, and are DTCs 31, 32, 33, 34, 35, 36, 37, and/or 38 indicated?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—The system is OK at this time. ■

DTC 41, 42, 43, 44: Wheel Lock

1. Test-drive the vehicle, and check for brake drag by duplicating city driving at speeds over 30 mph (50 km/h). Use the brakes often.

Do the brakes drag?

YES—Repair the brake drag. ■

NO—Go to step 2.

2. Check the installation of the appropriate wheel sensor (see page 19-81).

DTC	Appropriate Wheel Sensor
41	Right-front
42	Left-front
43	Right-rear
44	Left-rear

Is it correct?

YES—If the DTC does not reappear, the most probable cause for the DTC is that the vehicle might have lost traction on a slippery road and spun around. ■

NO—Reinstall or replace the wheel sensor (see page 19-82). ■

DTC 51: Motor Lock

1. Check the No. 17 (30 A) fuse in the under-hood fuse/relay box.

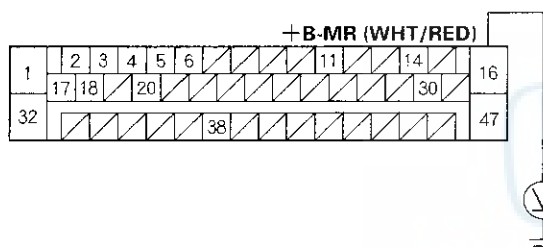
Is the fuse OK?

YES—Reinstall the fuse, and go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect the ABS/TCS control unit 47P connector.
3. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 16 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

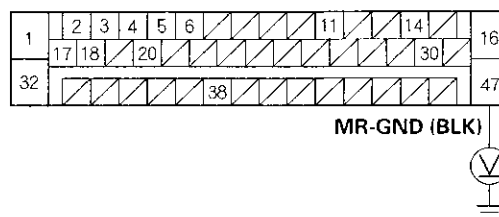
YES—Go to step 4.

NO—Repair open in the wire between the No. 17 (30 A) fuse and the ABS/TCS modulator-control unit. ■

4. Reconnect the ABS/TCS control unit 47P connector.
5. Turn the ignition switch ON (II).

6. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 47 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 7.

NO—Repair open in the wire between the ABS/TCS modulator-control unit and body ground (G203). ■

7. Clear the DTC using the HDS (see page 19-35).
8. Disconnect the HDS from the 16P DLC.
9. Turn the ignition switch OFF, then turn it ON (II) again.
10. Test-drive the vehicle at 10 mph (15 km/h) or more.

Does the ABS indicator come on, and is DTC 51 or 52 indicated?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—The system is OK at this time. ■

ABS/TCS Components

DTC Troubleshooting (cont'd)

DTC 52: Motor Stuck OFF

1. Check the No. 17 (30 A) fuse in the under-hood fuse/relay box.

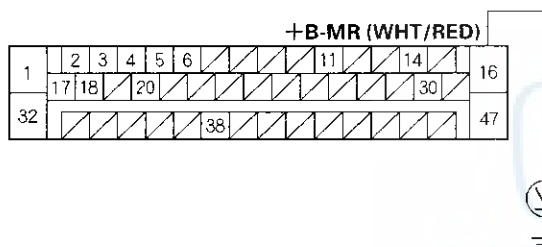
Is the fuse OK?

YES—Reinstall the fuse, and go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect the ABS/TCS control unit 47P connector.
3. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 16 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

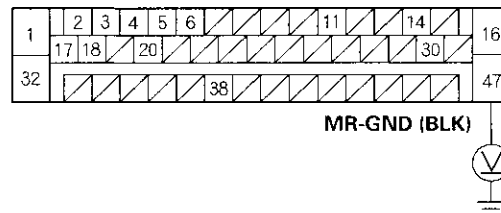
YES—Go to step 4.

NO—Repair open in the wire between the No. 17 (30 A) fuse and the ABS/TCS modulator-control unit. ■

4. Reconnect the ABS/TCS control unit 47P connector.
5. Turn the ignition switch ON (II).

6. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 47 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Repair open in the wire between the ABS/TCS modulator-control unit and body ground (G203). ■

DTC 53: Motor Stuck ON

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

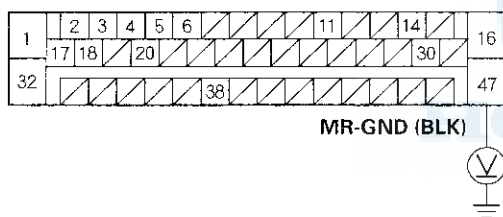
Does the ABS indicator come on, and is DTC 53 indicated?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 47 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Repair open in the wire between the ABS/TCS modulator-control unit and body ground (G203). ■

DTC 54: ABS Fail-safe Relay

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 54 indicated?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—Intermittent failure; the vehicle is OK at this time. ■

ABS/TCS Components

DTC Troubleshooting (cont'd)

DTC 61, 62: High/Low Voltage

1. Clear the DTC using the HDS (see page 19-35).
2. Turn the ignition switch ON (II).

Does the ABS indicator come on?

YES—Go to step 3.

NO—The system is OK at this time. ■

3. Verify the DTC.

Is DTC 61 or 62 indicated?

YES—Check the charging system. ■

NO—Do the appropriate troubleshooting for the DTC indicated. ■

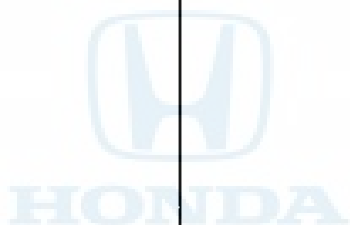
DTC 64: Sensor Power Voltage

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 64 indicated?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—The system is OK at this time. ■





DTC 65: Brake Fluid Level

1. Check the brake fluid level.

Is the level correct?

YES—Go to step 2.

NO—Inspect the brake system for fluid leaks, if no leaks are found, replace all worn out brake pads. ■

2. Check for short in the GRN/RED wire between the gauge control module and the brake fluid level switch. If OK, check the brake fluid level switch.

Is the switch OK?

YES—Do the troubleshooting for the gauge control module (see page 22-226). ■

NO—Replace the brake fluid level switch. ■

DTC 66: TCS Pressure Sensor (Inside of ABS/TCS Modulator-Control Unit)

1. Clear the DTC using the HDS (see page 19-35).

2. Disconnect the HDS from the 16P DLC.

3. Turn the ignition switch OFF, then turn it ON (II) again.

4. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 66 indicated?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Do the TCS pressure sensor neutral position memorization (see page 19-78).

6. Clear the DTC using the HDS (see page 19-35).

7. Disconnect the HDS from the 16P DLC.

8. Turn the ignition switch OFF, then turn it ON (II) again.

9. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 66 indicated?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If no loose terminals are found, replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—The system is OK at this time. ■

ABS/TCS Components

DTC Troubleshooting (cont'd)

DTC 68: Brake Pedal Position Switch

1. Check for other DTCs.

Is another DTC indicated?

YES—Do the appropriate troubleshooting for the DTC. ■

NO—Go to step 2.

2. Check the brake pedal position switch (see page 22-169).

Is the switch OK?

YES—Go to step 3.

NO—Replace the brake pedal position switch (see page 19-5). ■

3. Clear the DTC using the HDS (see page 19-35).
4. Disconnect the HDS from the 16P DLC.
5. Turn the ignition switch OFF, then turn it ON (II) again.
6. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 68 indicated?

YES—Go to step 7.

NO—The system is OK at this time. ■

7. Do the brake pedal position switch signal circuit troubleshooting (see page 11-338).

Is the brake pedal position switch circuit OK?

YES—Substitute a known-good PCM, and recheck:

- If the problem is gone, replace the original PCM. ■
- If the problem continues, check for loose terminals in the ABS/TCS 47P connector. If no loose terminals are found, replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—Repair the brake pedal position switch circuit. ■

DTC 71: Different Diameter Tire

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 71 indicated?

YES—Go to step 5.

NO—Intermittent failure; confirm that tire inflation is set to spec. The vehicle is OK at this time. ■

5. Check that all four tires are the specified size and are inflated to the proper specification.

Are all four tires the correct size and properly inflated?

YES—Go to step 6.

NO—Install the correct tires or set the tires to the correct inflation, and retest. ■

6. With the vehicle on level ground, mark each tire with a small spot of grease. Roll the vehicle until each of the tires makes two grease spots on the floor.
7. Measure and record the distance between the two grease spots.

Is the distance between the shortest and the longest measurement more than 8.5 %?

YES—Replace the tire/tires that is smaller or larger than the others. ■

NO—Replace the ABS/TCS modulator-control unit (see page 19-79). ■



DTC 81: Central Processing Unit (CPU)

1. Check for other DTCs.

Is another DTC indicated?

YES—Do the appropriate troubleshooting for the DTC indicated. ■

NO—Go to step 2.

2. Clear the DTC using the HDS (see page 19-35).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Test-drive the vehicle.

Does the ABS indicator come on, and is DTC 81 indicated?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Intermittent failure; the vehicle is OK at this time. ■

DTC 83: PCM

1. Check the DTC.

Is DTC 86 indicated?

YES—Do the troubleshooting for DTC 86. ■

NO—Go to step 2.

2. Clear the DTC using the HDS (see page 19-35).
3. Disconnect the HDS from the 16P DLC.
4. Turn the ignition switch OFF, then turn it ON (II) again.
5. Test-drive the vehicle.

Do the TCS and TCS activation indicators come on, and is DTC 83 indicated?

YES—Go to step 6.

NO—The system is OK at this time. ■

6. Check the PGM-FI system.

Does the MIL indicator come on or are PGM-FI or A/T-related DTCs indicated?

YES—Do the troubleshooting for the DTC indicated. ■

NO—Go to step 7.

7. Check the gear position indicator.

Does the D indicator come on while neutral position (N) selected or is PCM's DTC indicated?

YES—Do the troubleshooting for the PCM. ■

NO—Check for loose terminals in the PCM connectors, and go to step 8.

(cont'd)

ABS/TCS Components

DTC Troubleshooting (cont'd)

8. Clear the DTC using the HDS (see page 19-35).
9. Disconnect the HDS from the 16P DLC.
10. Turn the ignition switch OFF, then turn it ON (II) again.
11. Test-drive the vehicle.

Is DTC 83 indicated and no PCM's DTC?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—The system is OK at this time. ■

DTC 84: TCS Pressure Sensor Neutral Position

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the TCS indicator come on, and is DTC 84 indicated?

YES—Go to step 5.

NO—The system is OK at this time. ■

5. Do the TCS pressure sensor neutral position memorization (see page 19-78).
6. Clear the DTC using the HDS (see page 19-35).
7. Disconnect the HDS from the 16P DLC.
8. Turn the ignition switch OFF, then turn it ON (II) again.
9. Test-drive the vehicle.

Does the TCS indicator come on, and is DTC 84 indicated?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If no loose terminals are found, replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—The system is OK at this time. ■



DTC 86: F-CAN Communication

1. Clear the DTC using the HDS (see page 19-35).
2. Start and run the engine for at least 5 seconds then turn the engine off.
3. Check for DTCs using the HDS.

Is DTC 86 indicated?

YES—Go to step 4.

NO—Intermittent failure, the F-CAN communication line is OK at this time. ■

4. Check for DTCs in the PCM.

Are any DTCs indicated?

YES—Troubleshoot the PCM DTCs. ■

NO—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, replace the ABS/TCS modulator-control unit (see page 19-79).
■

DTC 107: TCS Operation

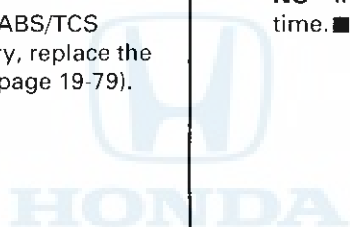
NOTE: The ABS/TCS indicators do not come on by memorizing the DTC 107.

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Is DTC 107 indicated?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Intermittent failure; the system is OK at this time. ■





DTC 121, 122, 123, 124: TCS Solenoid

1. Clear the DTC using the HDS (see page 19-35).
2. Disconnect the HDS from the 16P DLC.
3. Turn the ignition switch OFF, then turn it ON (II) again.
4. Test-drive the vehicle.

Does the TCS indicator come on, and is DTC 121, 122, 123, or 124 indicated?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Intermittent failure; the system is OK at this time. ■

ABS Indicator Circuit Troubleshooting

ABS indicator does not come on

1. Turn the ignition switch ON (II), and watch the ABS indicator.

Does the ABS indicator come on for several seconds?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Do the gauge control module self-diagnosis function procedure (see page 22-226).

Is the gauge control module OK?

YES—Go to step 3.

NO—Replace the gauge control module (see page 22-235). ■

3. Turn the ignition switch OFF.
4. Substitute a known-good ABS/TCS modulator-control unit.
5. Turn the ignition switch ON (II).

Does the ABS indicator come on?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—Check for loose terminals in the gauge control module connectors. If connections are good, replace the gauge control module. ■

ABS/TCS Components

ABS Indicator Circuit Troubleshooting (cont'd)

ABS indicator does not go off, and no DTCs are stored

1. Check the No. 18 (40 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Reinstall the fuse, and go to step 2.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS/TCS modulator-control unit (see page 19-79). ■

2. Check the No. 18 (15 A) fuse in the under-dash fuse/relay box.

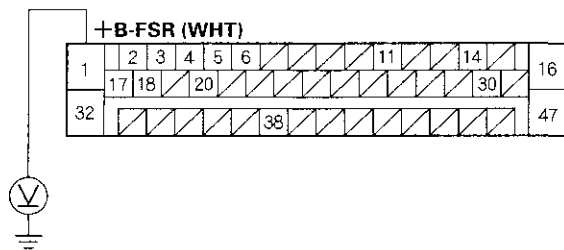
Is the fuse OK?

YES—Reinstall the fuse, and go to step 3.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS/TCS modulator-control unit (see page 19-79). ■

3. Turn the ignition switch OFF.
4. Disconnect the ABS/TCS control unit 47P connector.
5. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 1 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

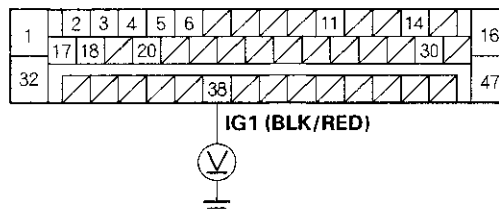
YES—Go to step 6.

NO—Repair open in the wire between the No. 18 (40 A) fuse and the ABS/TCS modulator-control unit. ■

6. Turn the ignition switch ON (II).

7. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 38 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

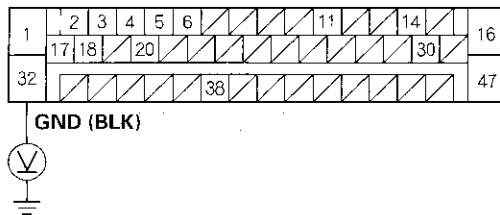
YES—Go to step 8.

NO—Repair open in the wire between the No. 18 (15 A) fuse and the ABS/TCS modulator-control unit. ■

8. Turn the ignition switch OFF.
9. Reconnect the ABS/TCS control unit 47P connector.
10. Turn the ignition switch ON (II).

11. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 32 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Repair open in the wire between the ABS/TCS modulator-control unit and body ground (G203). ■

Brake System Indicator Circuit Troubleshooting

Brake system indicator does not come on at bulb check and/or with parking brake applied

1. Turn the ignition switch ON (II), and watch the brake system indicator.

Does the brake system indicator come on for several seconds?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Do the gauge control module self-diagnosis function procedure (see page 22-226).

Is the gauge control module OK?

YES—Go to step 3.

NO—Replace gauge control module (see page 22-235). ■

3. Turn the ignition switch OFF.

4. Substitute a known-good ABS/TCS modulator-control unit (see page 19-79).

5. Turn the ignition switch ON (II).

Does the brake system indicator come on?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—Check for loose terminals in the gauge control module connectors. If connections are good, replace the gauge control module. ■

ABS/TCS Components

Brake System Indicator Circuit Troubleshooting (cont'd)

Brake system indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II).
2. Release the parking brake.

Does the brake system indicator go off after several seconds?

YES—The system is OK at this time. ■

NO—Go to step 3.

3. Check the brake fluid level (see page 19-9).

Is the level OK?

YES—Go to step 4.

NO—Inspect the brake system for fluid leaks, if no leaks are found, replace the worn out brake pads. ■

4. Check the ABS indicator.

Does the ABS indicator stay on?

YES—Read the DTC (see page 19-35), and do the applicable troubleshooting for the DTC. ■

NO—Go to step 5.

5. Turn the ignition switch OFF.
6. Check the parking brake switch (see page 19-7).

Is the parking brake switch OK?

YES—Go to step 7.

NO—Replace the parking brake switch. ■

7. Check the brake fluid level switch (see page 19-11).

Is the brake fluid level switch OK?

YES—Go to step 8.

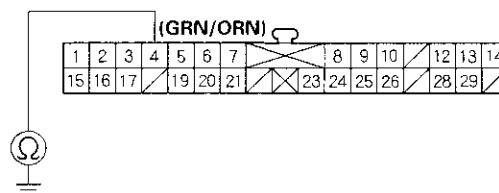
NO—Replace the brake fluid level switch. ■

8. Remove the gauge control module (see page 22-235).

9. Disconnect the gauge control module connector B (30P).

10. Check for continuity between the gauge control module connector B (30P) terminal No. 4 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (30P)



Wire side of female terminals

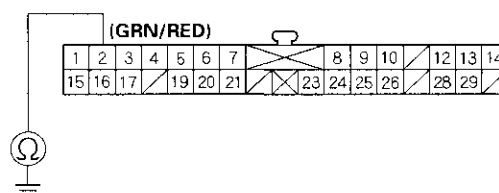
Is there continuity?

YES—Repair short to body ground in the wire between the gauge control module and the parking brake switch. ■

NO—Go to step 11.

11. Check for continuity between the gauge control module connector B (30P) terminal No. 2 and body ground.

GAUGE CONTROL MODULE CONNECTOR B (30P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the gauge control module and the brake fluid level switch. ■

NO—Check for loose terminals in the gauge control module connectors. If connectors are good, replace the gauge control module. ■

TCS Indicator Circuit Troubleshooting

TCS indicator does not come on

1. Turn the ignition switch ON (II), and watch the TCS indicator.

Does the TCS indicator come on for several seconds?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Do the gauge control module self-diagnostic function procedure (see page 22-226).

Is the gauge control module OK?

YES—Go to step 3.

NO—Replace the gauge control module (see page 22-235). ■

3. Turn the ignition switch OFF.
4. Substitute a known-good ABS/TCS modulator-control unit.
5. Turn the ignition switch ON (II).

Does the TCS indicator come on?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79). ■

NO—Check for loose terminals in the gauge control module connectors. If connections are good, replace the gauge control module. ■

TCS indicator does not go off, and no DTCs are stored

1. Check the No. 18 (40 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Reinstall the fuse, and go to step 2.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS/TCS modulator-control unit. ■

2. Check the No. 18 (15 A) fuse in the under-dash fuse/relay box.

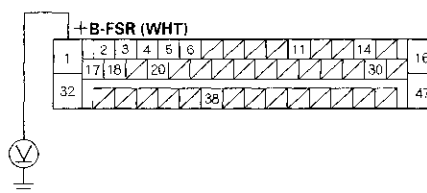
Is the fuse OK?

YES—Reinstall the fuse, and go to step 3.

NO—Replace the fuse, and recheck. If the fuse is blown, check for a short to body ground in this fuse circuit. If the circuit is OK, replace the ABS/TCS modulator-control unit (see page 19-79). ■

3. Turn the ignition switch OFF.
4. Disconnect the ABS/TCS control unit 47P connector.
5. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 1 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Is there battery voltage?

YES—Go to step 6.

NO—Repair open in the wire between the No. 18 (40 A) fuse in the under-hood fuse/relay box and the ABS/TCS modulator-control unit. ■

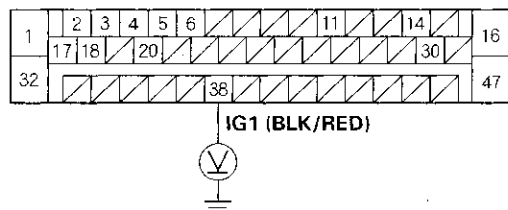
(cont'd)

ABS/TCS Components

TCS Indicator Circuit Troubleshooting (cont'd)

6. Turn the ignition switch ON (II).
7. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 38 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there battery voltage?

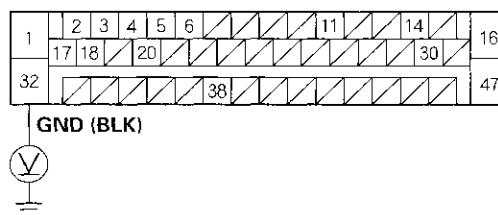
YES—Go to step 8.

NO—Repair open in the wire between the No. 18 (15 A) fuse in the under-dash fuse/relay box and the ABS/TCS modulator-control unit. ■

8. Turn the ignition switch OFF.
9. Reconnect the ABS/TCS control unit 47P connector.
10. Turn the ignition switch ON (II).

11. Measure the voltage between the ABS/TCS control unit 47P connector terminal No. 32 and body ground.

ABS/TCS CONTROL UNIT 47P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Check for loose terminals in the ABS/TCS control unit 47P connector. If necessary, substitute a known-good ABS/TCS modulator-control unit, and recheck. ■

NO—Repair open in the wire between the ABS/TCS modulator-control unit and body ground (G203). ■



TCS Activation Indicator Circuit Troubleshooting

TCS Activation indicator does not come on

1. Turn the ignition switch ON (II), and watch the TCS activation indicator.

Does the TCS activation indicator come on for several seconds?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Do the gauge control module self-diagnostic function procedure (see page 22-226).

Is the gauge control module OK?

YES—Go to step 3.

NO—Replace the gauge control module (see page 22-235). ■

3. Turn the ignition switch OFF.

4. Substitute a known-good ABS/TCS modulator-control unit.

5. Turn the ignition switch ON (II).

Does the TCS activation indicator come on?

YES—Replace the ABS/TCS modulator-control unit (see page 19-79) ■

NO—Check for loose terminals in the gauge control module connectors. If connections are good, replace the gauge control module. ■

TCS Activation indicator does not go off, and no DTCs are stored

1. Turn the ignition switch ON (II), and watch the TCS indicator.

Does the TCS indicator go off?

YES—Go to step 2.

NO—Do the appropriate troubleshooting for the TCS indicator. ■

2. Turn the ignition switch OFF.

3. Check the TCS OFF switch (see page 19-77).

Is the switch OK?

YES—Go to step 4.

NO—Replace the TCS OFF switch (see page 19-77). ■

4. Clear the DTC using the HDS (see page 19-35).

Does the TCS activation indicator go off?

YES—The system is OK at this time. ■

NO—Go to step 5.

5. Clear the DTC using the HDS (see page 19-35).

Does the TCS activation indicator go off?

YES—The system is OK at this time. ■

NO—Go to step 6.

6. Remove the gauge control module (see page 22-235).

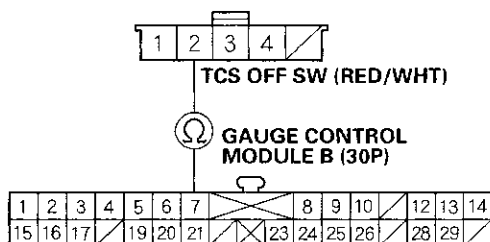
(cont'd)

ABS/TCS Components

TCS Activation Indicator Circuit Troubleshooting (cont'd)

7. Check for continuity between the TCS OFF switch 5P connector terminal No. 2 and the gauge control module connector B (30P) terminal No. 7.

TCS OFF SWITCH 5P CONNECTOR



Wire side of female terminals

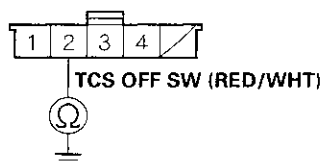
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the TCS OFF switch and the gauge control module connector B (30P).

8. Check for continuity between the TCS OFF switch 5P connector terminal No. 2 and body ground.

TCS OFF SWITCH 5P CONNECTOR



Wire side of female terminals

Is there continuity?

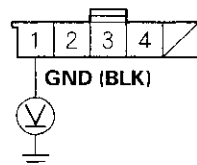
YES—Repair short in the wire between the TCS OFF switch 5P connector terminal No. 2 and the gauge control module. ■

NO—Go to step 9.

9. Turn the ignition switch ON (II).

10. Measure the voltage between the TCS OFF switch 5P connector terminal No. 1 and body ground.

TCS OFF SWITCH 5P CONNECTOR



Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 11.

NO—Repair open in the wire between the TCS OFF switch and body ground (G501). ■

11. Substitute a known-good ABS/TCS modulator-control unit.

12. Reconnect all of the disconnected connectors.

13. Clear the DTC using the HDS (see page 19-35).

14. Disconnect the HDS from the 16P DLC.

15. Turn the ignition switch OFF, then turn it ON (II) again.

16. Test-drive the vehicle.

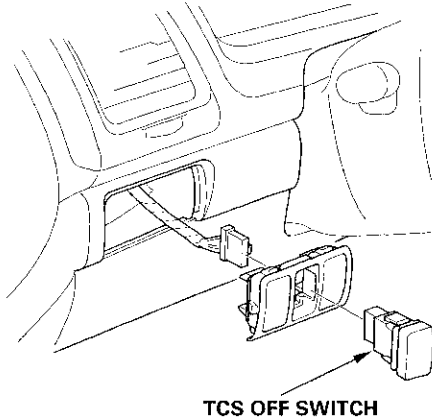
Does the TCS activation indicator go off?

YES—Replace the ABS/TCS modulator-control unit. ■

NO—Check for loose terminals in the gauge control module connectors. If necessary, substitute a known-good gauge control module, and recheck. ■

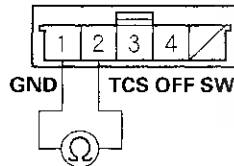
TCS OFF Switch Test

1. Remove the TCS OFF switch from the switch panel.



2. Disconnect the TCS OFF switch 5P connector.
3. Check for continuity between the TCS OFF switch 5P connector terminal No. 1 and No. 2. There should be continuity when the switch is pushed.

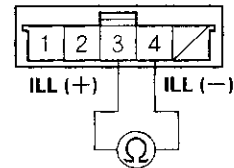
TCS OFF SWITCH 5P CONNECTOR



Terminal side of male terminals

4. Check for continuity between the TCS OFF switch 5P connector terminal No. 3 and No. 4. There should be continuity at all times.

TCS OFF SWITCH 5P CONNECTOR

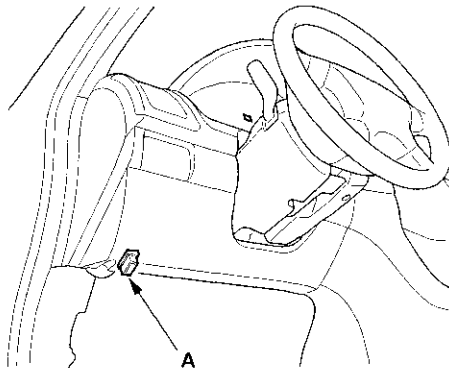


Terminal side of male terminals

ABS/TCS Components

TCS Pressure Sensor Neutral Position Memorization

1. With the ignition switch OFF, connect the HDS to the 16P data link connector (DLC) (A) under the driver's side of the dashboard.

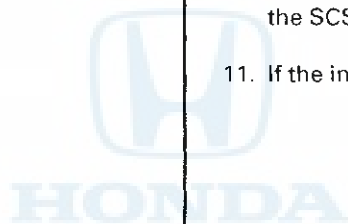


2. Short the SCS circuit to body ground using the HDS.
3. The system will show the message: The SCS line has been shorted. Do you want to leave the SCS line shorted? Choose YES.

4. Turn the ignition switch ON (II).
5. The ABS indicator comes on for 2 seconds.
6. Push the TCS OFF switch once within 2 seconds after the ABS indicator goes off.
7. Push the TCS OFF switch once within 2 seconds after the ABS indicator comes back on.
8. The TCS activation indicator blinks, and the system starts TCS pressure sensor neutral position memorization.
9. When the ABS indicator, TCS indicator and TCS activation indicator go off, the memorizing is done. If the indicators do not go off, retry these steps.

NOTE: On the left bottom side of the HDS screen you will notice "SCS" blinking during steps 4 to 9.

10. Disconnect the HDS from the DLC, or go back into the SCS menu and remove the short from there.
11. If the indicators do not go OFF, retry step 10.



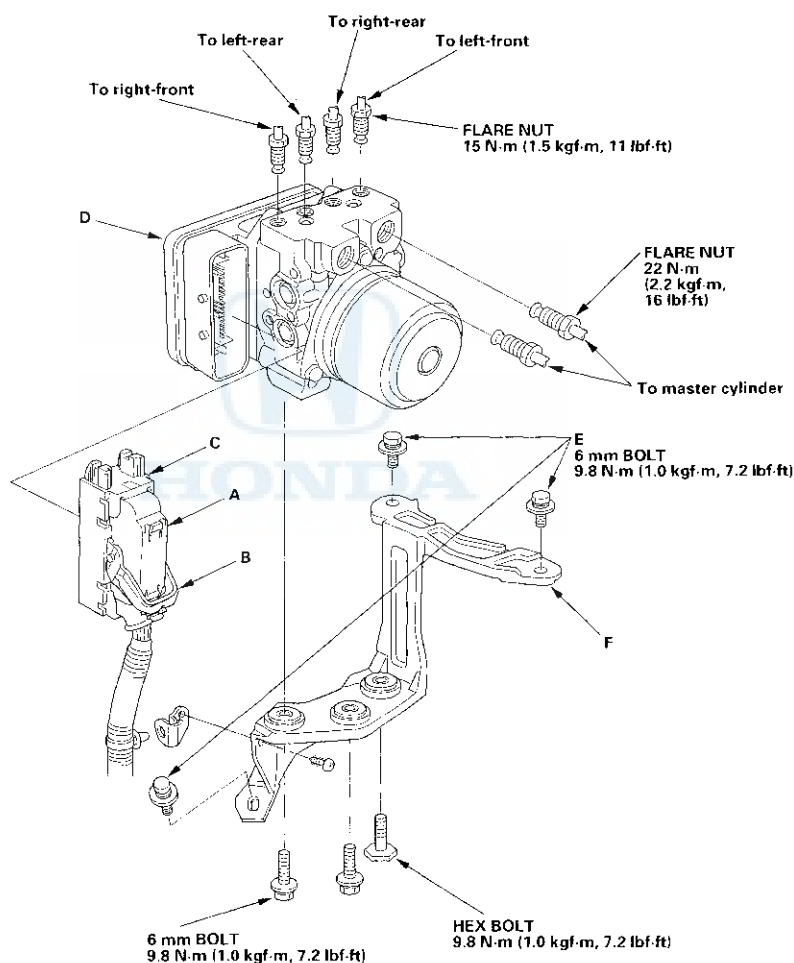
ABS/TCS Modulator-Control Unit Removal and Installation

NOTE:

- Do not spill brake fluid on the vehicle; it may damage the paint; if brake fluid gets on the paint, wash it off immediately with water.
- Be careful not to damage or deform the brake lines during removal and installation.
- To prevent the brake fluid from flowing, plug and cover the hose ends and joints with a shop towel or equivalent material.

Removal

1. Push in on the lock (A), then pull down the lever (B) of the ABS/TCS control unit 47P connector (C), and the connector disconnects itself.



2. Disconnect the six brake lines from the ABS/TCS modulator-control unit (D).
3. Remove the three 6 mm bolts (E).
4. Remove the ABS/TCS modulator-control unit and bracket (F).
5. Remove the two 6 mm bolts and hex bolt, then remove the bracket.

(cont'd)

ABS/TCS Components

ABS/TCS Modulator-Control Unit Removal and Installation (cont'd)

Installation

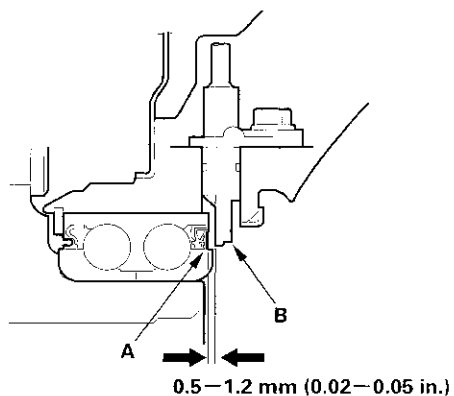
1. Install the ABS/TCS modulator-control unit to the bracket, then tighten the two 6 mm bolts and the hex bolt.
2. Install the ABS/TCS modulator-control unit/bracket, then tighten the three 6 mm bolts.
3. Reconnect the six brake lines, then tighten the nuts.
4. Align the connecting surface of the ABS/TCS control unit 47P connector.
5. Push in the lock of the ABS/TCS control unit 47P connector until you hear it click into place, then connect the connector.
6. Bleed the brake system, starting with the front wheels.
7. Perform the TCS pressure sensor neutral position memorization (see page 19-78).
8. Start the engine, and check that the ABS, TCS and TCS activation indicators goes off.
9. Test-drive the vehicle, and check that the ABS, TCS and TCS activation indicators do not come on.



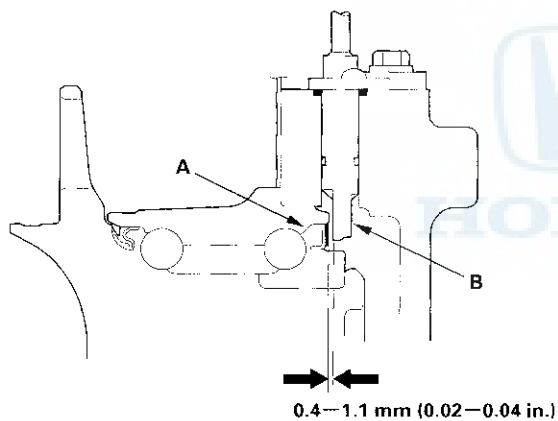
Wheel Sensor Inspection

1. Check the magnetic encoder (A) after cleaning it. If necessary, replace the encoder.

Front



Rear



2. Measure the air gap between the wheel sensor (B) and the magnetic encoder all the way around while rotating the encoder.

Standard:

Front: 0.5–1.2 mm (0.02–0.05 in.)

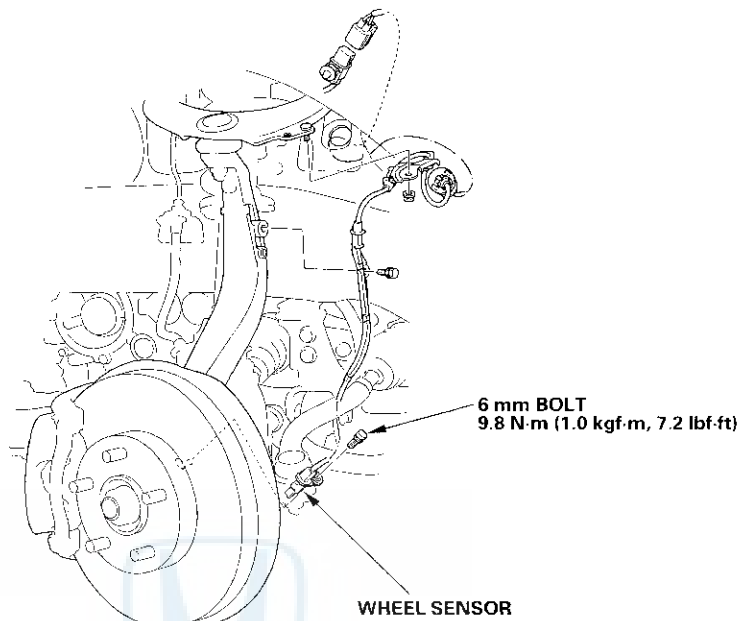
Rear: 0.4–1.1 mm (0.02–0.04 in.)

ABS/TCS Components

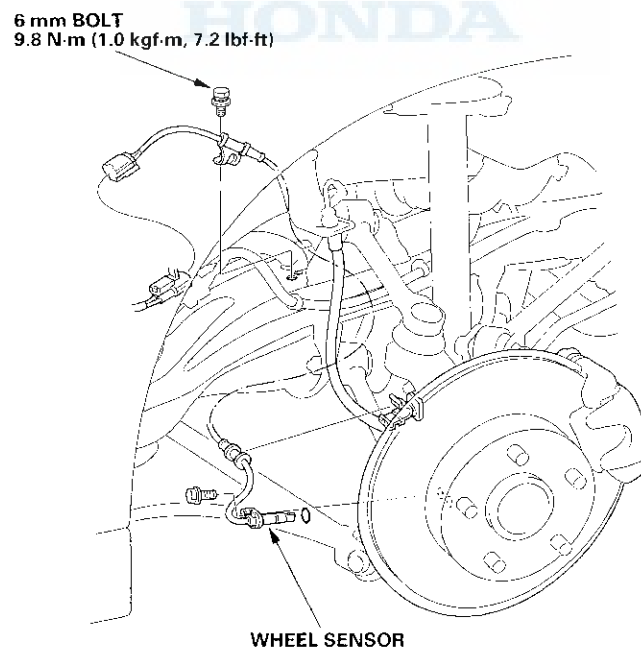
Wheel Sensor Replacement

NOTE: Install the sensor carefully to avoid twisting the wires.

Front



Rear



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If body maintenance is required)

The Accord Hybrid SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



INTEGRATED MOTOR ASSIST (IMA) SYSTEM (If body maintenance is required)

IMA components are located in this area. The IMA is a high-voltage system. The high voltage cables and their covers are identified by orange coloring. The safety labels are attached to high voltage and other related parts (see page 1-4). You must be familiar with the IMA system before working on or around it. Make sure you have read the Service Precautions in the IMA section before performing repairs or service (see page 12-3).



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Frame

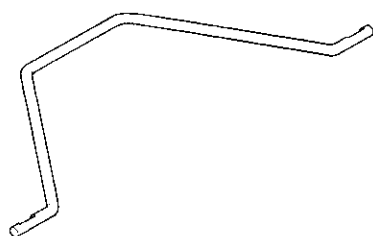
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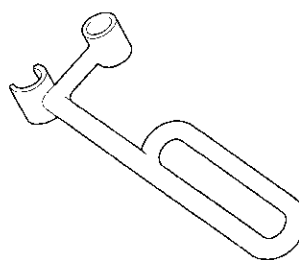
Body

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07AAC-SDAA100	Upper Panel/Vent Removal Tool	1
②	08M10-SM4-100 or 07AAE-SDAA100	Torsion Bar Assembly Tool	1



①



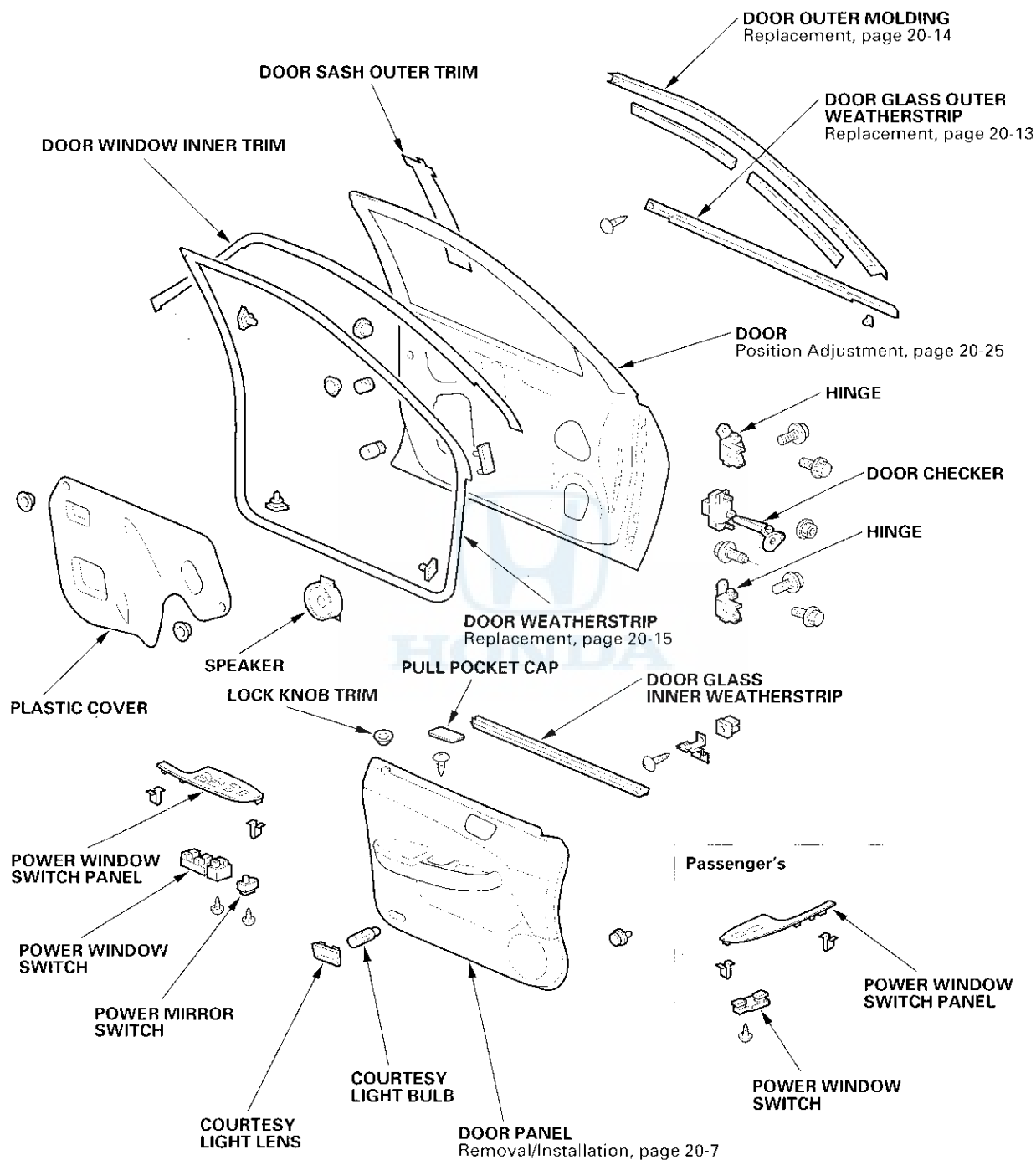
②



Doors



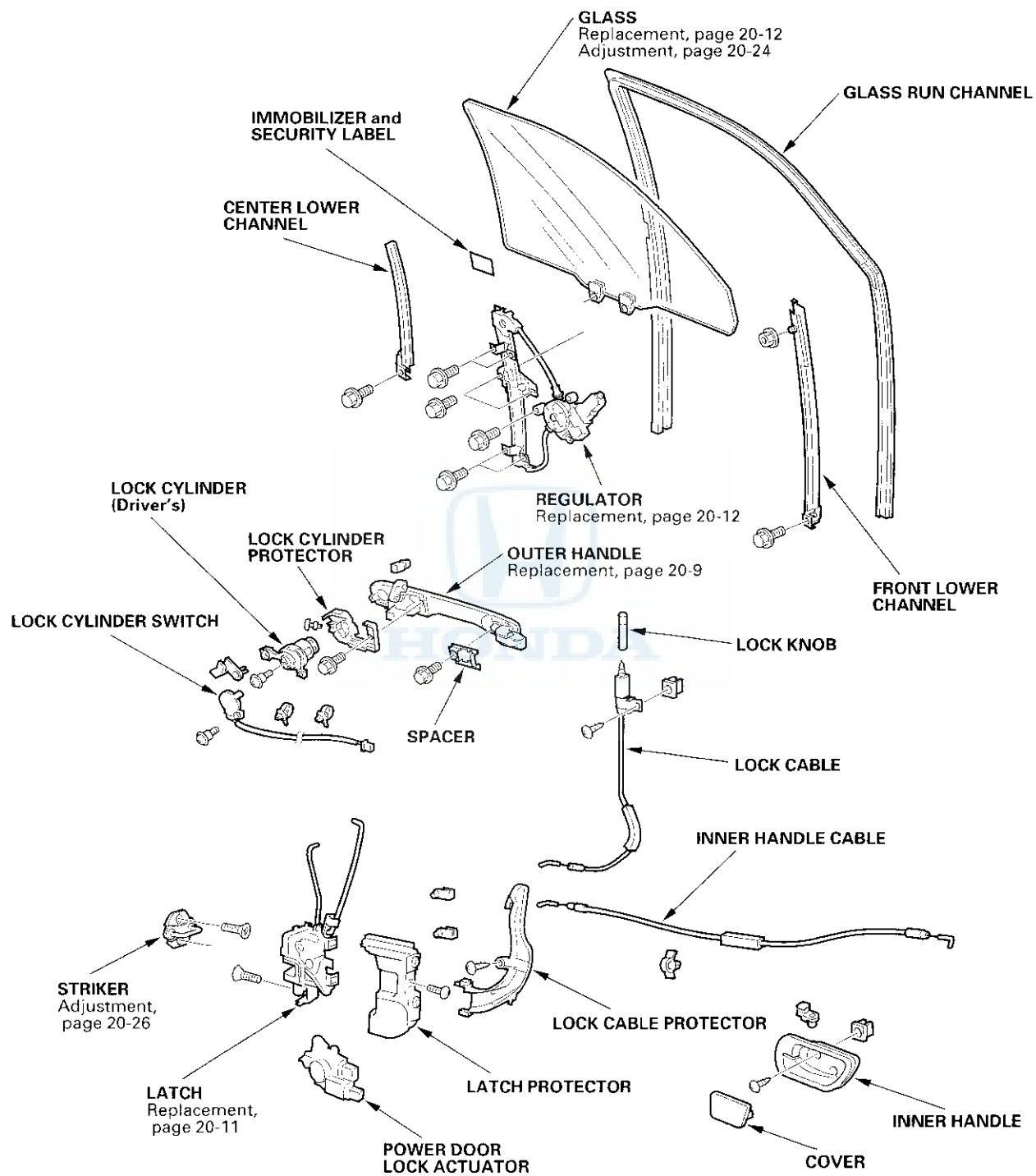
Component Location Index - Front Door



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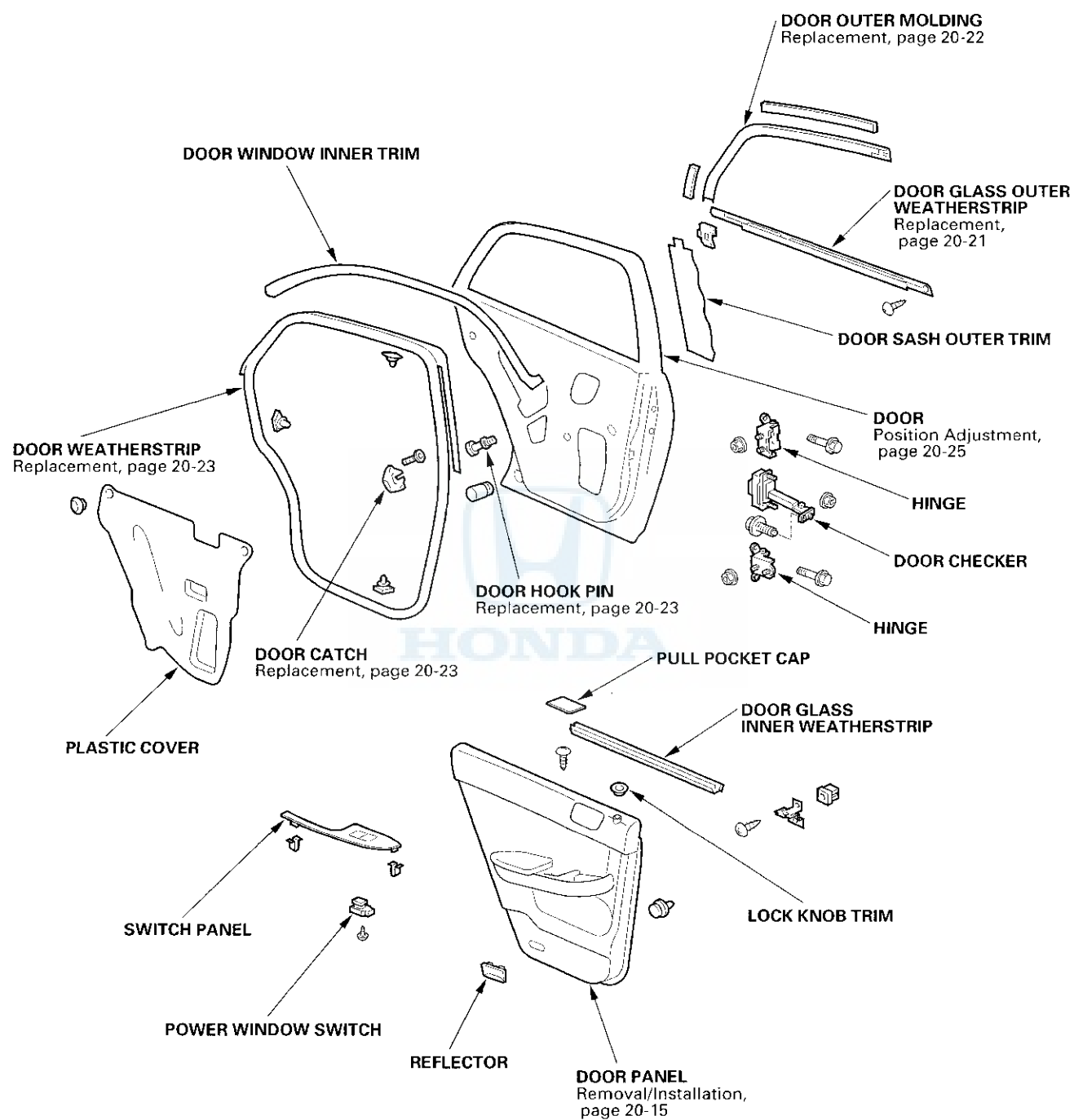
Doors

Component Location Index - Front Door (cont'd)





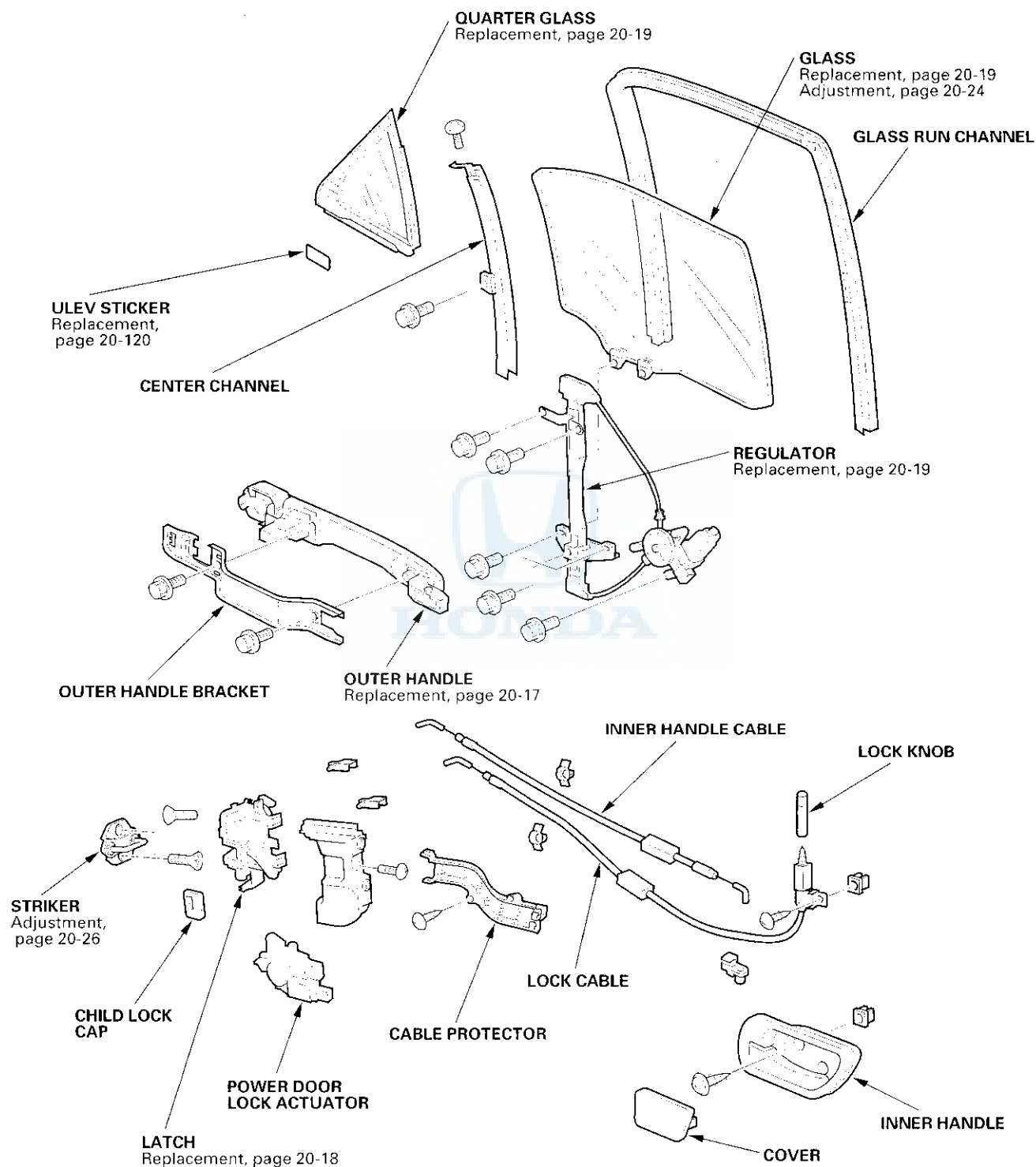
Component Location Index - Rear Door



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Doors

Component Location Index - Rear Door (cont'd)





Front Door Panel Removal/Installation

Special Tools Required

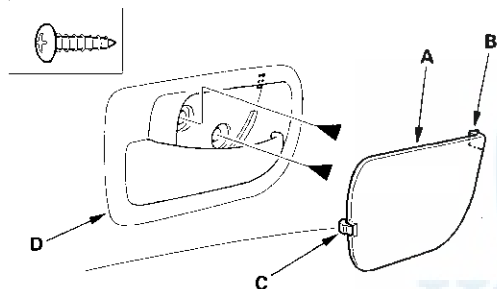
- KTC trim tool set SOJATP2014 *
- Trim pad remover, Snap-on A 177A or equivalent, commercially available
- * Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Lower the glass fully.
2. Using a trim tool, pry out on the rear portion of the cover (A) to release the hooks (B, C), then remove the cover and the screws securing the inner handle (D).

Fastener Locations

► : Screw, 2



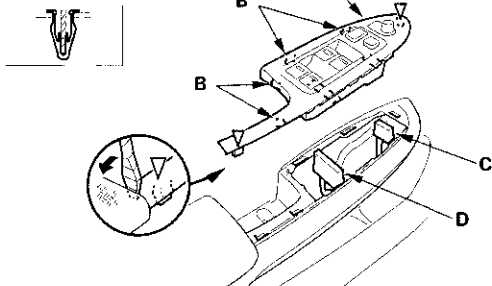
3. Remove the power window switch panel (A).

- 1 Pry up on the rear edge of the switch panel with a trim tool to release the rear clip.
- 2 Pull out along the edge of the panel to release the hooks (B) and front clip.
- 3 Disconnect the power mirror switch connector (C) (driver's) and the power window switch connector (D).

Driver's

Fastener Locations

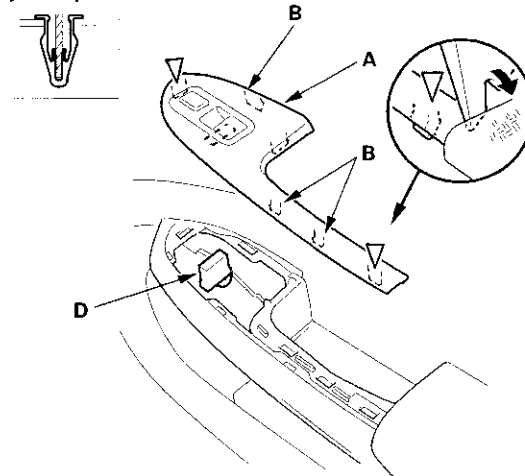
► : Clip, 2



Passenger's

Fastener Locations

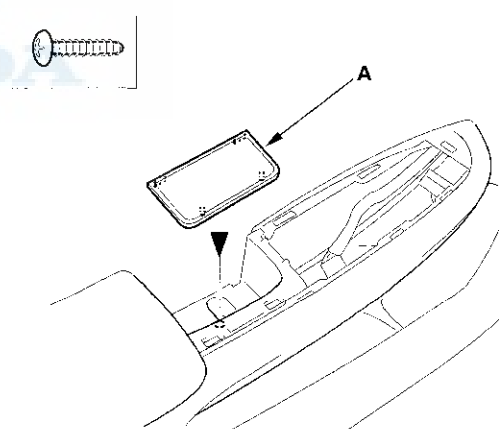
► : Clip, 2



4. Remove the screw from under the pull pocket cap (A).

Fastener Location

► : Screw, 1



5. Remove the mirror mount cover (see step 2 on page 20-28).

(cont'd)

Doors

Front Door Panel Removal/Installation (cont'd)

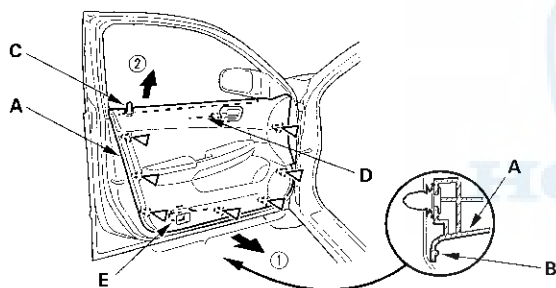
6. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

- 1 Start at the bottom edge of the door panel, release the clips that are just above the marks (B) on the edge of the panel with a commercially available trim pad remover.
- 2 Detach the upper clips.
- 3 Starting at the rear, pull the door panel upward and over the lock knob (C).

NOTE: The inner handle cable (D) and the courtesy light bulb socket (E) are connected to the door panel. Do not pull the door panel up too far, or the inner handle cable will be damaged.

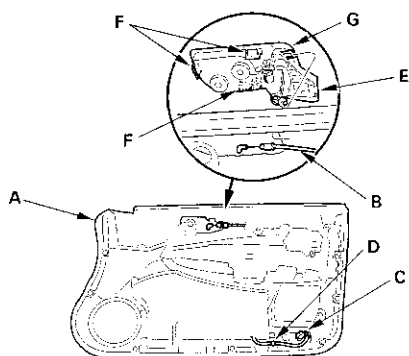
Fastener Locations

▷ : Clip, 7

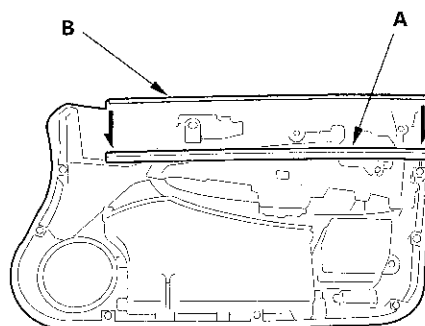


7. While holding the door panel (A) away from the door, disconnect the inner handle cable (B) and courtesy light bulb socket (C), detach the harness clip (D), then remove the panel. If necessary, remove the inner handle (E) by releasing the hooks (F, G).

Back view



8. If necessary, remove the door glass inner weatherstrip (A) from the door panel (B) by pulling it down.



9. Install the door panel in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Make sure the connectors are plugged in properly, and the cable and the bulb socket are connected properly.
- Make sure the window and power door lock operate properly.
- Driver's: Perform the power window control unit reset procedure (see page 22-200).



Front Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

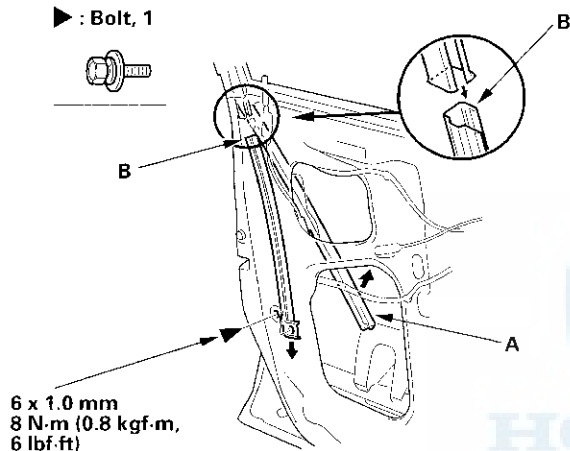
- Door panel (see page 20-7)
- Plastic cover, as needed (see page 20-3)

2. Raise the glass fully.

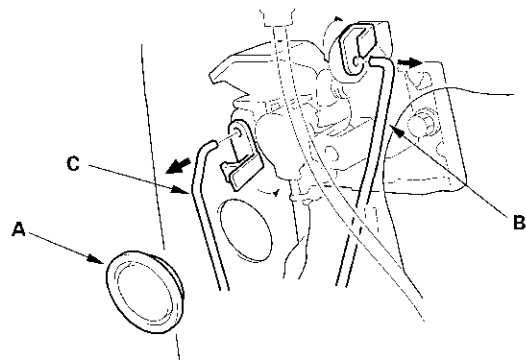
3. Pull the glass run channel (A) away as needed, and remove the bolt, then remove the center lower channel (B) by pulling it downward.

Fastener Location

► : Bolt, 1



4. Remove the maintenance cap (A), then disconnect the outer handle rod (B), and cylinder rod (C).

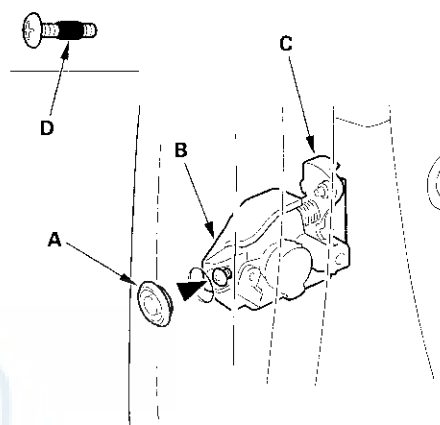


5. Driver's: Remove the maintenance cap (A) from the rear of the door, then loosen the screw securing the lock cylinder protector (B) and the outer handle (C).

NOTE: Because of the tape (D) on the middle of threads, the screw will stay on the protector after it is loosened.

Fastener Location

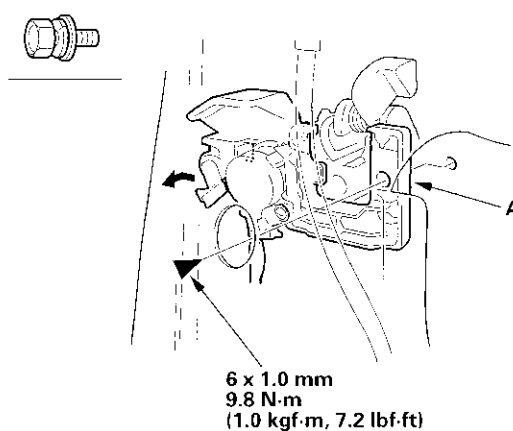
► : Screw, 1



6. Remove the bolt, slide the lock cylinder protector (A) rearward, then remove the lock cylinder switch, lock cylinder, and lock cylinder protector as an assembly.

Fastener Location

► : Bolt, 1

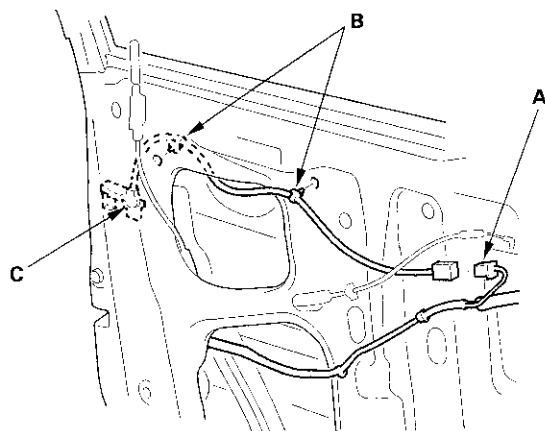


(cont'd)

Doors

Front Door Outer Handle Replacement (cont'd)

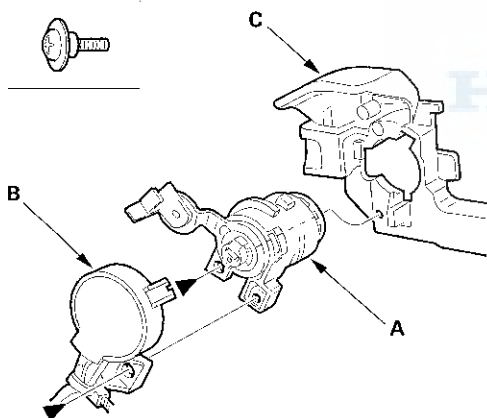
7. Driver's: Disconnect the lock cylinder switch connector (A), and detach the harness clips (B), then remove the lock cylinder switch (C).



8. Remove the screws, then separate the lock cylinder (A), lock cylinder switch (B), and lock cylinder protector (C).

Fastener Locations

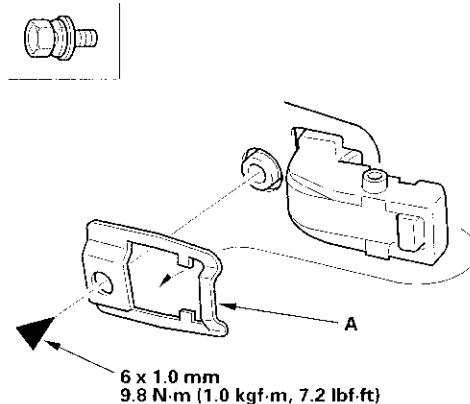
- : Screw, 2



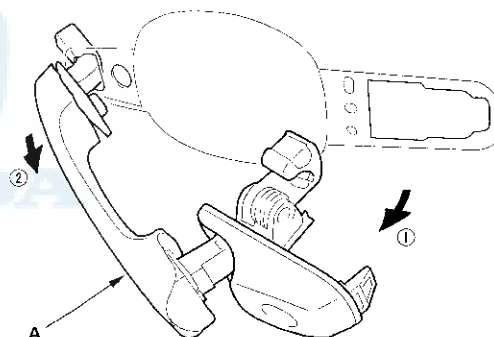
9. Remove the bolt, then remove the spacer (A).

Fastener Location

- : Bolt, 1



10. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.



11. Install the handle in the reverse order of removal, and note these items:

- Make sure the lock cylinder switch harness is routed properly.
- Make sure the lock cylinder switch connector is plugged in properly, and each rod is connected securely.
- Be sure that the end of the lock cylinder is engaged with the lock cylinder switch correctly.
- Make sure the door lock cylinder/door locks operate properly.
- Make sure the door handle works properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Driver's: Perform the power window control unit reset procedure (see page 22-200).



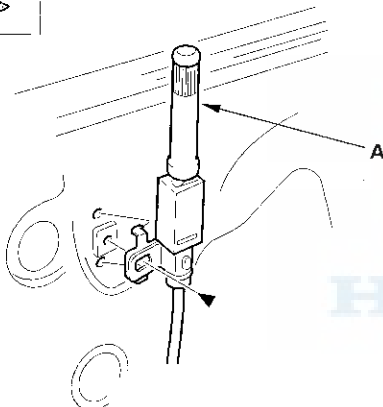
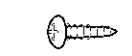
Front Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Raise the glass fully.
2. Remove these items:
 - Door panel (see page 20-7)
 - Plastic cover, as needed (see page 20-3)
 - Center lower channel (see step 3 on page 20-9)
3. Disconnect the cylinder rod from the lock cylinder, and disconnect the outer handle rod from the outer handle (see step 4 on page 20-9).
4. Remove the screw securing the lock knob (A).

Fastener Location

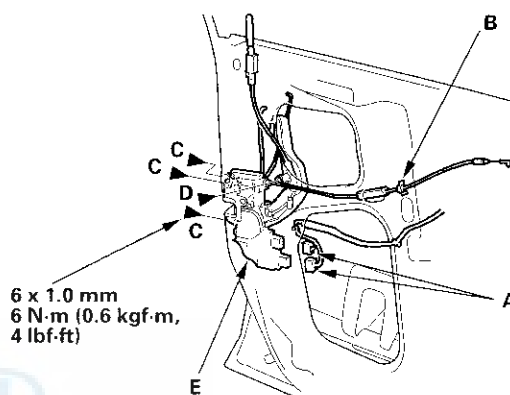
► : Screw, 1



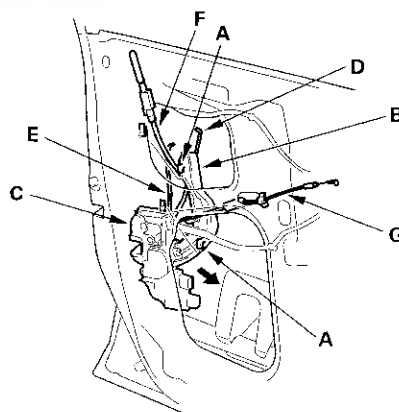
5. Disconnect the actuator connectors (A), and detach the inner handle cable clip (B). Remove the screws (C, D) securing the latch (E) and the lock cable protector.

Fastener Locations

C► : Screw, 3 D► : Screw, 1



6. Release the hooks (A) of the lock cable protector (B) from the door, then remove the latch (C) with the protector through the hole in the door. Take care not to bend the outer handle rod (D), cylinder rod (E), lock cable (F), and inner handle cable (G).

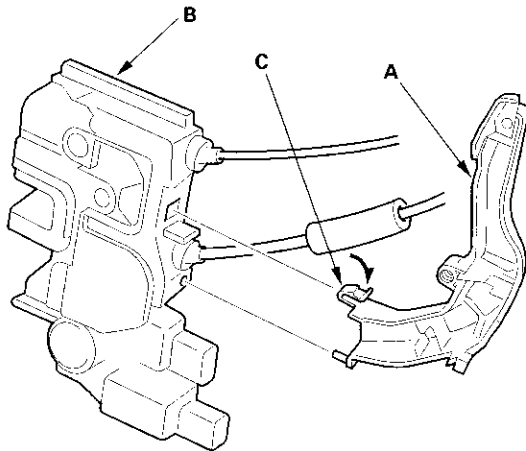


(cont'd)

Doors

Front Door Latch Replacement (cont'd)

7. Remove the lock cable protector (A) from the latch protector (B) by releasing the hook (C).



8. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connectors are plugged in properly and each rod is connected securely.
- Make sure the door locks and opens properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
- Driver's: Perform the power window control unit reset procedure (see page 22-200).

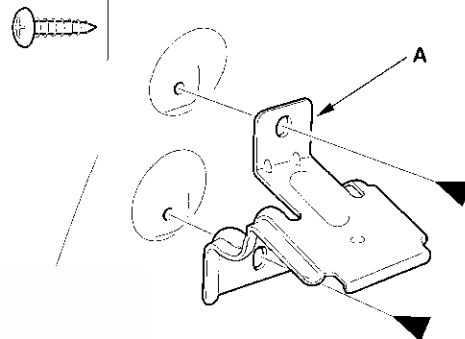
Front Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the door panel (see page 20-7).
2. Remove the screws, then remove the panel bracket (A).

Fastener Locations

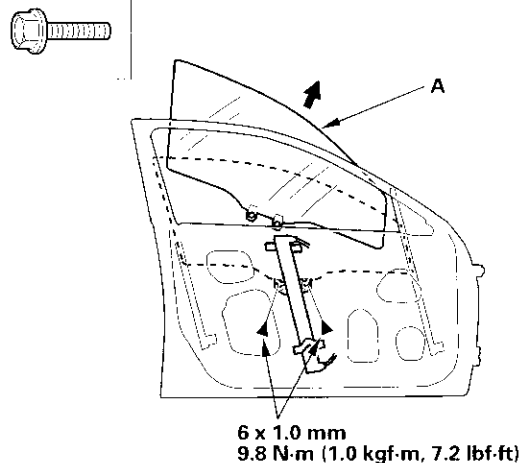
► : Screw, 2



3. Remove the plastic cover (see page 20-3).
4. Carefully raise the glass (A) until you can see the bolts, then remove them. Carefully pull the glass out through the window slot. Take care not to drop the glass inside the door.

Fastener Locations

► : Bolt, 2

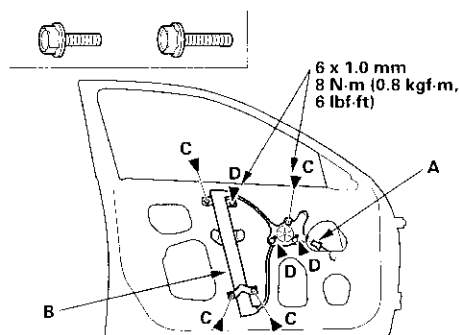




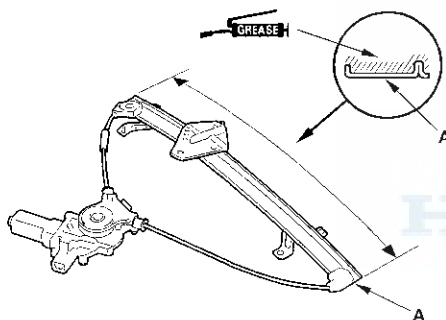
5. Disconnect the connector (A) from the regulator (B).

Fastener Locations

C ► : Bolt, 4 D ► : Bolt, 3



6. Remove the bolts (C), and loosen the bolts (D), then remove the regulator through the hole in the door.
7. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



8. Install the glass and regulator in the reverse order of removal, and note these items:
- Roll the glass up and down to see if it moves freely without binding.
 - Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
 - Adjust the position of the glass as necessary (see page 20-24).
 - Check for water leaks (see step 7 on page 20-25).
 - Test-drive and check for wind noise and rattles.
 - When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.
 - Make sure the power door locks, windows, and power mirror operate properly.
 - Driver's: Perform the power window control unit reset procedure (see page 22-200).

Front Door Glass Outer Weatherstrip Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- If you remove the door glass outer weatherstrip, replace it with a new one because it will bend.
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

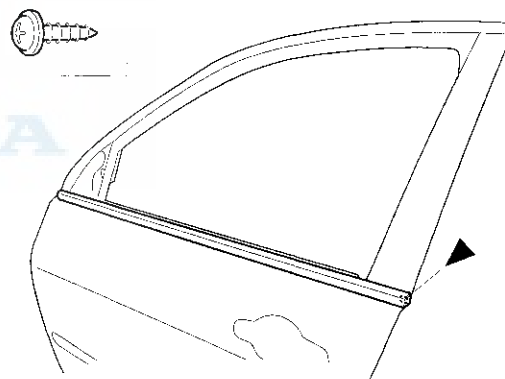
1. Remove these items:

- Door panel (see page 20-7)
- Mirror (see page 20-28)

2. Remove the screws from the rear edge of the door.

Fastener Location

► : Screw, 1

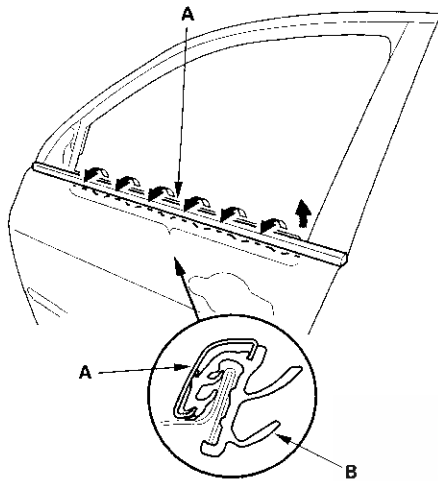


(cont'd)

Doors

Front Door Glass Outer Weatherstrip Replacement (cont'd)

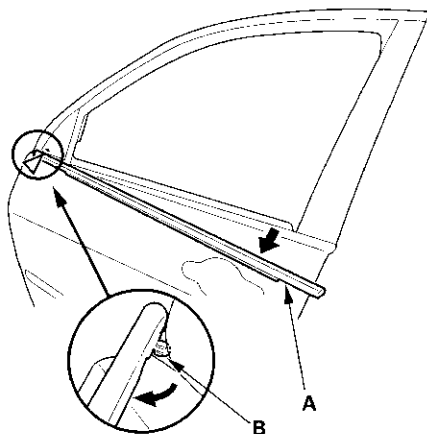
3. Starting at the rear, pull the door glass outer weatherstrip (A) up at each portion where the inner molding (B) catches the inside edge of the window slot.



4. Pull the rear of the glass outer weatherstrip (A) away from the door, then release the front clip (B) from the mounting hole in the door. If necessary, pry the clip, then remove the weatherstrip.

Fastener Location

B ▷ : Clip, 1



5. Install a new weatherstrip in the reverse order of removal, and perform the power window control unit reset procedure (driver's) (see page 22-200).

Front Door Outer Molding Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- If you remove the door outer molding, replace it with a new one because it will bend during removal.
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

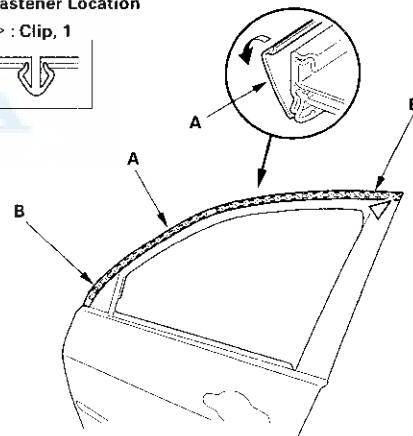
1. Remove the mirror (see page 20-28).

2. Remove the door outer molding (A).

- 1 Pry the rear clip with a trim tool.
- 2 While removing the upper edge of the door outer molding from the edge of the sash, cut the double-sided adhesive tapes (B) with a utility knife, then remove the molding.

Fastener Location

▷ : Clip, 1



3. Scrape off the remaining double-sided adhesive tape from the sash, then clean the sash surface with a sponge dampened in alcohol.

4. Install a new door outer molding in the reverse order of removal, and note these items:

- Push the clip and the adhesive portions into place securely.
- Make sure the upper and lower sides of the molding are catching the edges of the sash properly.



Front Door Weatherstrip Replacement

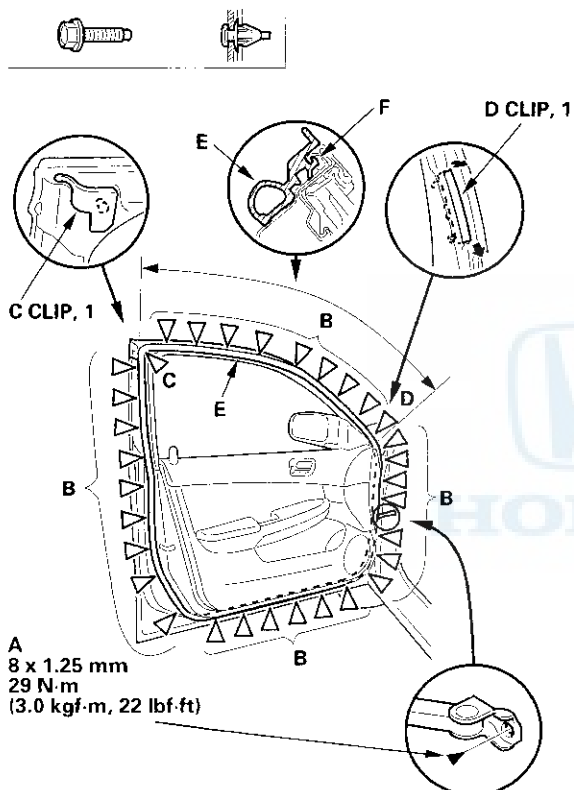
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. At the A-pillar, remove the door checker mounting bolt (A).

Fastener Locations

A ► : Bolt, 1 B ► : Clip, 30



2. Detach the clips (B, C, D), then remove the door weatherstrip (E).

3. Install the weatherstrip in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Make sure the weatherstrip is installed in the holder (F) securely.
- Apply liquid thread lock to door checker mounting bolt before installation.
- Test-drive and check for wind noise.

Rear Door Panel Removal/Installation

Special Tools Required

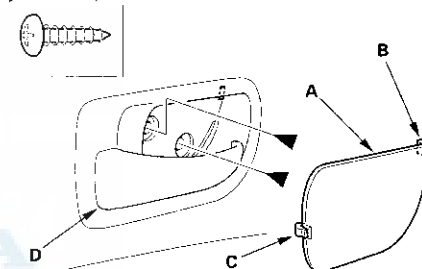
- KTC trim tool set SOJATP2014 *
- Trim pad remover, Snap-on A 177A or equivalent, commercially available
- * Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Lower the glass fully.
2. Using a trim tool, pry out on the rear portion of the cover (A) to release the hooks (B, C), then remove the cover and the screws securing the inner handle (D).

Fastener Locations

► : Screw, 2

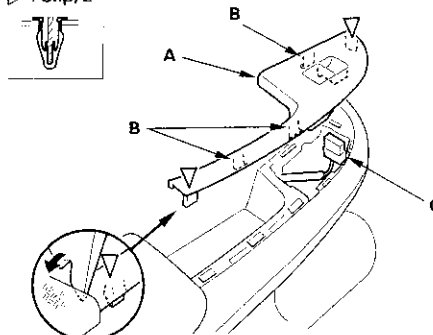


3. Remove the switch panel (A).

- 1 Pry up on the rear edge of the switch panel with a trim tool to release the rear clip.
- 2 Pull out along the edge of the panel to release the hooks (B) and clip.
- 3 Disconnect the power window switch connector (C).

Fastener Locations

► : Clip, 2



(cont'd)

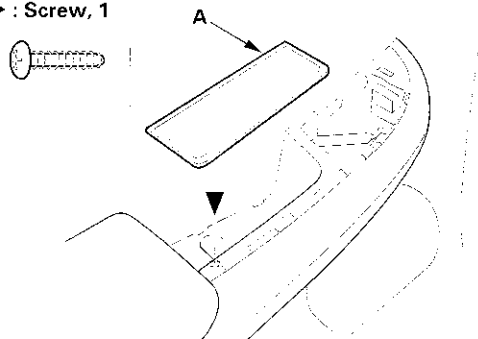
Doors

Rear Door Panel Removal/Installation (cont'd)

4. Remove the screw from under the pull pocket cap (A).

Fastener Location

► : Screw, 1



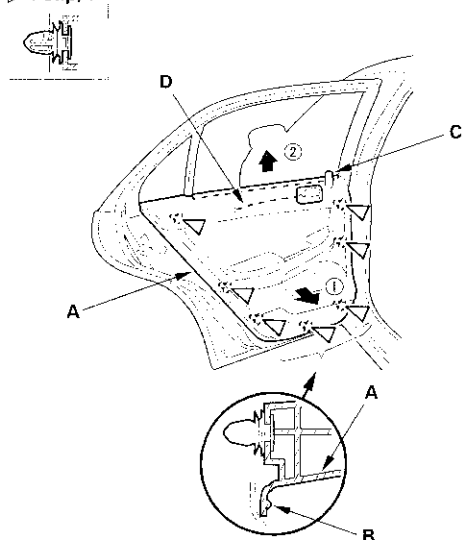
5. Remove the door panel (A) with as little bending as possible to avoid creasing or breaking it.

- 1 Start at the bottom edge of the door panel, release the clips that are just above the marks (B) on the edge of the panel with a commercially available trim pad remover.
- 2 Detach the upper clips.
- 3 Starting at the front, pull the door panel upward and over the lock knob (C).

NOTE: The inner handle cable (D) is connected to the door panel. Do not pull the door panel up too far, or the inner handle cable will be damaged.

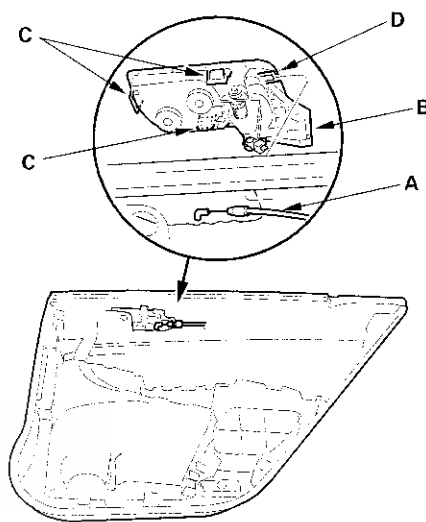
Fastener Locations

▷ : Clip, 7

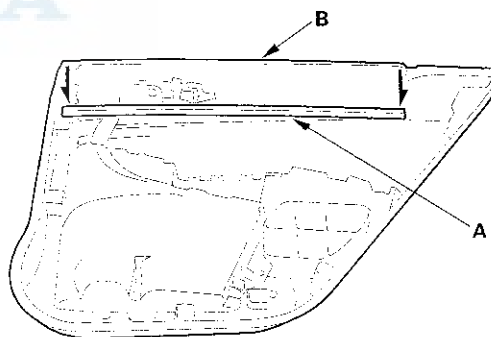


6. While holding the door panel away from the door, disconnect the inner handle cable (A), then remove the door panel. If necessary, remove the inner handle (B) by releasing the hooks (C, D).

Back view



7. If necessary, remove the door glass inner weatherstrip (A) from the door panel (B).



8. Install the panel in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Make sure the connector is plugged in properly and the cable is connected securely.
- If equipped, make sure the window and power door lock operate properly.



Rear Door Outer Handle Replacement

NOTE: Put on gloves to protect your hands.

1. Remove these items:

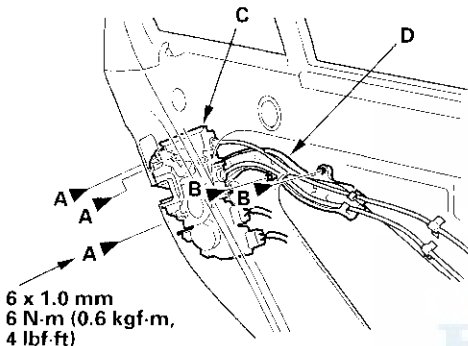
- Door panel (see page 20-15)
- Plastic cover, as needed (see page 20-5)

2. Raise the glass fully.

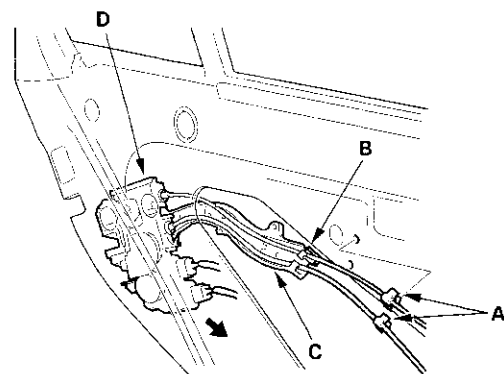
3. Remove the screws (A, B) securing the latch (C) and the cable protector (D).

Fastener Locations

A ▶ : Screw, 3 B ▶ : Screw, 2



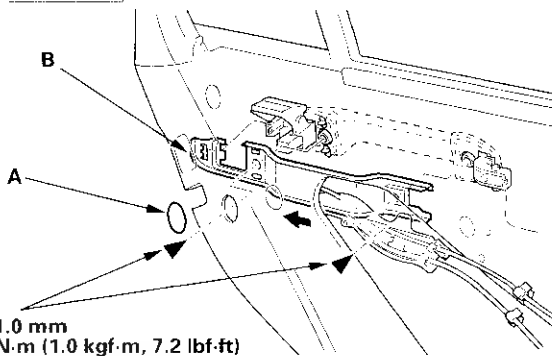
4. Detach the cable clips (A) and the hook (B) of the cable protector (C), then pull the latch (D) and the cable protector forward. Take care not to bend any of the cables.



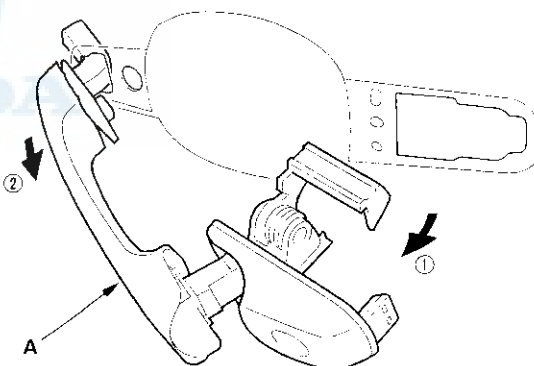
5. Remove the maintenance hole seal (A) and bolts, slide the outer handle bracket (B) rearward, then remove it.

Fastener Locations

▶ : Bolt, 2



6. While pulling the outer handle (A), remove the handle from the holes in the door panel. Take care not to scratch the door.



7. Install the handle in the reverse order of removal, and note these items:

- Make sure the door locks and opens properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.

Doors

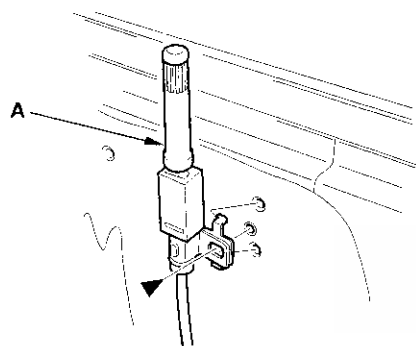
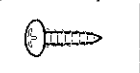
Rear Door Latch Replacement

NOTE: Put on gloves to protect your hands.

1. Remove the door panel (see page 20-15).
2. Raise the glass fully.
3. Remove the screw securing the lock knob (A).

Fastener Location

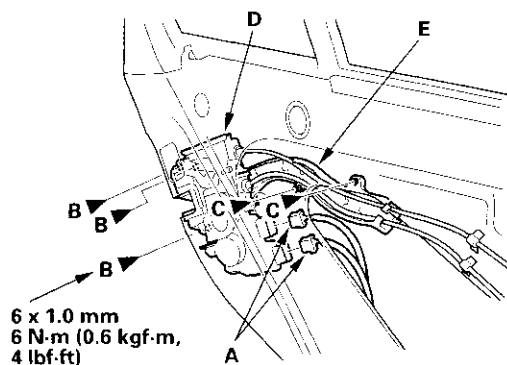
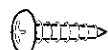
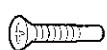
► : Screw, 1



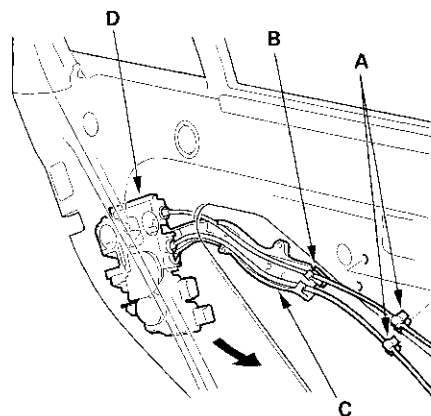
4. Remove the plastic cover, as needed (see page 20-5).
5. Disconnect the actuator connectors (A). Remove the screws (B, C) securing the latch (D) and the cable protector (E).

Fastener Locations

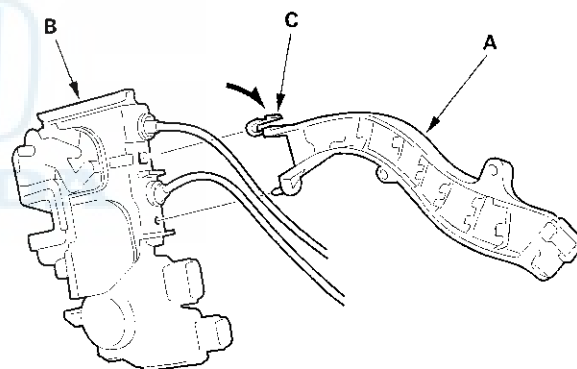
B ► : Screw, 3 C ► : Screw, 2



6. Detach the cable clips (A) and the hook (B) of the cable protector (C), then remove the latch (D) with the cable protector through the hole in the door. Take care not to bend any of the cables.



7. Remove the cable protector (A) from the latch protector (B) by releasing the hook (C).



8. Install the latch in the reverse order of removal, and note these items:

- Make sure the actuator connectors are plugged in properly.
- Make sure the door locks and the window operates properly.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its outside perimeter to seal out water.



Rear Door Glass and Regulator Replacement

NOTE: Put on gloves to protect your hands.

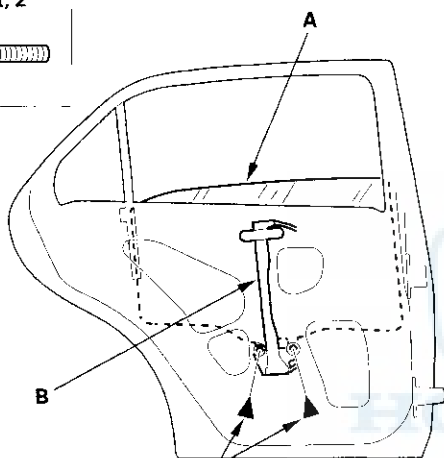
1. Remove these items:

- Door panel (see page 20-15)
- Panel bracket (see step 2 on page 20-12)
- Plastic cover, as needed (see page 20-5)

2. Carefully move the glass (A) until you can see the bolts, then remove them. Remove the glass from the regulator (B), and carefully lower the glass. Take care not to drop the glass inside the door.

Fastener Locations

► : Bolt, 2

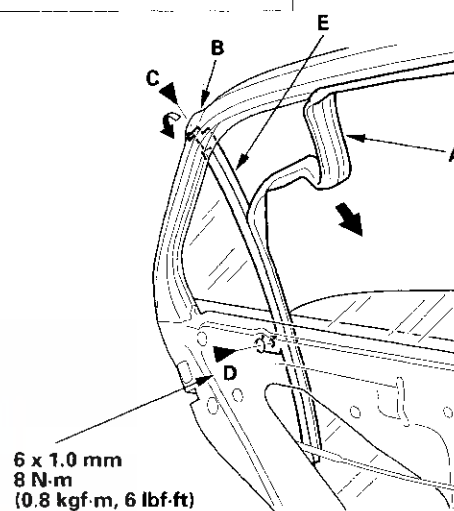


6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)

3. Pull the glass run channel (A) away as needed. Pull the door weatherstrip (B) away as needed, then remove the screw (C). Remove the bolt (D) securing the center channel (E).

Fastener Locations

C ► : Screw, 1 D ► : Bolt, 1



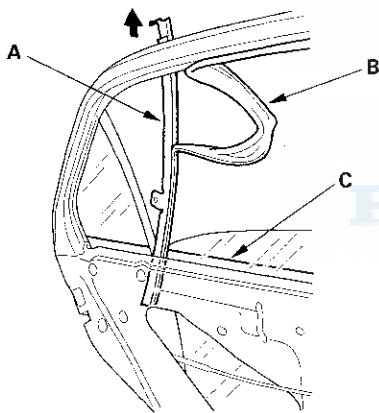
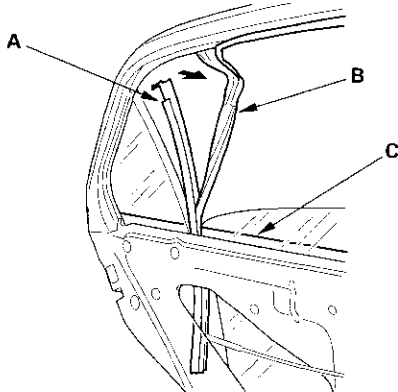
6 x 1.0 mm
8 N·m
(0.8 kgf·m, 6 lbf·ft)

(cont'd)

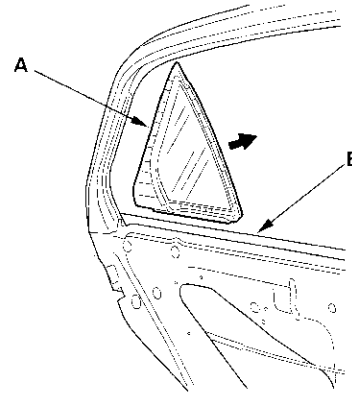
Doors

Rear Door Glass and Regulator Replacement (cont'd)

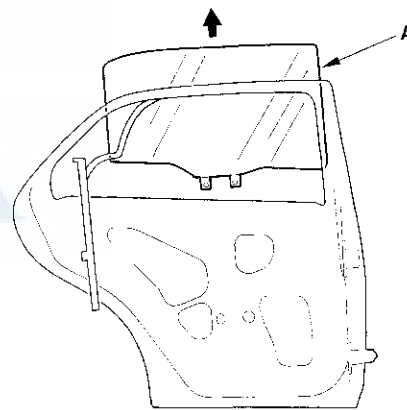
4. Pull the upper portion of the center channel (A) forward to remove it from the door quarter glass seal (B), then pull up and remove the center channel out through the window slot. Take care not to damage the outer weatherstrip (C).



5. Remove the quarter glass (A). Take care not to damage the outer weatherstrip (B).



6. Carefully remove the glass (A) out through the window slot. Take care not to drop the glass inside the door.

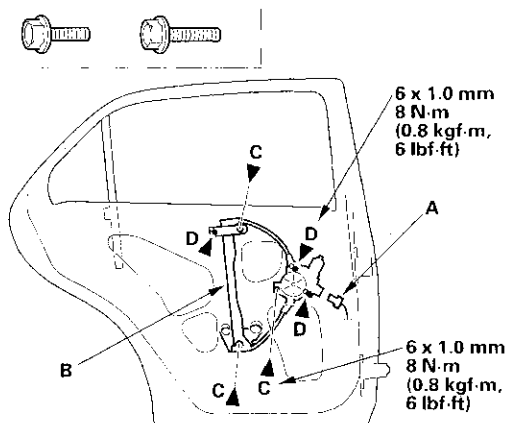




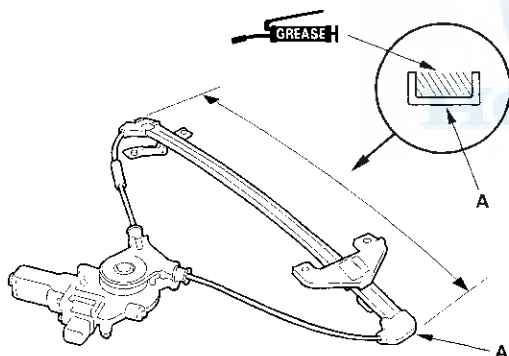
7. Disconnect the connector (A) from the regulator (B).

Fastener Locations

C ► : Bolt, 3 D ► : Bolt, 3



8. Remove the bolts (C), and loosen the bolts (D), then remove the regulator through the hole in the door.
9. Apply multipurpose grease to all the sliding surfaces of the regulator (A) where shown.



10. Install the glass and regulator in the reverse order of removal, and note these items:

- Roll the glass up and down to see if it moves freely without binding.
- Make sure that there is no clearance between the glass and glass run channel when the glass is closed.
- Adjust the position of the glass as necessary (see page 20-24).
- Check for water leaks (see step 7 on page 20-25).
- Test-drive and check for wind noise and rattles.
- When reinstalling the door panel, make sure the plastic cover is installed properly and sealed around its perimeter.

Rear Door Glass Outer Weatherstrip Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

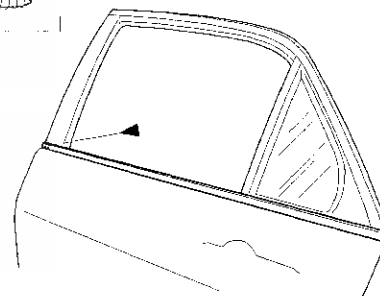
NOTE:

- Once you remove the door glass outer weatherstrip, replace it with a new one because it will bend.
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

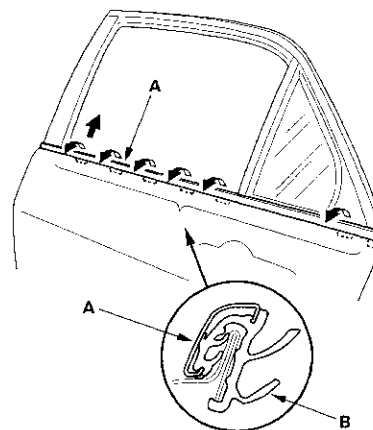
1. Remove the door panel (see page 20-15).
2. Remove the screw from the front edge of the door.

Fastener Location

► : Screw, 1



3. Starting at the front, pull the door glass outer weatherstrip (A) up at each portion where the inner molding (B) catches the inside edge of the window slot.



(cont'd)

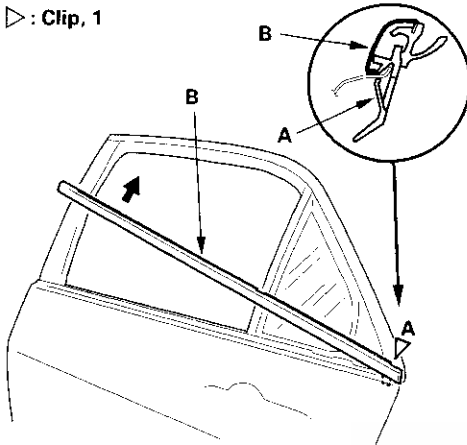
Doors

Rear Door Glass Outer Weatherstrip Replacement (cont'd)

4. Detach the rear clip (A), then remove the door glass outer weatherstrip (B).

Fastener Location

A ▷ : Clip, 1



5. Install a new weatherstrip in the reverse order of removal.

Rear Door Outer Molding Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

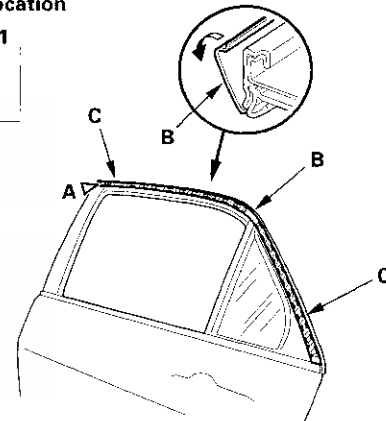
NOTE:

- If you remove the door outer molding, replace it with a new one because it will bend during removal.
- Put on gloves to protect your hands.
- Take care not to scratch the door.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Pry the front clip (A) with a trim tool.

Fastener Location

A ▷ : Clip, 1



2. While removing the upper edge of the door outer molding (B) from the edge of the sash, cut the double-sided adhesive tapes (C) with a utility knife, then remove the molding.
3. Scrape off the remaining double-sided adhesive tape from the sash, then clean the sash surface with a sponge dampened in alcohol.
4. Install a new door outer molding in the reverse order of removal, and note these items:
 - Push the clip and the adhesive portions into place securely.
 - Make sure the upper and lower sides of the molding are catching the edges of the sash properly.



Rear Door Weatherstrip Replacement

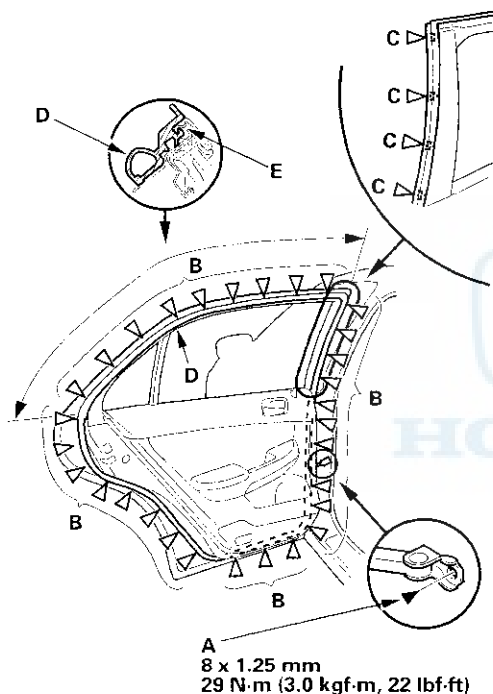
NOTE:

- Take care not to scratch the door.
- Use a clip remover to remove the clips.

1. At the B-pillar, remove the door checker mounting bolt (A).

Fastener Locations

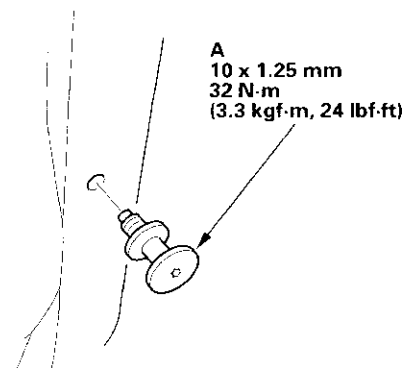
A ▶ : Bolt, 1 B ▶ : Clip, 30 C ▶ : Clip, 4



2. Detach the clips (B, C), then remove the door weatherstrip (D).
3. Install the weatherstrip in the reverse order of removal, and note these items:
 - Replace any damaged clips.
 - Make sure the weatherstrip is installed in the holder (E) securely.
 - Apply liquid thread lock to the door checker mounting bolt before installation.
 - Test-drive and check for wind noise.

Rear Door Hook Pin and Catch Replacement

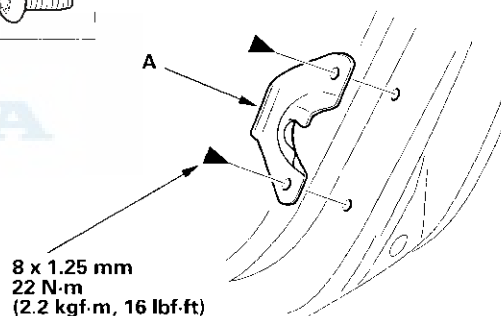
1. With a T40 Torx bit, remove the door hook pin (A) from the door.



2. With a T40 Torx bit, remove the bolts, then remove the door catch (A) from the body.

Fastener Locations

▶ : Bolt, 2



3. Install the hook pin and catch in the reverse order of removal, and apply liquid thread lock to the threads of the door hook pin.

Doors

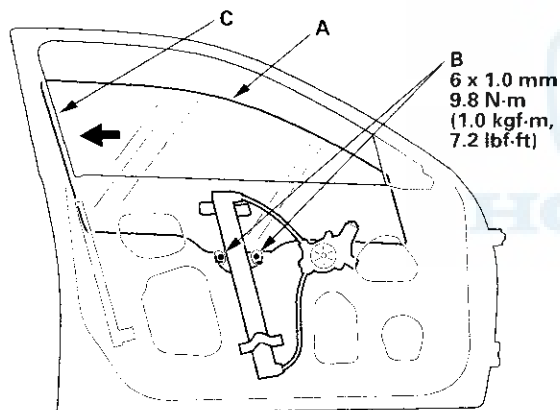
Front and Rear Door Glass Adjustment

NOTE:

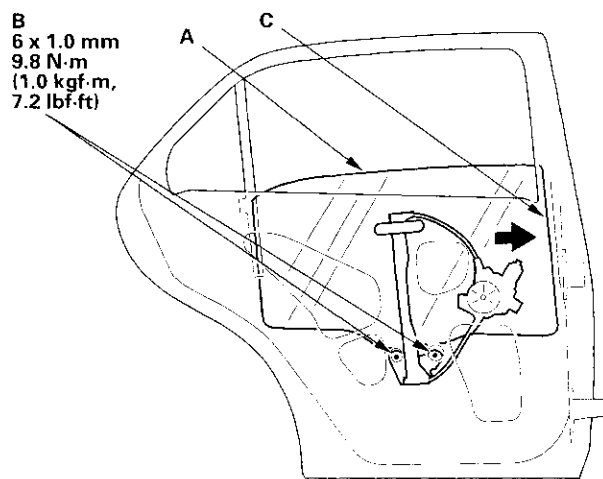
- Check the weatherstrips and glass run channel for damage or deterioration, and replace them if necessary.
- Wipe the run channel clean with a shop towel.
- Lubricate the run channel with Shin-Etsu silicone grease P/N 08798-9013.

1. Place the vehicle on a firm, level surface.
2. Remove these items:
 - Door panel, front door (see page 20-7), rear door (see page 20-15)
 - Plastic cover, front door (see page 20-3), rear door (see page 20-5)
3. Carefully move the glass (A) until you can see the glass mounting bolts (B), then loosen them.

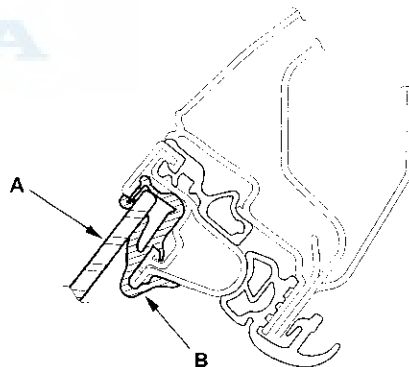
Front door



Rear door



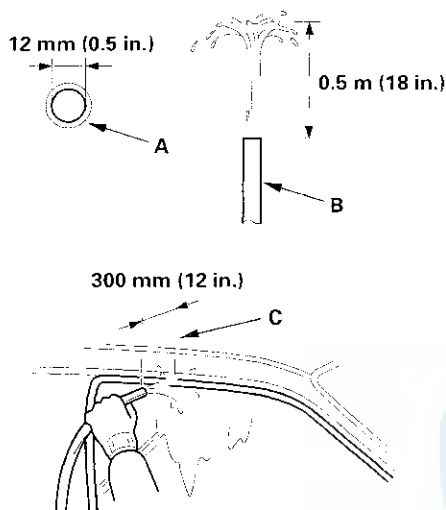
4. Push the glass against the channel (C), then tighten the glass mounting bolts.
5. Check that the glass moves smoothly.
6. Raise the glass fully, and check for gaps. Also check that the glass (A) contacts the glass run channel (B) evenly.





7. Check for water leaks. Run water over the roof and on the sealing area as shown, and note these items:

- Use a 12 mm (0.5 in.) diameter hose (A).
- Adjust the rate of water flow as shown (B).
- Do not use a nozzle.
- Hold the hose about 300 mm (12 in.) away from the door (C).



8. Attach the plastic cover, and install the door panel, front door (see page 20-7), rear door (see page 20-15).
9. Driver's: Perform the power window control unit reset procedure (see page 22-200).
10. Test-drive and check for wind noise.

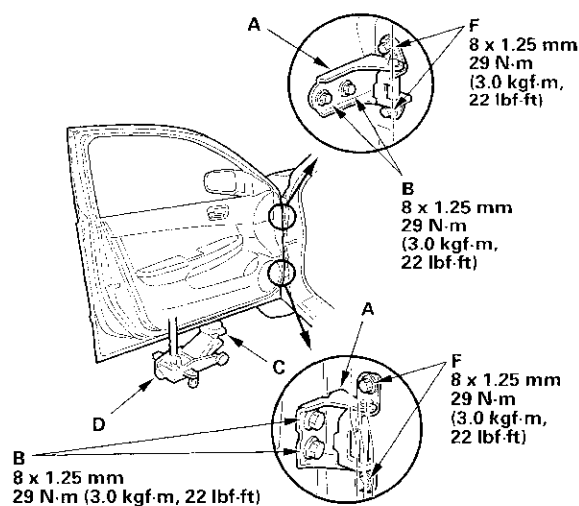
Front and Rear Door Position Adjustment

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE: Check for a flush fit with the body, then check for equal gaps between the front, rear, and bottom door edges and the body. Check that the door and body edges are parallel.

1. Place the vehicle on a firm, level surface when adjusting the doors.
2. Adjust at the hinges (A):
 - On the front door: Remove the front inner fender (see page 20-121) and front fender fairing (see page 20-123). Loosen the hinge mounting bolts (B) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps. Place a shop towel (C) on the jack (D) to prevent damage when adjusting the door.
 - On the rear door: Remove the B-pillar lower trim (see page 20-48) and remove the front seat belt and retractor (see page 24-4), and the plug seal from the body. Loosen the hinge mounting nuts (E) slightly, and move the door backward or forward, up or down as necessary to equalize the gaps. Place a shop towel on the jack to prevent damage when adjusting the door.

Front door

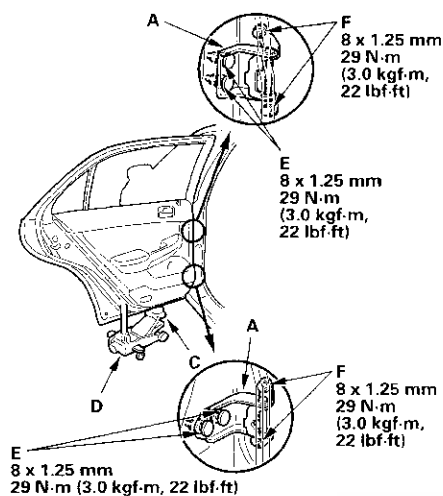


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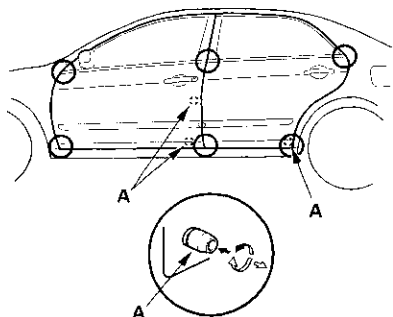
Doors

Front and Rear Door Position Adjustment (cont'd)

Rear door



3. If necessary, replace the door mounting bolts (F) with the adjusting bolts (P/N 90102-SFA-305) made specifically for door adjustment, then adjust at the door: Loosen the adjusting bolts slightly, move the door in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
4. Check that the door and body edges are parallel. If necessary, adjust the door cushions (A) to make the rear of the doors flush with the body.

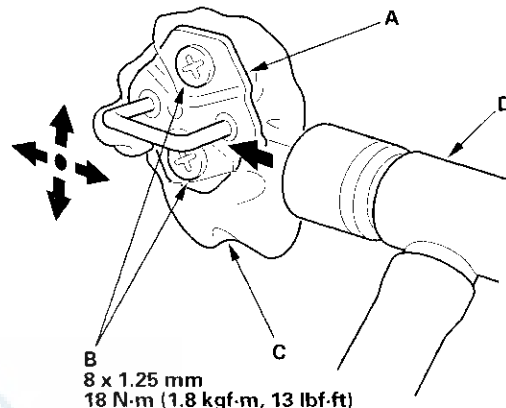


5. Apply touch-up paint to the hinge mounting bolts, and around the hinges.
6. Check for water leaks (see step 7 on page 20-25).
7. Test-drive and check for wind noise.
8. Reinstall all remaining removed parts.

Front and Rear Door Striker Adjustment

Make sure the door latches securely without slamming it. If necessary, adjust the striker (A): The striker can be adjusted slightly up or down, and in or out.

1. Loosen the screws (B), then insert a shop towel (C) between the body and striker.

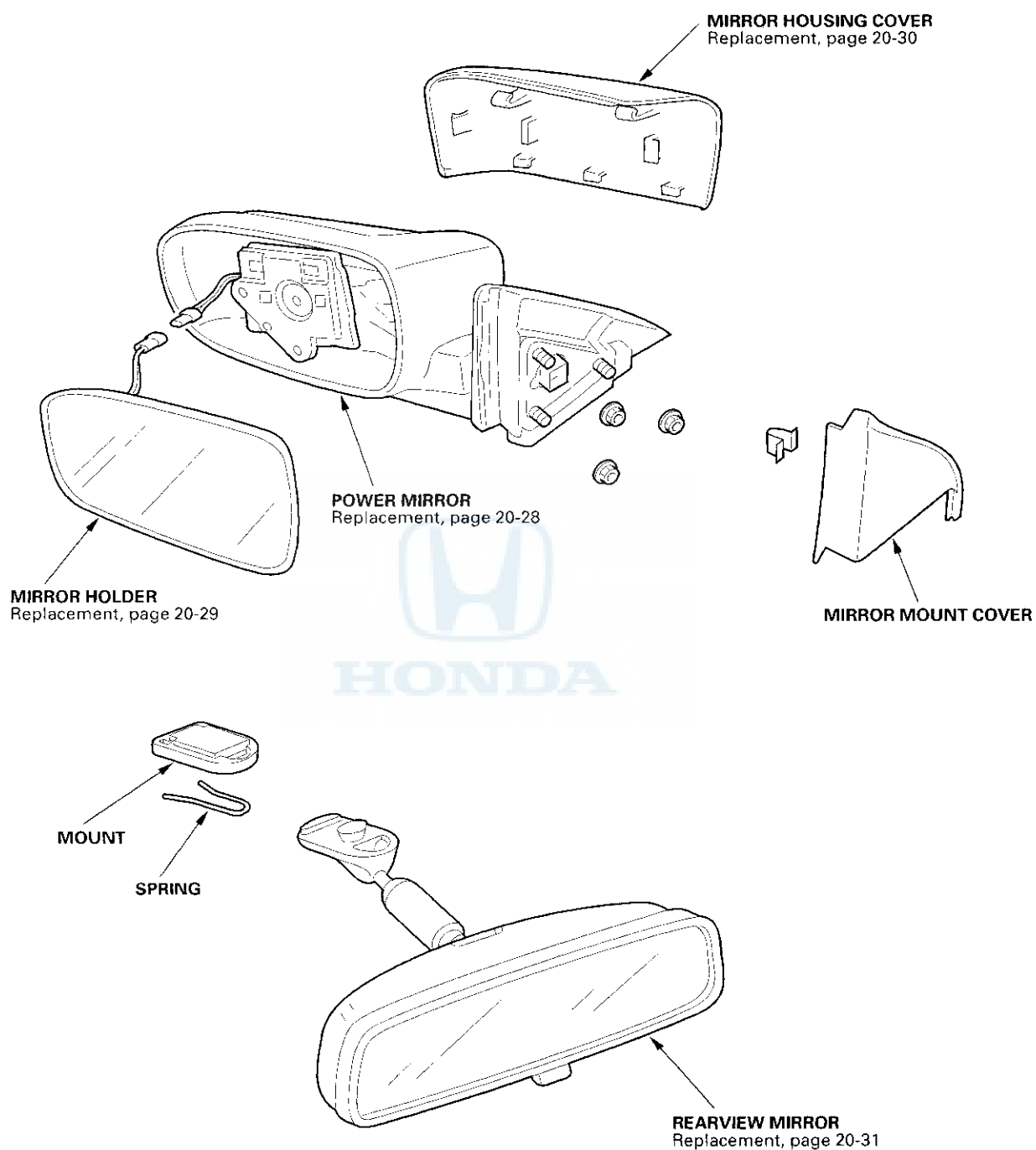


2. Lightly tighten the screws.
3. Wrap the striker with a shop towel, then adjust the striker by tapping it with a plastic hammer (D). Do not tap the striker too hard.
4. Loosen the screws, and remove the shop towel.
5. Lightly tighten the screws.
6. Hold the outer handle out, and push the door against the body to be sure the striker allows a flush fit. If the door latches properly, tighten the screws and recheck.



Mirrors

Component Location Index



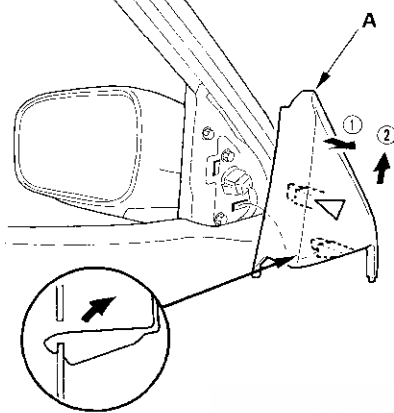
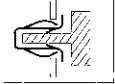
Mirrors

Power Mirror Replacement

1. Lower the door glass fully.
2. Carefully pry out the mirror mount cover (A) by hand in the sequence shown.

Fastener Location

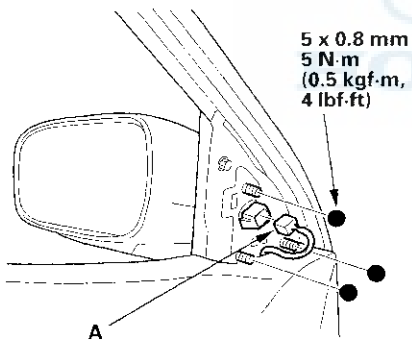
▷ : Clip, 1



3. Disconnect the connector (A).

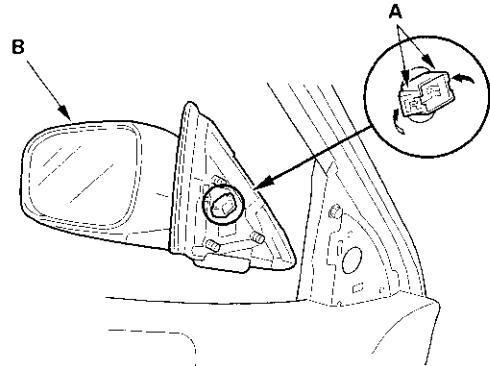
Fastener Locations

● : Nut, 3



4. While holding the mirror, remove the nuts securing the mirror.

5. While holding the mirror, push in on the connector clip tabs (A), then push out to remove the mirror (B). Take care not to scratch the door.



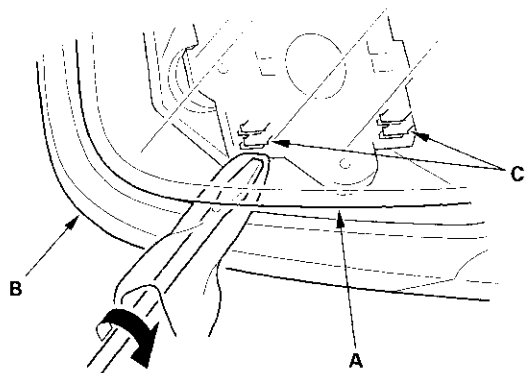
6. Install the mirror in the reverse order of removal, and make sure the connector is plugged in properly.



Mirror Holder Replacement

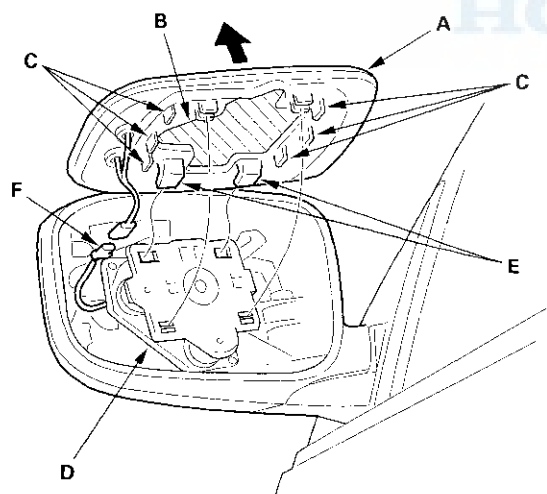
NOTE: Put on gloves to protect your hands.

1. Carefully push on the top edge of the mirror holder (A) by hand.



2. Put a shop towel in the opening between the lower edge of the mirror holder and the mirror housing (B) to prevent scratches, and detach the bottom clips (C) with a flat-tip screwdriver wrapped with protective tape.

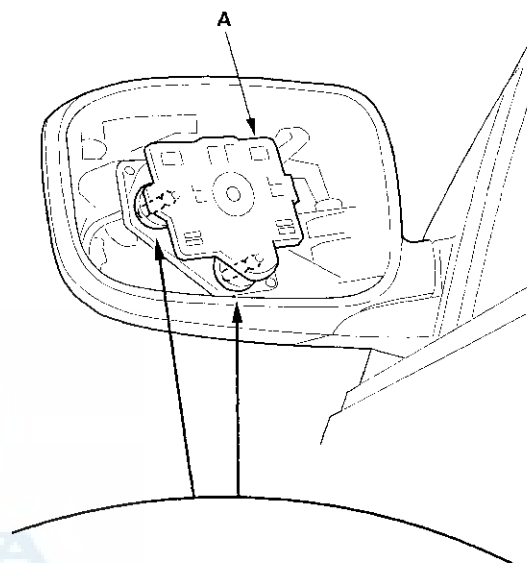
3. Carefully pull out the bottom edge of the mirror holder (A) to separate the adhesive (B), and then release the side clips (C).



4. Separate the mirror holder from the actuator (D) by releasing the hooks (E). If equipped, disconnect the mirror defogger connectors (F).

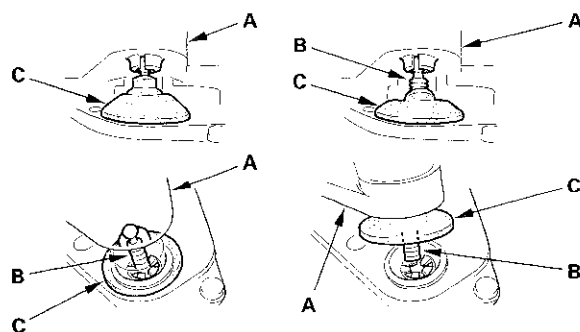
5. Before reinstalling the mirror holder to the inner holder (A) of the actuator, check the actuator rods (B) and the actuator boots (C):

- If each rod is off the actuator hole, insert it securely.
- The whole of each rod should be covered with the boot. If not, adjust the boot into proper position.



OK

NO GOOD



(cont'd)

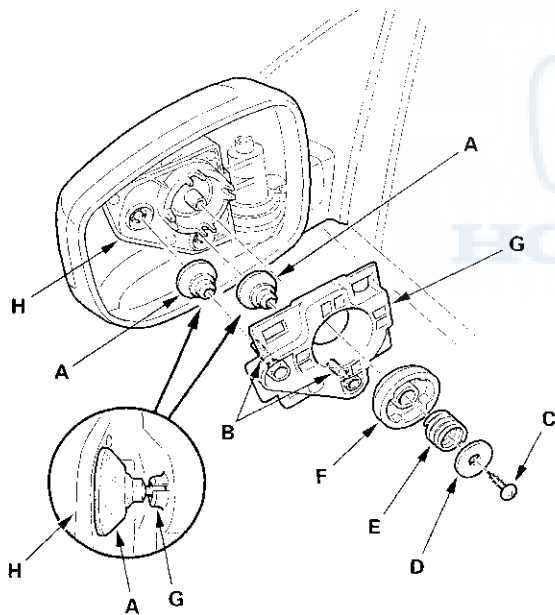
Mirrors

Mirror Holder Replacement (cont'd)

6. If either of the actuator boots (A) is hard to adjust its position because the top of the boot is down on the actuator rod (B) and it was turned inside out, disassemble the mirror actuator assembly to reset the turned boots on the rod, then reassemble them:

- 1 Remove the mounting screw (C).
- 2 Remove the washer (D), the spring (E), the lock cap (F) and the inner holder (G) with the boots from the actuator (H).
- 3 If necessary, remove the boots.
- 4 Stretch the turned boot, and put it on the rod entirely. Take care not to tear or damage either of the boots. It is irreplaceable.
- 5 Reinstall the removed parts, then secure them with the screw.

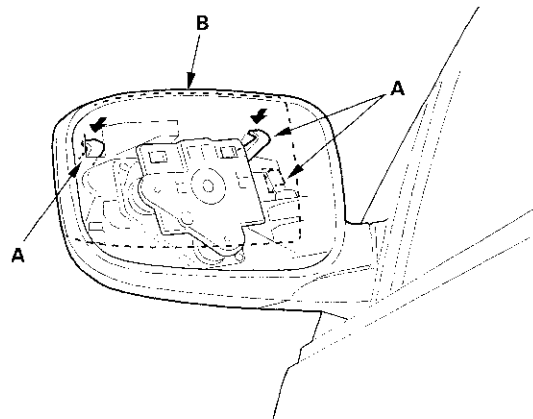
NOTE: Make sure each actuator rod is inserted to the actuator securely, and each actuator boot is fully seated on the actuator.



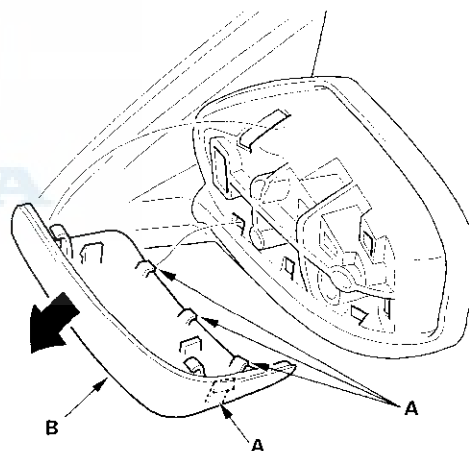
7. If equipped, reconnect the mirror defogger connectors.
8. Reattach the hooks of the mirror holder to the actuator, then position the mirror holder on the actuator. Carefully push on the clip portions of the mirror holder until the mirror holder locks into place.
9. Check the actuator operation.

Mirror Housing Cover Replacement

1. Remove the mirror holder (see page 20-29).
2. From the mirror holder opening, release the hooks (A) of the mirror housing cover (B).



3. Release the hooks (A), then remove the mirror housing cover (B).

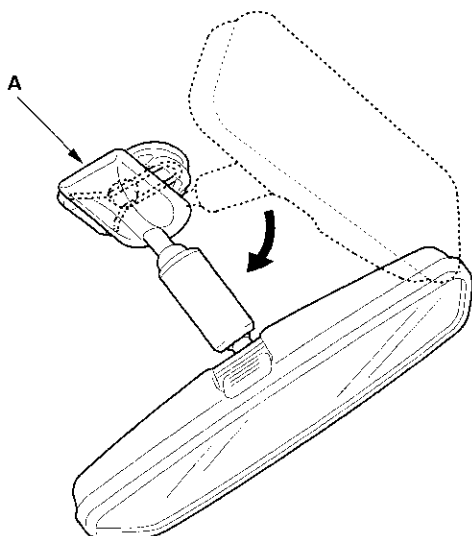


4. Install the mirror housing cover in the reverse order of removal.

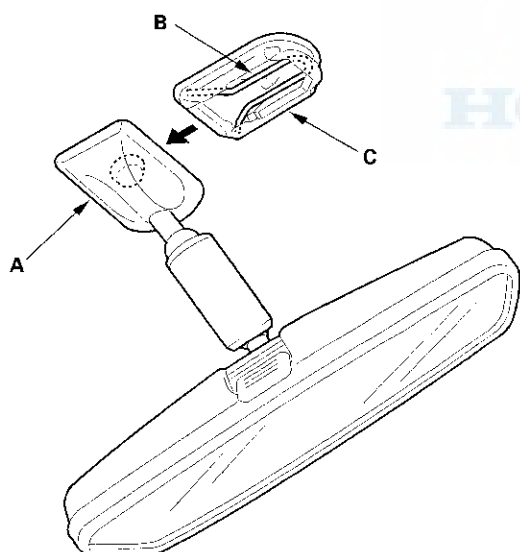


Rearview Mirror Replacement

1. Turn the rearview mirror base (A) 90 °.



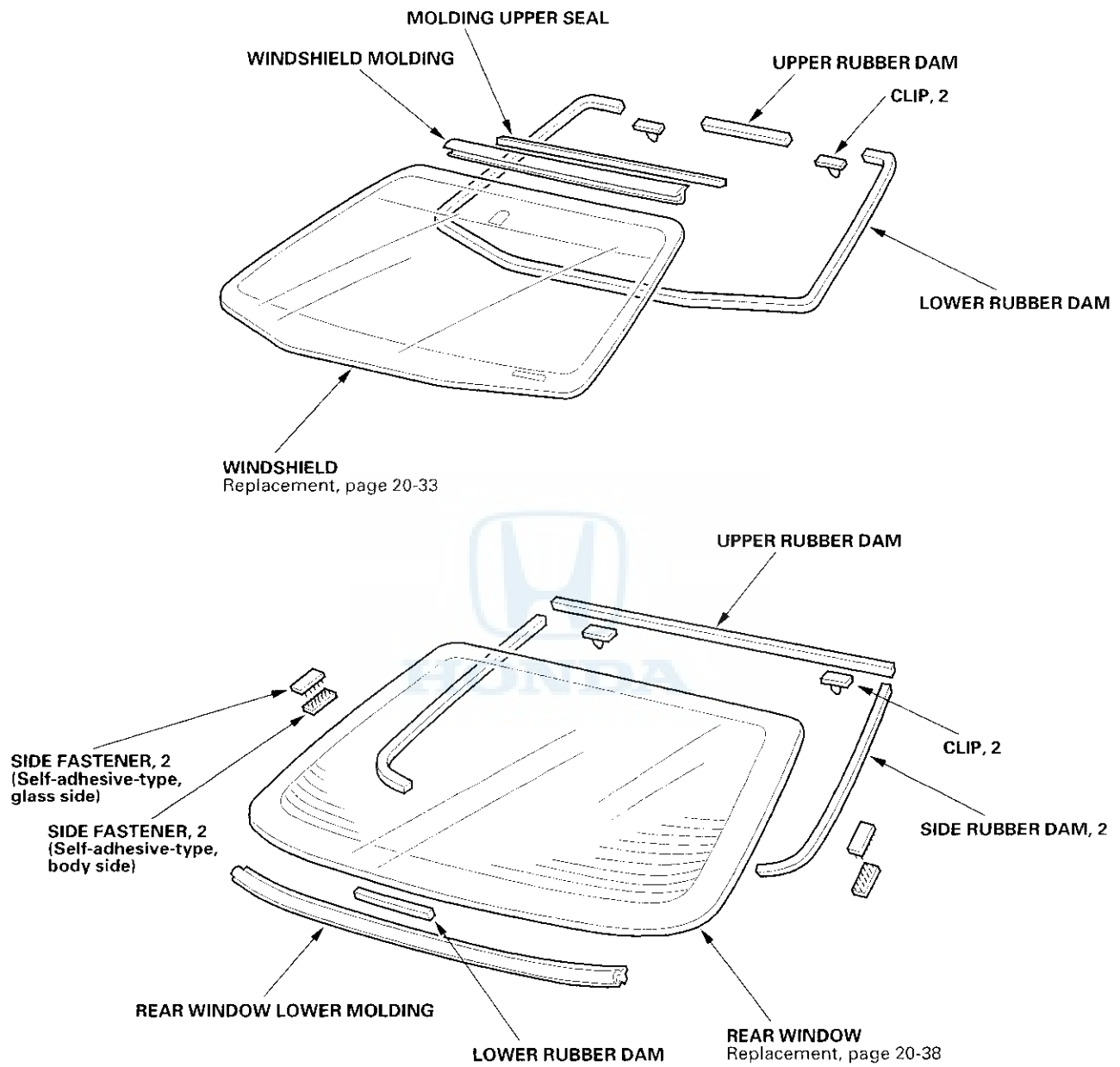
2. Slide the rearview mirror (A) down toward the bottom of the windshield to detach it from the spring (B) in the mount (C).



3. If necessary, remove the spring from the mount.
4. Install the rearview mirror in the reverse order of removal.

Glass

Component Location Index





Windshield Replacement

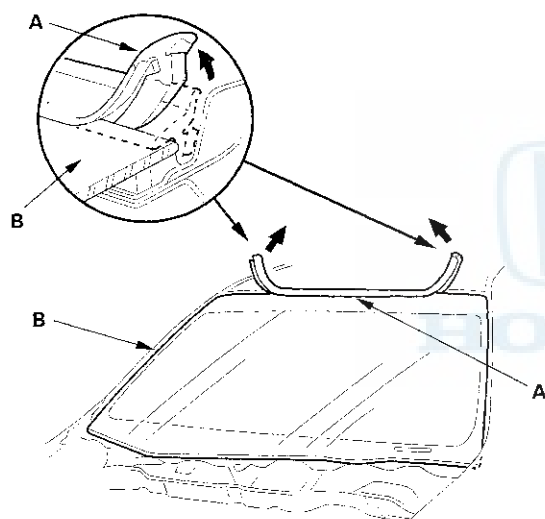
NOTE:

- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with piano wire.
- Use seat covers to avoid damaging the seat.

1. Remove these items:

- Windshield wiper arms (see page 22-221)
- Cowl covers (see page 20-113)
- Rearview mirror (see page 20-31)
- A-pillar trim, both sides (see page 20-47)
- Roof moldings (see page 20-114)

2. Remove the molding (A) from the upper edge of the windshield (B). If necessary, cut the molding with a utility knife.

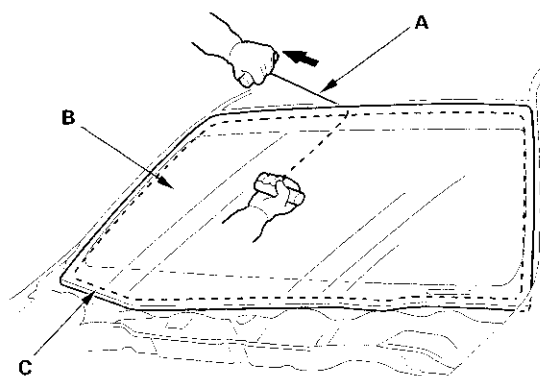


3. If the old windshield is to be reinstalled, make alignment marks across the glass and body with a grease pencil.

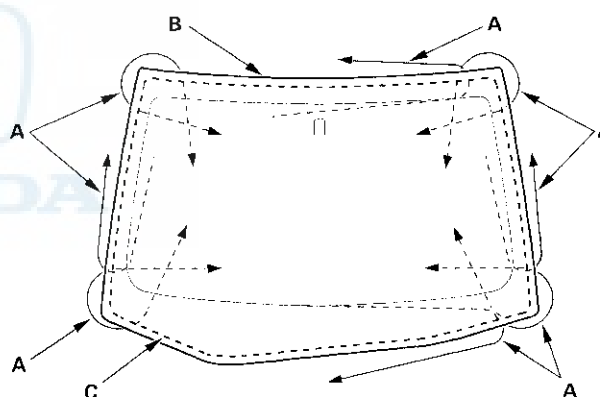
4. Pull down the front portion of the headliner (see page 20-56). Take care not to bend the headliner excessively, or you may crease or break it.

5. Apply protective tape along the edge of the dashboard and body. Using an awl, make a hole through the rubber dam and adhesive from inside the vehicle at the corner portion of the windshield. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.

6. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the windshield (B) as possible to prevent damage to the body and dashboard. Carefully cut through the rubber dam and adhesive (C) around the entire windshield.



Cutting positions



7. Carefully remove the windshield.

(cont'd)

Glass

Windshield Replacement (cont'd)

8. With a knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire windshield opening flange:
 - Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
 - Remove the rubber dam and fasteners from the body.
 - Replace the dashboard seal with a new one.
9. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the clean surface.
10. If the old windshield is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the fasteners and the rubber dam from the windshield. Clean the inside face and the edge of the windshield with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

11. Attach the upper rubber dam (A), lower rubber dam (B), and clips (C) with adhesive tape to the inside face of the windshield (D) as shown:

- Be sure the rubber dam and clips line up with the alignment marks (E).
- Be careful not to touch the windshield where adhesive will be applied.

Rubber dams adhesive tape:

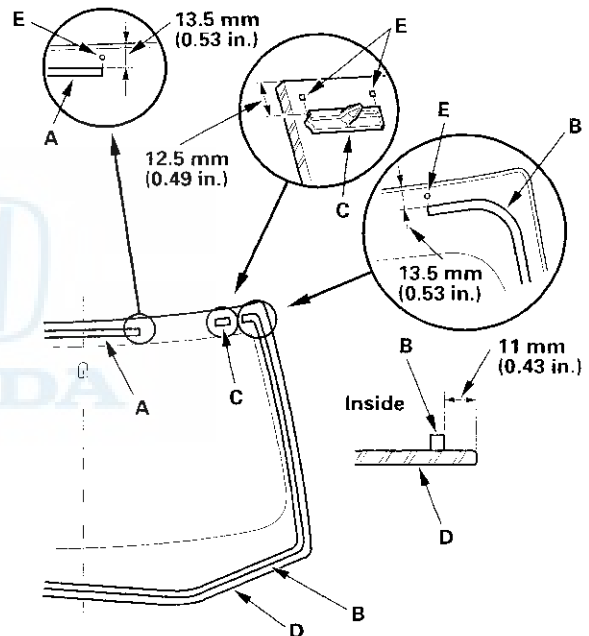
Thickness 0.16 mm (0.0063 in.)

Width 3.5 mm (0.14 in.)

Clips adhesive tape:

Thickness 0.4 mm (0.016 in.)

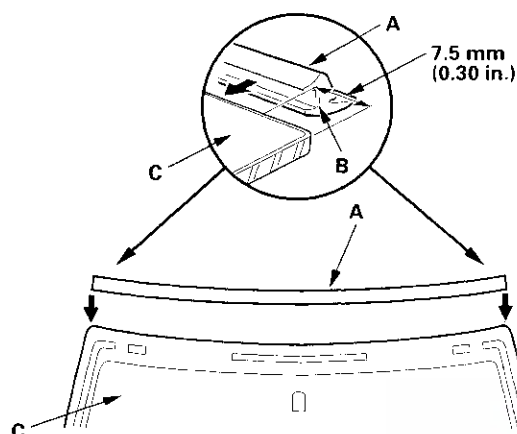
Width 10 mm (0.39 in.)





12. Attach the molding (A) with adhesive tape (B) to the upper edge of the windshield (C). Be careful not to touch the windshield where adhesive will be applied.

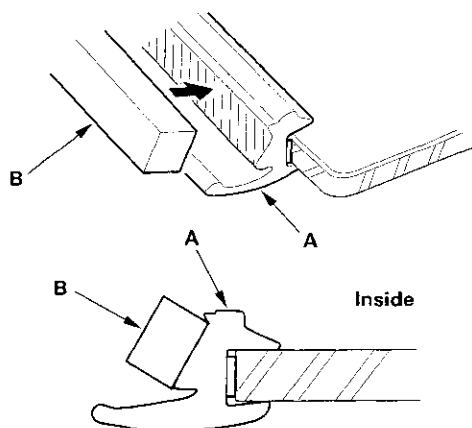
**Molding adhesive tape: Thickness 0.8 mm (0.03 in.)
Width 4 mm (0.16 in.)**



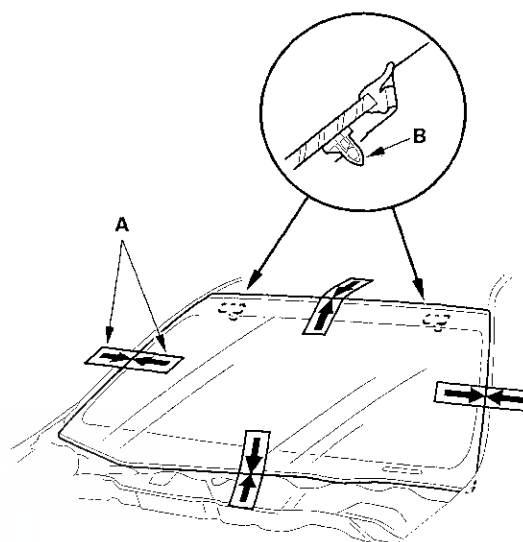
13. Apply primer to the molding (A), then attach the molding upper seal (B) with adhesive tape to the inside surface of the molding as shown:

**Seals adhesive tape: Thickness 0.16 mm (0.0063 in.)
Width 7 mm (0.28 in.)**

//// : Apply primer here.



14. Set the windshield in the opening, and center it. Make alignment marks (A) across the windshield and body with a grease pencil at the four points shown. Make sure both clips (B) contact with the edge of the body holes. Be careful not to touch the windshield where adhesive will be applied.



15. Remove the windshield.

(cont'd)

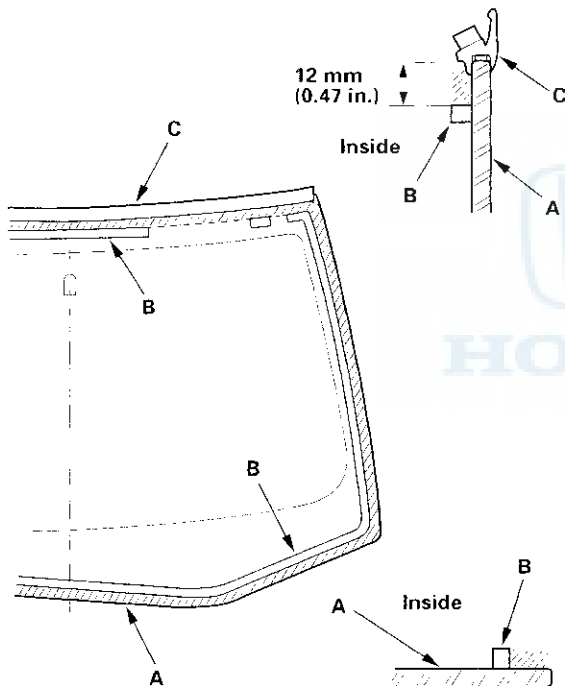
Glass

Windshield Replacement (cont'd)

16. With a sponge, apply a light coat of glass primer around the edge of the windshield (A) between the dams (B) and molding (C) as shown, then lightly wipe it off with gauze or cheesecloth:

- Apply glass primer to the molding.
- Do not apply body primer to the windshield, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the windshield properly, causing a leak after the windshield is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

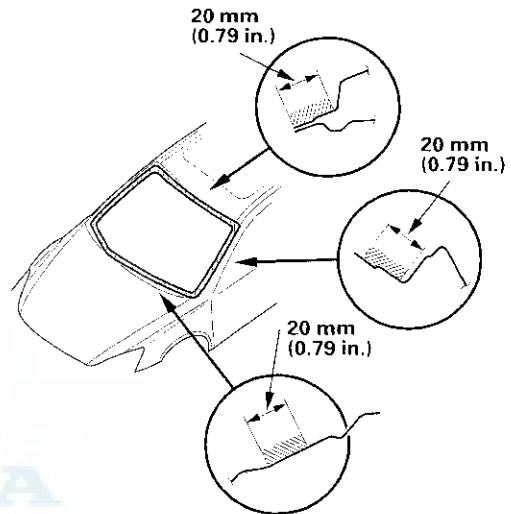
 : Apply glass primer here.



17. With a sponge, carefully apply a light coat of body primer to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

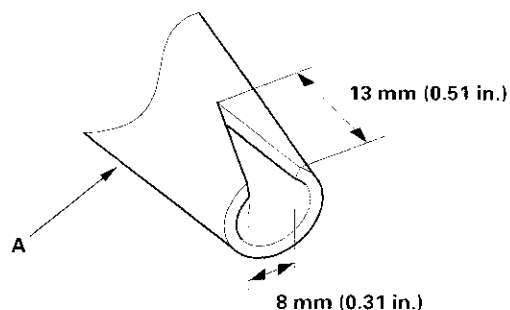
- Do NOT apply body primer to any remaining original adhesive on the flange.
- Be careful not to mix up the body and glass primer sponges.
- Never touch the primed surfaces with your hands.

 : Apply body primer to exposed paint here.

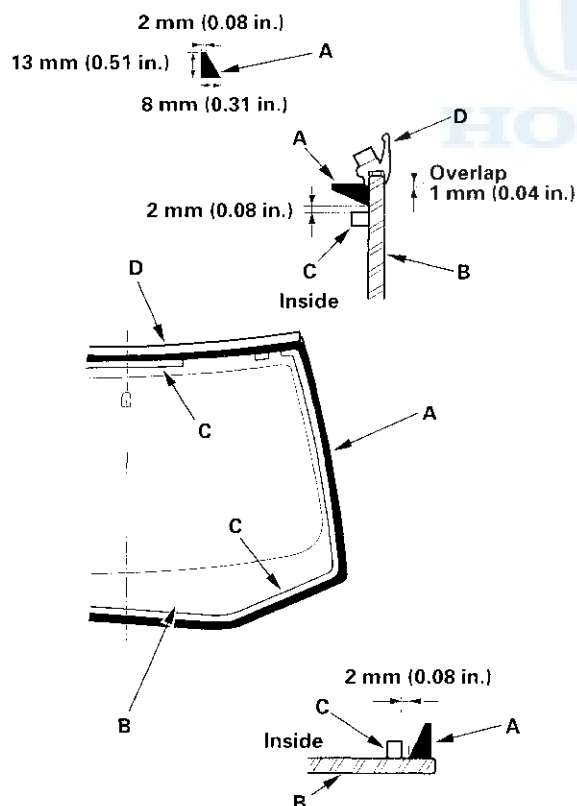




18. Cut a "V" in the end of the nozzle (A) on the adhesive cartridge as shown.



19. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the windshield (B) between the dams (C) and molding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.



20. Use suction cups to hold the windshield over the opening, align it with the alignment marks made in step 14, and set it down on the adhesive. Lightly push on the windshield until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.

21. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the windshield, wipe with a soft shop towel dampened with alcohol.

22. Let the adhesive dry for at least 1 hour, then spray water over the windshield and check for leaks. Mark leaking areas, and let the windshield dry, then seal with sealant:

- Let the vehicle stand for at least 4 hours after windshield installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
- Keep the windshield dry for the first hour after installation.

23. Reinstall all remaining removed parts.

NOTE: Advise the customer not to do the following things for 2 to 3 days:

- Slam the doors with all the windows rolled up.
- Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).

Rear Window Replacement

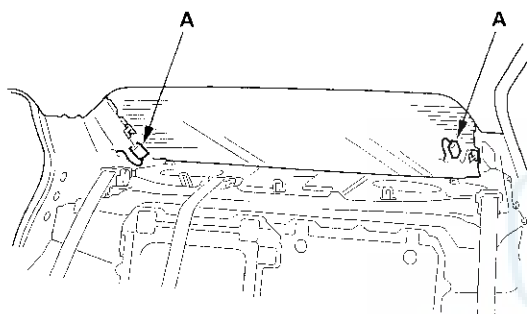
NOTE:

- Put on gloves to protect your hands.
- Wear eye protection while cutting the glass adhesive with piano wire.
- Use seat covers to avoid damaging any surfaces.
- Do not damage the rear window defogger grid lines, window antenna grid lines, and terminals.

1. Remove these items:

- Trunk lid
- Rear shelf (see page 20-51)

2. Disconnect the rear window defogger connectors (A).

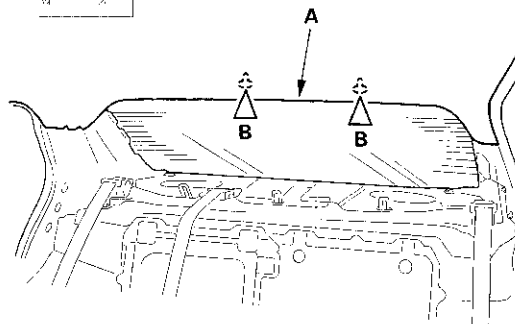


3. If the old rear window is to be reinstalled, make alignment marks across the glass and body with a grease pencil.

4. Pull down the rear portion of the headliner (A) by detaching the clips (B). Take care not to bend the headliner excessively, or you may crease or break it.

Fastener Locations

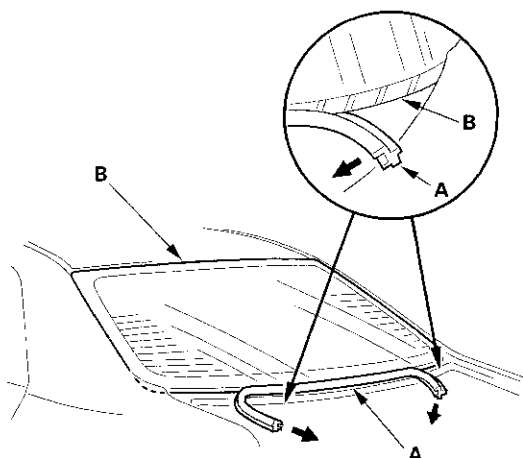
B ▷ : Clip, 2



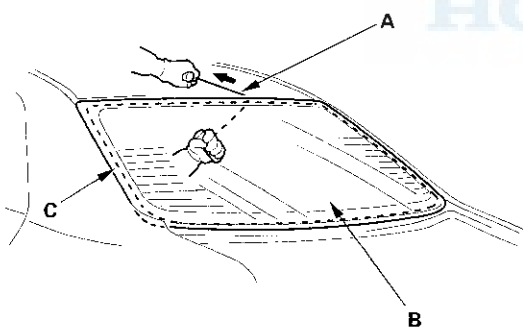
5. Apply protective tape along the inside and outside edges of the body. Using an awl, make a hole through the adhesive from inside the vehicle at the corner portion of the rear window. Push a piece of piano wire through the hole, and wrap each end around a piece of wood.



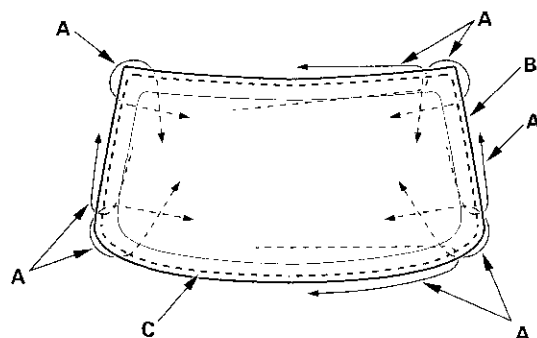
6. Remove the molding (A) from the lower edge of the rear window (B). If necessary, cut the molding with a utility knife.



7. With a helper on the outside, pull the piano wire (A) back and forth in a sawing motion. Hold the piano wire as close to the rear window (B) as possible to prevent damage to the body, and carefully cut through the adhesive (C) around the entire rear window.



Cutting positions



8. Carefully remove the rear window.
9. With a putty knife, scrape the old adhesive smooth to a thickness of about 2 mm (0.08 in.) on the bonding surface around the entire rear window opening flange:
- Do not scrape down to the painted surface of the body; damaged paint will interfere with proper bonding.
 - Remove the fasteners from the body.
10. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease and water from getting on the surface.
11. If the old rear window is to be reinstalled, use a putty knife to scrape off all of the old adhesive, the moldings and the fasteners from the rear window. Clean the inside face and the edge of the rear window with alcohol where new adhesive is to be applied. Make sure the bonding surface is kept free of water, oil and grease.

(cont'd)

Glass

Rear Window Replacement (cont'd)

12. Attach the upper rubber dam (A), side rubber dam (B), lower rubber dam (C), clips (D), and fasteners (E) with adhesive tape to the inside face of the rear window (F) as shown:

- First attach the upper rubber dam, then attach the side rubber dams around the edge of the rear window. Be sure top of the side rubber dam contacts with bottom of the upper rubber dam. If necessary, cut the rubber dam.
- Be sure the side rubber dam, clips, and fasteners line up with the alignment marks (G).
- Be careful not to touch the windshield where adhesive will be applied.

Rubber dams adhesive tape:

Thickness 0.16 mm (0.0063 in.)

Width 4 mm (0.16 in.)

Clips adhesive tape:

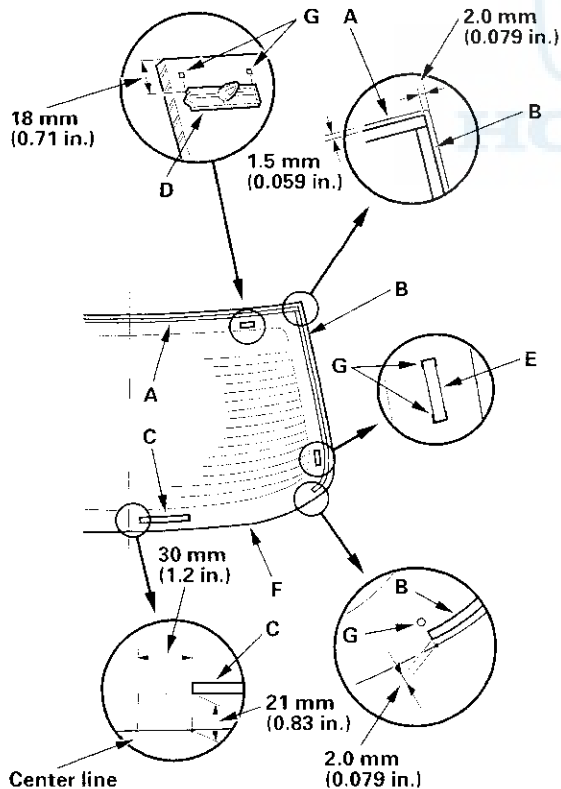
Thickness 0.4 mm (0.016 in.)

Width 10 mm (0.39 in.)

Fasteners adhesive tape:

Thickness 0.8 mm (0.03 in.)

Width 7 mm (0.28 in.)



13. Apply primer to the edge of the rear window (A) where the molding adhesive tape will be attached as shown. Attach the molding (B) with adhesive tape (C) to the lower edge of the rear window:

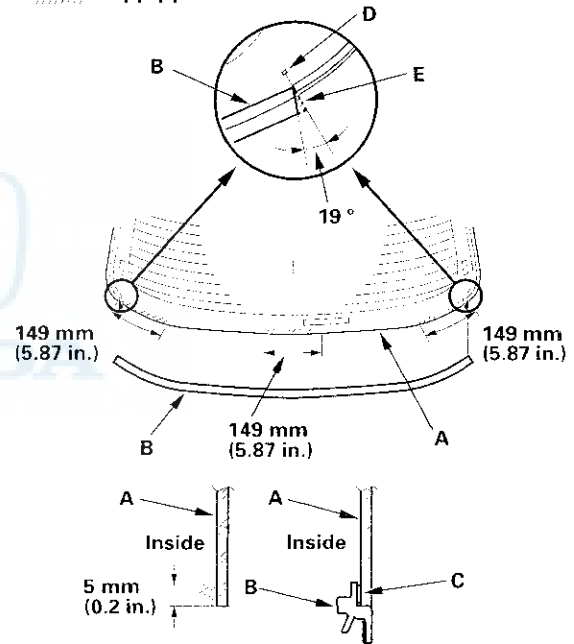
- Be sure both ends of the molding line up with the alignment marks (D) of the rear window.
- After installing the molding, cut the ends (E) of the molding as shown.
- Be careful not to touch the windshield where adhesive will be applied.

Molding adhesive tape:

Thickness 0.2 mm (0.0079 in.)

Width 4 mm (0.16 in.)

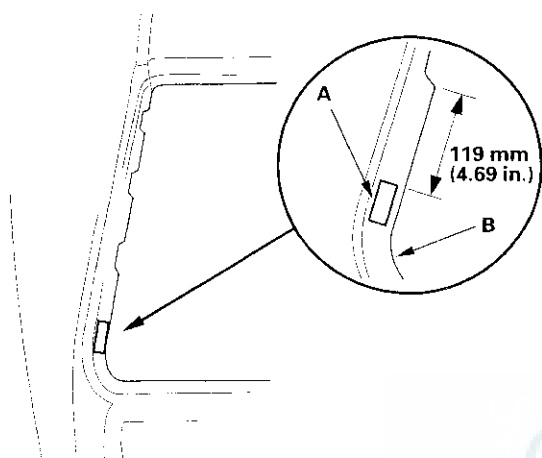
Apply primer here.



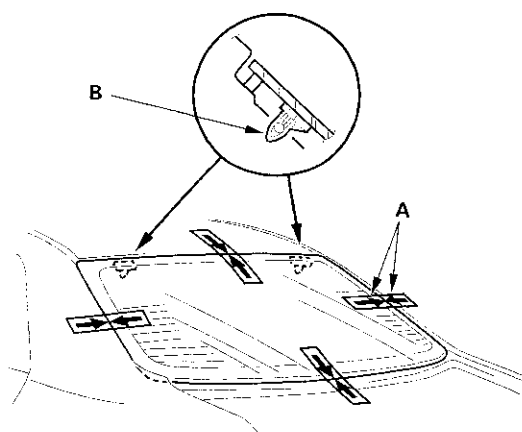


14. Attach the fasteners (A) with adhesive tape to the rear window opening flange (B) of the body on both sides.

Fasteners adhesive tape:
Thickness 0.8 mm (0.031 in.)
Width 9 mm (0.35 in.)



15. Set the rear window in the opening, and center it. Make alignment marks (A) across the rear window and body with a grease pencil at the four points shown. Make sure both upper clips (B) are in the body holes. Be careful not to touch the rear window where adhesive will be applied.

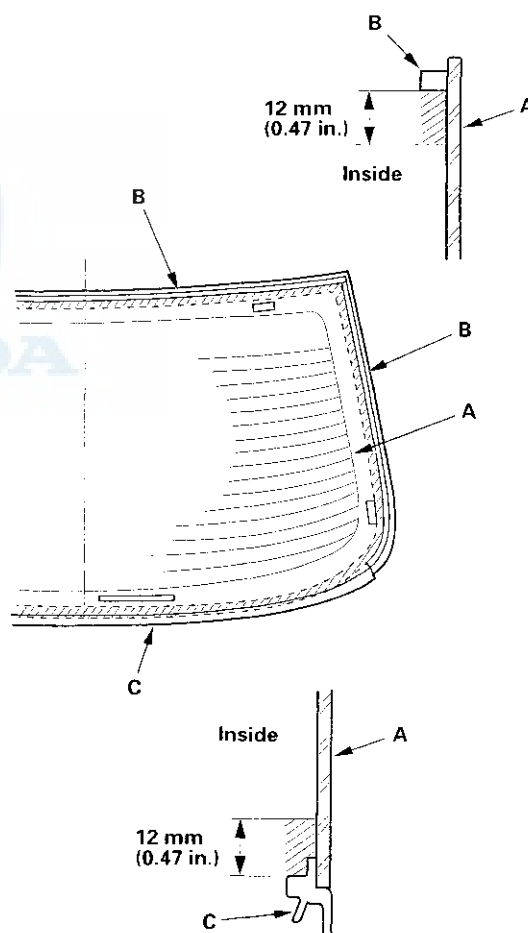


16. Remove the rear window.

17. With a sponge, apply a light coat of glass primer along the edge of the rear window (A) between the dams (B) and molding (C) as shown, then lightly wipe it off with gauze or cheesecloth:

- Do not apply body primer to the rear window, and do not get body and glass primer sponges mixed up.
- Never touch the primed surfaces with your hands. If you do, the adhesive may not bond to the rear window properly, causing a leak after the rear window is installed.
- Keep water, dust, and abrasive materials away from the primed surfaces.

 : Apply glass primer here.



(cont'd)

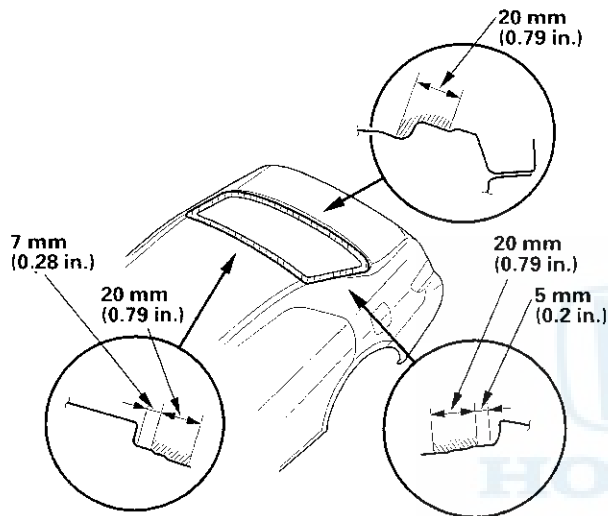
Glass

Rear Window Replacement (cont'd)

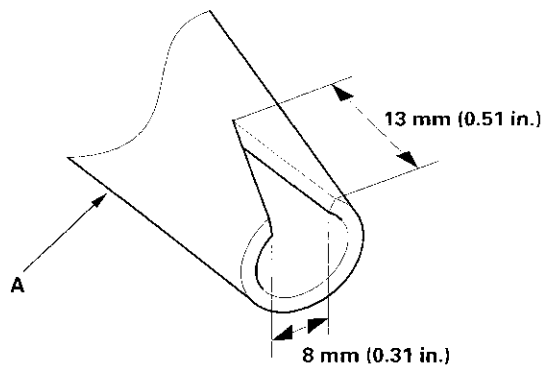
18. With a sponge, carefully apply a light coat of body primer to any exposed paint or metal around the flange where new adhesive will be applied. Let the primer dry for at least 10 minutes:

- Do NOT apply body primer to any remaining original adhesive on the flange.
- Be careful not to mix up the body and glass primer sponges.
- Never touch the primed surfaces with your hands.

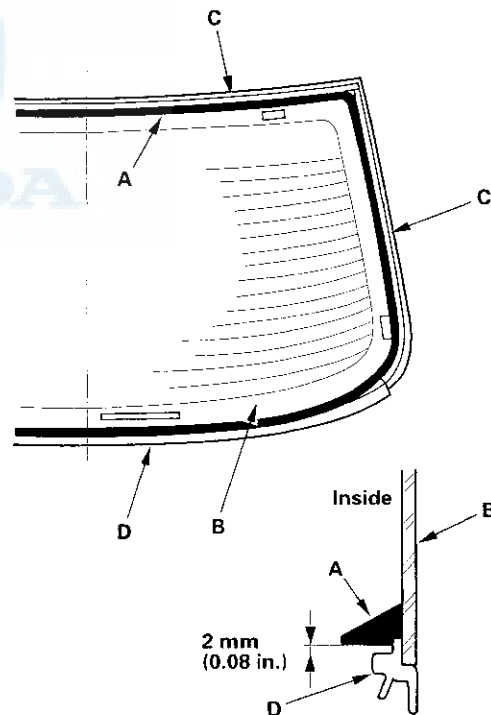
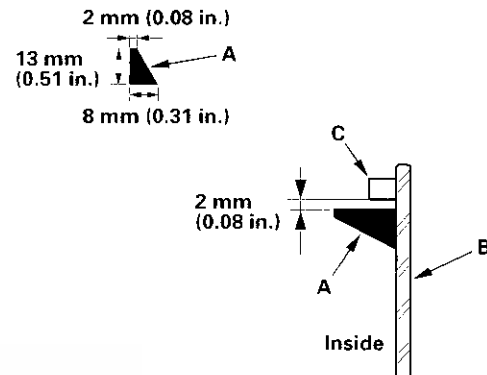
 : Apply body primer to exposed paint here.



19. Cut a "V" in the end of the nozzle (A) on the adhesive cartridge as shown.



20. Pack adhesive into the cartridge without air pockets to ensure continuous delivery. Put the cartridge in a caulking gun, and run a bead of adhesive (A) around the edge of the rear window (B) between the dams (C) and molding (D) as shown. Apply the adhesive within 30 minutes after applying the glass primer. Make a slightly thicker bead at each corner.

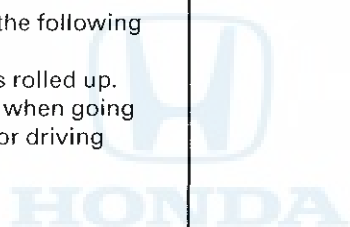




21. Use suction cups to hold the rear window over the opening, align it with the alignment marks you made in step 15, and set it down on the adhesive. Lightly push on the rear window until its edges are fully seated on the adhesive all the way around. Do not open or close the doors until the adhesive is dry.
22. Scrape or wipe the excess adhesive off with a putty knife or towel. To remove adhesive from a painted surface or the rear window, use a soft shop towel dampened with alcohol.
23. Let the adhesive dry for at least 1 hour, then spray water over the rear window and check for leaks. Mark the leaking areas, let the rear window dry, then seal with sealant. Let the vehicle stand for at least 4 hours after rear window installation. If the vehicle has to be used within the first 4 hours, it must be driven slowly.
24. Reinstall all remaining removed parts.

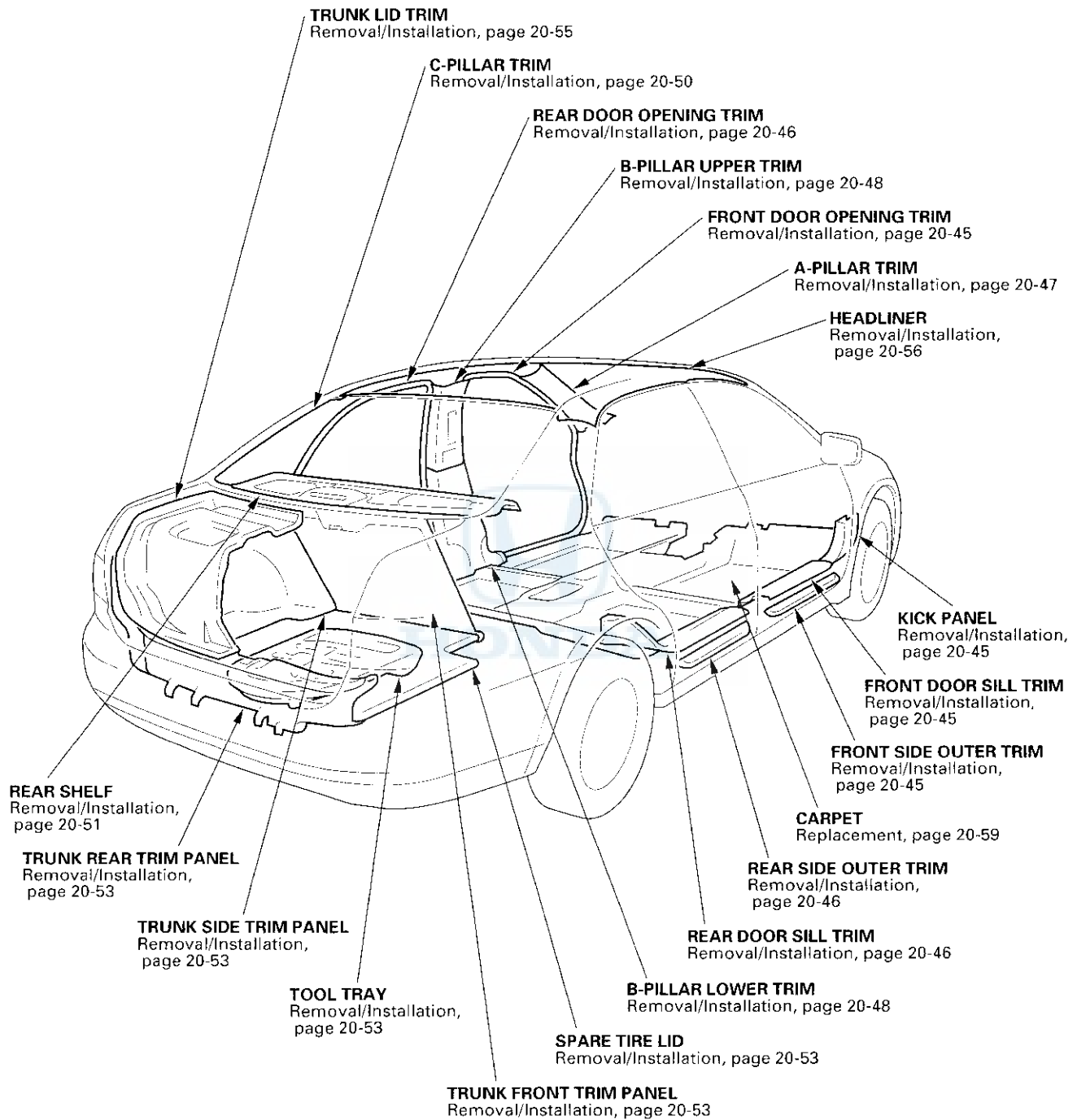
NOTE: Advise the customer not to do the following things for 2 to 3 days:

- Slam the doors with all the windows rolled up.
- Twist the body excessively (such as when going in and out of driveways at an angle or driving over rough, uneven roads).



Interior Trim

Component Location Index





Trim Removal/Installation - Door Areas

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

Front Door Sill Area

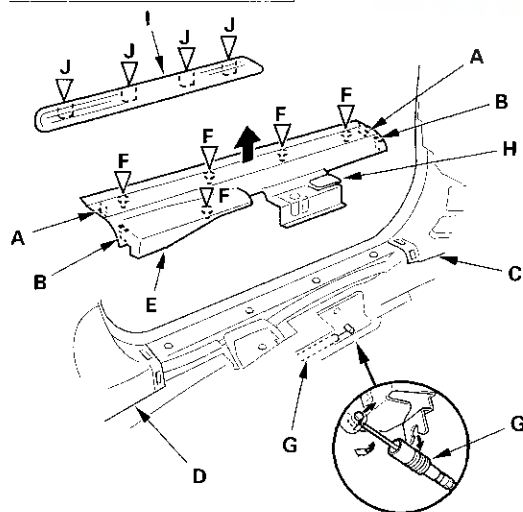
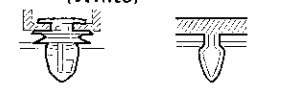
NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Left side: Remove the footrest (see step 5 on page 20-60).
2. Left side: Remove the front side cap from the front door sill trim, and remove the opener lock cylinder and bolt (see page 20-131).
3. Detach the hooks (A) and tabs (B) from the kick panel (C) and B-pillar lower trim (D), and pull the front door sill trim (E) up by hand to detach the clips (F), then remove it.

Fastener Locations

F ▷ : Clip, 5 (White) J ▷ : Clip, 4



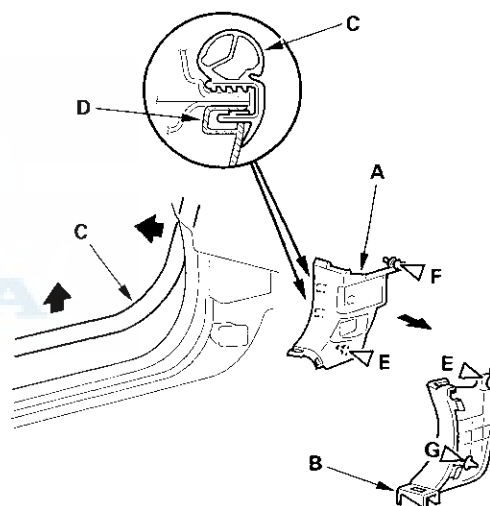
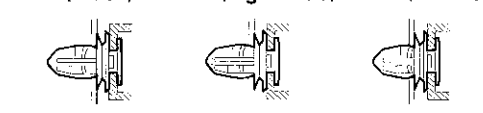
4. Disconnect the trunk lid opener/fuel fill door opener cable (G) from the opener (H).
5. If necessary, pull the front side outer trim (I) up to detach the clips (J), then remove the trim.

6. Remove the left kick panel (A) or the right kick panel (B).

- 1 Pull out the door opening trim (C) as needed from the kick panel hooks (D) and the door opening flange.
- 2 Left side: Pull the hood release handle, and hold it.
- 3 Pull the kick panel back by hand to detach the clips (E, F, G), then remove it.

Fastener Locations

E ▷ : Clip, 2 (Black) F ▷ : Clip, 1 (Light Blue) G ▷ : Clip, 1 (White)

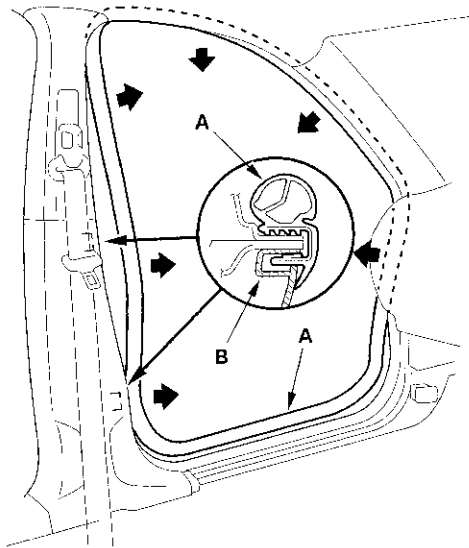


(cont'd)

Interior Trim

Trim Removal/Installation - Door Areas (cont'd)

7. Pull out the front door opening trim (A) from the trim hooks (B) and around the front door opening flange, then remove the trim.



8. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips and hooks into place securely.
- Make sure the trunk lid opener/fuel fill door opener cable is connected securely.

Rear Door Sill Area

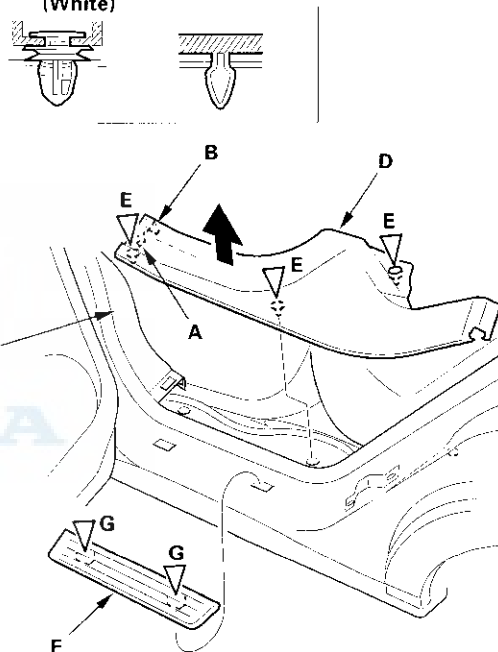
NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Detach the hook (A) and tab (B) from the B-pillar lower trim (C), and pull the rear door sill trim (D) up by hand to detach the clips (E), then remove it.

Fastener Locations

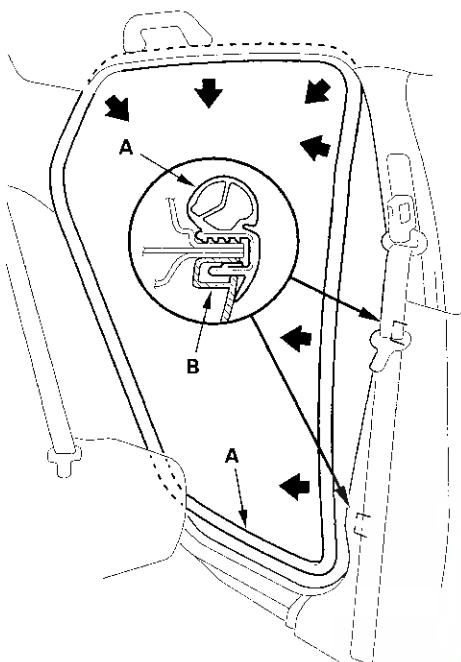
E ▷ : Clip, 3 (White) G ▷ : Clip, 2



2. If necessary, pull the rear side outer trim (F) up to detach the clips (G), then remove the trim.



3. Pull out the rear door opening trim (A) from the trim hooks (B) and around the rear door opening flange, then remove the trim.



4. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips and hooks into place securely.

Trim Removal/Installation - Pillar Areas

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

A-pillar

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

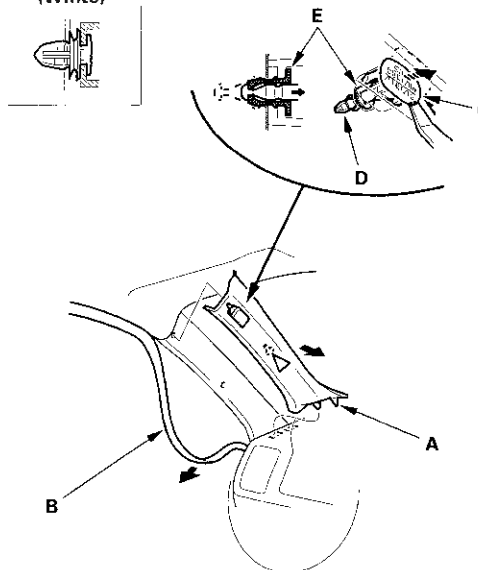
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the A-pillar trim (A).

- 1 Pull out the door opening trim (B) as needed.
- 2 Pry the A-pillar cap (C) out until it is stopped by the hooks (D) in the grommet (E).
- 3 Pull the trim back by hand to detach the clip, then pull the trim up.
- 4 Release the hooks on the grommet and pull the cap out. Discard the cap.

Fastener Location

▷ : Clip, 1 (White)



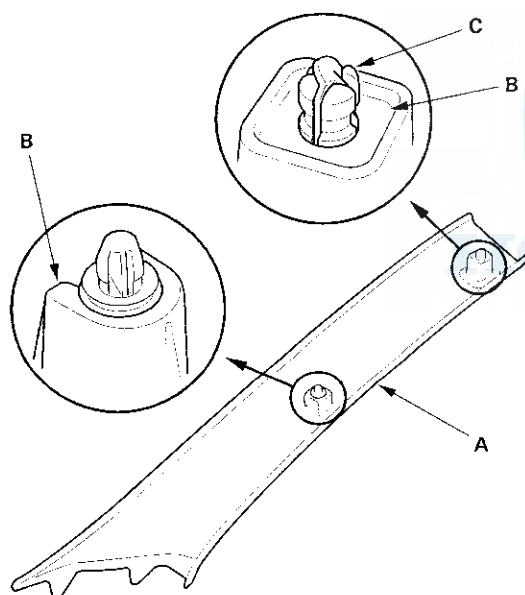
(cont'd)

Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

2. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips with new ones.
- Do not reuse the A-pillar cap; always replace it.
- If the side curtain airbag has deployed, replace the A-pillar trim with a new one.
- To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
 - Any cracks, deformations, or stress-whitenings in the A-pillar trim (A)
 - Any cracks, or stress-whitenings in the grommet and clip seating surfaces (B)
 - Bent or broken grommet (C)
- Replace any damaged parts with new ones.
- Make sure the top of the trim overlaps with the headliner correctly (see page 24-138).
- Push the clips into place securely.



B-pillar

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove these items:

- Front door sill trim (see page 20-45)
- Rear door sill trim (see page 20-46)
- Front door opening trim, as needed (see step 7 on page 20-46)
- Rear door opening trim, as needed (see step 3 on page 20-47)

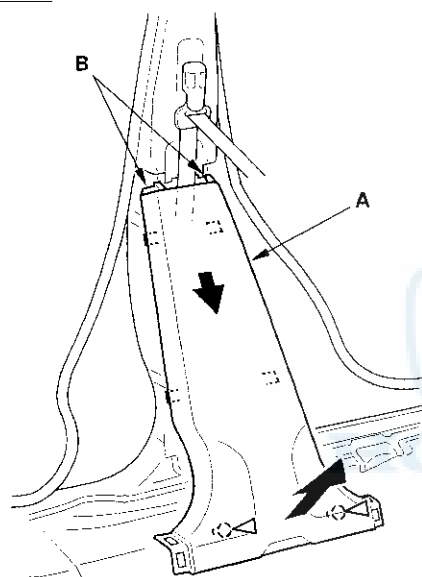


2. Remove the B-pillar lower trim (A).

- 1 Detach the lower clips by pulling the bottom of the trim back by hand.
- 2 Pull the trim down to release the upper hooks (B).

Fastener Locations

▷ : Clip, 2
(Black)



3. Remove the upper anchor cover, and remove the upper anchor bolt (see step 6 on page 24-4).

4. Remove the B-pillar upper trim (A).

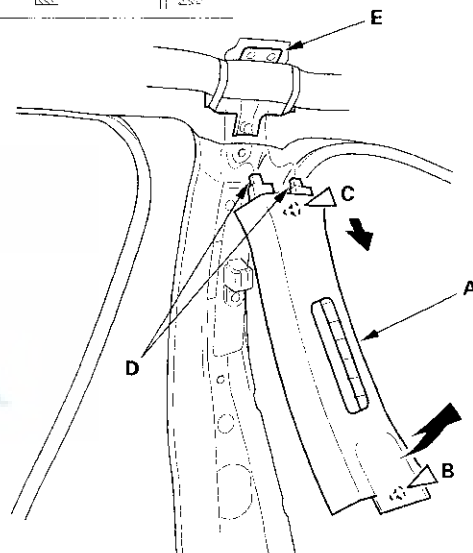
- 1 Pull the bottom of the trim back by hand to detach the lower clip (B).
- 2 Detach the upper clip (C) by pulling the top of the trim.
- 3 Pull the trim down to release the upper hooks (D) from the side curtain airbag B-pillar bracket (E).

Fastener Locations

B ▷ : Clip, 1
(Black)



C ▷ : Clip, 1
(Pink)



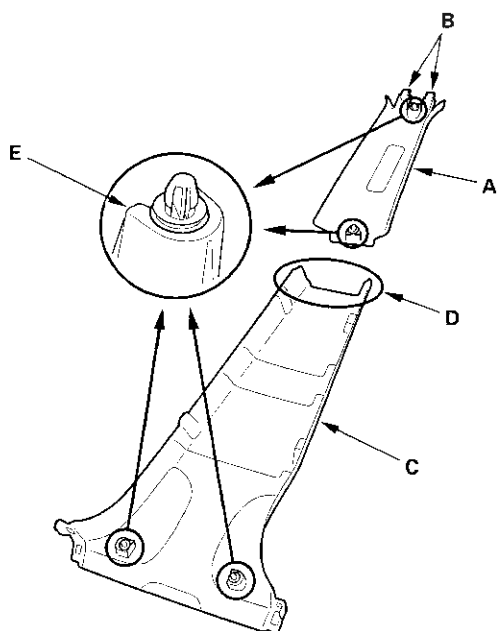
(cont'd)

Interior Trim

Trim Removal/Installation - Pillar Areas (cont'd)

5. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips with new ones.
- If the side curtain airbag has deployed, replace the B-pillar upper trim with a new one.
- To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
 - Any cracks or deformations in the B-pillar upper trim (A) and the upper hooks (B), and any stress-whitenings in the upper part of the trim
 - Any cracks or deformations in the B-pillar lower trim (C), and any breakages in the part (D) that fits into the B-pillar upper trim
 - Any cracks or stress-whitenings in the clip seating surfaces (E)
- Replace any damaged parts with new ones.
- Make sure the top of the trim overlaps with the headliner correctly (see page 24-138).
- Make sure the trim hooks are installed into the holes in the side curtain airbag B-pillar bracket securely.
- Push the clips into place securely.
- Apply liquid thread lock to the front seat belt upper anchor bolt before reinstallation (see step 11 on page 24-5).
- Before installing the anchor bolt, make sure there are no twists or kinks in the seat belt.



C-pillar

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove these items:

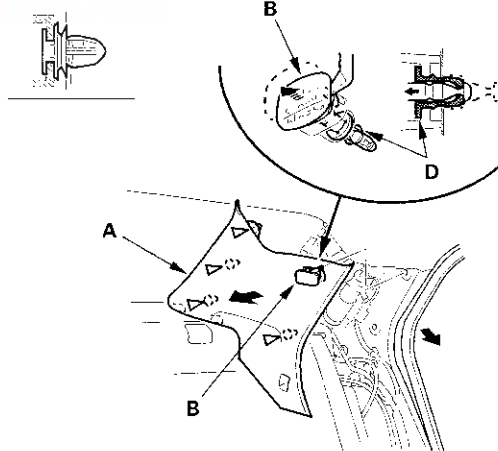
- Rear seat-back (see page 20-95)
- Rear door opening trim, as needed (see step 3 on page 20-47)

2. Remove the C-pillar trim (A).

- 1 Pry the C-pillar cap (B) out until it is stopped by the hooks (C) in the grommet (D).
- 2 Pull the C-pillar trim back by hand to detach the clips, then remove the trim.
- 3 Release the hooks and pull the cap out. Discard the cap.

Fastener Locations

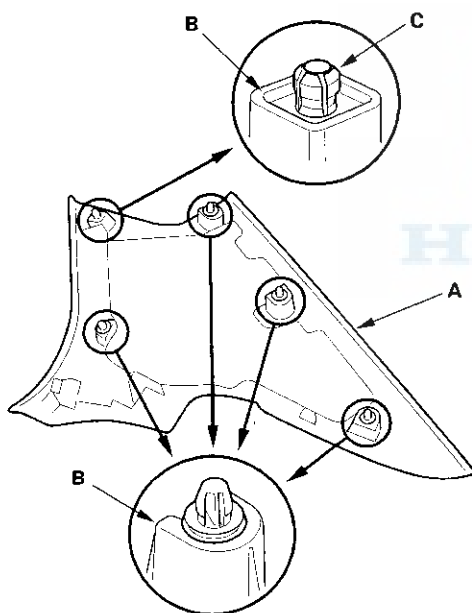
▷ : Clip, 4 (White)





3. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips with new ones.
- Do not reuse the C-pillar cap; always replace it.
- If the side curtain airbag has deployed, replace the C-pillar trim with new one.
- To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
 - Any cracks, deformations, or stress-whitenings in the C-pillar trim (A)
 - Any cracks, or stress-whitenings in the grommet and clip seating surfaces (B)
 - Bent or broken grommet (C)
- Replace any damaged parts with new ones.
- Make sure the top of the trim overlaps with the headliner correctly (see page 24-138).
- Push the clips into place securely.



Trim Removal/Installation - Rear Shelf Area

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

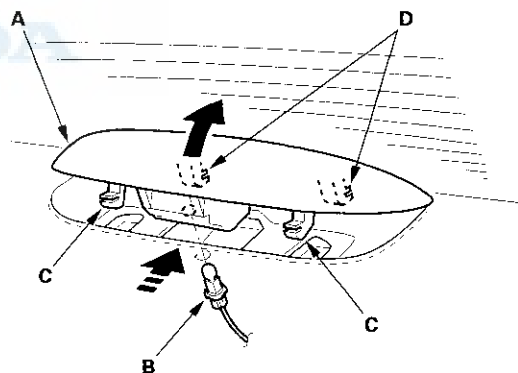
- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove these items:

- Rear seat-back and seat cushion (see page 20-95)
- C-pillar trim (see page 20-50)

2. Remove the high mount brake light (A).

- 1 From the trunk compartment, disconnect the high mount brake light bulb socket (B).
- 2 Push the high mount brake light towards the rear window, and gently pry up at the back to release the front hooks (C).
- 3 Release the rear hooks (D), then remove the high mount brake light.



(cont'd)

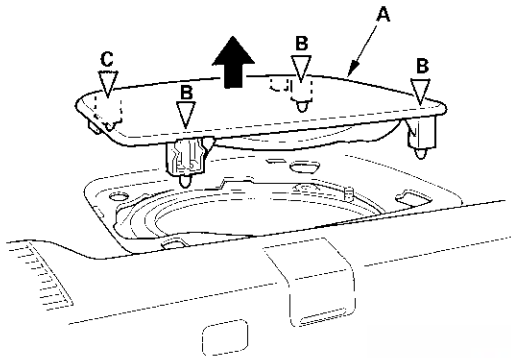
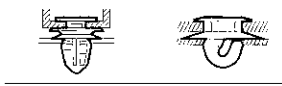
Interior Trim

Trim Removal/Installation - Rear Shelf Area (cont'd)

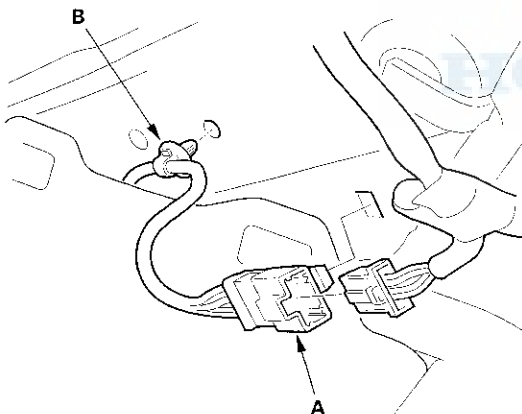
3. From both sides, pull the rear speaker grille (A) up to detach the clips (B, C), then remove the rear speaker grille.

Fastener Locations

B ▷ : Clip, 6 C ▷ : Clip, 2



4. Disconnect and detach the active noise control rear microphone connector (A) and detach the harness clip (B).

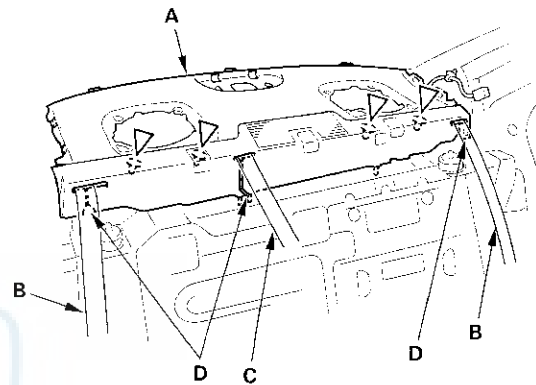


5. Remove the rear shelf (A).

- 1 Lift the rear shelf to detach the clips.
- 2 Pull the rear shelf toward the front of the vehicle.

Fastener Locations

▷ : Clip, 4 (White)



6. Pull both rear seat belts (B) and rear center seat belt (C) out through the slits (D) in the rear shelf.

7. Install the shelf in the reverse order of removal, and note these items:

- Replace any damaged clips.
- When installing the rear shelf, slip the rear seat belts and center seat belt through the slits in the rear shelf.
- Push the clips and hooks into place securely.
- Make sure the active noise control rear microphone connector is plugged in properly, and high mount brake light bulb socket is connected securely.



Trim Removal/Installation - Trunk Area

Special Tools Required

KTC trim tool set SOJATP2014 *

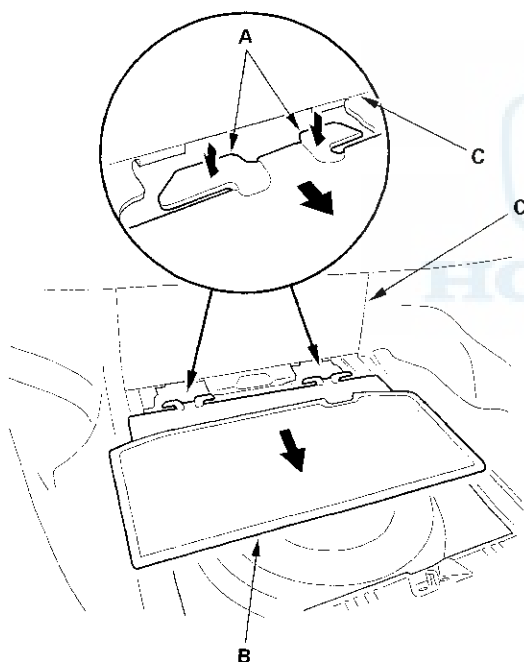
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim and panels.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

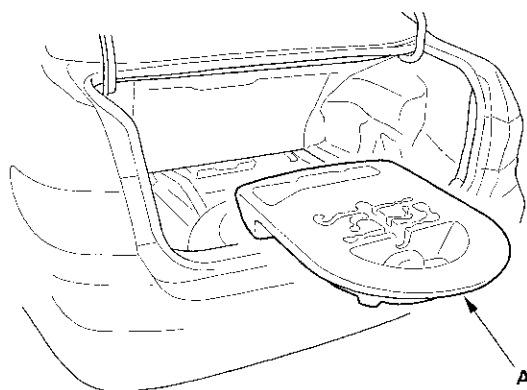
Trim and Panel Removal/Installation

1. Fold the spare tire lid.
2. While pushing both four hooks (A) down with your hands, pull the spare tire lid (B) back to release these hooks from under the trunk front trim (C), and then remove the lid.

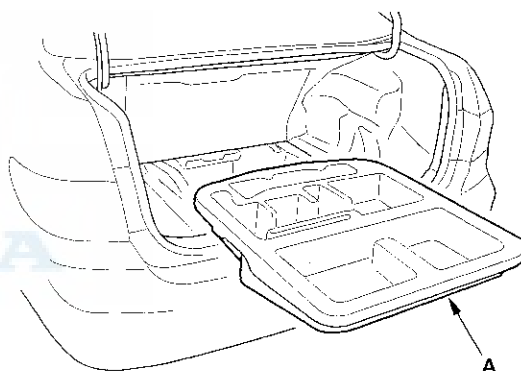


3. If necessary, remove the tool tray (A).

With spare tire (Canadian model)



Without spare tire (US model)



(cont'd)

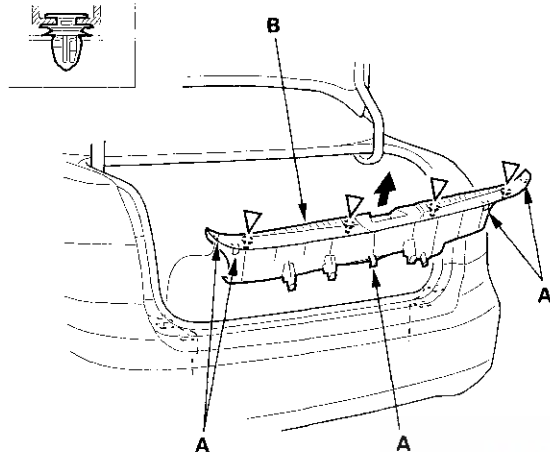
Interior Trim

Trim Removal/Installation - Trunk Area (cont'd)

4. Detach the clips, and release the hooks (A) by pulling the trunk rear trim panel (B) up, then remove it.

Fastener Locations

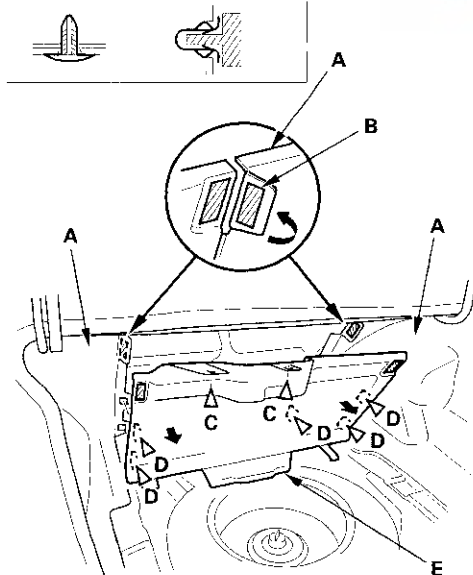
▷ : Clip, 4



5. Turn the corners of both the trunk side trim panels (A) to release the fasteners (B), release the clips (C), and detach the clips (D), then remove the trunk front trim panel (E).

Fastener Locations

C ▷ : Clip, 2 D ▷ : Clip, 5



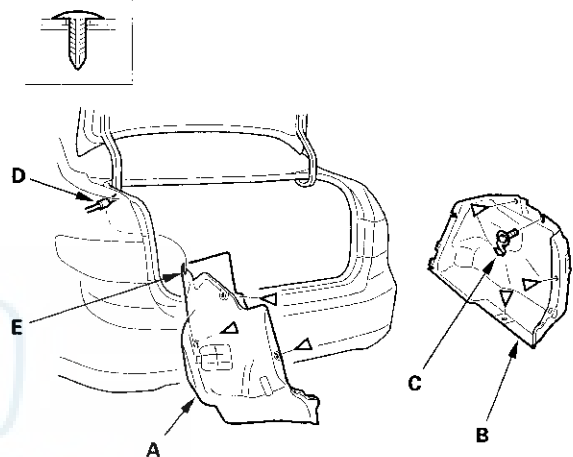
6. Remove the left trunk side trim panel (A) and the right trunk side trim panel (B).

- 1 Right side: Remove the trunk hook (C).
- 2 Remove the clips.
- 3 Remove the trim panels from the trunk compartment.

Left side: Release the trunk lid opener cable (D) from the slit (E) in the trim panel.

Fastener Locations

▷ : Clip, 6



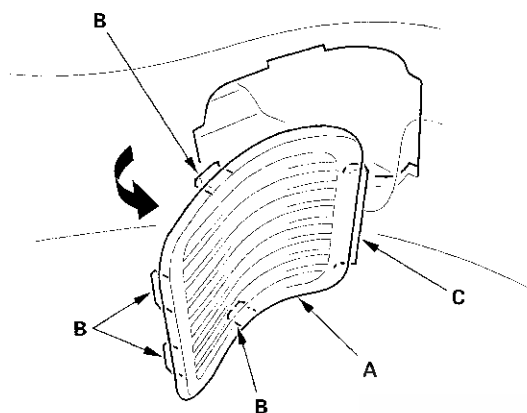
7. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips into place securely.



Trunk Side Outlet Replacement

1. Pull out along the front edge of the outlet (A) to release the hooks (B), then remove the outlet by releasing the rear hook (C) from the hole in the right trunk side trim panel.



2. Install the outlet in the reverse order of removal.

Trim Removal/Installation - Trunk Lid

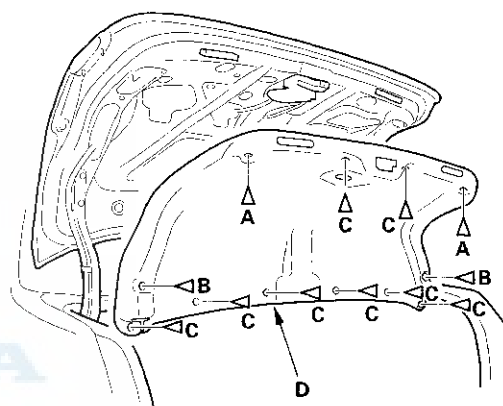
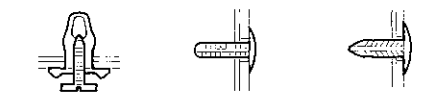
NOTE:

- Put on gloves to protect your hands.
- Take care not to bend or scratch the trim.

1. Using a clip remover, detach the clips (A, B, C), then remove the trunk lid trim (D). Take care not to scratch the trunk lid.

Fastener Locations

A ▷ : Clip, 2 B ▷ : Clip, 2 C ▷ : Clip, 8



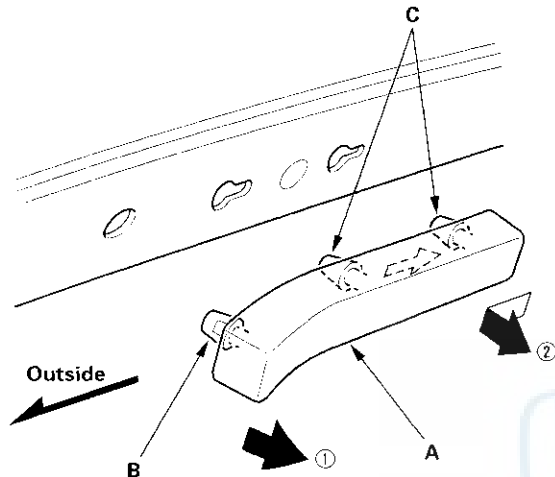
(cont'd)

Interior Trim

Trim Removal/Installation - Trunk Lid (cont'd)

2. Remove the trunk lid protector (A).

- 1 Pull back the outside of the protector to release the outside hook (B).
- 2 Slide the protector outside, then release the hooks (C) to remove it.



3. Install the trim in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the clips into place securely.

Headliner Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

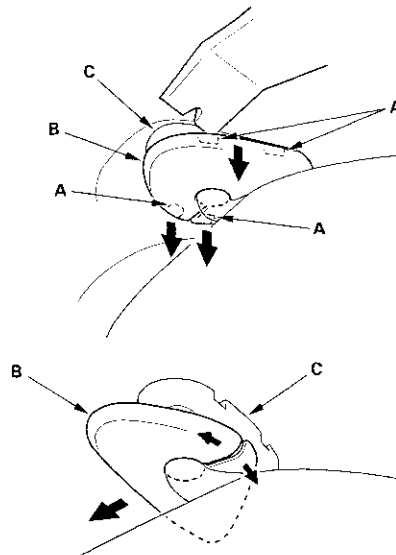
NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to bend or scratch the headliner.
- Be careful not to damage the dashboard and other interior trim.

1. Remove these items:

- A-pillar trim, both sides (see page 20-47)
- Ceiling light (see page 22-189)
- Front seat belt upper anchor, both sides (see step 6 on page 24-4)
- B-pillar lower trim (see page 20-48)
- B-pillar upper trim, both sides (see page 20-48)
- C-pillar trim, both sides (see page 20-50)

2. From both sides, using a trim tool, release the tabs (A), then turn the sunvisor cap (B), and remove it from the bracket (C).



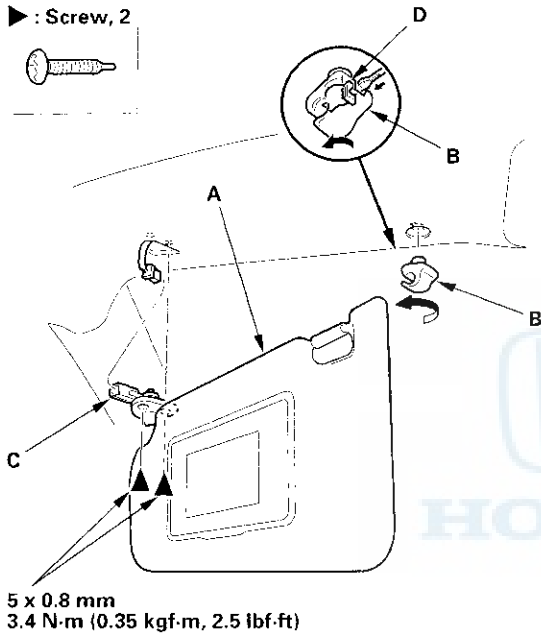


3. From both sides, remove the sunvisor (A) and holder (B).

- 1 Remove the self-tapping ET screws.
- 2 Remove the sunvisor from the body and holder.
- 3 Disconnect the vanity mirror light connector (C).
- 4 Using a flat-tip screwdriver, push the hook (D), turn the holder 90°, and then pull it out.

Fastener Locations

► : Screw, 2

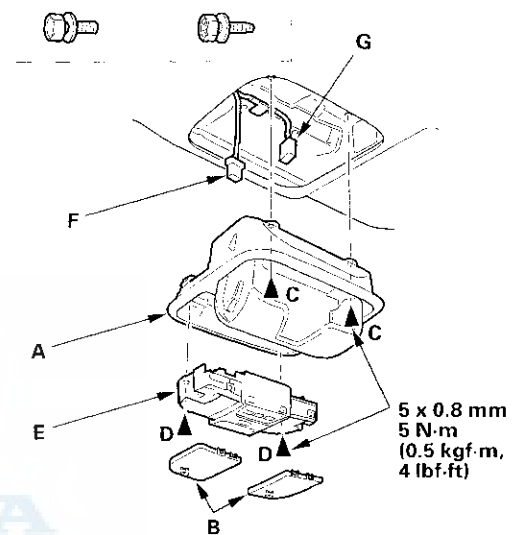


4. Remove the roof console (A).

- 1 Remove the lenses (B).
- 2 Remove the bolts (C, D).
- 3 Pull out the roof console, and front individual map light (E). Disconnect the front individual map light connector (F) and ambient light connector (G).

Fastener Locations

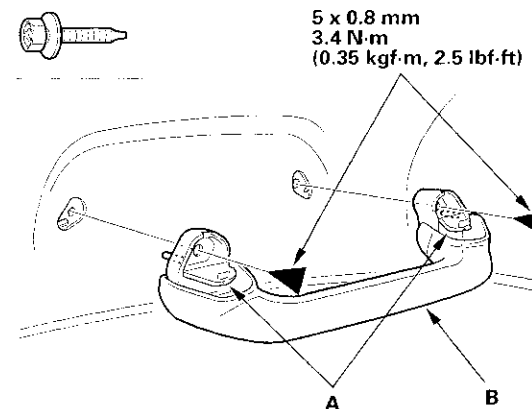
C ► : Bolt, 2 D ► : Bolt, 2



5. Lower the grab handle, then pry out the lids (A). Remove the self-tapping ET screws, then remove the grab handle (B). Remove the remaining grab handles.

Fastener Locations

► : Screw, 8



(cont'd)

Interior Trim

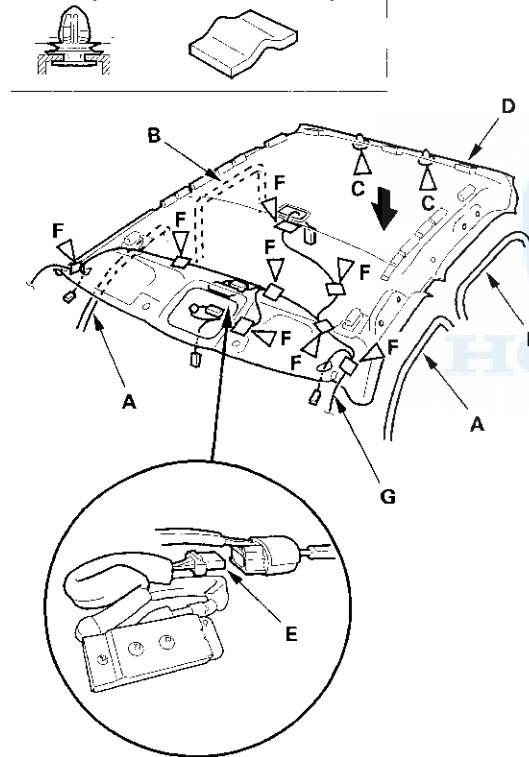
Headliner Removal/Installation (cont'd)

6. Remove the headliner.

- 1 Remove the front door opening trim (A) and rear door opening trim (B) from each roof portion.
- 2 With the help of an assistant, detach the rear clips (C) by pulling the rear portion of the headliner (D) down.
- 3 Disconnect the active noise control front microphone connector (E).
- 4 Remove the cushion tape (F), then remove the roof wire harness (G) from the headliner.
- 5 Remove the headliner through the front passenger's door opening.

Fastener Locations

C ▷ : Clip, 2 F ▷ : Cushion tape, 8



7. Install the headliner in the reverse order of removal, and note these items:

- If the side curtain airbag has been deployed, replace the headliner and front grab handle on deployed side with new ones.
- To prevent the side curtain airbags from deploying improperly and possibly causing injury, inspect removed pieces and replace them if they have any of these types of damage:
 - Any creases or tears in the headliner (A)
 - Any clip bases (B) which have come off the headliner
 - Any damage around the grab handle holes (C) or sunvisor holes (D) in the headliner
 - Any deformations in the grab handle (E)
 - Any cracks in the sunvisor stay base (F)
 - Any bends or cracks in the sunvisor stay shaft (G)
 - Any cracks in the sunvisor base (H)
 - Any cracks in the vanity mirror base (I)
 - Any deformations in the grab handle bracket
- Replace any damaged parts with new ones.
- Make sure the top of the headliner overlaps with the trim pieces correctly (see page 24-138).
- When passing the headliner through the door opening, be careful not to fold or bend it. Also, be careful not to scratch the body.
- If the threads on a visor or grab handle screw are worn out, use an oversized self-tapping ET screw made specifically for this application:

Visor: P/N 90137-S30-003

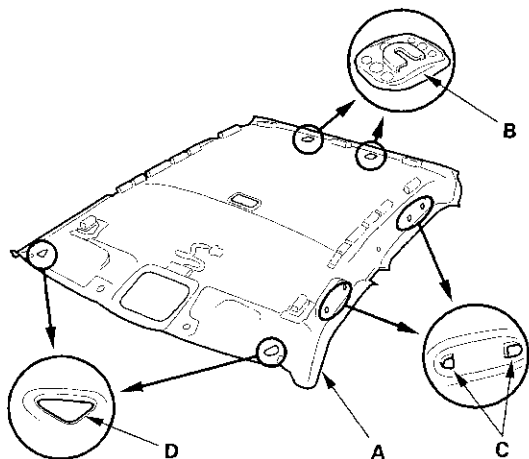
Grab handle: P/N 90137-S0A-003

- Check that both sides of the headliner are securely attached to the trim.

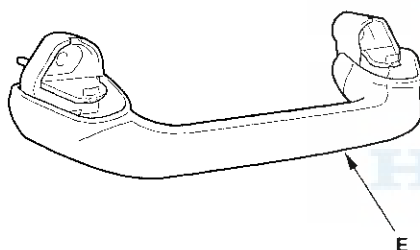


Carpet Replacement

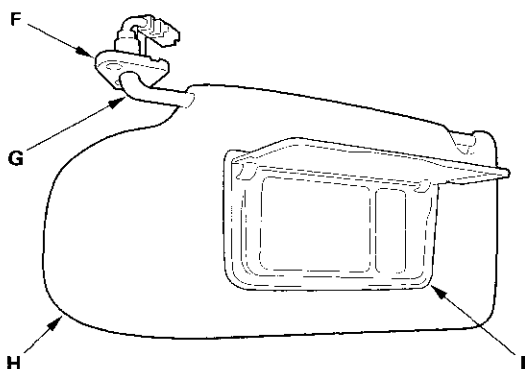
Headliner



Grab handle



Sunvisor



SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Put on gloves to protect your hands.
- Take care not to damage, wrinkle or twist the carpet.
- Be careful not to damage the dashboard or other interior trim pieces.

1. Make sure you have the anti-theft codes for the radio and the navigation system, and then write down the audio presets.

2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Remove these items:

- Front seats, both sides (see page 20-80)
- Rear seat cushion (see page 20-95)
- Front door sill trim, both sides (see page 20-45)
- Kick panels, both sides (see page 20-45)
- Rear door sill trim, both sides (see page 20-46)
- B-pillar lower trim (see page 20-48)
- Center console (see page 20-62)
- Driver's dashboard center lower cover (see step 4 on page 20-74)
- Passenger's dashboard center lower cover (see step 5 on page 20-74)
- Driver's dashboard under cover (see page 20-67)
- Passenger's dashboard lower cover (see page 20-72)
- Parking brake lever (see page 19-29)

4. Remove the front seat belt lower anchor bolt, both sides (see step 4 on page 24-4).

(cont'd)

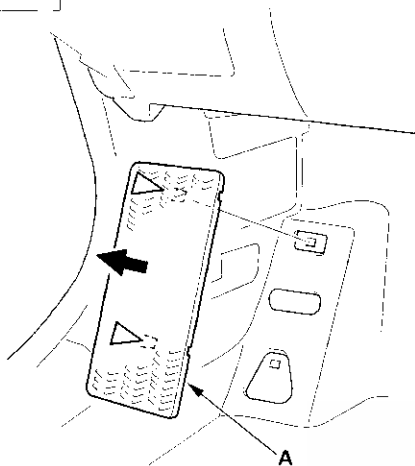
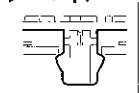
Interior Trim

Carpet Replacement (cont'd)

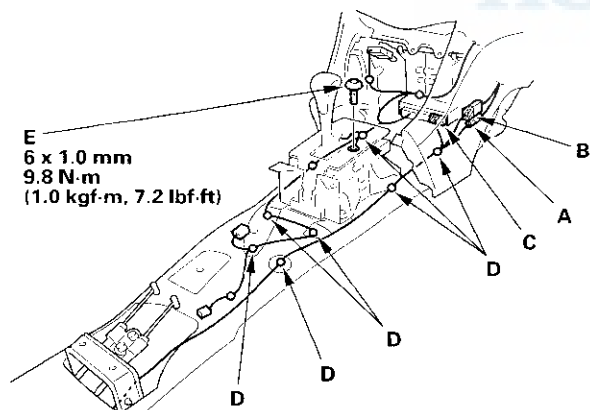
5. Detach the clips, then remove the footrest (A).

Fastener Locations

▷ : Clip, 2



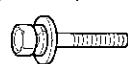
6. Disconnect the antenna lead (A) and antenna connector (B). Disconnect the side curtain airbag subharness connector (C). Detach the harness clips (D), and using a T30 Torx bit, remove the ground bolt (E).



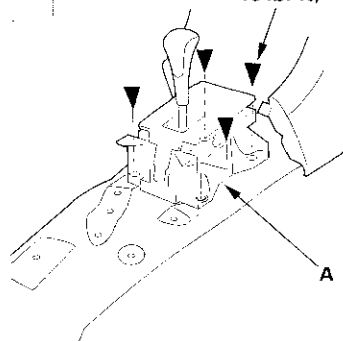
7. Remove the bolts securing the select lever bracket (A).

Fastener Locations

▶ : Bolt, 4



8 x 1.25 mm
22 N·m (2.2 kgf·m,
16 lbf·ft)

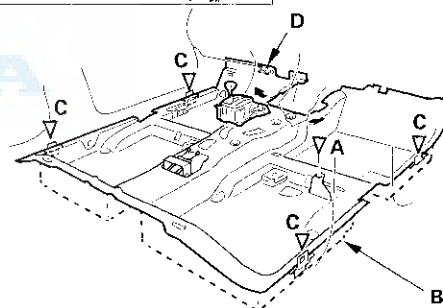


8. Release the clip (A) from middle of the carpet (B).

Fastener Locations

A ▷ : Clip, 1

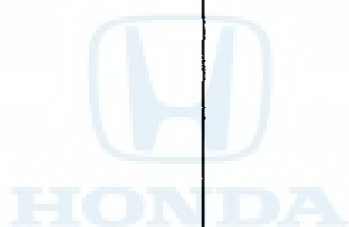
C ▷ : Hook, 4



9. Release the hooks (C) with a flat-tip screwdriver; push the screwdriver toward the door, then lift upward. Remove the fastener (D), and then remove the carpet.



10. Install the carpet in the reverse order of removal, and note these items:
- Take care not to damage, wrinkle or twist the carpet.
 - Make sure the seat harnesses are routed correctly.
 - Replace the clip if it is damaged.
 - Reconnect the negative cable to the battery.
 - If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or Neutral) until the BAT displays at least three segments.
 - Enter the anti-theft codes for the radio and the navigation system, and then enter the customer's audio presets.
 - Set the clock.



Consoles

Center Console Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

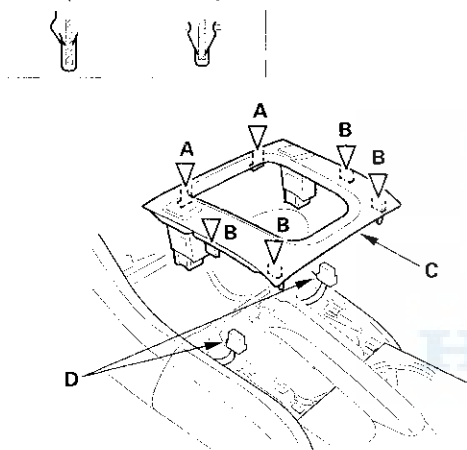
NOTE:

- Take care not to scratch the front seat, dashboard, and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Detach the clips (A, B) by pulling the center console front panel (C) up. Disconnect the seat heater switch connectors (D).

Fastener Locations

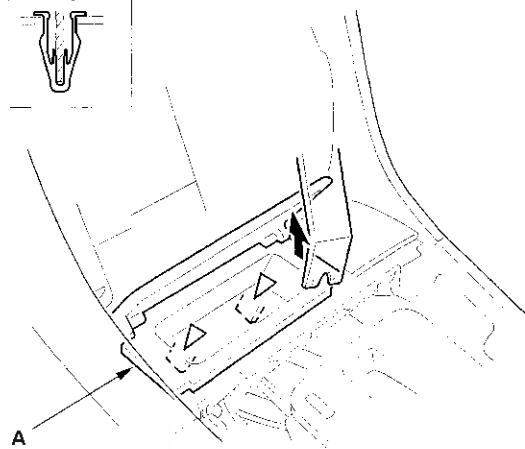
A▷ : Clip, 2 B▷ : Clip, 4



2. Pry up on both rear corner gaps under the rubber surface of the console pocket (A) with a trim tool, and detach the clips, then remove the pocket.

Fastener Locations

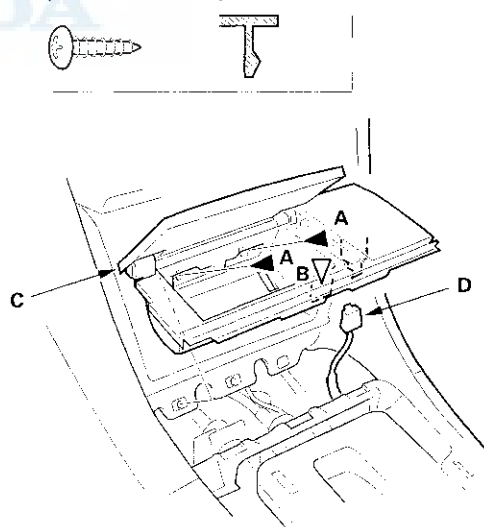
▷ : Clip, 2



3. Remove the screws (A), detach the hook (B) by pulling the center holder (C) up, and disconnect the front accessory power socket connector (D).

Fastener Locations

A▷ : Screw, 2 B▷ : Hook, 1

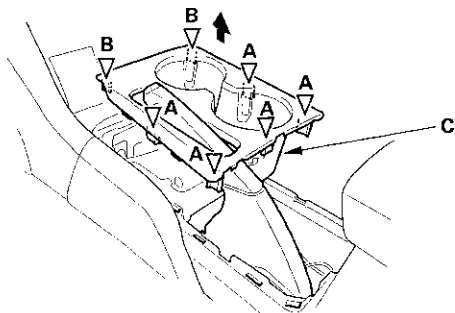




4. Detach the clips (A, B) by pulling the center console rear panel (C) up.

Fastener Locations

A▷ : Clip, 5 B▷ : Clip, 2

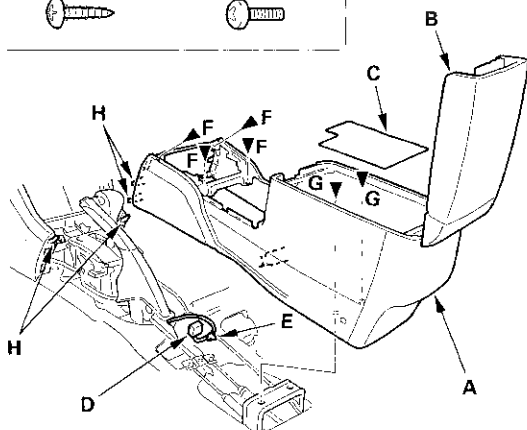


5. Remove the center console (A).

- 1 Open the console box lid (B) then remove the console mat (C).
- 2 Disconnect the rear accessory power socket connector (D), and detach the clip (E).
- 3 Remove the screws (F, G), then pull the rear portion of the console up to release the hooks (H), then remove it.

Fastener Locations

F▷ : Screw, 4 G▷ : Screw, 2



6. Install the console in the reverse order of removal, and replace any damaged clips.

Center Console Armrest Disassembly/Reassembly

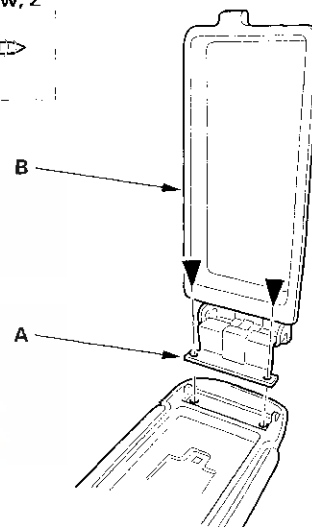
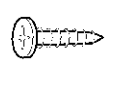
NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch armrest.

1. Remove the center console armrest (see step 2 on page 20-65).
2. Remove the screws, then remove the armrest hinge (A) and the console tray (B) as an assembly.

Fastener Locations

▷ : Screw, 2



3. Slide the console armrest forward fully.

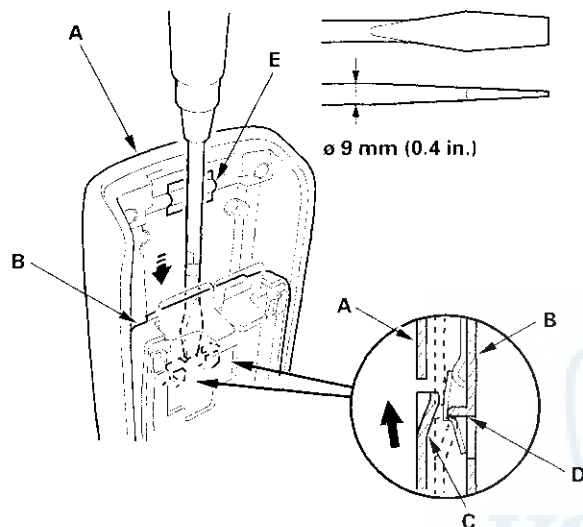
(cont'd)

Consoles

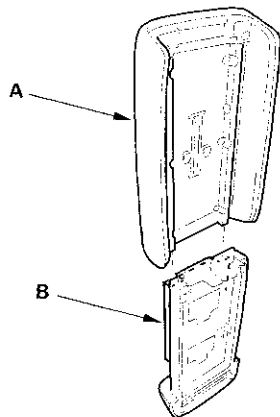
Center Console Armrest Disassembly/Reassembly (cont'd)

4. Insert a large flat-tip screwdriver wrapped with protective tape into the center of the gap between the console armrest (A) and the console armrest base (B), and gently push it straight down until both inside hooks (C) of the console armrest come off the stop portions (D) of the console base.

NOTE: Apply protective tape (E) to the projection in the back surface of the console armrest to prevent damage.



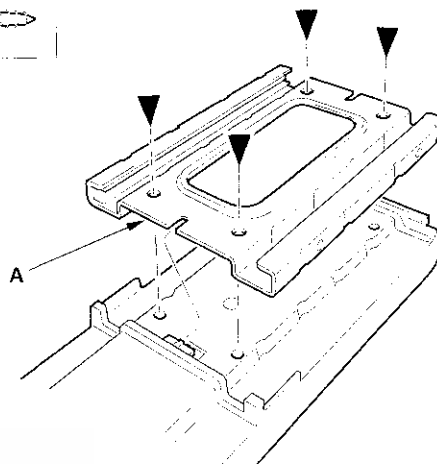
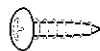
5. Slightly slide the console armrest forward to get the inside hooks over the stop portions, then remove the flat-tip screwdriver from the gap.
6. Remove the console armrest (A) from the guide rails of the console armrest base (B).



7. Remove the screws, then remove the slide bracket (A).

Fastener Locations

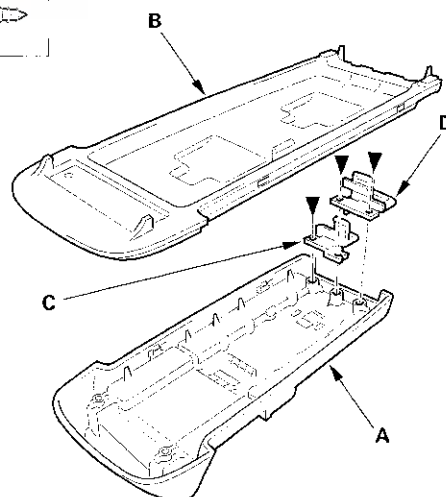
► : Screw, 4



8. Separate the console armrest upper base (A) from the lower base (B). Remove the screws, then remove the armrest lock (C) and the tray lock (D) from the upper base.

Fastener Locations

► : Screw, 3



9. Reassemble the console armrest in the reverse order of disassembly.



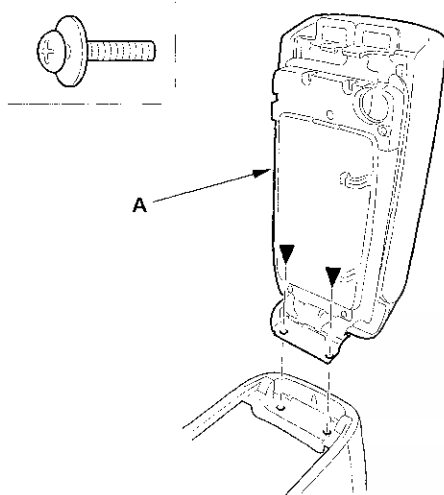
Center Console Rear Cover Replacement

NOTE: Take care not to scratch the center console.

1. Remove the center console (see page 20-62).
2. Open the center console armrest (A) and remove the hinge mounting screws, then remove the armrest.

Fastener Locations

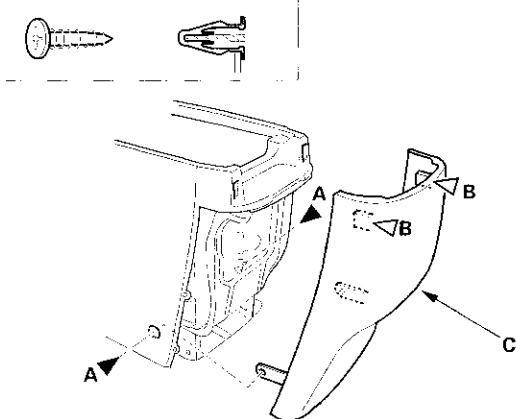
► : Screw, 2



3. Remove the screws (A) and detach the clips (B) then remove the center console rear cover (C).

Fastener Locations

A ► : Screw, 2 B ► : Clip, 2



4. Install the cover in the reverse order of removal.

Dashboard

Instrument Panel Removal/ Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

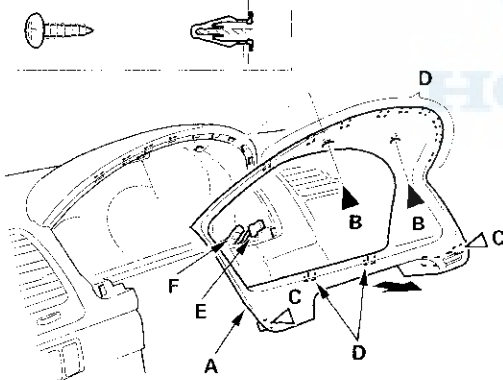
1. Tilt the steering column down.

2. Remove the instrument panel (A).

- 1 Remove the screws (B).
- 2 Gently pull out along the bottom to release the clips (C) and hooks (D).
- 3 Gently pull out the upper portion of the panel.
- 4 Disconnect the in-car temperature sensor connector (E) and the air hose (F).

Fastener Locations

B ► : Screw, 2 C ▷ : Clip, 2



3. Install the panel in the reverse order of removal. Make sure the in-car temperature sensor connector is plugged in properly, and the air hose is connected securely.

Instrument Upper Visor Removal/ Installation

NOTE: Take care not to scratch the dashboard and related parts.

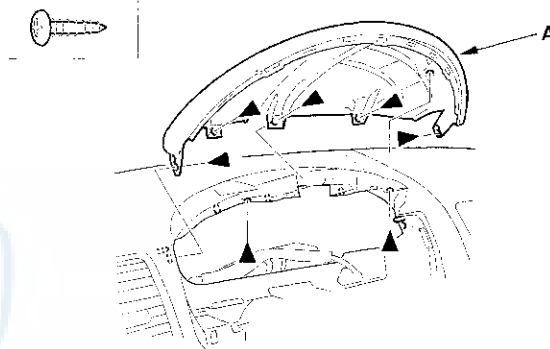
1. Remove these items:

- Instrument panel (see page 20-66)
- Gauge control module (see page 22-235)

2. Remove the screws, then remove the instrument upper visor (A).

Fastener Locations

► : Screw, 7



3. Install the visor in the reverse order of removal.



Driver's Dashboard Lower Cover Removal/Installation

NOTE:

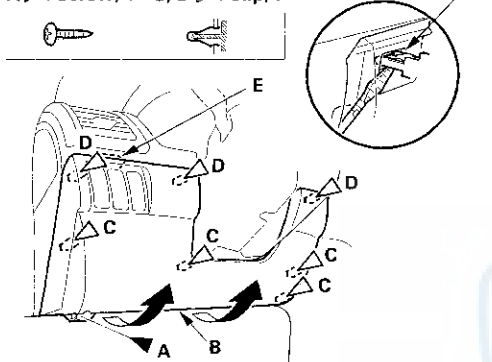
- Take care not to scratch the dashboard and related parts.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.

1. Adjust the steering column upward.

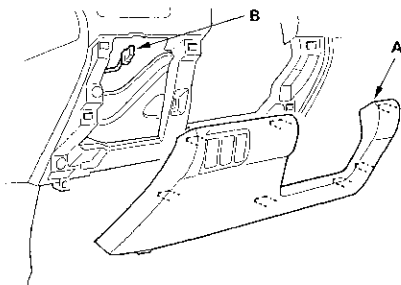
2. Remove the screw (A).

Fastener Locations

A ▶ : Screw, 1 C, D ▶ : Clip, 7



3. Pull out the bottom of the driver's dashboard lower cover (B) to detach the lower clips (C).
4. Detach the upper clips (D) and a hook (E) by pulling the driver's dashboard lower cover back.
5. If any of the clips (C, D) securing the driver's dashboard lower cover is hard to detach, pry it with a flat-tip screwdriver.
6. Remove the driver's dashboard lower cover (A). Disconnect the TCS off switch connector (B).



7. Install the cover in the reverse order of removal, and make sure the TCS off switch connector is plugged in properly.

Driver's Dashboard Under Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the driver's dashboard lower cover (see page 20-67).

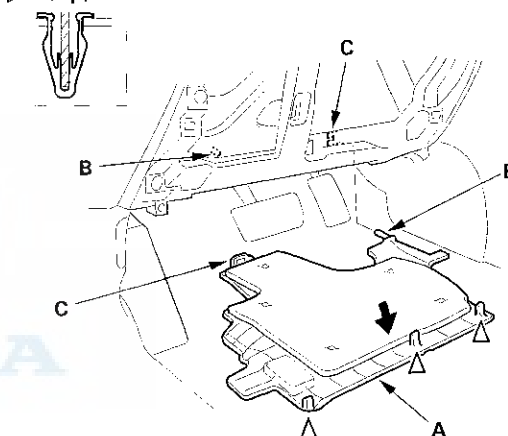
2. Remove the driver's dashboard under cover (A).

-1 Gently pull down the rear edge to detach the clips.

-2 Pull the cover away to release the pins (B) from the holders (C).

Fastener Locations

▶ : Clip, 3



3. Install the cover in the reverse order of removal.

Dashboard

Upper Panel Removal/Installation

Special Tools Required

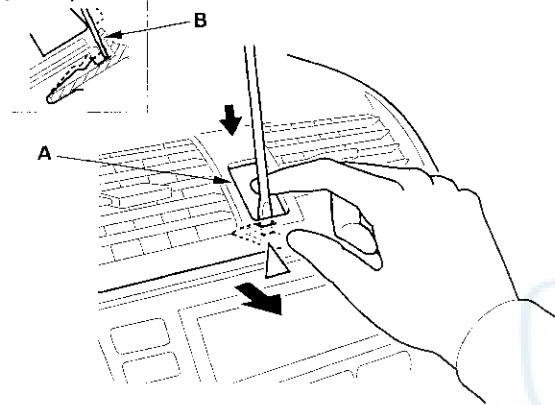
Upper panel/vent removal tool 07AAC-SDAA100

NOTE: Take care not to scratch the dashboard and related parts.

1. Push the hazard warning switch button (A). Carefully insert a flat-tip screwdriver into the slot (B) below the button, and push down on the center clip.

Fastener Location

▷ : Clip, 1

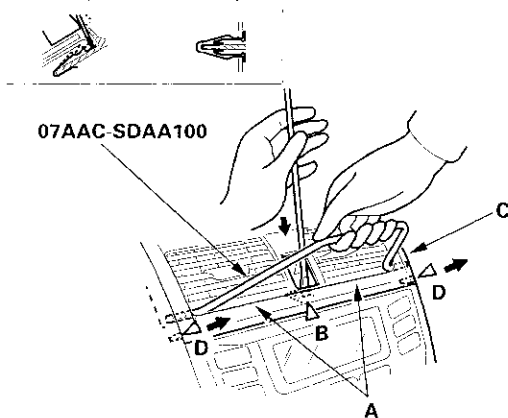


With the special tool and a flat-tip screwdriver

2. Set both ends of the special tool in the center vent openings (A) as shown. While pressing the center clip (B) down, pull the upper panel (C) back with the tool to detach the clips (D).

Fastener Locations

B▷ : Clip, 1 D▷ : Clip, 2

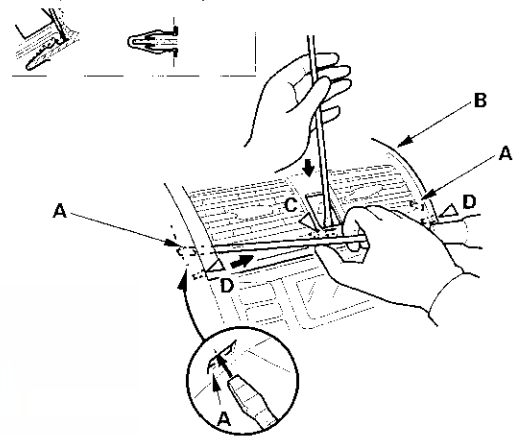


With two flat-tip screwdrivers

3. Carefully insert a flat-tip screwdriver wrapped with tape into the slot (A) on one side of the upper panel (B). While pressing down on the center clip (C), carefully pull out on the side of the panel to detach the clips (D). Repeat this operation on the other side of the panel.

Fastener Locations

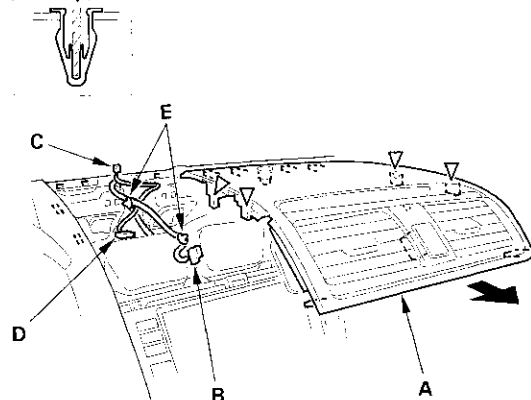
C▷ : Clip, 1 D▷ : Clip, 2



4. Pull the upper panel (A) in the direction shown to release the remaining clips, disconnect the hazard warning switch connector (B), sunlight sensor connector (C) and navigation subdisplay connector (D). Detach the harness clips (E), then remove the upper panel.

Fastener Locations

▷ : Clip, 4



5. Install the panel in the reverse order of removal, and make sure each connector is plugged in properly.



Center Pocket Removal/Installation

Without Navigation System

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

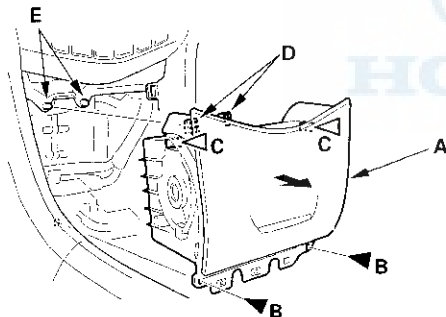
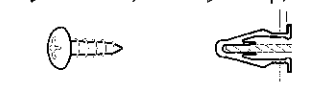
NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. Remove the center holder (see page 20-62).
2. Remove the center pocket (A).
 - 1 Remove the screws (B).
 - 2 Open the lid, then pull the pocket back by hand to detach the clips (C).
 - 3 Close the lid, then remove the pocket.

Fastener Locations

B ► : Screw, 2 C ▷ : Clip, 2



3. Install the pocket in the reverse order of removal, and note these items:
 - Make sure the holders (D) are installed onto the pins (E) properly.
 - Push the clipped portions into place securely.
 - Make sure the center pocket lid opens smoothly.

With Navigation System

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

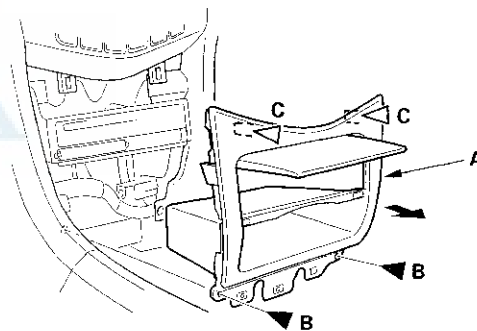
- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.

1. Remove the center holder (see page 20-62).
2. Remove the center pocket (A).

- 1 Remove the screws (B).
- 2 Open the lid, then pull the pocket back by hand to detach the clips (C).

Fastener Locations

B ► : Screw, 2 C ▷ : Clip, 2



3. Install the pocket in the reverse order of removal, and note these items:
 - Push the clipped portions into place securely.
 - Make sure the center pocket lid opens smoothly.

Dashboard

Glove Box Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

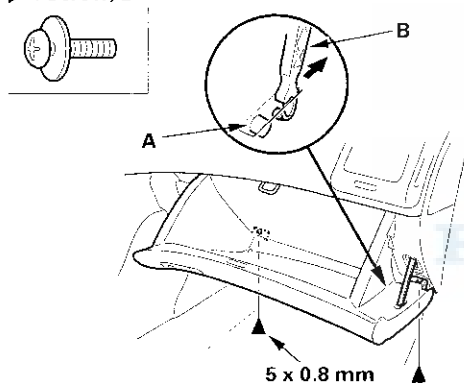
NOTE:

- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

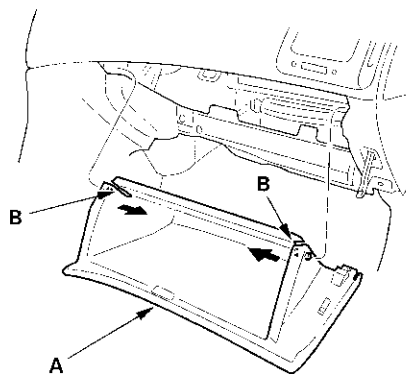
1. Detach the hook (A) of the glove box damper (B), and remove the screws.

Fastener Locations

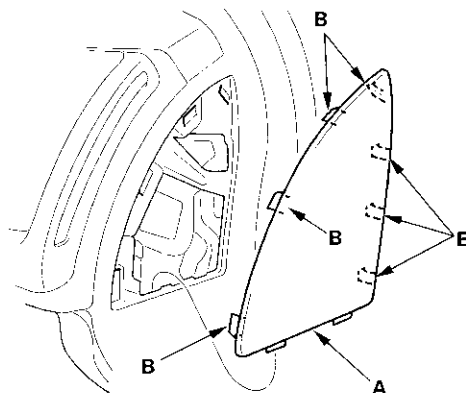
► : Screw, 2



2. While holding the glove box (A), release the glove box stop (B) on each side from the dashboard by pushing them in, then remove the glove box.



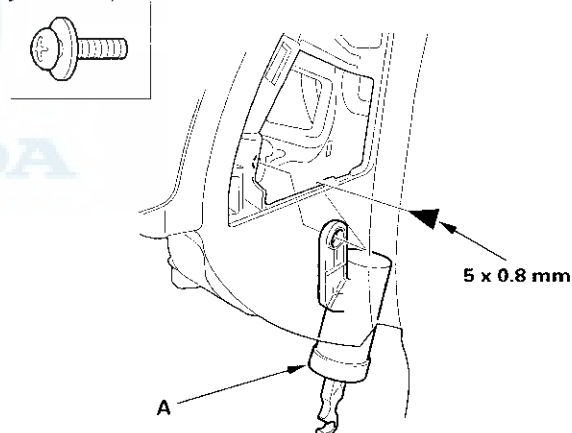
3. Open the passenger's door, and gently pull out on the front of the dashboard side cover (A) to release the hooks (B), and remove the cover.



4. Remove the screw, then remove the glove box damper (A).

Fastener Location

► : Screw, 1



5. Install the glove box in the reverse order of removal.

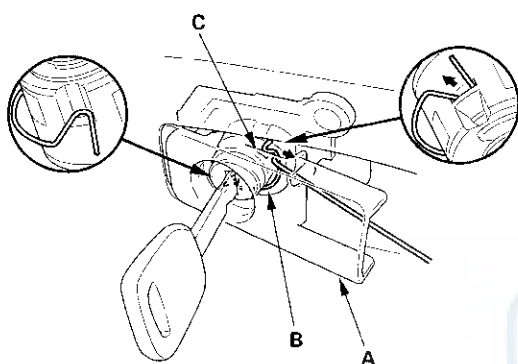


Glove Box Lock Cylinder Replacement

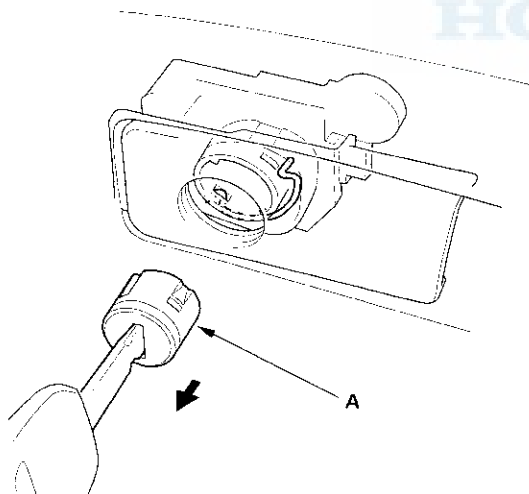
NOTE: Take care not to scratch the glove box.

1. Remove the glove box (see page 20-70).
2. Pull out the glove box knob (A) and use a hooked-shaped tool to pull the top end of the retainer (B) out of its slot (C).

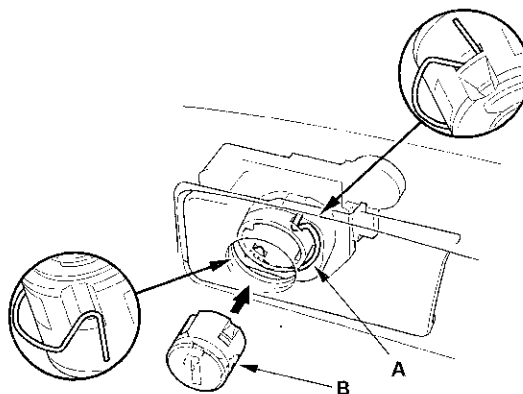
NOTE: Do not remove the retainer entirely. Leave the other side of it in the original position when removing and installing the lock cylinder.



3. Remove the glove box lock cylinder (A).



4. Reinstall the top of the retainer (A) in its original position, then reinstall the lock cylinder (B). Push the cylinder into place securely until the retainer snaps into place.



Dashboard

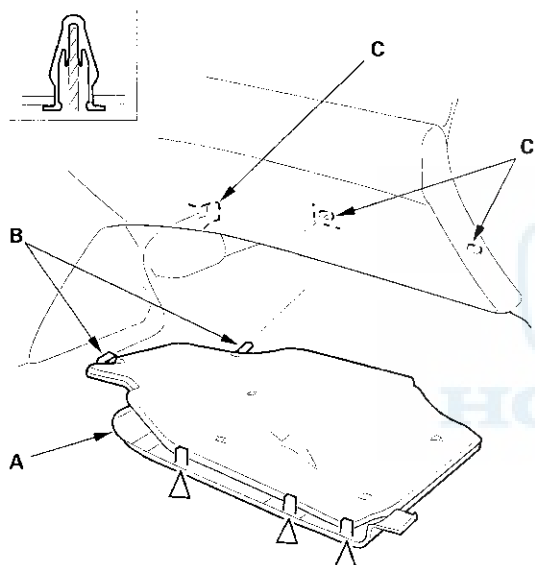
Passenger's Dashboard Lower Cover Removal/Installation

NOTE: Take care not to scratch the dashboard and related parts.

1. Remove the passenger's dashboard lower cover (A).
 - 1 Gently pull down the edge nearest the glove box to detach the clips.
 - 2 Pull the cover away to release the pins (B) from the holders (C).

Fastener Locations

▷ : Clip, 3



2. Install the cover in the reverse order of removal.

Dashboard Side Vent Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

Driver's

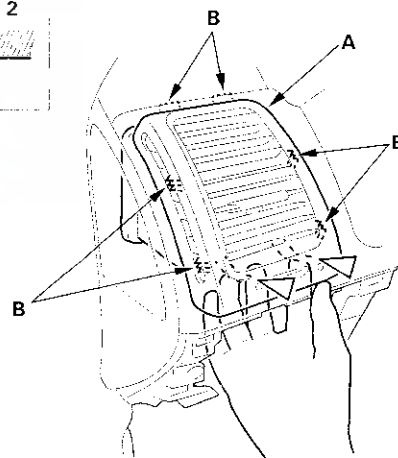
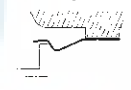
NOTE:

- Take care not to scratch the dashboard and related parts.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Remove the driver's dashboard lower cover (see page 20-67).
2. Push up the lower clips by hand, then push out the driver's side vent (A) by releasing the upper and side tabs (B).

Fastener Locations

▷ : Clip, 2



3. Reinstall the tab portions of the vent first, then push the clip portions into place securely.



Passenger's

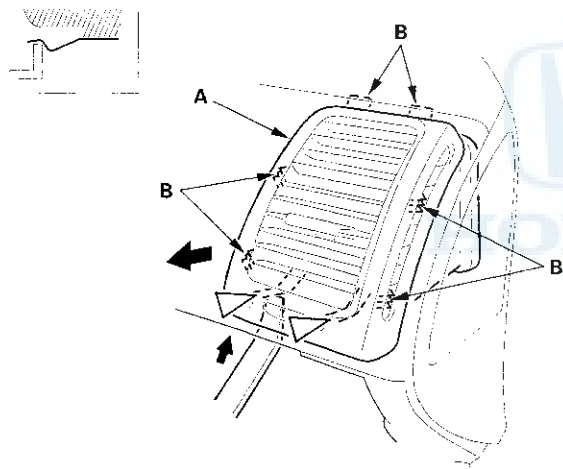
NOTE:

- Take care not to scratch the dashboard and related parts.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Detach the hook of the glove box damper, then lower the glove box (see page 20-70).
2. Carefully insert the trim tool under the inner clip, and push it up.
3. Carefully insert the trim tool in under the outside of the passenger's side vent (A) next to the outer clip. Pry out the outer clip to release the upper and side tabs (B). Then remove the vent.

Fastener Locations

▷ : Clip, 2



4. Reinstall the tab portions of the vent first, then push the clip portions into place securely.

Dashboard/Steering Hanger Beam Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- When prying with a flat-tip screwdriver, wrap it with protective tape, and apply protective tape around the related parts to prevent damage.
- Have an assistant help you when removing and installing the dashboard/steering hanger beam.
- Take care not to scratch the dashboard, body and other related parts.
- Put on gloves to protect your hands.

1. Make sure you have the anti-theft codes for the radio and the navigation system, and then write down the audio presets.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.

3. Remove these items:

- Center console (see page 20-62)
- Driver's dashboard lower cover (see page 20-67)
- Passenger's dashboard lower cover (see page 20-72)
- Center pocket, with navigation system (see page 20-69), without navigation system (see page 20-69)
- Glove box (see page 20-70)
- Driver's dashboard under cover (see page 20-67)
- Kick panels, both sides (see page 20-45)
- A-pillar trim, both sides (see page 20-47)
- Steering column (see page 17-9)
- Shift lever (see page 14-257)

(cont'd)

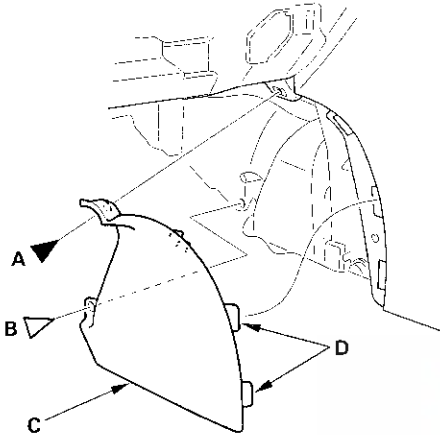
Dashboard

Dashboard/Steering Hanger Beam Removal/Installation (cont'd)

4. Remove the screw (A) and release the clip (B), then remove the driver's center lower cover (C) by releasing the hooks (D).

Fastener Locations

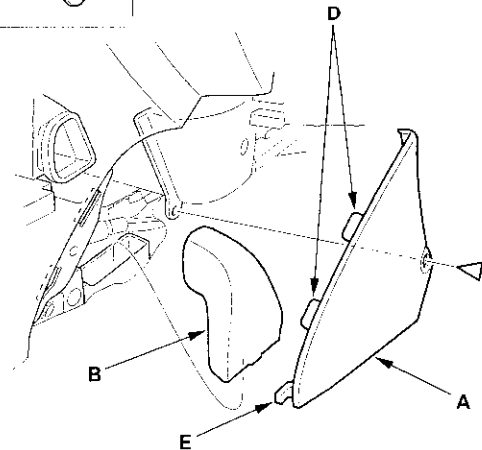
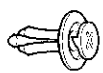
A ► : Screw, 1 B ► : Clip, 1



5. Release the clip, then remove the passenger's center lower cover (A) and the rear vent duct (B) by releasing the hooks (D) and the hook (E).

Fastener Location

► : Clip, 1

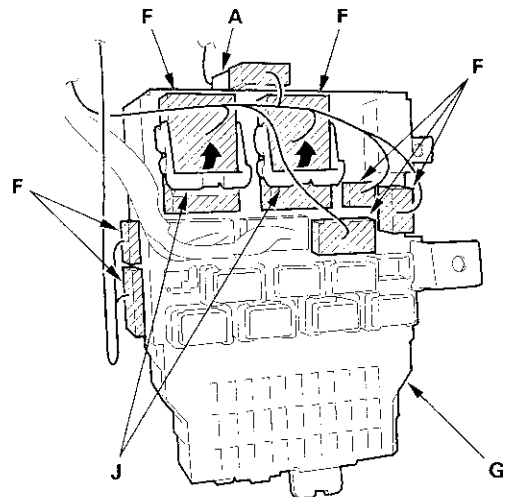
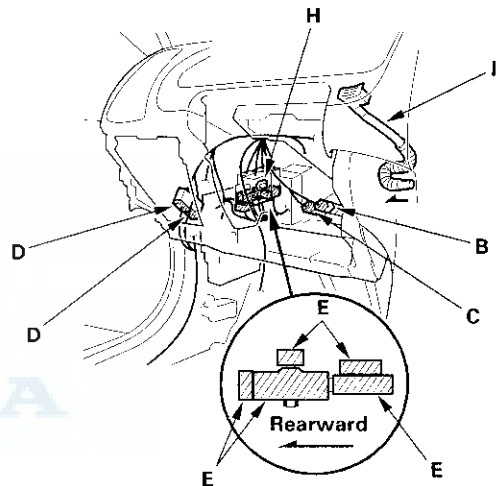


6. Remove the SRS control unit (see page 24-153).

Driver's side

7. From under the dash, disconnect the interior wire harness connector (A), brake switch connector (B), idle stop switch connector (C), floor wire harness connectors (D), engine compartment wire harness connectors (E), and disconnect the dashboard wire harness connectors (F) from the under-dash fuse/relay box (G), then detach the connector clip (H). Disconnect the air hose (I).

NOTE: Lift the white wire harness connector locks (J) before trying to remove the connectors from the fuse box.

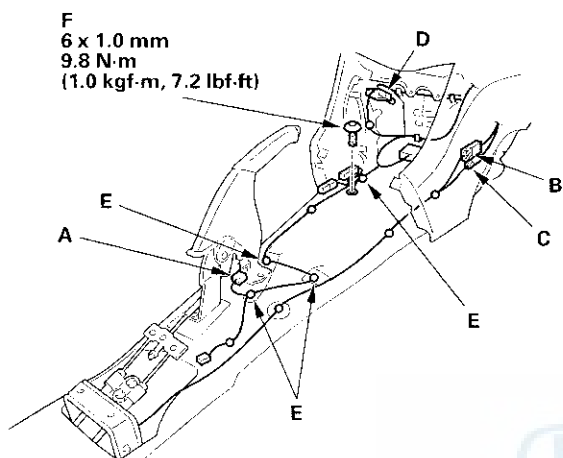




Middle portion (shift lever portion)

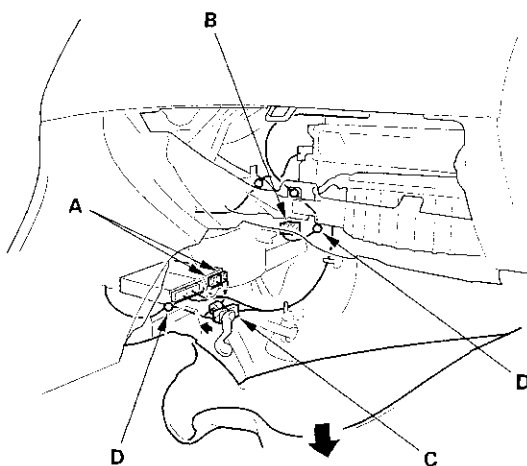
8. Disconnect the parking brake switch connector (A), radio antenna connector (B), antenna lead (C), A/C subharness connector (D), then release the wire harness clips (E).

Using a T30 Torx bit, remove the ground bolt (F).



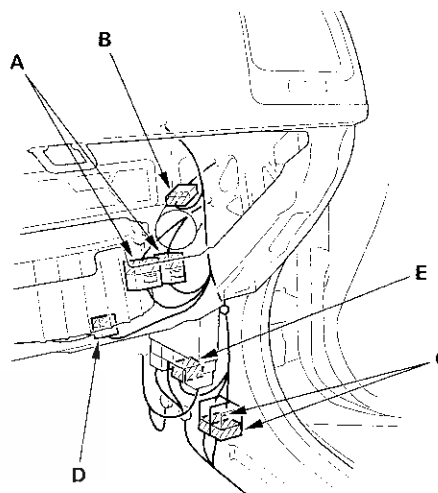
Middle portion (passenger's side)

9. From under the dash, disconnect the ECM/PCM connectors (A), power transistor connector (B), and engine wire harness connector (C), then release the wire harness clips (D).



Passenger's side

10. From under the dash, disconnect the passenger's door wire harness connectors (A), roof wire harness connector (B), floor wire harness connectors (C), blower motor connector (D), and EPS control unit connector (E).

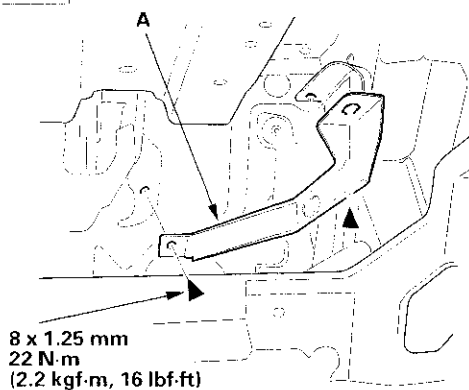


11. Detach all of the harness and connector clips.

12. Remove bolts, then remove the brake pedal support member (A).

Fastener Locations

► : Bolt, 2



13. Cover the parking brake handle to protect it.

(cont'd)

Dashboard

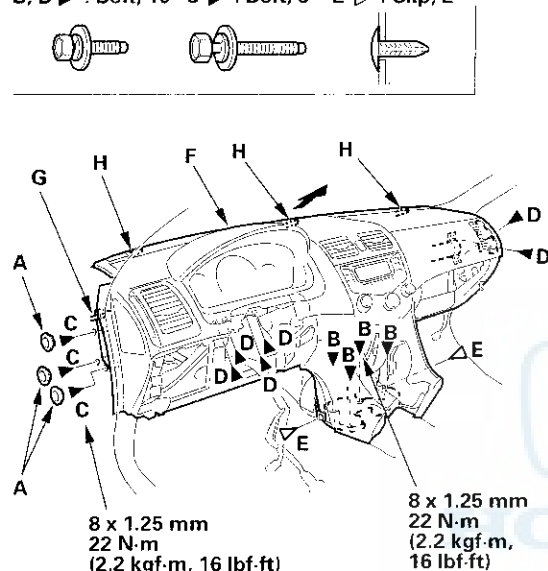
Dashboard/Steering Hanger Beam Removal/Installation (cont'd)

14. Open the driver's door, and remove the caps (A), then remove the bolts (B, C, D), and clips (E) and lift up on the dashboard (F)/steering hanger beam to release it from the guide pins (G, H).

NOTE: Before removing the dashboard/steering hanger beam, make sure all the harnesses have been disconnected.

Fastener Locations

B, D ▶ : Bolt, 10 C ▶ : Bolt, 3 E ▶ : Clip, 2



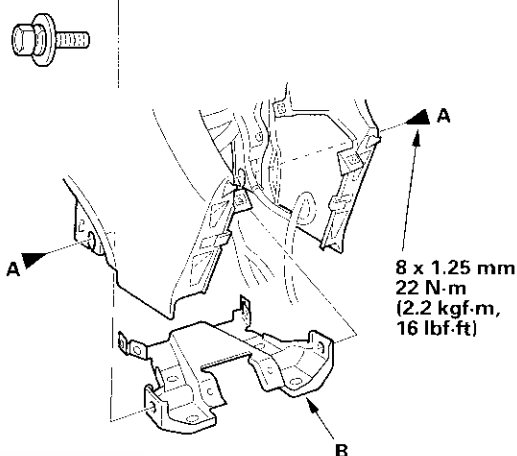
15. Carefully remove the dashboard/steering hanger beam through the front door opening.

NOTE: Lay the dashboard/steering hanger beam on its front or back. Do not stand it on the lower console opening or you may damage it.

16. Remove the bolts (A), then remove the center bracket (B).

Fastener Locations

A ▶ : Bolt, 2



17. Install the dashboard/steering hanger beam in the reverse order of removal, and note these items:

- Apply liquid thread lock to the bolts securing the center bracket and the dashboard center frame before reinstallation.
- Reinstall the center bracket on the center frame, and slightly tighten the mounting bolts. Reinstall the dashboard/steering hanger beam on the body. After tightening both dashboard/steering hanger beam mounting bolts, tighten the center bracket mounting bolts and center frame mounting bolts.
- Make sure the dashboard/steering hanger beam fits onto the guide pins correctly.
- Before tightening the bolts, make sure none of the wire harnesses are pinched.
- Make sure the connectors are plugged in properly, and the antenna lead and air hose are connected properly.
- Reconnect the negative cable to the battery.
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or Neutral) until the BAT displays at least three segments.
- Enter the anti-theft codes for the radio and the navigation system, and then enter the customer's audio presets.
- Set the clock.



Dashboard/Steering Hanger Beam Disassembly/Reassembly

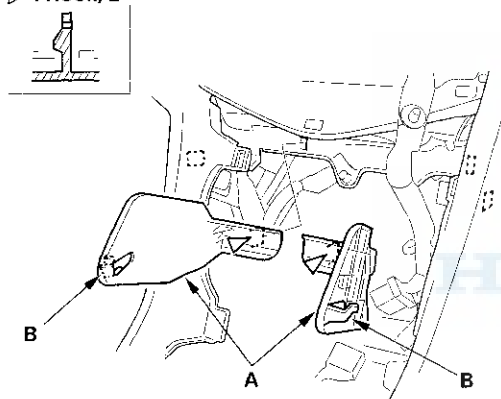
NOTE: Put on gloves to protect your hands.

1. Remove the dashboard/steering hanger beam (see page 20-73).
2. Remove these items from the dashboard:
 - Upper panel (see page 20-68)
 - Instrument panel (see page 20-66)
 - Gauge control module (see page 22-235)
 - Audio-HVAC-Display module (see page 23-69)
 - Passenger's airbag (see page 24-140)
 - Glove box damper (see step 4 on page 20-70)

3. Without navigation system: Detach the hooks by pulling both blind covers (A) back, release the hooks (B), then remove the covers.

Fastener Locations

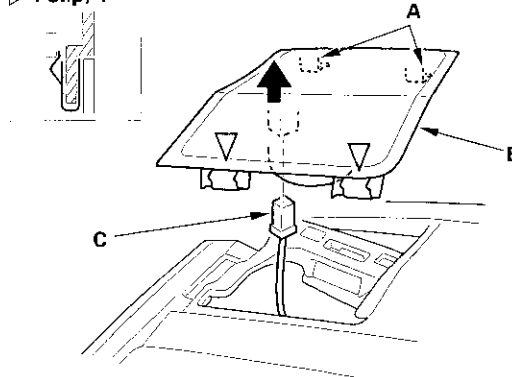
▷ : Hook, 2



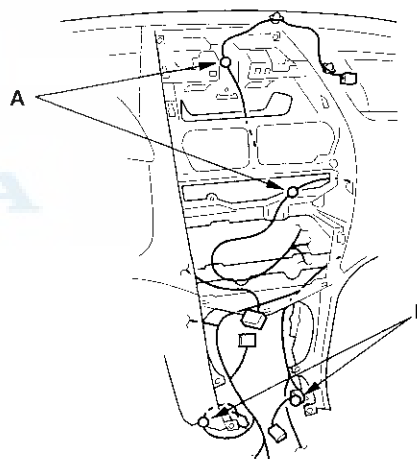
4. On both sides, detach the clips and release the hooks (A), then remove the tweeters (B) or tweeter grille. Disconnect the tweeter connectors (C).

Fastener Locations

▷ : Clip, 4



5. From the front of the dashboard, detach the harness clips (A, B).



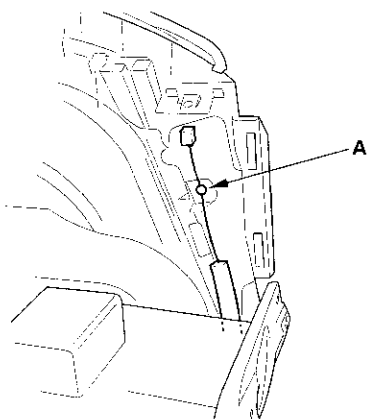
(cont'd)

Dashboard

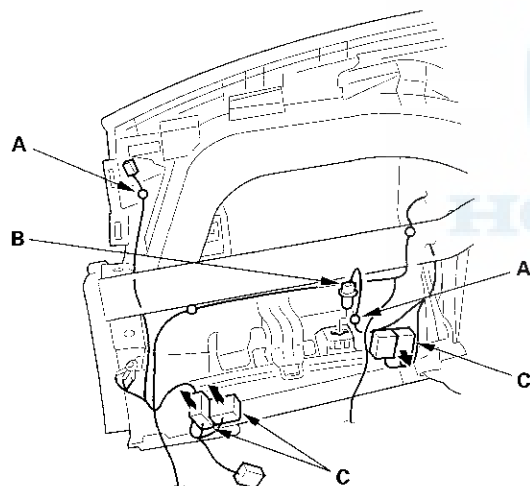
Dashboard/Steering Hanger Beam Disassembly/Reassembly (cont'd)

6. From the back of the dashboard, Detach the harness clips (A) from both sides.

Driver's side



Passenger's side

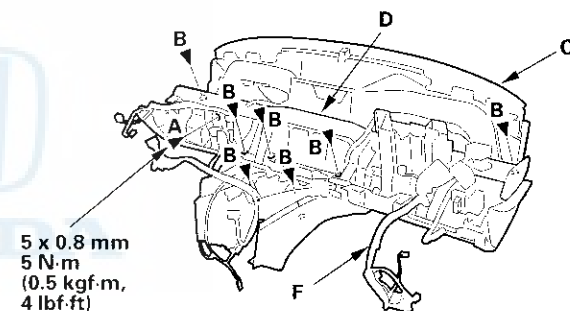
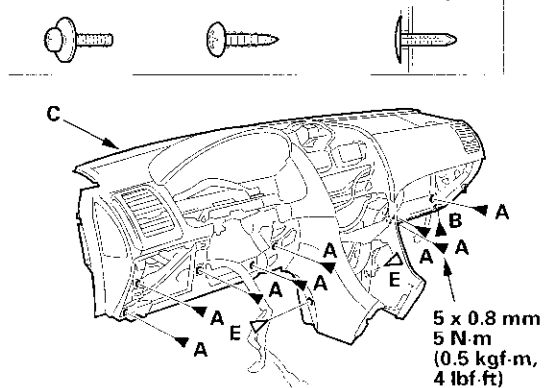


7. On passenger's side disconnect the glove box light bulb socket (B), and detach the connectors (C).

8. Remove the screws (A, B) securing the dashboard (C) and steering hanger beam (D), and detach the clips (E), then separate the dashboard and steering hanger beam.

Fastener Locations

A ► : Screw, 9 B ► : Screw, 8 E ► : Clip, 2

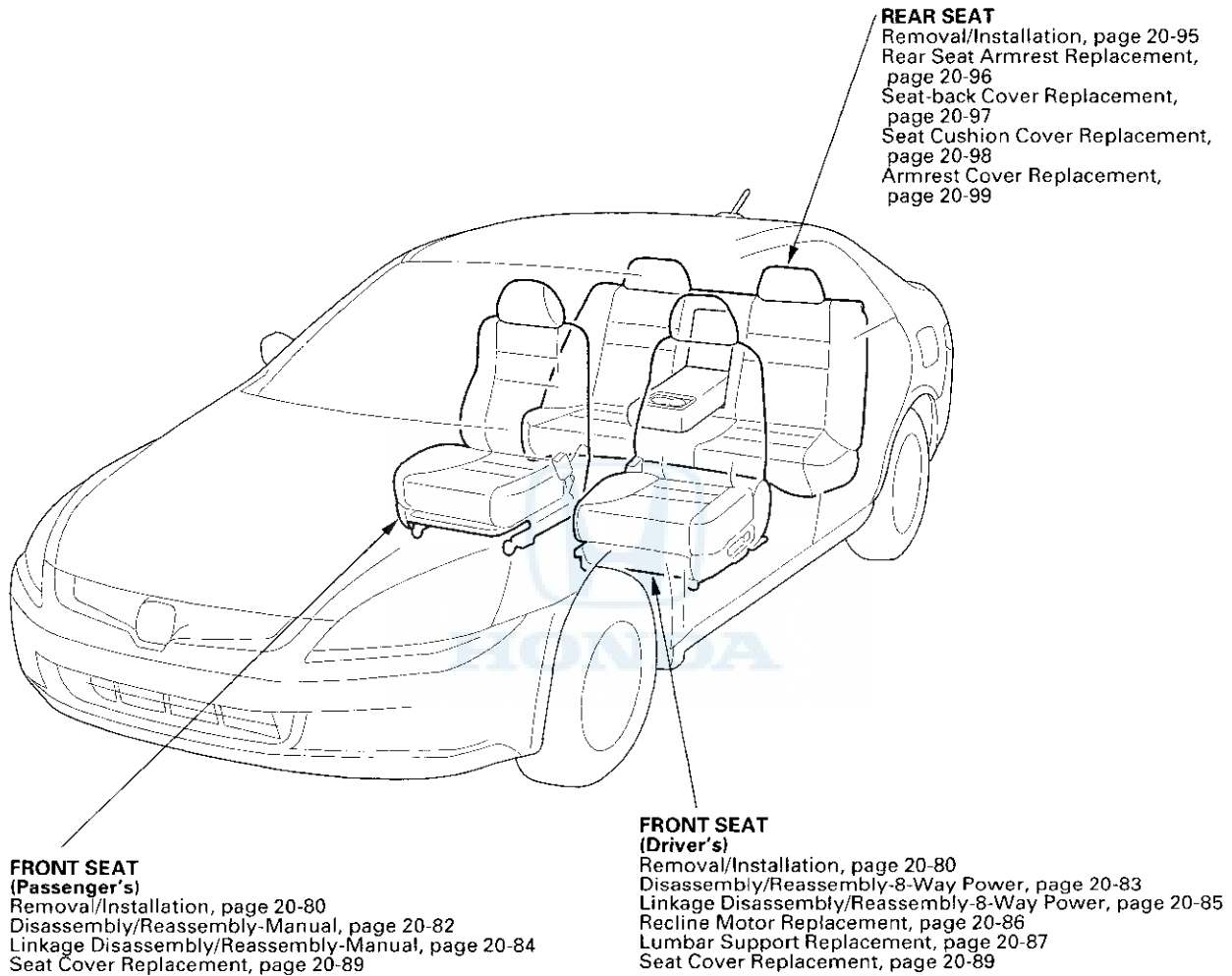


9. Install the dashboard in the reverse order of removal, and note these items:

- Make sure the dashboard wire harness (F) is not pinched.
- Make sure the connectors are plugged in properly, and the glove box light bulb socket is connected securely.



Component Location Index



Seats

Front Seat Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

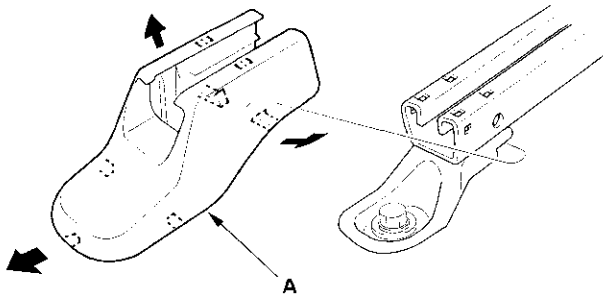
SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE

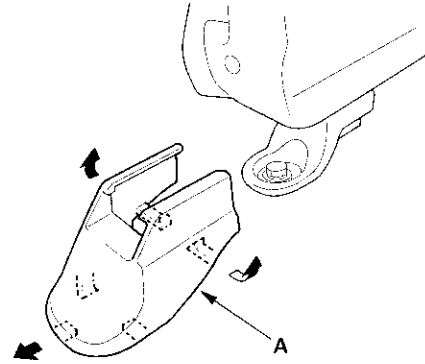
- Put on gloves to protect your hands.
- When prying with a flat-tip screwdriver, wrap it with protective tape to prevent damage.
- Take care not to scratch the body or tear the seat covers.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Make sure you have the anti-theft codes for the radio and the navigation system, and then write down the audio presets.
2. Tilt the steering wheel all the way up and telescope it all the way in.
3. Slide the seat all the way forward, then remove the seat track end covers (A) from the back of both seat tracks.

Manual



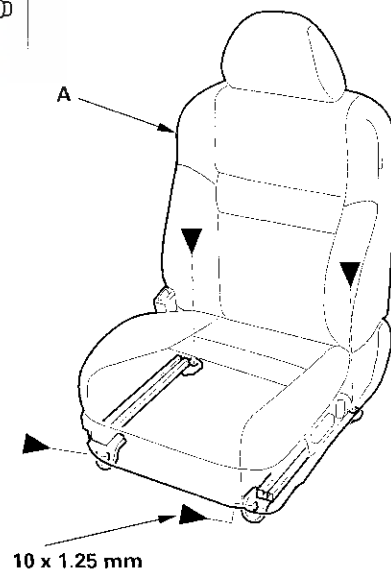
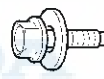
8-way power



4. Slide the seat about half way to the rear so you can access the seat mounting bolts. If you remove the 8-way power seat, fully raise the seat.
5. Disconnect the negative cable from the battery, and wait at least 3 minutes before removing the seat.
6. Remove the bolts securing the front seat (A).

Fastener Locations

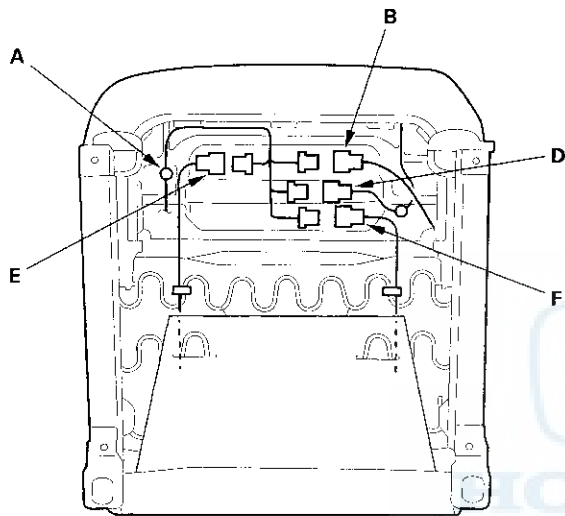
► : Bolt, 4



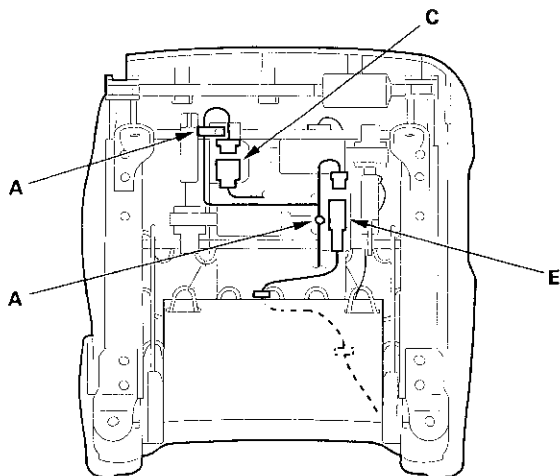


7. Lift up the front seat, then detach the harness clips (A), and disconnect the seat belt switch connector (B) on the passenger's manual seat, the power seat harness connector (C) on the driver's 8-way power seat, the seat heater connector (D) on the passenger's manual seat, the side airbag connector (E) on the driver's and passenger's seat, and the OPDS unit connector (F) on the passenger's manual seat.

Manual seat



8-way power seat



8. With the help of an assistant, carefully remove the front seat through the front door opening.

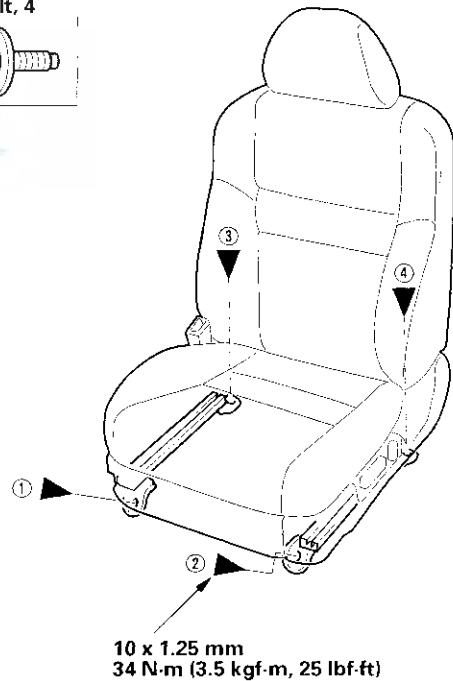
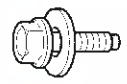
9. Install the seat in the reverse order of removal, and note these items:

- Apply liquid thread lock to the front seat mounting bolts before reinstallation.
- Make sure each connector is plugged in properly.
- Tighten the seat mounting bolts to the specified torque in the sequence shown. Slide the seat all the way back and tighten ① and ②, then slide it forward and tighten ③ and ④.
- Reconnect the negative cable to the battery.
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or Neutral) until the BAT displays at least three segments.
- Enter the anti-theft codes for the radio and navigation system, and then enter the customer's audio presets.
- Set the clock.

Seat mounting bolts tightening sequence

Fastener Locations

► : Bolt, 4



10 x 1.25 mm
34 N·m (3.5 kgf·m, 25 lbf·ft)

Seats

Front Seat Disassembly/Reassembly - Manual

Special Tools Required

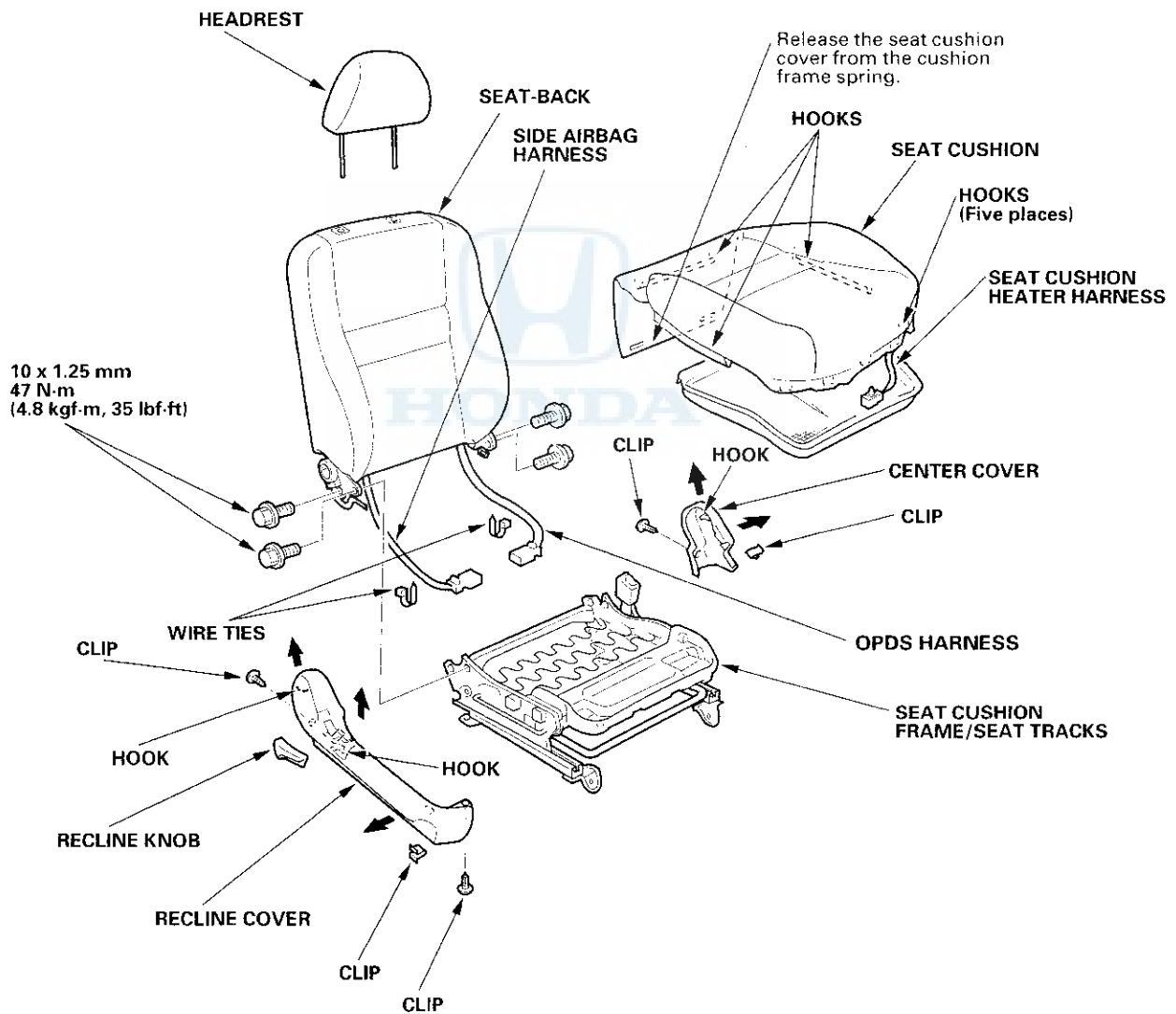
KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Apply multipurpose grease to the moving parts of the seat track.
- To prevent wrinkles in the seat cushion cover, stretch the material evenly over the pad.

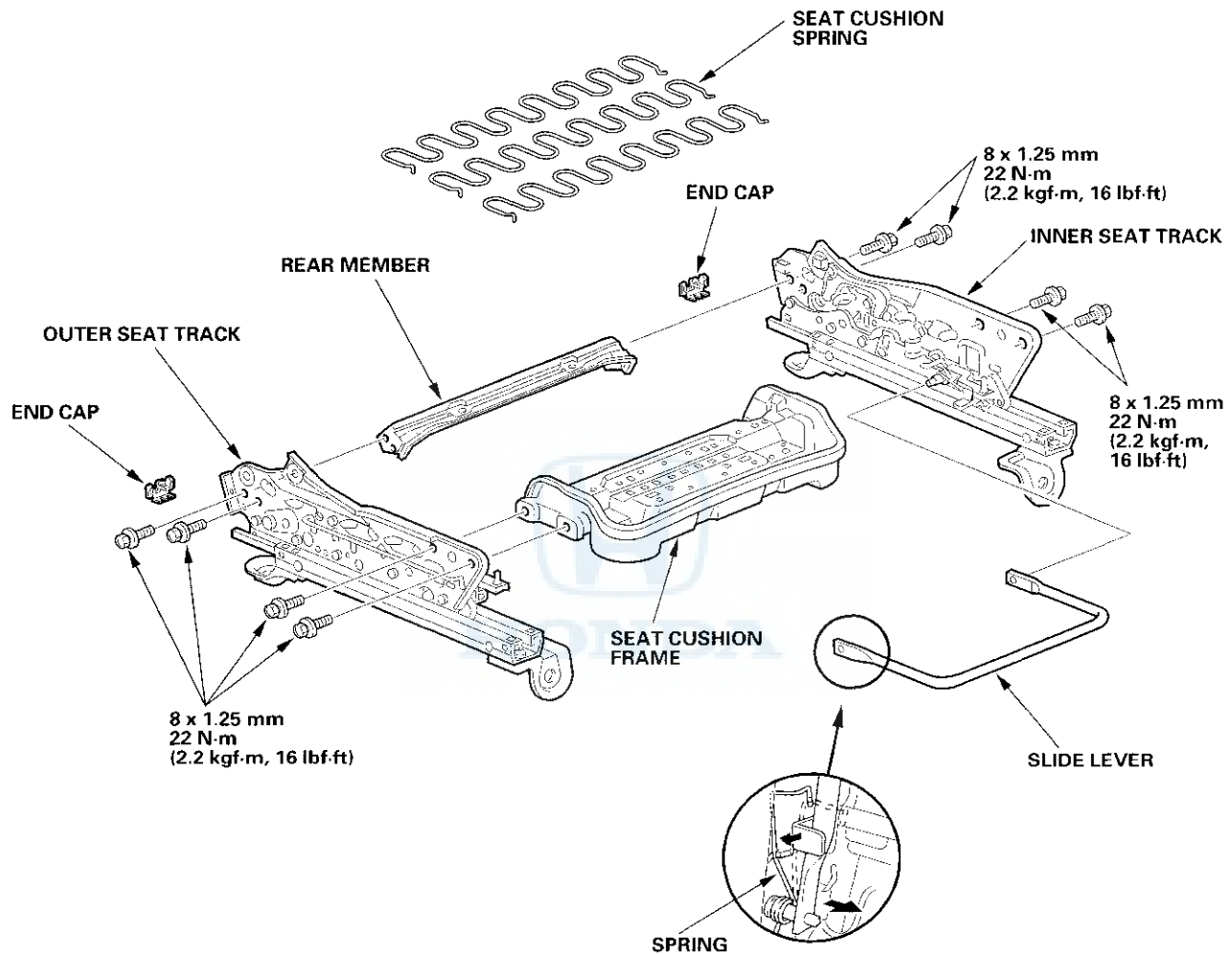


Seats

Front Seat Linkage Disassembly/Reassembly - Manual

NOTE:

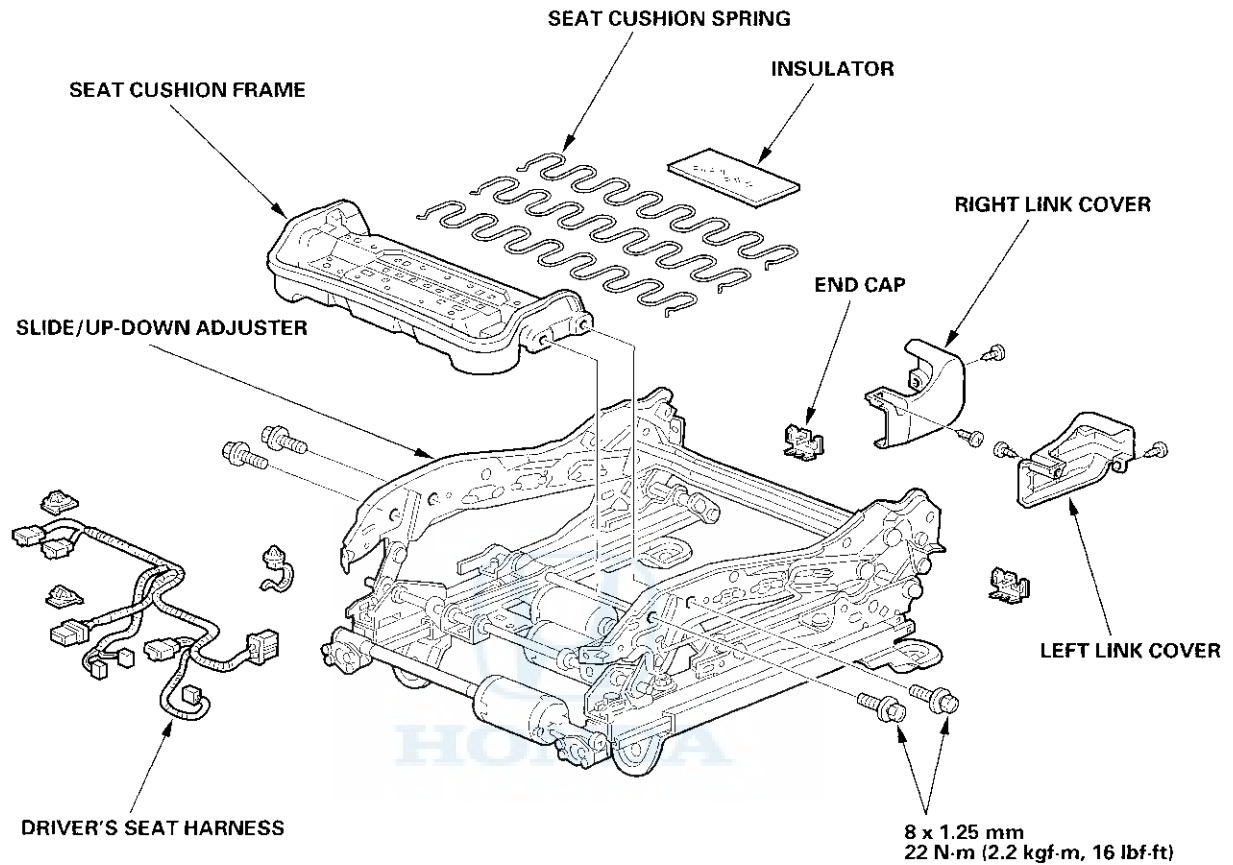
- Put on gloves to protect your hands.
- Apply oil to the pivot portions of the slide locks.
- Apply multipurpose grease to the sliding portions of the seat tracks.





Front Seat Linkage Disassembly/Reassembly - 8-Way Power

NOTE: Apply multipurpose grease to the sliding and pivot portions.



Seats

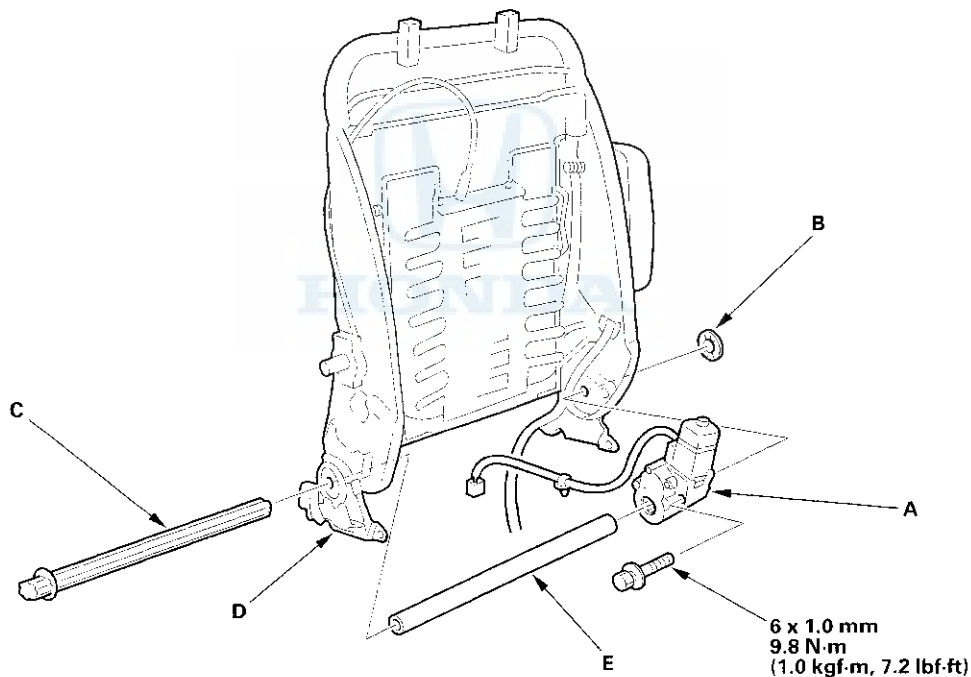
Front Seat Recline Motor Replacement

8-Way Power Seat

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE: Put on gloves to protect your hands.

1. Remove the front seat (see page 20-80).
2. Remove the seat-back cover/pad from the seat-back frame (see page 20-89).
3. Remove the recline motor (A).
 - 1 Release the push nut (B) from the motor side end of the connecting rod (C).
 - 2 Gently tap on the motor side of the connecting rod to remove it from the recline motor and both recline adjusters (D).
 - 3 Remove the rod cover (E).
 - 4 Remove the motor mounting bolt, then remove the recline motor.



4. Install the motor in the reverse order of removal, and note these items:
 - Replace the push nut with a new one. Make sure the push nut is installed correctly.
 - Apply liquid thread lock to the motor mounting bolt before reinstallation.



Front Seat Lumbar Support Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

Driver's Seat

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend the cable.
- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

1. Remove these items:

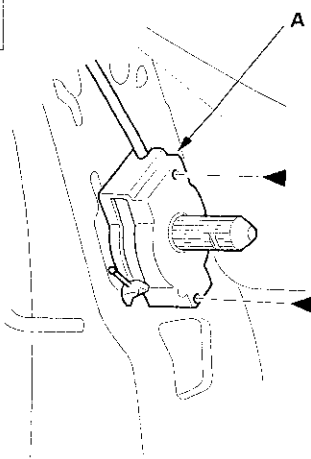
- Lumbar support knob (see step 5 on page 20-89)
- Back panel (see step 6 on page 20-90)

2. Release the hook strips on the inside of the seat-back (see step 7 on page 20-90).

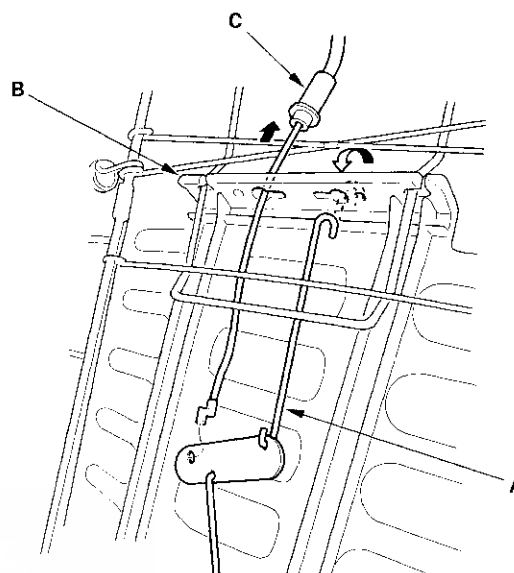
3. Remove the screws securing the lumbar support actuator (A).

Fastener Locations

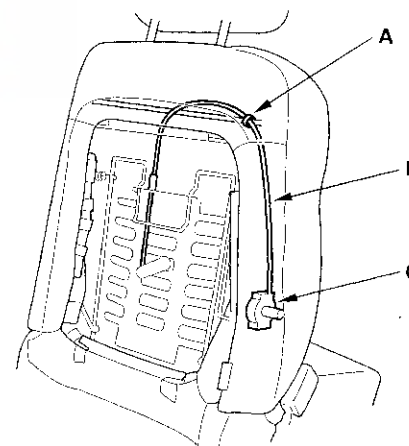
► : Screw, 2



4. Release the hook of the yoke wire (A) from top of the basket (B) to loosen the lumbar support cable (C), then disconnect it.



5. Release the wire tie (A), then remove the lumbar support cable (B) and actuator (C) as an assembly.

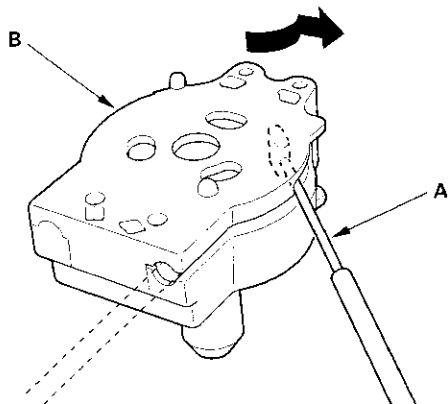


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Seats

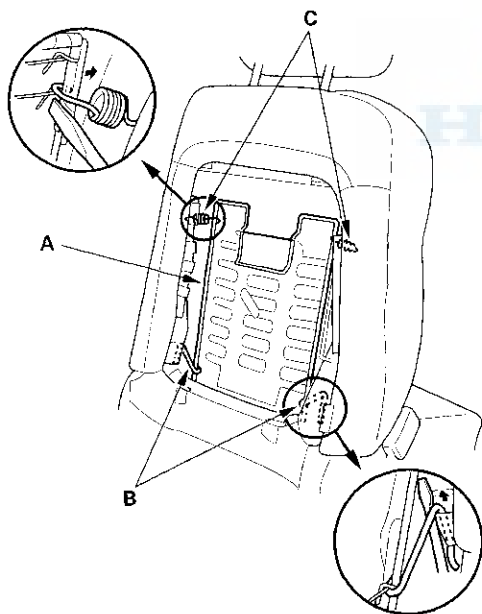
Front Seat Lumbar Support Replacement (cont'd)

6. Disconnect the lumbar support cable (A) from the lumbar support actuator (B).



7. Remove the lumbar support (A).

- 1 Release both lower springs (B) from inside the seat-back.
- 2 Release the lumbar support from both upper springs (C).



8. Install the lumbar support in the reverse order of removal, and note these items:

- Make sure the cable is connected securely.
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the hook strips.
- Replace the back panel clips with new ones.



Front Seat Cover Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

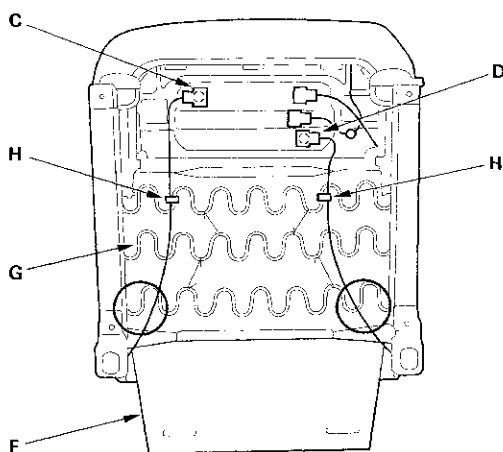
NOTE:

- Seats with a side airbag have a "SIDE AIRBAG" label on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.
- Do not repair any tears or frayed spots of the seat-back cover. If necessary, replace the seat-back cover.
- Take care not to tear the seams or damage the seat covers.
- On the passenger's seat with side airbag, do not touch the OPDS sensor in the seat-back pad, and keep it away from oil. Oil can corrode the sensor causing it to fail.
- Put on gloves to protect your hands.

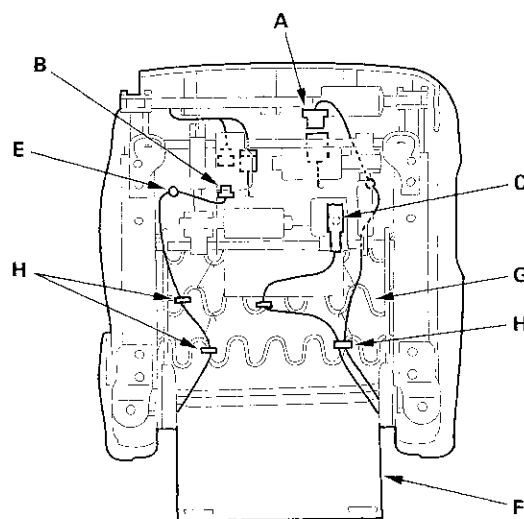
Seat-back Cover

1. Remove the front seat (see page 20-80).
2. Remove the headrest.
3. From under the seat cushion, disconnect the recline motor connector (A), and the seat-back heater connector (B) on the driver's 8-way power seat. Detach the side airbag connector clip (C), the OPDS unit connector clip (D) on the passenger's seat, and harness clips (E). Release the seat cushion cover (F) from the seat cushion frame spring (G), then pull the cover back, and remove the wire ties (H).

Manual seat



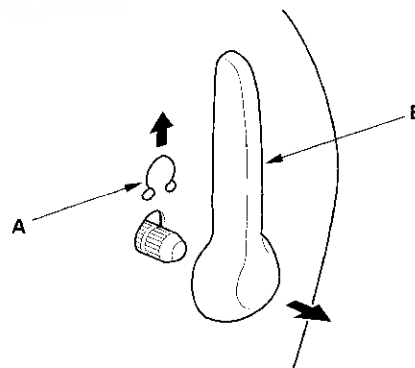
8-way power seat



4. Remove these items from the front seat, then remove the seat-back, manual seat (see page 20-82), 8-way power seat (see page 20-83):

- Recline cover
- Center cover

5. 8-way power seat: Remove the clip (A), then remove the lumbar support handle (B).



(cont'd)

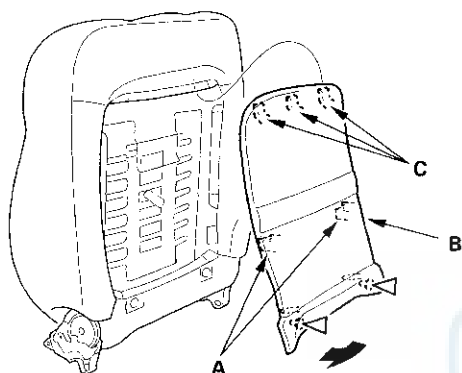
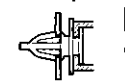
Seats

Front Seat Cover Replacement (cont'd)

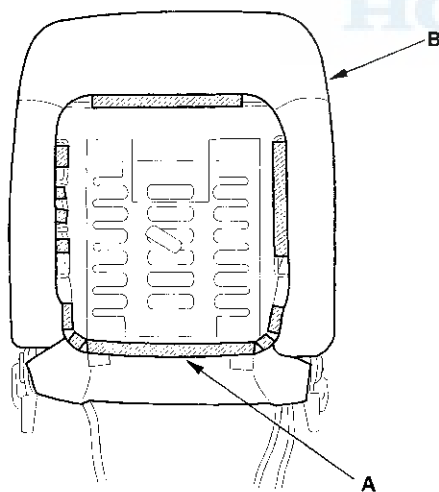
6. Detach the clips and hooks (A) by pulling the bottom of the back panel (B) back, then pull the panel downward to release the hooks (C) from the seat back frame, and remove the panel.

Fastener Locations

▷ : Clip, 2

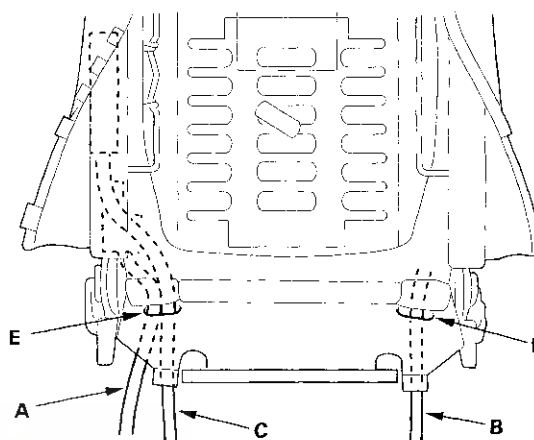


7. Release the hook strips (A), then loosen the seat-back cover (B).

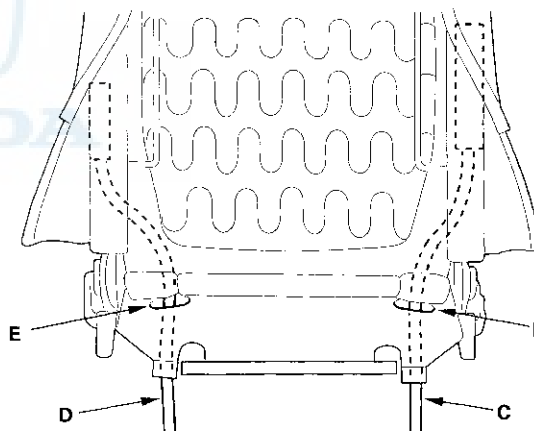


8. Pull the recline motor harness (A), seat-back heater harness (B) (driver's seat), side airbag harness (C) and the OPDS harness (D) (passenger's seat) out through the holes (E) in the seat-back cover.

Driver's seat-back

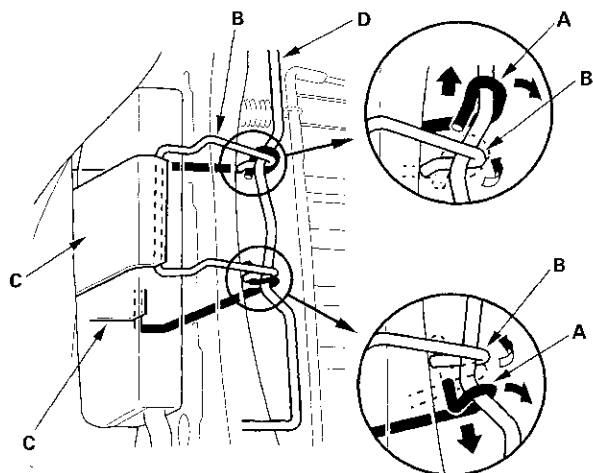


Passenger's seat-back

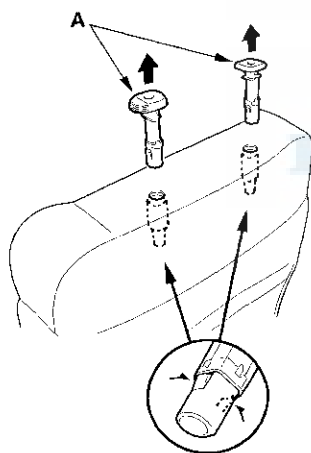




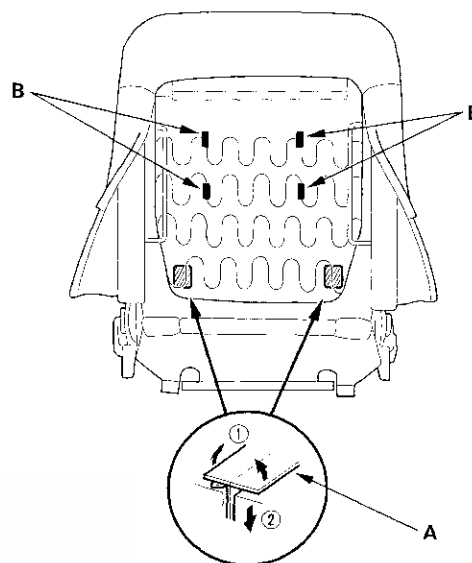
9. Release the front hook (A) and rear hook (B) of the reinforcing cloth (C) from seat-back frame (D).



10. Pull out the headrest guides (A) while pinching the tabs on the ends of the guides, and remove them.



11. From the back of the seat-back, pass both lower retainers (A) through the slots in the seat-back pad, and on passenger's seat, release all of the clips (B).



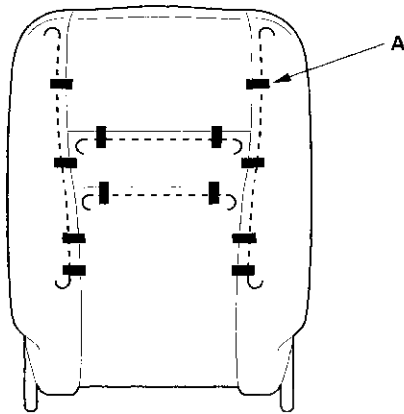
(cont'd)

Seats

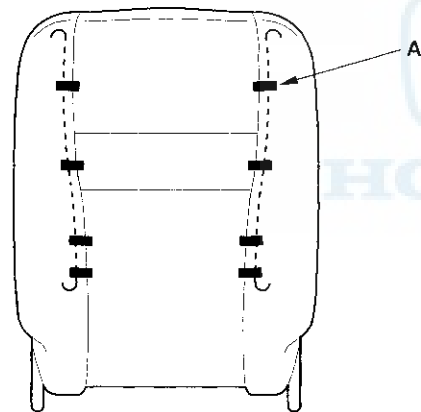
Front Seat Cover Replacement (cont'd)

12. Pull back the edge of the seat-back cover all the way around, and release the clips (A), then remove the seat-back cover.

Driver's

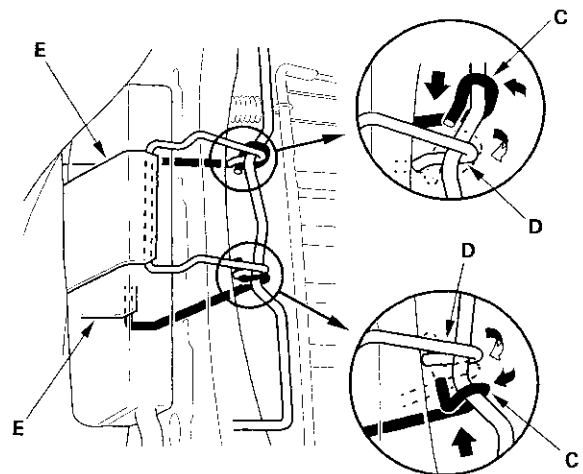
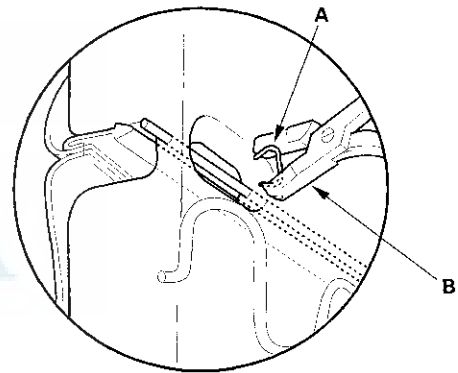


Passenger's



13. Install the cover in the reverse order of removal, and note these items:

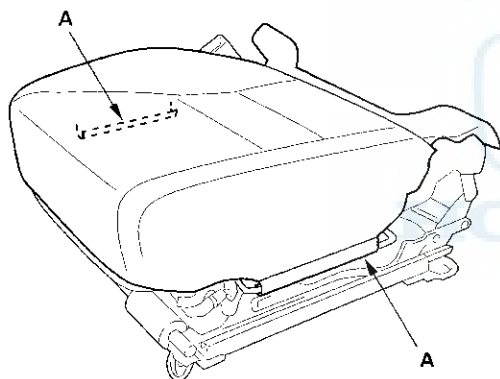
- Reinitialize the OPDS control unit (see page 24-26).
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the clips, hooks, and hook strips.
- Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).
- Reinstall the front hook (C) and rear hook (D) of the reinforcing cloth (E) securely.
- Use only original Honda replacement seat-back covers.
- Make sure the recline motor harness, (driver's seat) side airbag harness, and OPDS harness (passenger's seat) are routed properly.



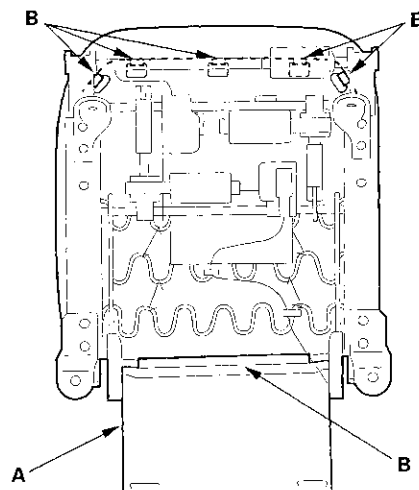


Seat Cushion Cover

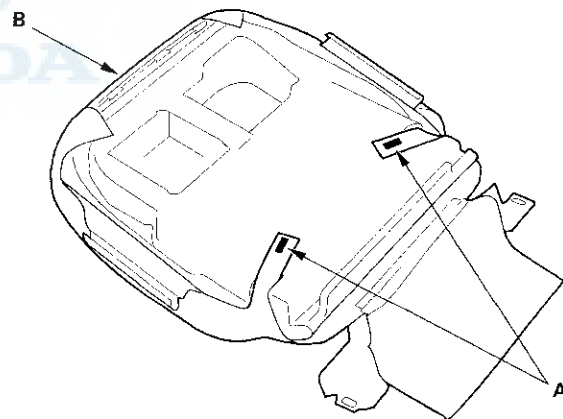
1. Remove the front seat (see page 20-80).
2. From under the seat cushion, detach the recline motor connector clip, the side airbag connector clip, and on the passenger's seat, the OPDS unit connector clip. Release the cushion cover from the seat cushion frame spring, then pull the cover back, and remove the wire ties.
3. Remove these items from the front seat, then remove the seat-back, manual seat (see page 20-82), 8-way power seat (see page 20-83):
 - Recline cover
 - Center cover
 - Front cover (8-way power seat)
4. Release the hook strips (A) from both sides the seat cushion.



5. Pull back the seat cushion cover (A), and release the hooks (B) from under the seat cushion.



6. Remove the cushion cover/pad from the seat cushion frame.
7. Release the clips (A) from under the seat cushion (B).

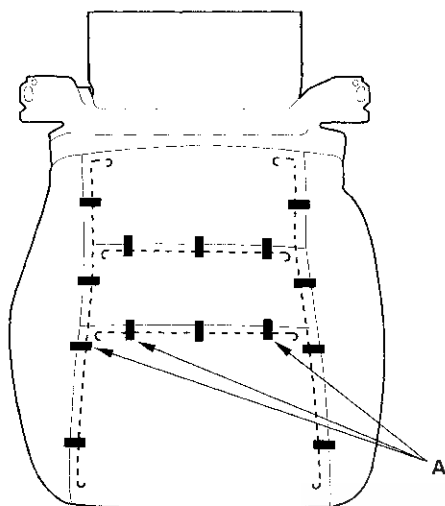


(cont'd)

Seats

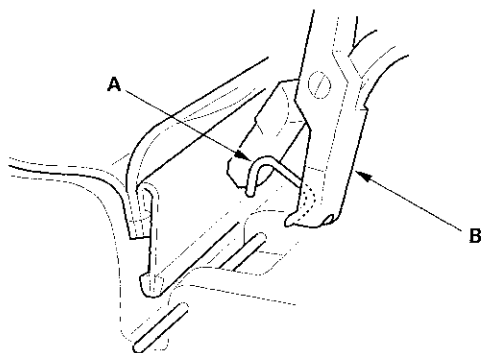
Front Seat Cover Replacement (cont'd)

8. Pull back the edge of the seat cushion cover all the way around, and release the clips (A), then remove the seat cushion cover.



9. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles when installing a seat cushion cover, make sure the material is stretched evenly over the pad before securing the clips and hook strips.
- Replace any clips you removed with new ones (A). Install them with commercially available upholstery ring pliers (B).





Rear Seat Removal/Installation

NOTE: Take care not to scratch the body or tear the seat covers.

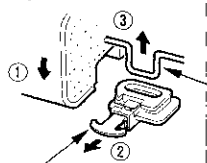
1. Remove the rear seat as shown.
2. Install the seat in the reverse order of removal, and note these items:
 - Before attaching the rear seat-back and cushion, make sure there are no twists or kinks in the rear seat belts and center seat belt.
 - When installing the seat cushion, slip the seat belt buckles through the slits in the seat cushion.

Fastener Locations

A ► : Bolt, 1 B ► : Bolt, 3



C ▼ : Hook, 2

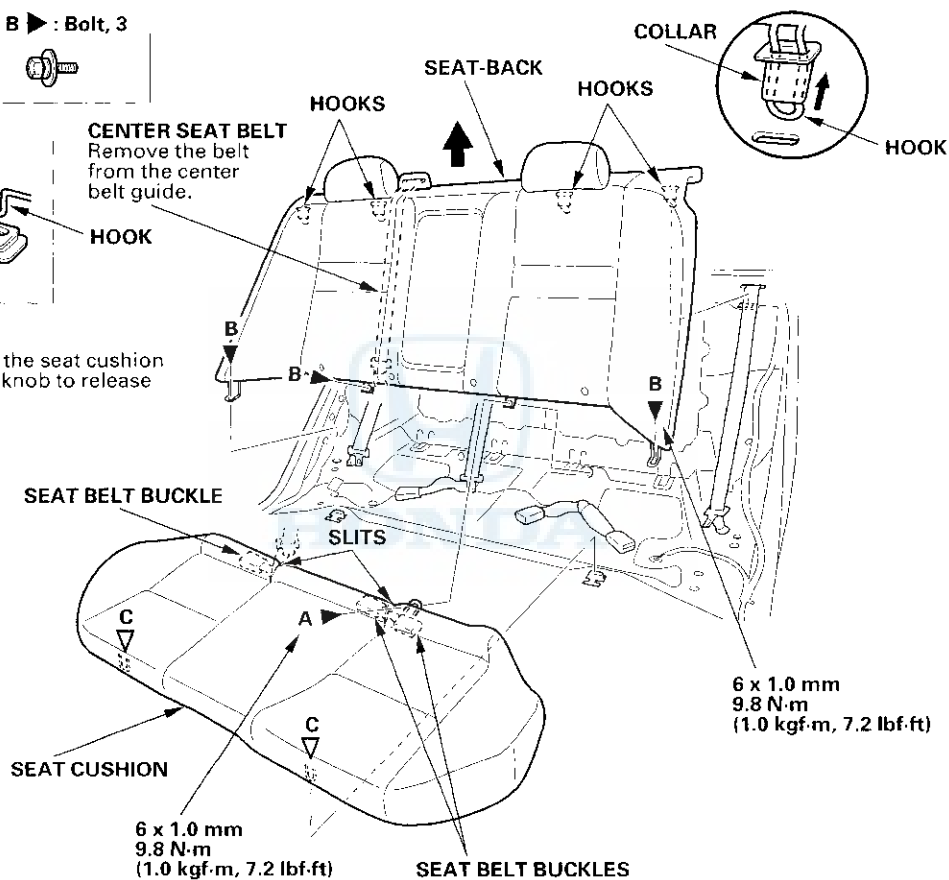


CENTER SEAT BELT
Remove the belt from the center belt guide.

HOOK

KNOB

While pushing the seat cushion down, pull the knob to release the hook.

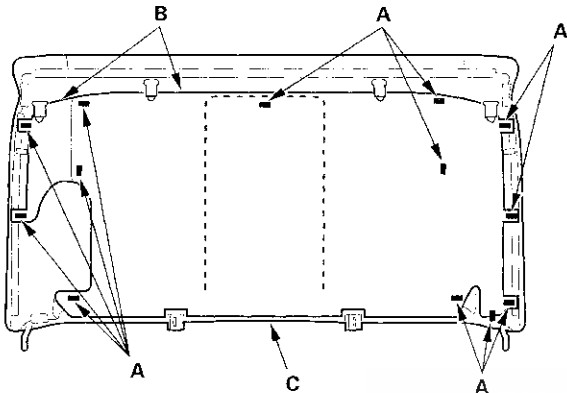


Seats

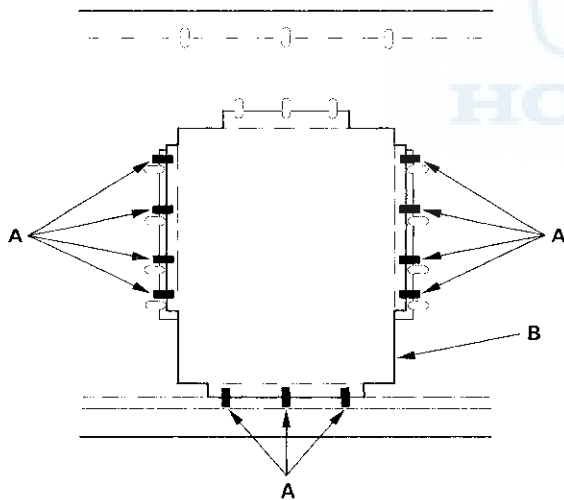
Rear Seat Armrest Replacement

NOTE: Take care not to tear the seams or damage the seat covers.

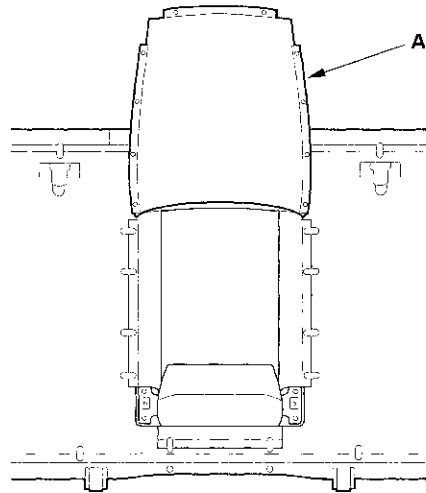
1. Remove the seat-back (see page 20-95).
2. Release the clips (A), then remove the insulators (B) from behind the seat-back (C).



3. Release the clips (A) fastening the armrest back cover (B).



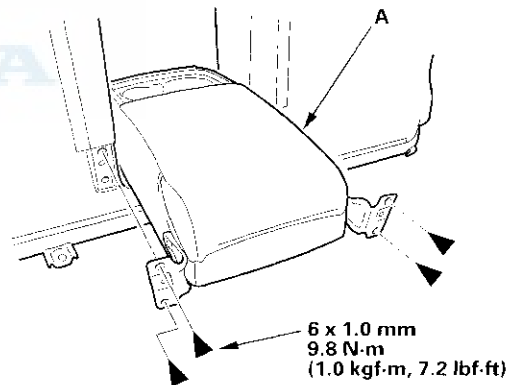
4. Turn over the armrest back cover (A).



5. Remove the bolts, then remove the armrest (A).

Fastener Locations

► : Bolt, 4



6. Install the armrest in the reverse order of removal. Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.



Rear Seat-back Cover Replacement

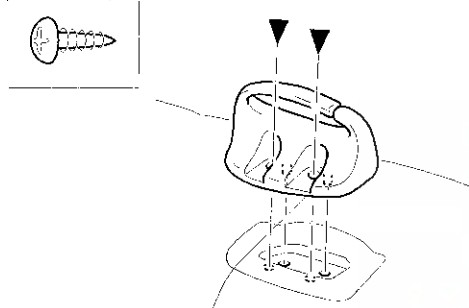
NOTE:

- Take care not to tear the seams or damage the seat covers.
- Put on gloves to protect your hands.

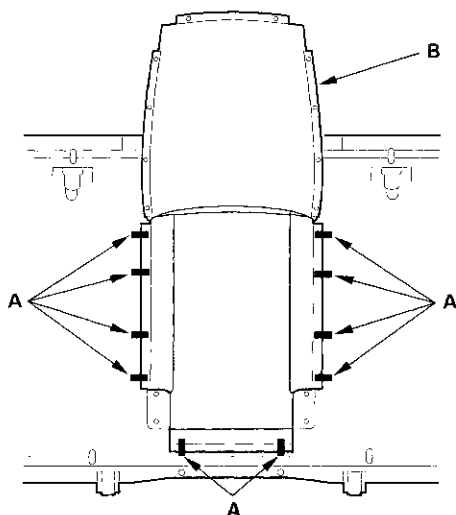
1. Remove the seat-back (see page 20-95).
2. Remove these items:
 - Armrest (see page 20-96)
 - Headrests
3. Remove the screws, then remove the center belt guide.

Fastener Locations

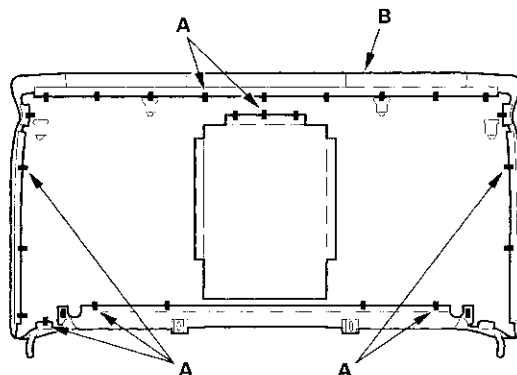
► : Screw, 2



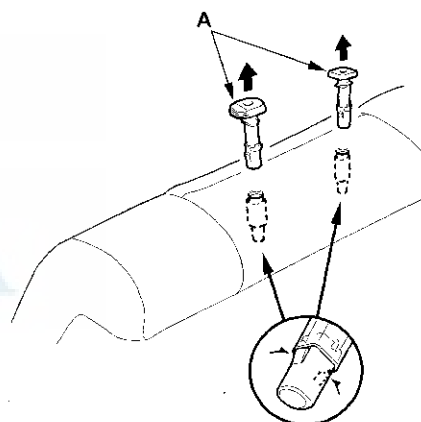
4. Release the clips (A) from under the armrest back cover (B).



5. Release all the clips (A), and then fold back the seat-back cover (B).



6. Pull out the headrest guides (A) while pinching the end of the guides, and remove them.

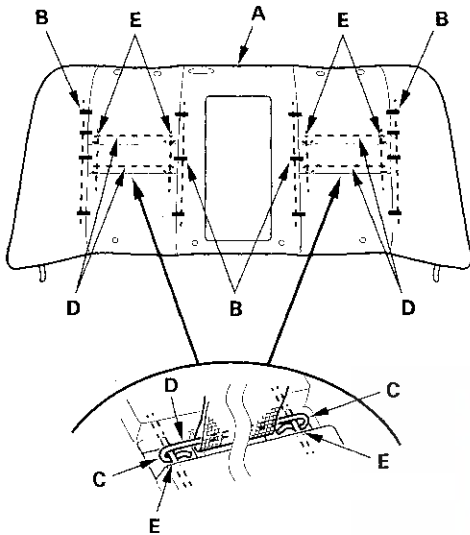


(cont'd)

Seats

Rear Seat-back Cover Replacement (cont'd)

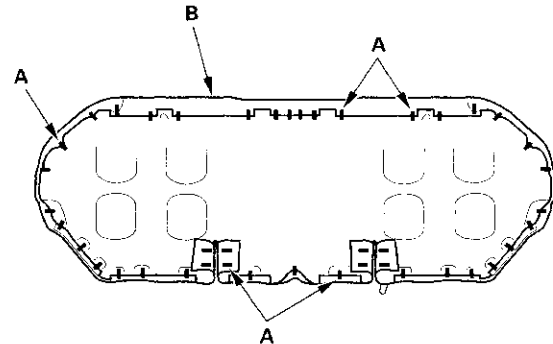
7. Pull back the edge of the seat-back cover (A) all the way around, release the clips (B), and release the hooks (C) of the horizontal wires (D) from the vertical wires (E) on the pad, then remove the seat-back cover.



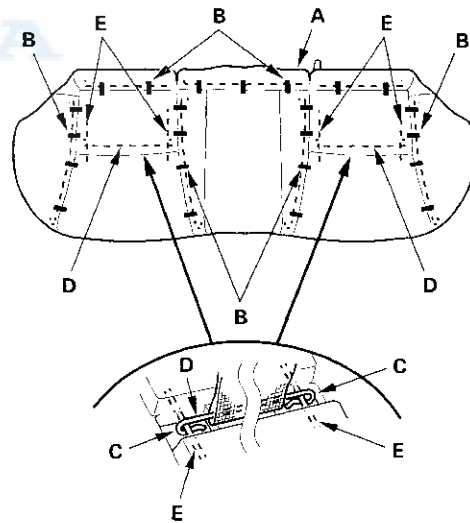
8. Install the cover in the reverse order of removal, and note these items:
- To prevent wrinkles when installing a seat-back cover, make sure the material is stretched evenly over the pad before securing the fasteners, hook strips, and clips.
 - Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.

Rear Seat Cushion Cover Replacement

1. Remove the seat-backs and seat cushion (see page 20-95).
2. Release all the clips (A) from under the seat cushion, and fold back the seat cushion cover (B).



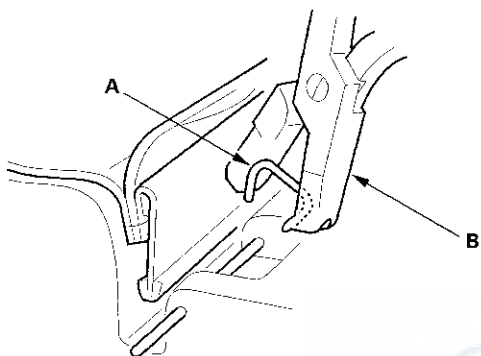
3. Pull back the edge of the seat cushion cover (A) all the way around, release the clips (B), and release the hooks (C) of the horizontal wires (D) from the vertical wires (E) on the pad, then remove the seat cushion cover.





4. Install the cover in the reverse order of removal, and note these items:

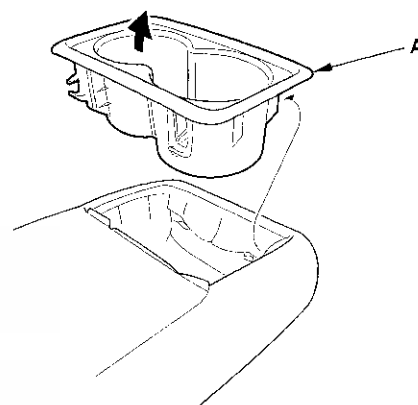
- To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips.
- Replace any clips (A) you removed with new ones. Install them with commercially available upholstery ring pliers (B).



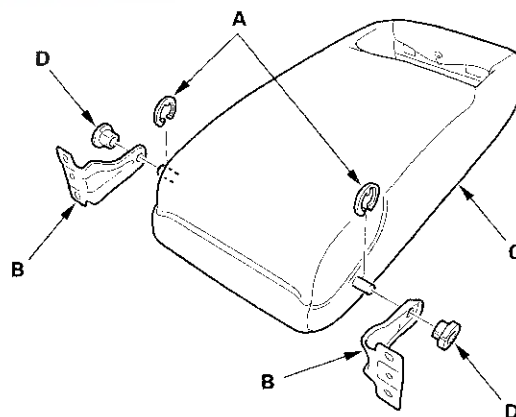
Rear Seat Armrest Cover Replacement

NOTE: Take care not to tear the seams or damage the seat covers.

1. Remove the seat-back (see page 20-95).
2. Remove the armrest from the seat-back (see page 20-96).
3. Remove the armrest beverage holder (A) from the armrest.



4. Remove the E clips (A), then remove the brackets (B) from both sides of the armrest (C).



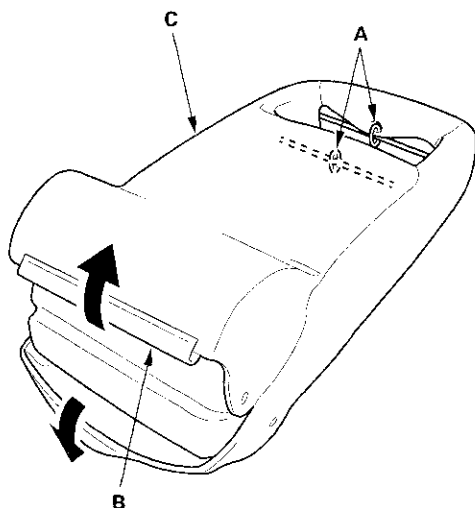
5. If necessary, remove the bushings (D) from the brackets.

(cont'd)

Seats

Rear Seat Armrest Cover Replacement (cont'd)

6. Release the clips (A) and rear hook (B), then remove the armrest cover (C).



7. Install the cover in the reverse order of removal, and note these items:

- To prevent wrinkles, make sure the material is stretched evenly over the pad before securing the clips and hooks.
- Replace any clips you removed with new ones. Install them with commercially available upholstery ring pliers.



Bumpers

Front Bumper Removal/Installation

NOTE:

- Have an assistant help you when removing and installing the front bumper.
- Take care not to scratch the front bumper and body.
- Put on gloves to protect your hands.

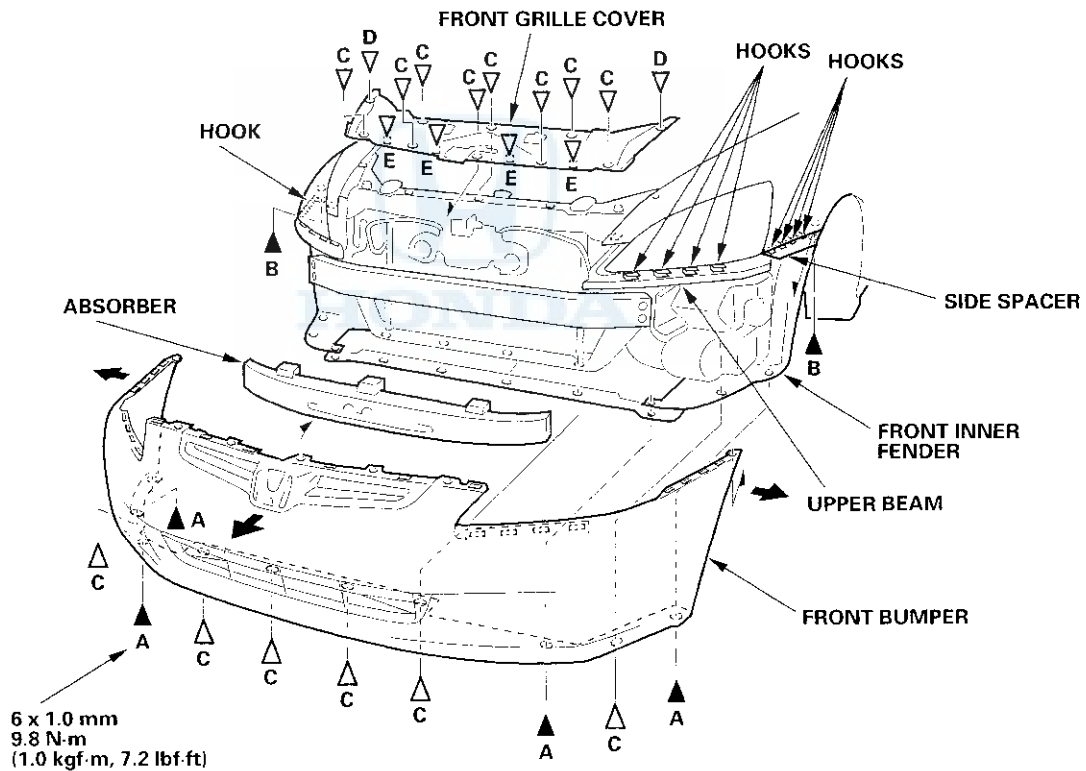
1. Remove the front bumper as shown.

2. Install the bumper in the reverse order of removal, and note these items:

- Make sure the front bumper engages the hooks of the side spacers and upper beams on both sides securely.
- Replace any damaged clips.

Fastener Locations

A ► : Bolt, 4 B ► : Screw, 2 C ► : Clip, 14 D ► : Clip, 2 E ► : Hook, 4



Bumpers

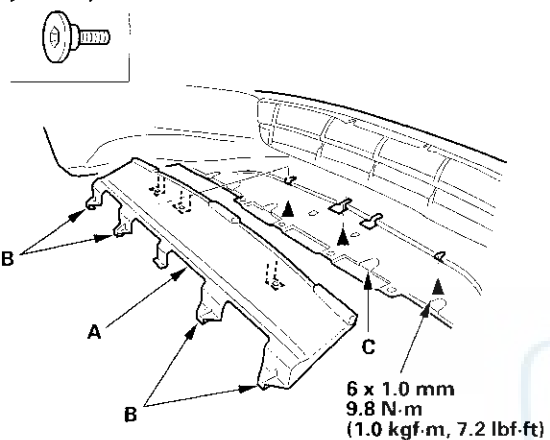
Front Bumper Air Guide Replacement

NOTE: Take care not to scratch the front bumper and body.

1. Remove the front bumper (see page 20-101).
2. Remove the bolts and slide the front bumper air guide (A) back to release the hooks (B), then remove the air guide from the front bumper (C).

Fastener Locations

► : Bolt, 3



3. Install the air guide in the reverse order of removal.



Rear Bumper Removal/Installation

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Have an assistant help you when removing and installing the rear bumper.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the rear bumper and body.
- Put on gloves to protect your hands.

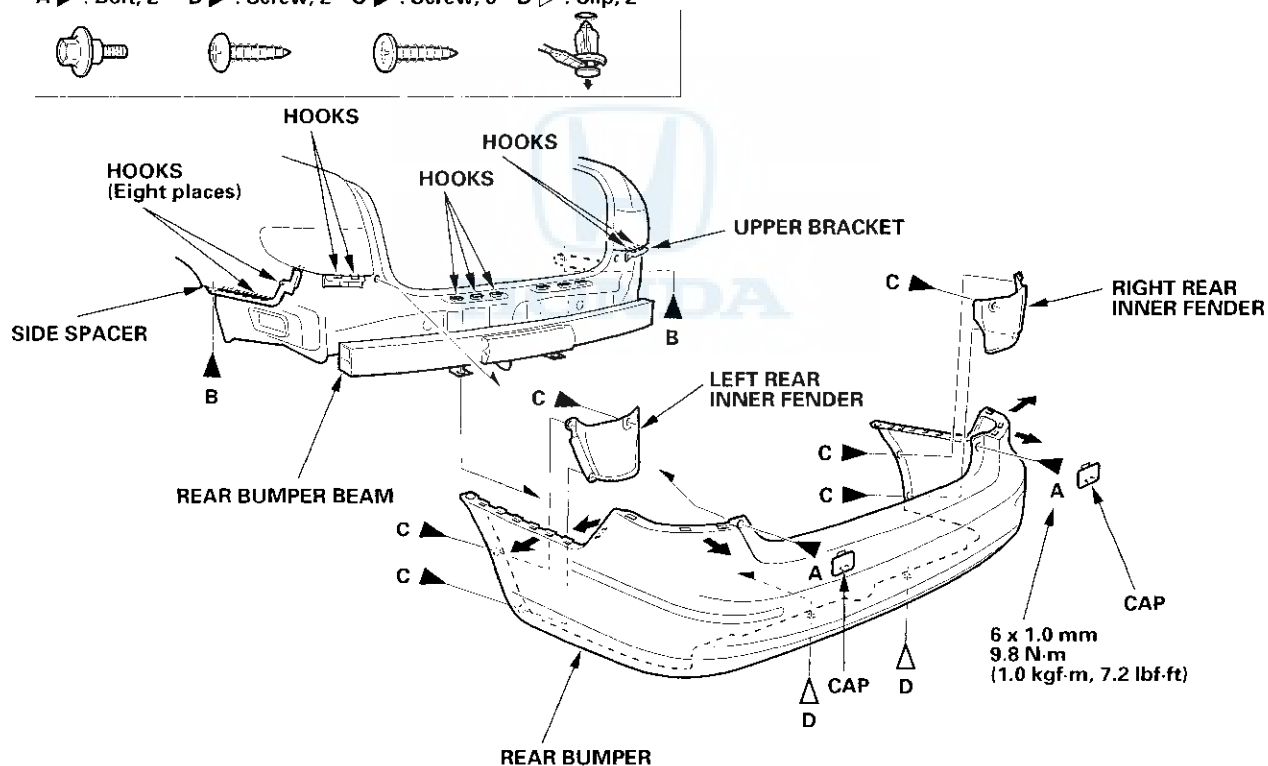
1. Remove the rear bumper as shown.

2. Install the bumper in the reverse order of removal, and note these items:

- Make sure the rear bumper engages the hooks of the side spacers and upper brackets on both sides securely.
- Replace any damaged clips.

Fastener Locations

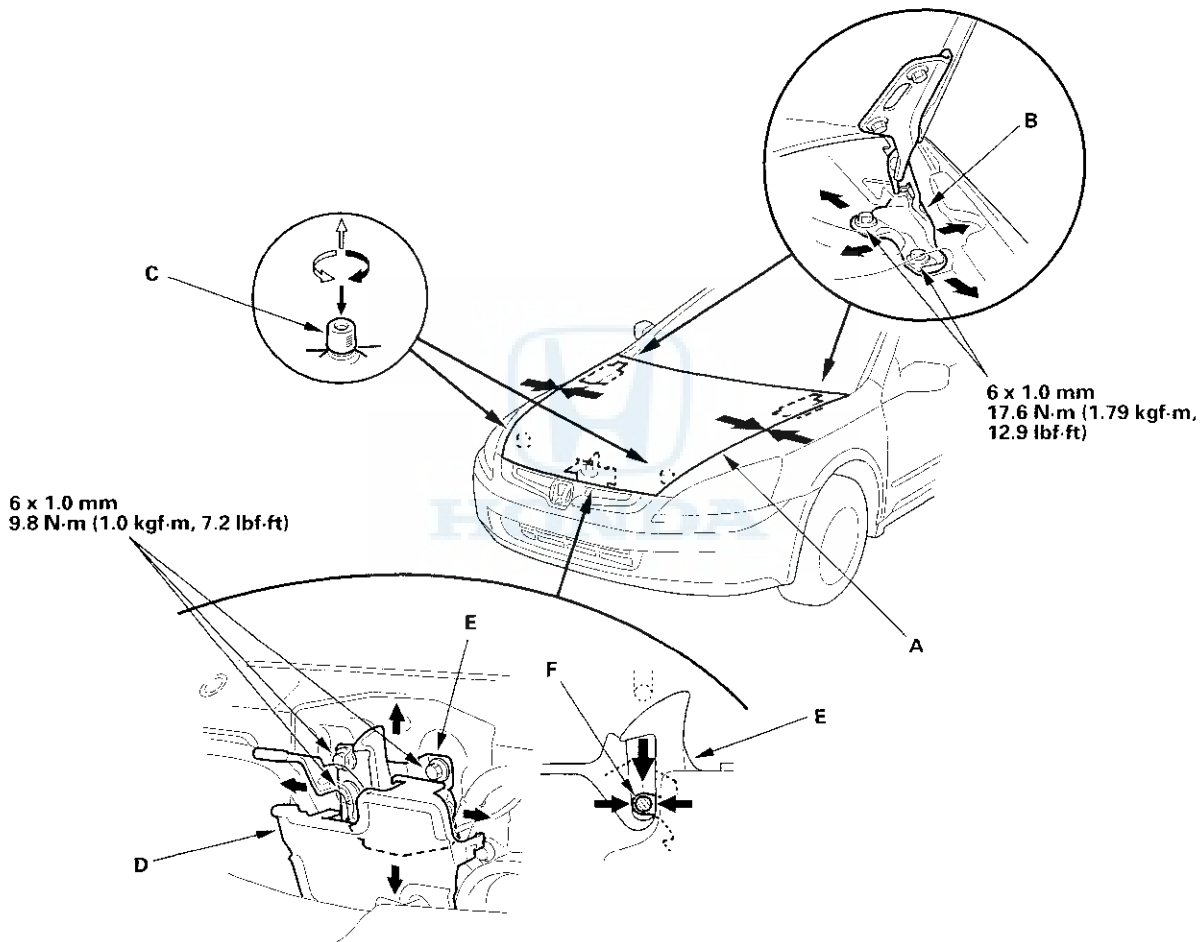
A ► : Bolt, 2 B ► : Screw, 2 C ► : Screw, 6 D ► : Clip, 2



Hood

Adjustment

1. Remove the support strut (see page 20-105).
2. Slightly loosen each hood hinge bolt.
3. Adjust the hood (A) alignment in this sequence.
 - Adjust the hood right and left, as well as forward and rearward, by using the elongated holes on the hood hinges (B).
 - Turn the hood edge cushions (C), as necessary, to make the hood fit flush with the body at the front and side edges.

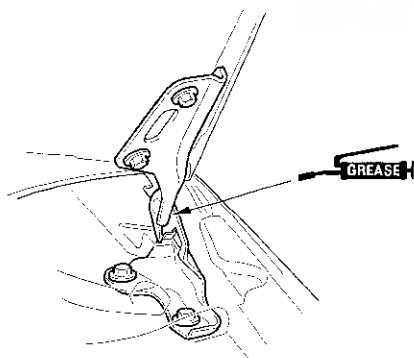
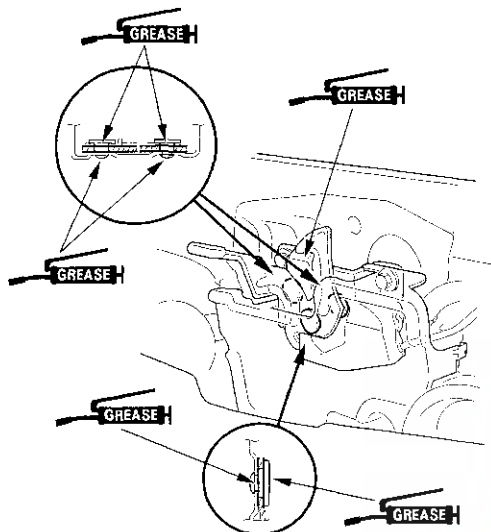


4. Remove the front grille cover (see step 1 on page 20-111), and release the upper portion of the hood latch cover (D) as needed. Adjust the hood latch (E) to obtain the proper height at the forward edge, and move the hood latch right or left until the striker (F) is centered in the hood latch.
5. Tighten the bolts to the specified torque.



Hood Support Strut Replacement

6. Check that the hood opens properly and closes securely.
7. Apply touch-up paint to the hinge mounting bolts and around the hinges.
8. Apply multipurpose grease to the hood latch and hood hinge as indicated by the arrows.



9. Reinstall the front grille cover and the support strut.

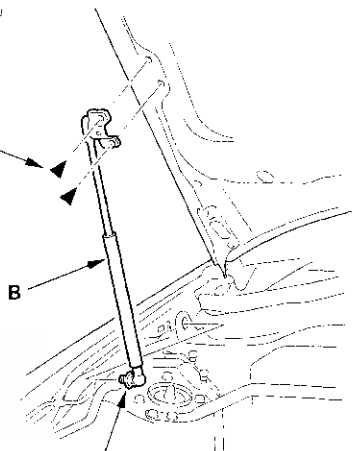
1. While an assistant supports the hood, remove the pivot bolt (A) and hood side bolts, then remove the support strut (B). Take care not to scratch the body or hood.

Fastener Locations

► : Bolt, 2



6 x 1.0 mm
9.8 N·m
(1.0 kgf·m,
7.2 lbf·ft)



A
8 x 1.25 mm
22 N·m (2.2 kgf·m, 16 lbf·ft)

2. Install the pivot bolt first, and then install the hood side bolts.

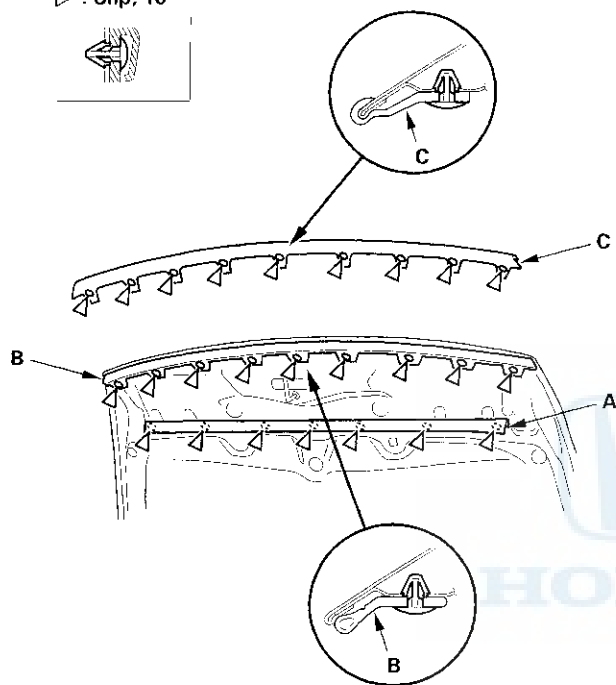
Hood

Hood Seal and Hood Molding Replacement

1. Using a clip remover, detach the clips, then remove the hood seal (A) and hood seal rubber (B). On Canadian model; remove the hood molding (C). Take care not to scratch the hood.

Fastener Locations

▷ : Clip, 16



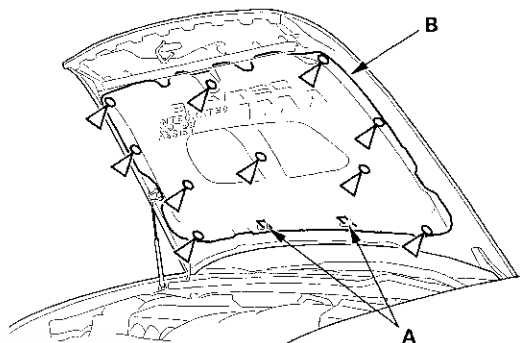
2. Install the seals in the reverse order of removal, and replace any damaged clips.

Hood Insulator Replacement

1. Using a clip remover, detach the clips. Release the hooks (A), then remove the hood insulator (B). Take care not to scratch the hood.

Fastener Locations

▷ : Clip, 10

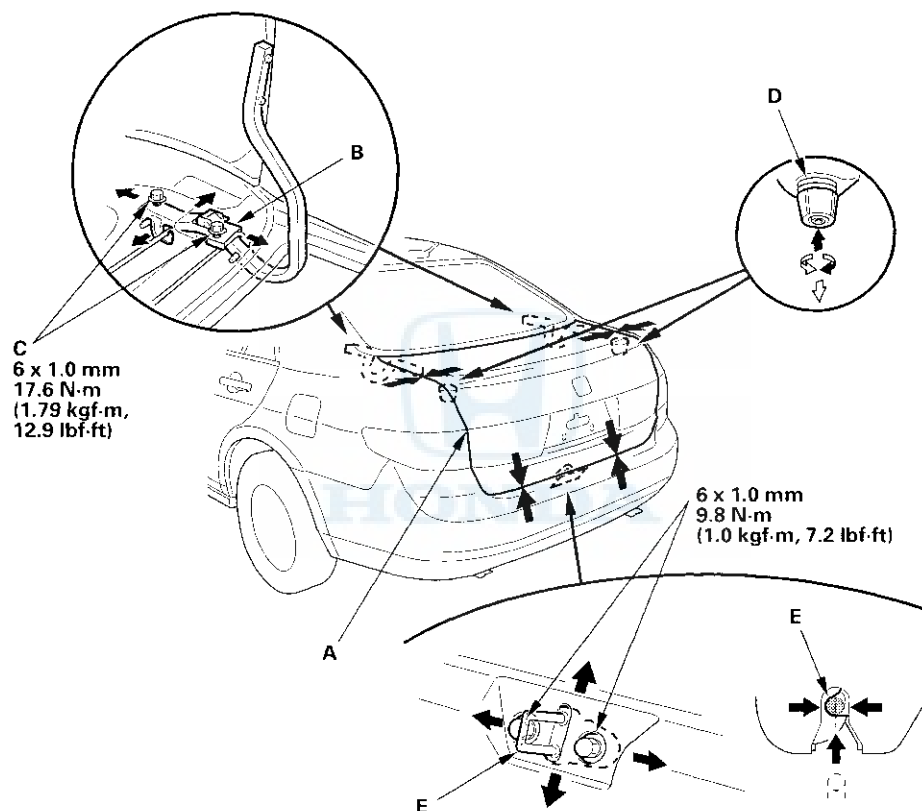


2. Install the insulator in the reverse order of removal, and replace any damaged clips.



Adjustment

1. Remove the rear shelf (see page 20-51).
2. Slightly loosen each bolt.
3. Adjust the trunk lid (A) alignment in the following sequence.
 - Adjust the trunk lid hinges (B) right and left, as well as forward and rearward, by using the elongated holes. Take care not to hit the rear window when loosening the bolts (C).
 - Turn the trunk lid edge cushions (D), in or out as necessary, to make the trunk lid fit flush with the body at the rear and side edges.
 - Adjust the fit between the trunk lid and the trunk lid opening by moving the striker (E).



4. Tighten the bolts to the specified torque.
5. Make sure the trunk lid opens properly and closes securely.
6. Reinstall all remaining removed parts.

Trunk Lid

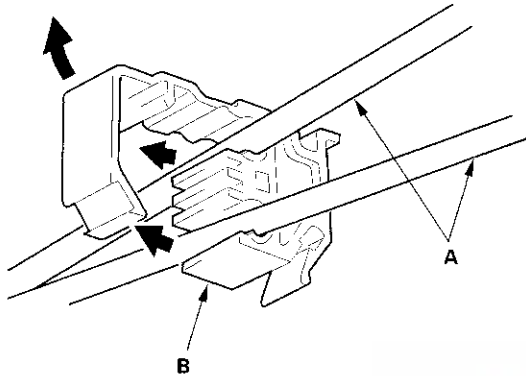
Trunk Lid Torsion Bar Replacement

Special Tools Required

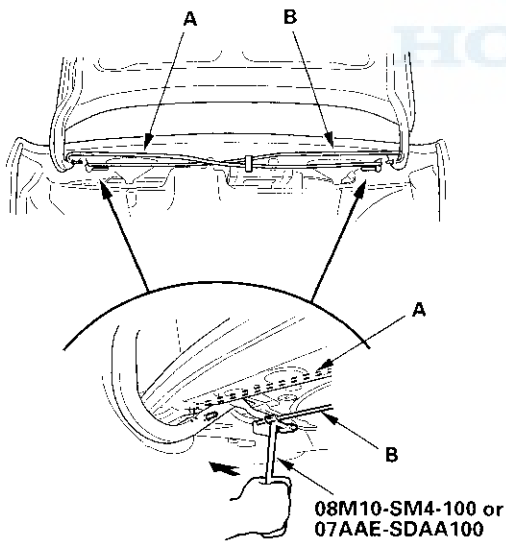
Torsion bar assembly tool 08M10-SM4-100
or 07AAE-SDAA100

NOTE: Put on gloves to protect your hands.

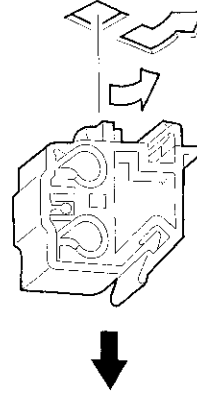
1. Remove the torsion bars (A) from the torsion bar center clip (B).



2. Use the torsion bar tool to remove the torsion bars from both trunk lid hinges. First remove the left torsion bar (A), then remove the right torsion bar (B).

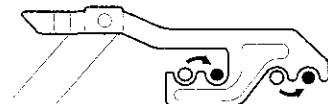
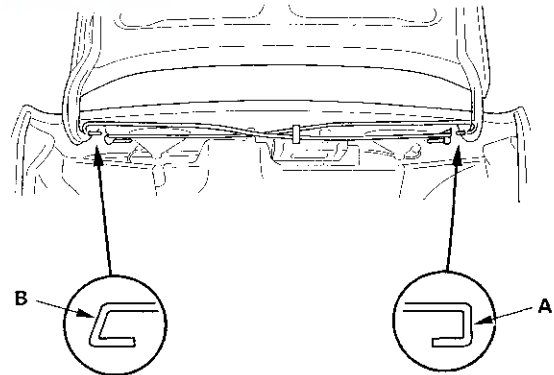


3. Remove the torsion bar center clip from the body.



4. Install the torsion bars in the reverse order of removal, and note these items:

- The shapes of the left torsion bar (A) and right torsion bar (B) are shown. Install the torsion bars properly.
- Adjust the torsion bars forward or rearward with the torsion bar assembly tool. The standard torsion bar positions are:
 - Left torsion bar: Higher tension
 - Right torsion bar: Normal position
- Make sure the trunk lid opens properly and locks securely.

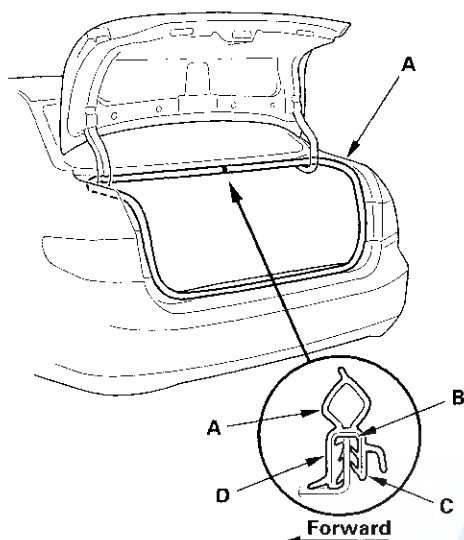


○ = Normal position
● = Higher tension



Trunk Lid Weatherstrip Replacement

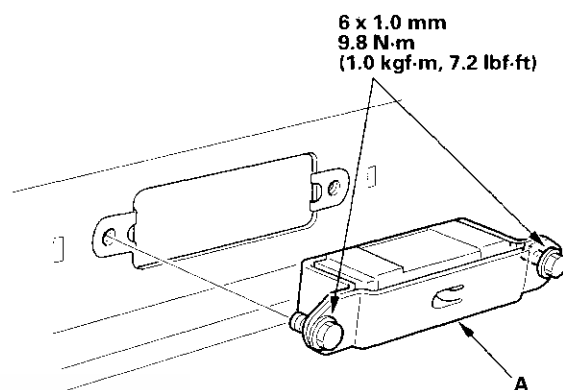
1. Remove the trunk lid weatherstrip (A) by pulling it off.



2. Apply clear weatherstrip sealant (B) into the channel of the trunk lid weatherstrip all the way around.
3. Locate the painted alignment mark (C or D) on the trunk lid weatherstrip. Align the painted mark with the center of the tailgate opening, and install the trunk lid weatherstrip all the way around in the direction shown. Make sure there are no wrinkles in the weatherstrip.
4. Check for water leaks.

Trunk Lid Dynamic Damper Replacement

1. Remove the trunk lid trim (see page 20-55).
2. Remove the bolts, then remove the trunk lid dynamic damper (A). Take care not to scratch the trunk lid.

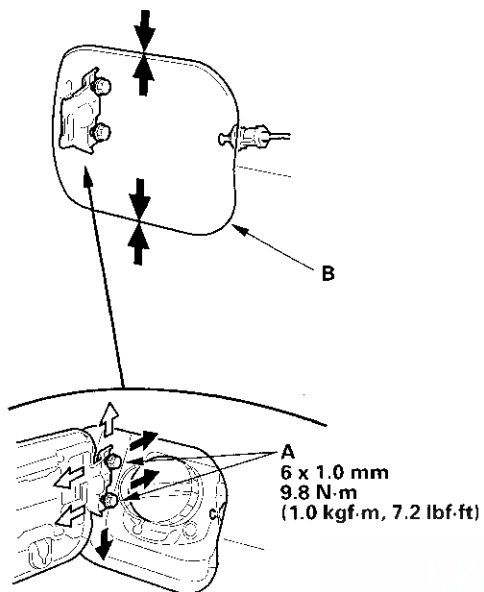


3. Install the damper in the reverse order of removal.

Fuel Fill Door

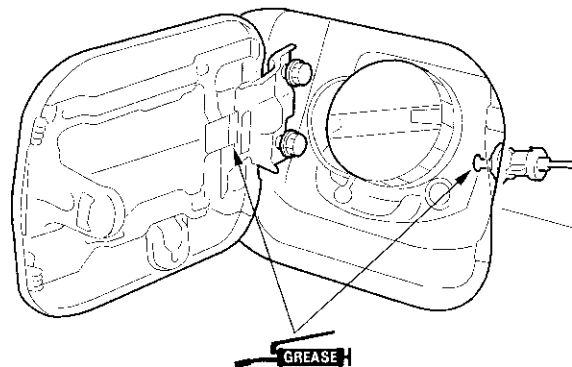
Adjustment

1. Slightly loosen the hinge mounting bolts (A).



2. Adjust the fuel fill door (B) in or out until it's flush with the body, and up or down as necessary to equalize the gaps.
3. Tighten the hinge mounting bolts.
4. Check that the fuel fill door opens properly and locks securely, and check that the rear of the door is flush with the body.

5. Apply multipurpose grease to each location indicated by the arrows.



6. Apply touch-up paint to the hinge mounting bolts and around the hinges.



Front Grille Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to scratch the front grille cover and front grille.

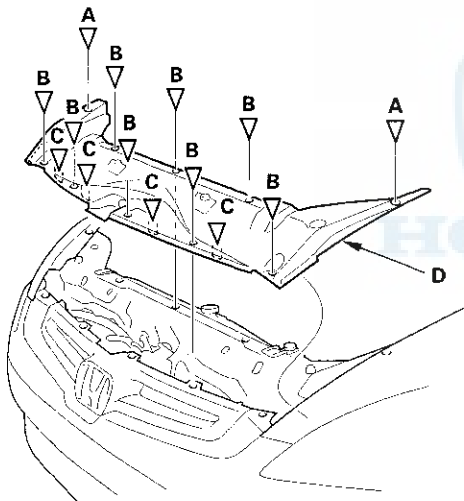
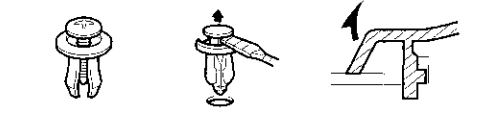
1. Remove the clips (A, B) and detach the hooks (C), then remove the front grille cover (D).

Fastener Locations

A ▷ : Clip, 2

B ▷ : Clip, 8

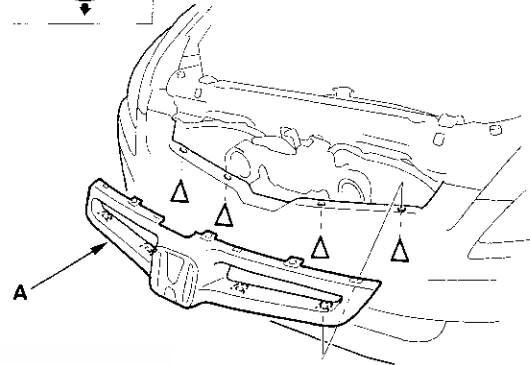
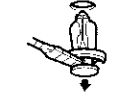
C ▷ : Hook, 4



2. Remove the clips, then remove the front grille (A). Take care not to drop the clips inside the front bumper.

Fastener Locations

▷ : Clip, 4



3. Install the front grille in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Push the front hook portions into place securely.

Exterior Trim

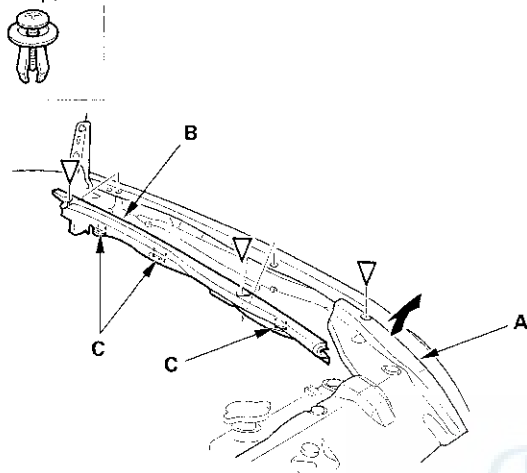
Front Fender Trim Replacement

NOTE: Take care not to scratch the body.

1. Remove the clips fastening the front grille cover (A) and the front fender trim (B).

Fastener Locations

▷ : Clip, 3



2. Pull up the rear of the front grille cover, then remove the front fender trim by releasing the hooks (C) from the body.
3. Install the trim in the reverse order of removal, and replace any damaged clips.

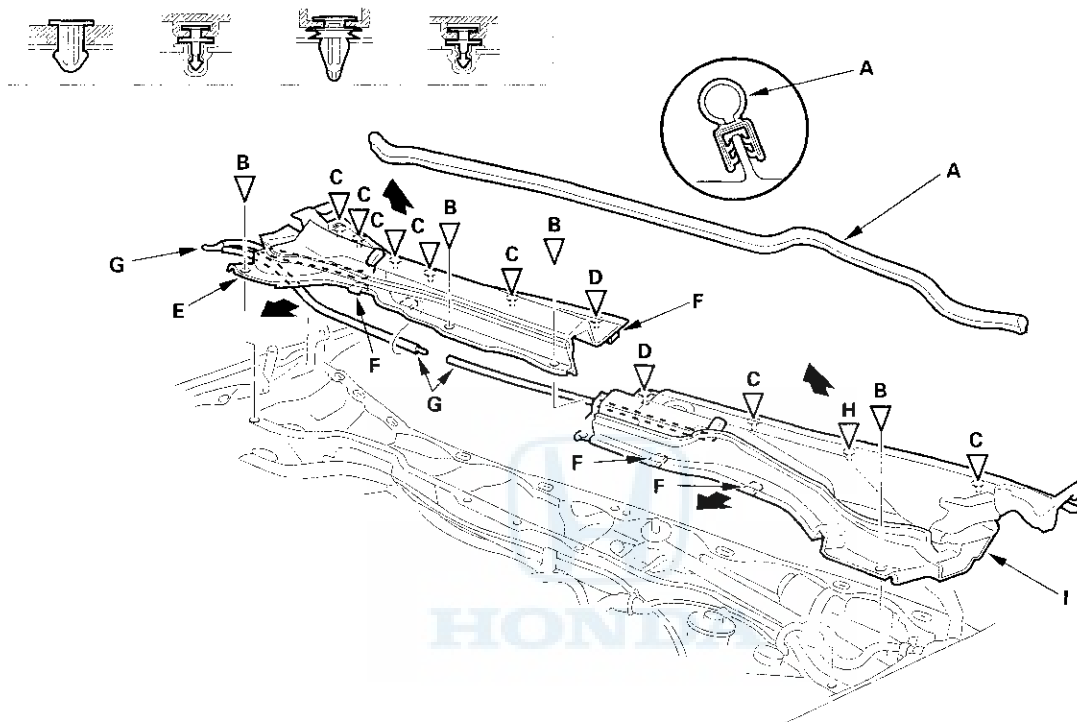


Cowl Cover Replacement

1. Remove the windshield wiper arms (see page 22-221).
2. Remove the hood rear seal (A) by pulling it out. Using a clip remover, detach the clips (B) from the cowl covers. Take care not to scratch the cowl covers.

Fastener Locations

B▷ : Clip, 4 C▷ : Clip, 7 D▷ : Clip, 2 H▷ : Clip, 1



3. Detach the clips (C, D) by carefully pulling the passenger's cowl cover (E) upward, and release the hooks (F) on the passenger's cowl cover from the driver's side, then remove the cover. Take care not to scratch the body.
4. Disconnect the windshield washer tubes (G).
5. Detach the clips (C, D, H) by carefully pulling the driver's cowl cover (I) upward, then remove the cover. Take care not to scratch the body.
6. Install the covers in the reverse order of removal, and note these items:
 - Replace any damaged clips.
 - Make sure the washer tubes are connected securely.

Exterior Trim

Roof Molding Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Put on gloves to protect your hands.
- Take care not to damage the windshield.
- Do not use any of metallic tools to remove the roof molding, or you may chip the edge of the windshield and cracks in the windshield will occur.
- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Take care not to bend the roof molding.

Molding Replacement

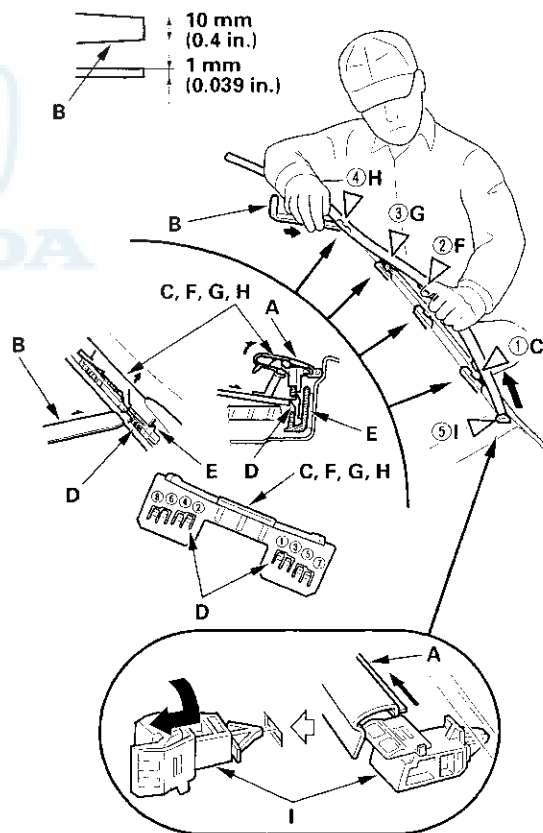
1. Remove the cowl cover (see page 20-113).

2. Remove the windshield portion of the roof molding (A).

- 1 Carefully insert a plastic trim tool (B) under the molding next to the clip (C).
- 2 While pulling the clip portion of the molding up by hand, push each of the eight small hooks (D) in the numbered sequence shown to release the clip from the retainer (E).
Do not try to pry up the clip even if it is hard to release from the retainer.
- 3 Gradually work your way up to release each of the upper clips (F, G, H).
- 4 Slide the molding off the lower clip (I).
- 5 Rotate the lower clip to remove it.

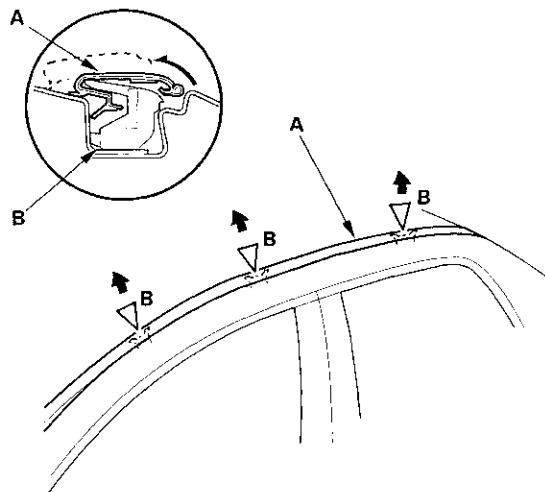
Fastener Locations

C ▷ : Green H ▷ : Blue
F ▷ : Yellow I ▷ (Left): Dark Blue
G ▷ : Red I ▷ (Right): White



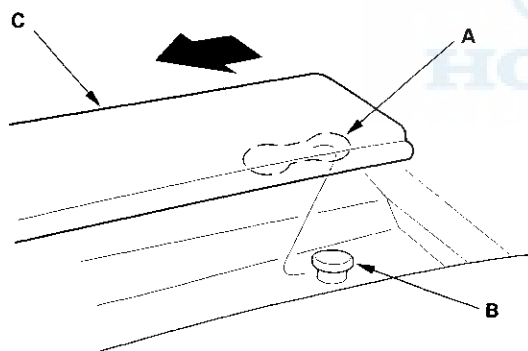


3. Pull up and slide the middle portion (A) of the roof molding to release it from the retainers (B).



4. Pull up the front portion of roof molding.

5. Pull up and release the rear end of the roof molding (A) from the pin (B), then remove the roof molding (C).



6. Install the molding in the reverse order of removal, and note these items:

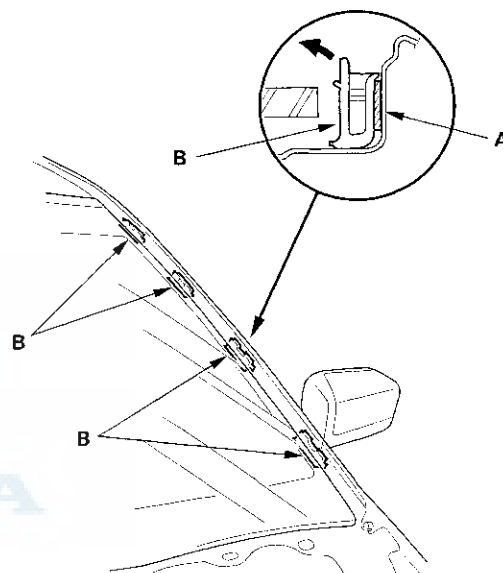
- Make sure the roof molding is installed securely.
- Replace any damaged clips.

Retainer Replacement

1. Gradually scrape off the adhesive tape (A) under the retainers (B) while heating it with a heat gun.

NOTE:

- Do not heat the painted body surface around the retainers too much.
- To keep the exterior resin parts near the A-pillar from being overheated by the heat gun, wrap them with aluminum foil.



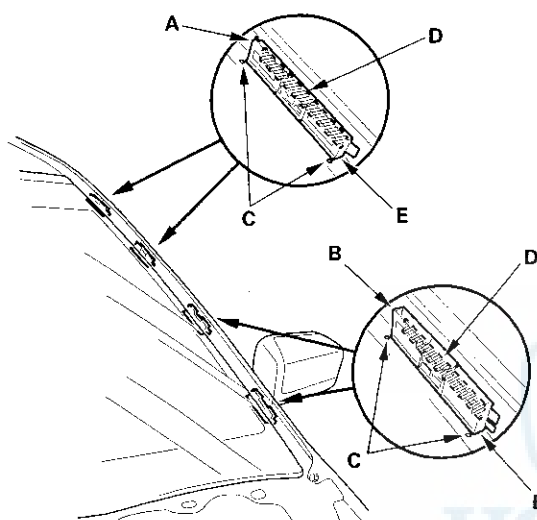
2. Clean the body bonding surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.

(cont'd)

Exterior Trim

Roof Molding Replacement (cont'd)

3. Install the upper retainers (A) and the lower retainers (B).
 - 1 Peel the adhesive backing away from the upper and lower retainers.
 - 2 Line up the retainers with the alignment marks (C) on the body, and attach the retainers with adhesive tape (D).
 - 3 Apply epoxy two-part mixing adhesive (E) around the edge of the retainers as shown.





Door Molding Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE:

- Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.
- Be careful not to pry too far or you may bend the molding.
- Put on gloves to protect your hands.

1. Prepare to release the molding clips from inside the vehicle.

- To remove the front door molding, remove the front door panel (see page 20-7) and plastic cover.
- To remove the rear door molding, remove the rear door panel (see page 20-15) and plastic cover.

2. Release the clips (A) and gently pry the front door molding (B) or rear door molding (C) away from the door while separating the adhesive tape (D, E, F).

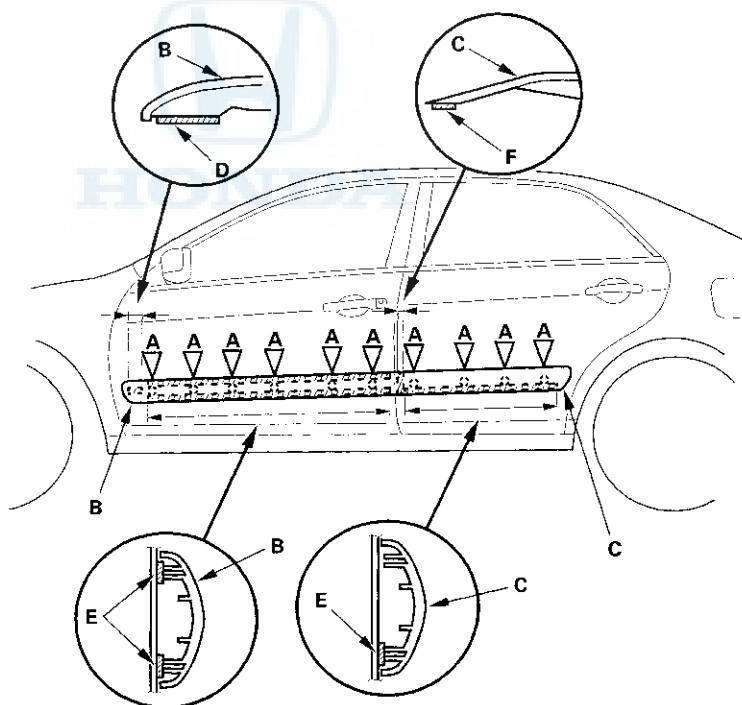
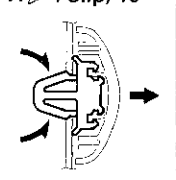
Adhesive tape (D): Thickness 1.2 mm (0.047 in.), Width 18 mm (0.71 in.)

Adhesive tape (E): Thickness 1.2 mm (0.047 in.), Width 5 mm (0.2 in.)

Adhesive tape (F): Thickness 0.4 mm (0.016 in.), Width 5 mm (0.2 in.)

Fastener Locations

A ▷ : Clip, 10



3. Install the moldings in the reverse order of removal, and replace any damaged clips and adhesive tape.

Exterior Trim

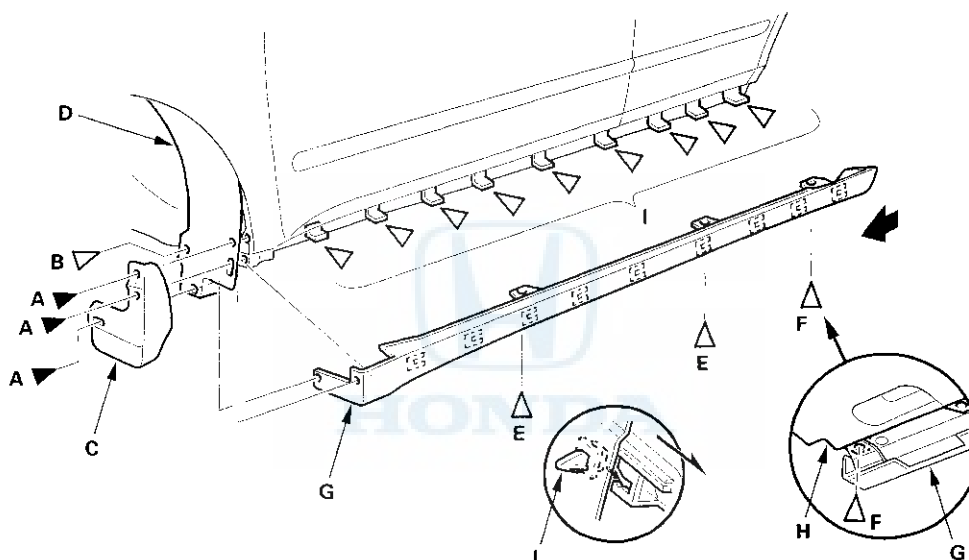
Side Sill Panel Replacement

1. Remove the side sill panel.

- 1 Remove the screws (A), clip (B), and if equipped, remove the splash guard (C).
- 2 Pull the inner fender (D) back as necessary, and remove the clips (E, F), fastening the side sill panel (G) and the middle floor under cover (H).
- 3 Slide the side sill panel forward, and remove it. The side clips (I) will stay in the body.
- 4 Remove the side clips from the body.

Fastener Locations

A ► : Screw, 3 B ► : Clip, 1 E ► : Clip, 2 F ► : Clip, 1 I ► : Clip, 9



2. Replace any damaged clips.

3. Install the side clips on the side sill panel.

4. Hold the panel up, and fit all the side clips into the holes in the body, then push on the panel until the clips snap into place.

5. Install all the clips.

6. Reinstall the inner fender and splash guard.



Trunk Lid Spoiler Replacement

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the trunk lid.

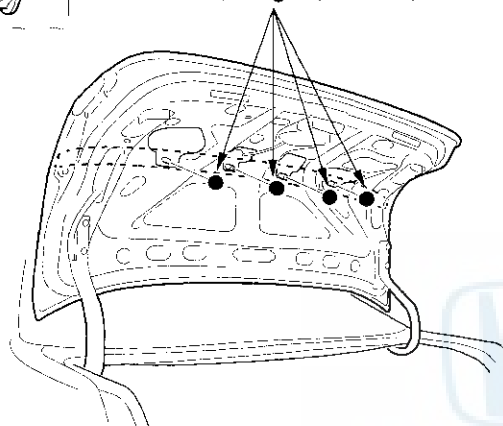
1. Remove the trunk lid trim (see page 20-55).
2. Open the trunk lid, and remove the nuts from inside the trunk lid.

Fastener Locations

● : Nut, 4



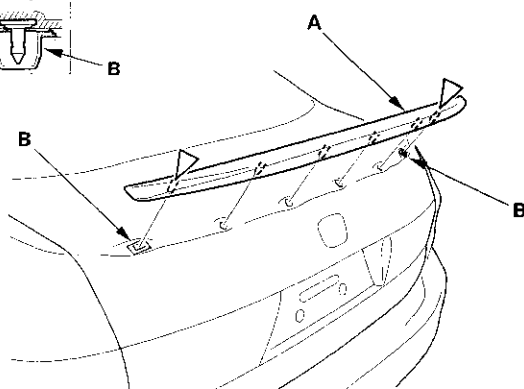
6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



3. Close the trunk lid. Pull the trunk lid spoiler (A) up to release the clips from the grommets (B) on the trunk lid, then remove the spoiler.

Fastener Locations

▷ : Clip, 2



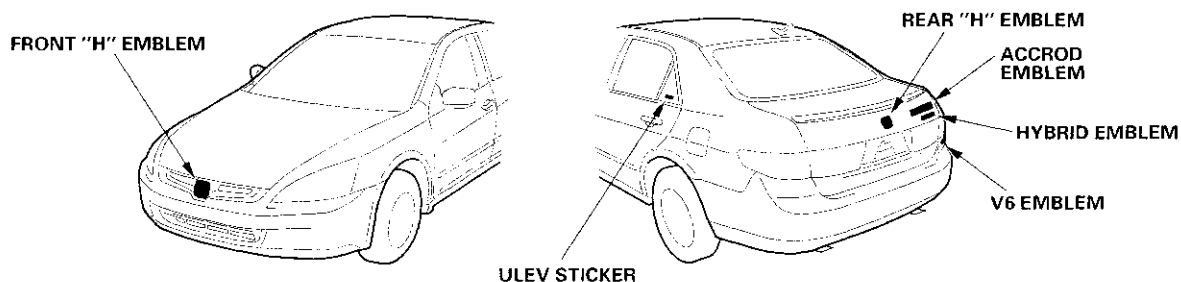
4. Install the spoiler in the reverse order of removal, and note these items, and replace any damaged clips.

Exterior Trim

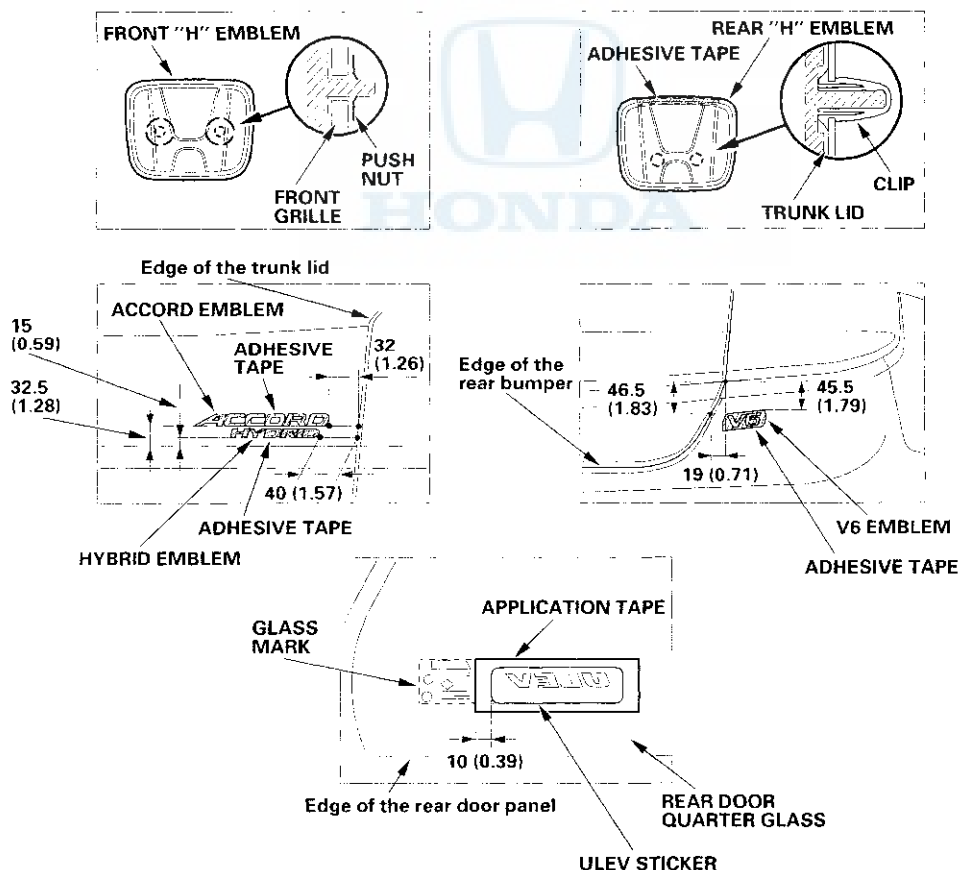
Emblem/Sticker Replacement

NOTE: When removing the emblems/sticker, take care not to scratch the body.

1. Clean the body surface with a sponge dampened in alcohol. After cleaning, keep oil, grease, and water from getting on the surface.
2. Apply the emblems/sticker where shown. When installing the ULEV sticker on the inside surface of the rear door quarter glass, align rear edge of the application tape and bottom of the sticker with the glass mark, then press the sticker into place, and remove the application tape.



Unit: mm (in.)
Adhesive tape: Thickness 0.8 mm (0.031 in.)





Fenderwell

Front Inner Fender Replacement

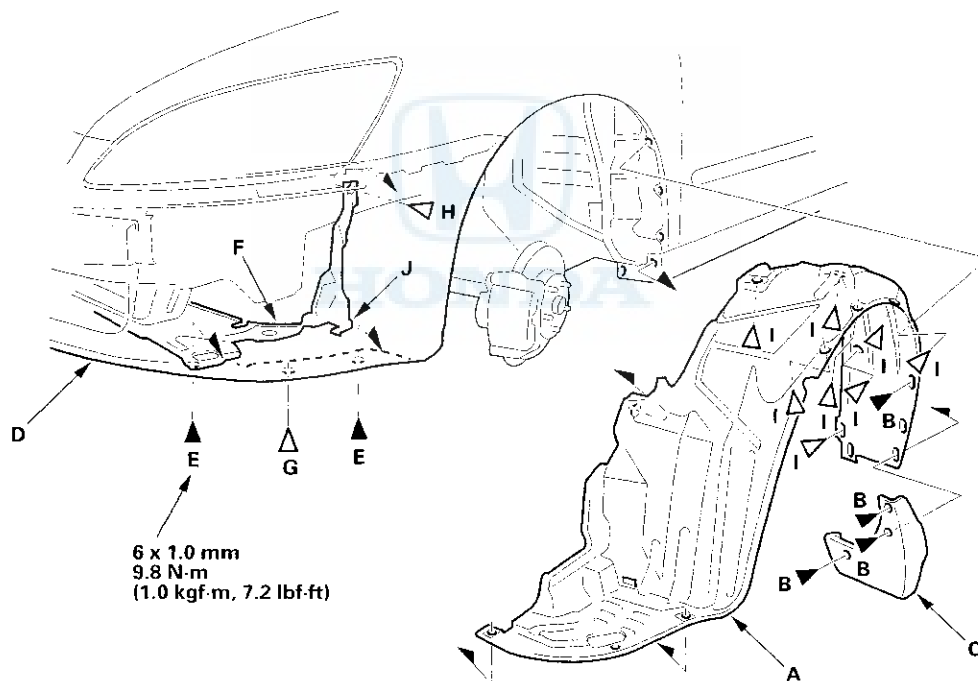
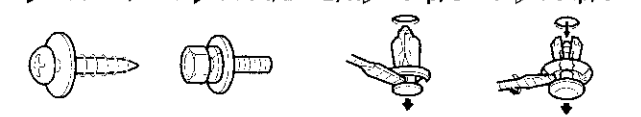
NOTE: Take care not to scratch the body.

1. Remove the front inner fender (A).

- 1 On the back of the wheel arch, remove the screws (B). If equipped, remove the front splash guard (C).
- 2 From under the front bumper (D), remove the bolts (E) securing the front bumper, splash shield (F), and front inner fender, and remove the clip (G) securing the front bumper and front inner fender.
- 3 From the wheel arch, remove the clips (H, I) securing the front inner fender (and splash shield) to the body.
- 4 Release the hook (J) of the splash shield, then remove the front inner fender.

Fastener Locations

B ► : Screw, 4 E ► : Bolt, 2 G, H ► : Clip, 2 I ► : Clip, 8



2. Install the inner fender in the reverse order of removal, and replace any damaged clips.

Fenderwell

Splash Shield Replacement

NOTE: Take care not to scratch the body.

1. Remove the splash shield (A).

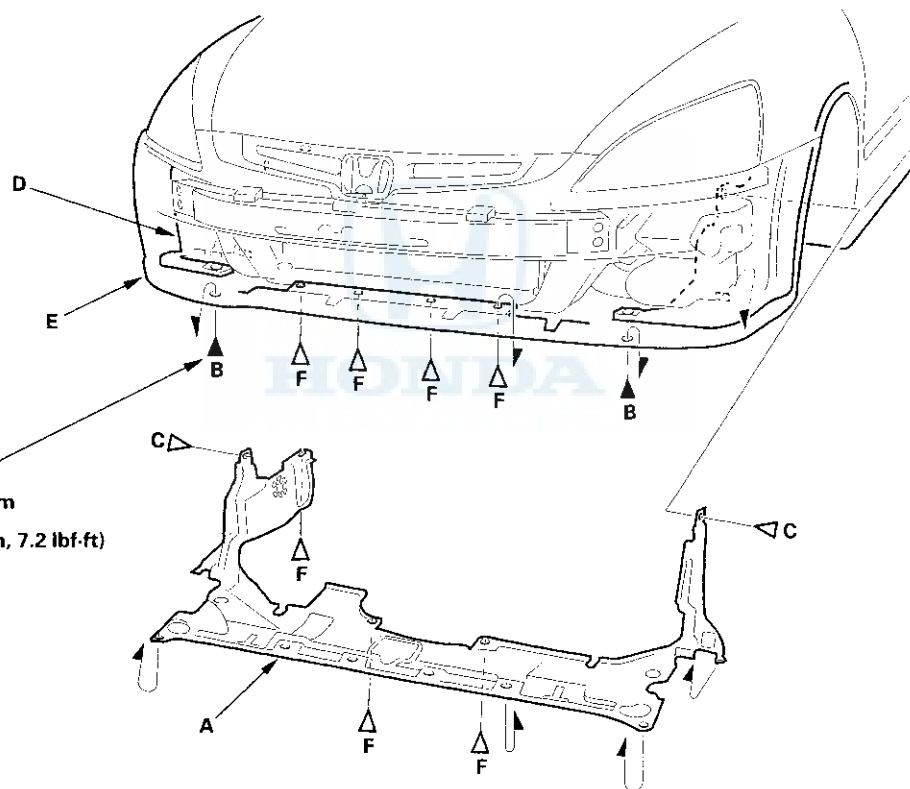
- 1 From both wheel arches, remove the bolts (B) and clips (C) securing the front inner fender (D) and splash shield to the body.
- 2 From under the front bumper (E), remove the clips (F).
- 3 Pull the splash shield out.

Fastener Locations

B ► : Bolt, 2 C, F ► : Clip, 9



6 x 1.0 mm
9.8 N·m
(1.0 kgf·m, 7.2 lbf·ft)



2. Install the splash shield in the reverse order of removal, and replace any damaged clip.

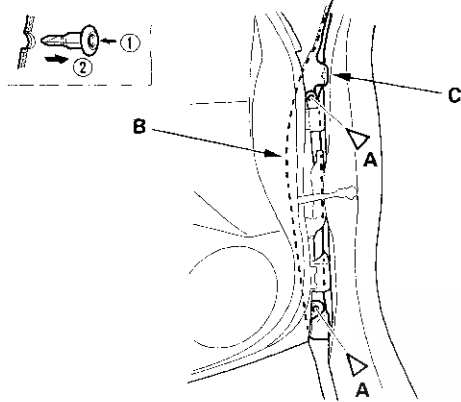


Front Fender Fairing Replacement

1. Remove the front inner fender as needed (see page 20-121).
2. Open the front door. Remove the upper clip (A), and from inside the door, remove the lower clip (A) securing the front fender fairing (B) and front fender (C).

Fastener Locations

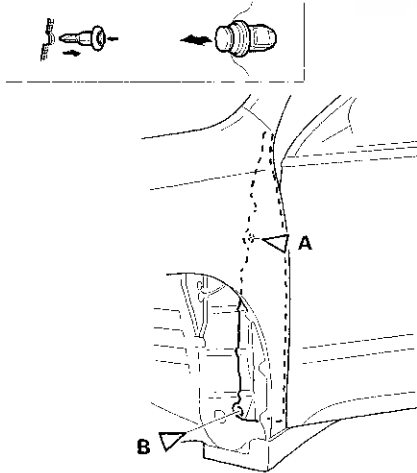
A ▷ : Clip, 2



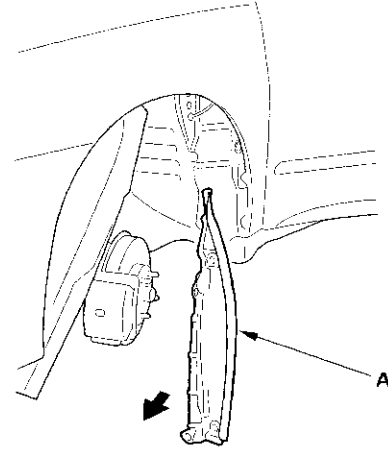
3. From the wheel arch, remove the clip (A), and then release the clip (B).

Fastener Locations

A ▷ : Clip, 1 B ▷ : Clip, 1

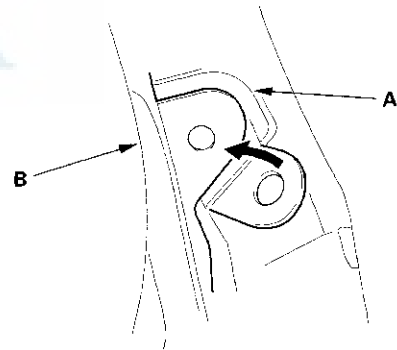


4. Remove the front fender fairing (A).



5. Install the fender fairing in the reverse order of removal, and note these items:

- Replace any damaged clips.
- Before installing the clips in the door opening area, install the front fender fairing (A) to the front fender (B) properly as shown.



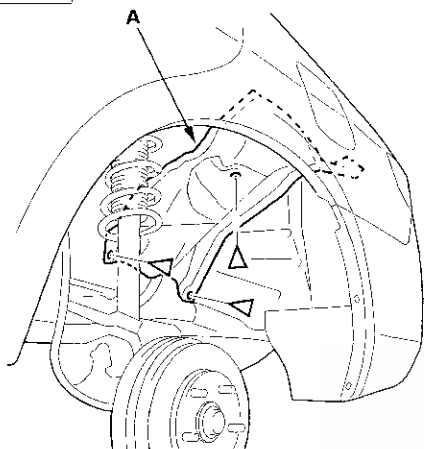
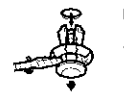
Fenderwell

Fuel Pipe Protector Replacement

1. Remove the clips, then remove the fuel pipe protector (A). Take care not to scratch the body.

Fastener Locations

▷ : Clip, 3



2. Install the protector in the reverse order of removal, and replace any damaged clips.

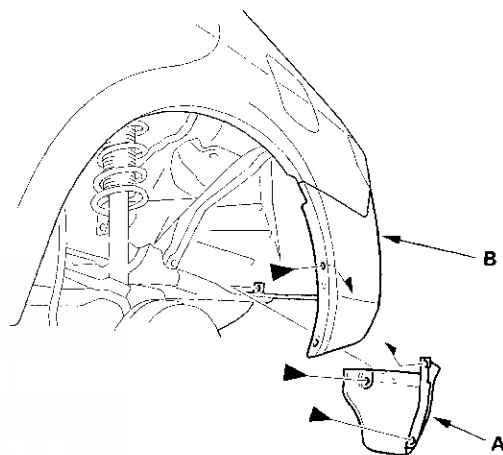
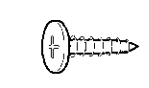
Rear Inner Fender Replacement

NOTE: Take care not to scratch the body.

1. Remove the screws, then remove rear inner fender (A) from the rear bumper (B) and body.

Fastener Locations

▶ : Screw, 3



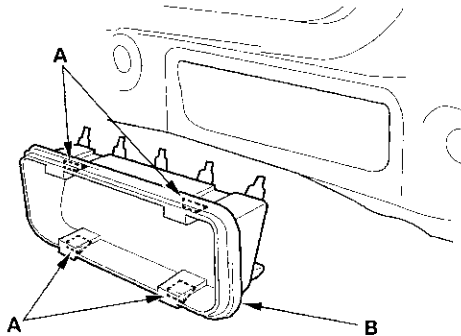
2. Install the inner fender in the reverse order of removal, and replace any damaged clips.



Rear Air Outlet Replacement

Left Side

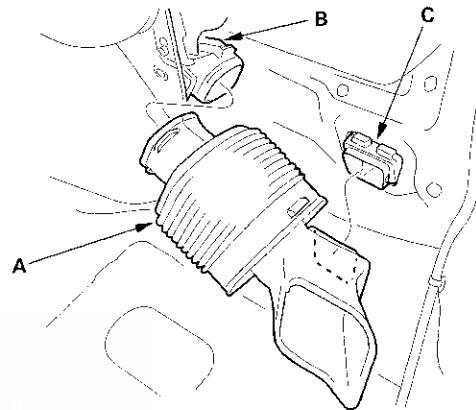
1. Remove the rear bumper (see page 20-103).
2. Detach the hooks (A), then remove the left rear air outlet (B). Take care not to scratch the body.



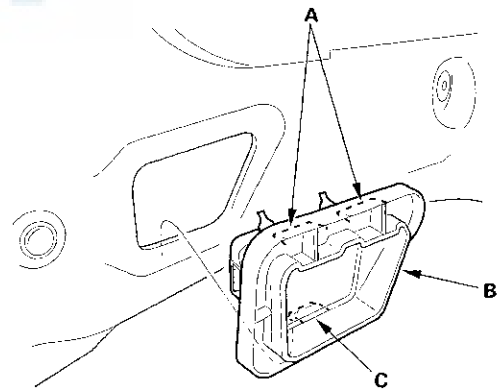
3. Install the air outlet by pushing on the hook portions until the hooks snap into place.

Right Side

1. Remove these items:
 - Rear bumper (see page 20-103)
 - Right trunk side trim panel (see page 20-53)
2. Disconnect the air outlet duct (A) from the cooling fan (B) and right rear air outlet (C), then remove it.



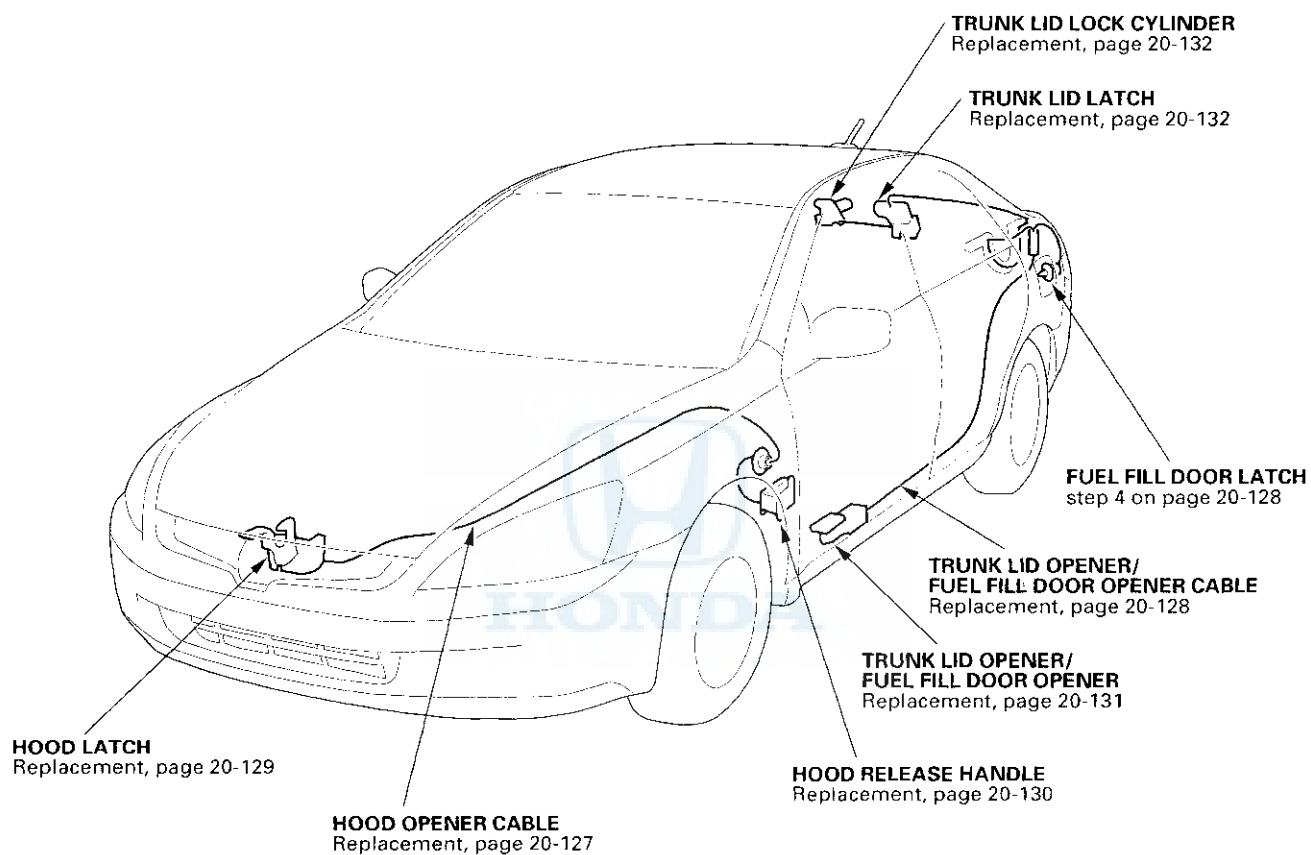
3. From inside of the trunk compartment, release the upper hooks (A) by pushing them down, then remove the right rear air outlet (B) by releasing the lower hook (C).



4. Install the air outlet by pushing on the hook portions until the hooks snap into place.

Openers

Component Location Index





Hood Opener Cable Replacement

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

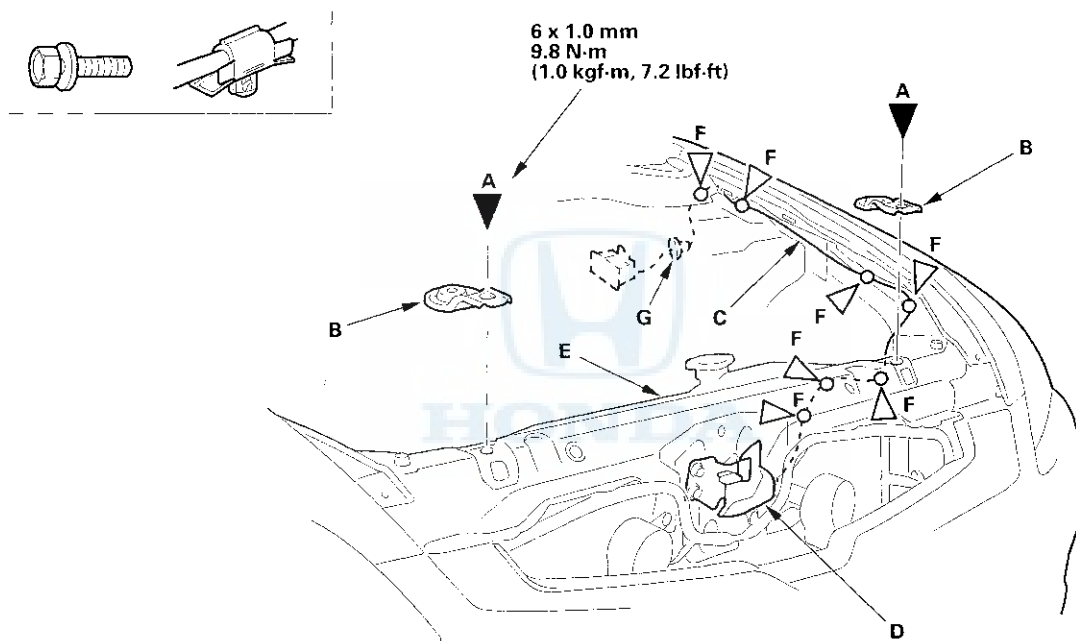
1. Remove these items:

- Front grille (see page 20-111)
- Inner fender (see page 20-121)
- Kick panel (see page 20-45)

2. Remove the bolts (A) then remove the radiator upper bracket (B).

Fastener Locations

A ► : Bolt, 2 F ▷ : Clip, 7



3. Disconnect the hood opener cable (C) from the hood latch (D) (see page 20-129).
4. Move the radiator (E) as needed. Using a clip remover, detach the clips (F), and remove the grommet (G) from the body, then remove the hood opener cable from the vehicle. Take care not to bend the cable.
5. Install the cable in the reverse order of removal, and replace any damaged clips.

Openers

Trunk Lid Opener Cable/Fuel Fill Door Opener Cable Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the body and related parts.

1. Remove these items from the left side of the vehicle:

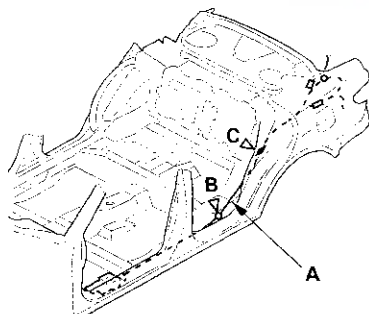
- Front door sill trim (see page 20-45)
- Rear door sill trim (see page 20-46)
- B-pillar lower trim (see page 20-48)
- Rear seat-back and seat cushion (see page 20-95)
- Trunk side trim panel, left side (see page 20-53)
- Trunk lid trim (see page 20-55)

2. Pull back the carpet as necessary.

3. Release the trunk lid opener/fuel fill door opener cable (A) from the clip (B). Remove the cushion tape (C).

Fastener Locations

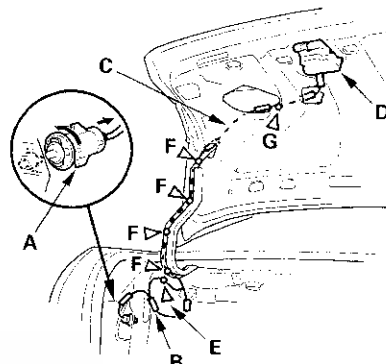
B▷: Clip, 1 C▷: Cushion Tape, 1



4. Remove the fuel fill door latch (A) by turning it 90°, and detach the opener cable junction box (B) from the body.

Fastener Locations

E▷: Clip, 1 F▷: Clip, 4 G▷: Clip, 1



5. Disconnect the trunk lid opener cable (C) from the trunk lid latch (D) (see page 20-132).

6. Using a clip remover, detach clip (E). Release the trunk lid opener/fuel fill door opener cable from the clips (F, G).

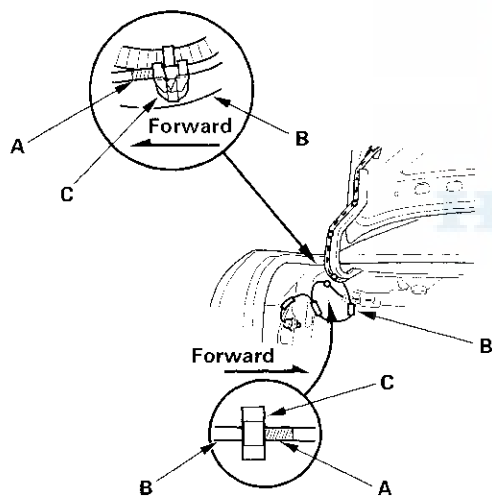
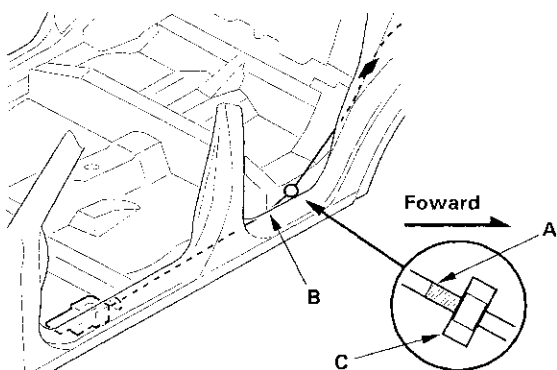
7. Remove the trunk lid opener/fuel fill door opener cable from the vehicle. Take care not to bend or kink the cable.



Hood Latch Replacement

8. Install the opener cable in the reverse order of removal, and note these items:

- Align the marks (A) on the opener cable (B) with the cable clips (C) as shown.
- Replace any damaged clips.

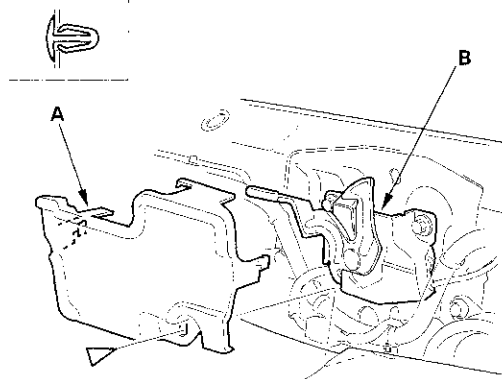


1. Remove the front grille (see page 20-111).

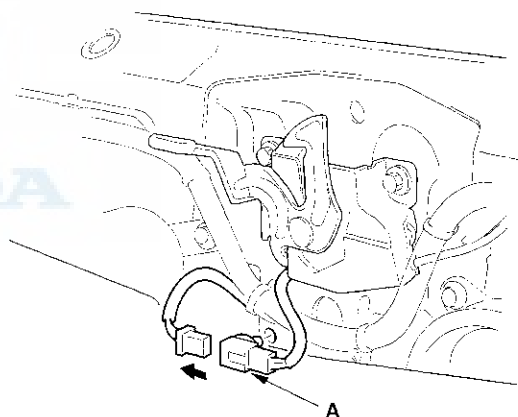
2. Remove the cover (A) from the hood latch (B).

Fastener Location

▷ : Clip, 1



3. Disconnect the hood latch switch connector (A).



(cont'd)

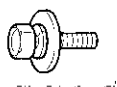
Openers

Hood Latch Replacement (cont'd)

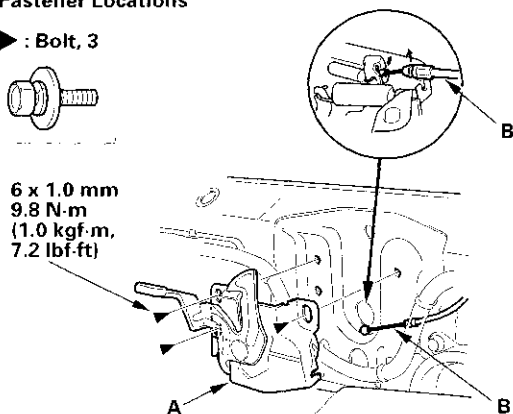
4. Remove the bolts, then remove the hood latch (A) from the body.

Fastener Locations

► : Bolt, 3

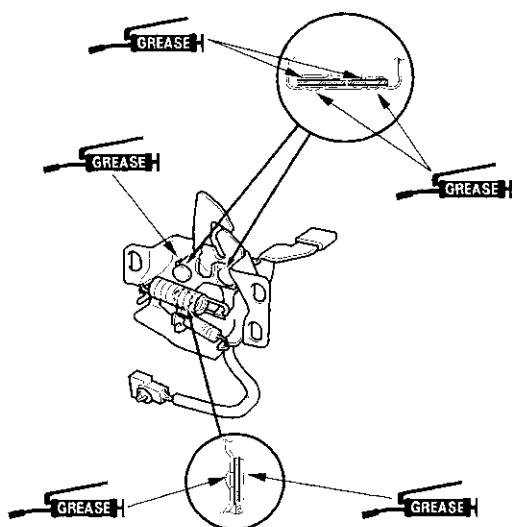


6 x 1.0 mm
9.8 N·m
(1.0 kgf·m,
7.2 lbf·ft)



5. Disconnect the hood opener cable (B) from the hood latch. Take care not to bend the cable.
6. Install the latch in the reverse order of removal, and note these items:

- Apply multipurpose grease to each location indicated by the arrows.
- Make sure the hood opener cable is connected properly and hood latch switch connector is plugged in properly.
- Adjust the hood latch alignment (see step 4 on page 20-104).
- Make sure the hood opens properly and locks securely.

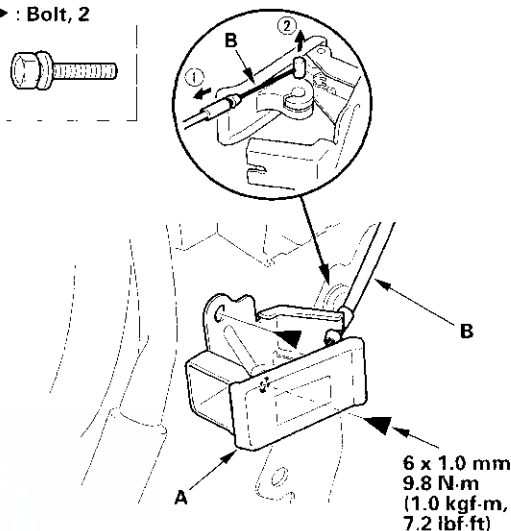


Hood Release Handle Replacement

1. Remove the kick panel (see page 20-45).
2. Remove the bolts, then remove the hood release handle (A).

Fastener Locations

► : Bolt, 2



3. Disconnect the hood opener cable (B) from the hood release handle. Take care not to bend the cable.
 4. Install the hood release handle in the reverse order of removal, and note these items:
- Make sure the hood opener cable is connected properly.
 - Make sure the hood opens properly.



Trunk Lid Opener/Fuel Fill Door Opener Replacement

Special Tools Required

KTC trim tool set SOJATP2014 *

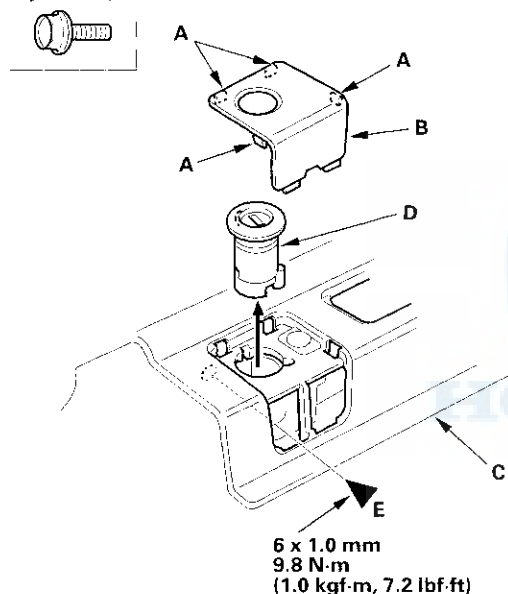
* Available through the American Honda Tool and Equipment Program; call 888-424-6857

NOTE: Use the appropriate tool from the KTC trim tool set to avoid damage when prying components.

1. Using a trim tool, detach the hooks (A) by prying the front side cap (B), then remove it from the front door sill trim (C), and remove the opener lock cylinder (D).

Fastener Location

E ► : Bolt, 1

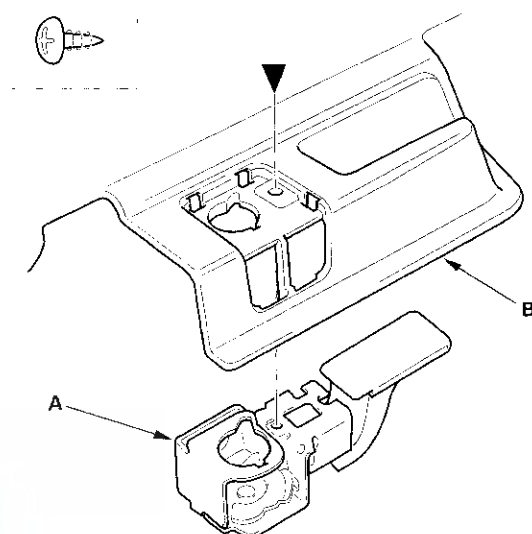


2. Remove the bolt (E).
3. Remove the front door sill trim (see page 20-45).

4. Remove the screw, then remove the trunk lid opener/fuel fill door opener (A) from the front door sill trim (B).

Fastener Location

► : Screw, 1



5. Install the opener in the reverse order of removal, and note these items:

- Make sure the opener cable is connected properly.
- Make sure the trunk lid and fuel fill door open properly and lock securely.

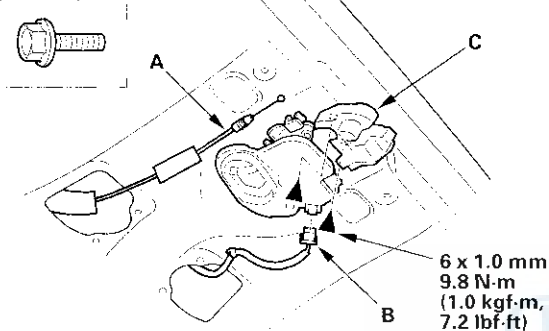
Openers

Trunk Lid Latch Replacement

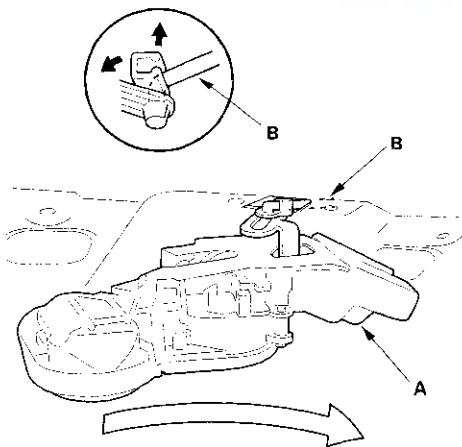
1. Remove the trunk lid trim (see page 20-55).
2. Disconnect the cylinder rod from the lock cylinder (see page 20-132).
3. Disconnect the trunk lid opener cable (A) and trunk lid latch switch connector (B). Detach the trunk lid latch switch connector from the trunk lid. Take care not to bend the opener cable.

Fastener Locations

► : Bolt, 2



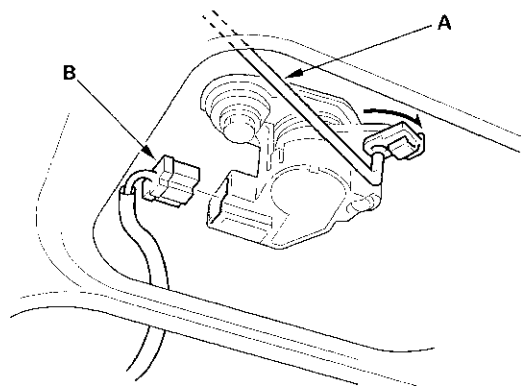
4. Remove the bolts from the trunk lid latch (C).
5. Pull the trunk lid latch (A) out, and disconnect the cylinder rod (B) from the trunk lid latch. Take care not to bend the cylinder rod.



6. Install the latch in the reverse order of removal, and note these items:
 - Make sure the connector is plugged in properly and the opener cable is connected properly.
 - Make sure the trunk lid opens properly and locks securely.

Trunk Lid Lock Cylinder Replacement

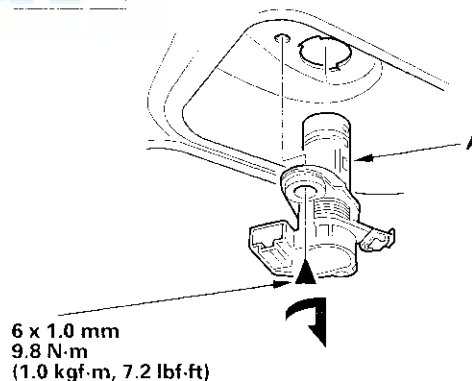
1. Remove the trunk lid trim (see page 20-55).
2. Disconnect the cylinder rod (A), and disconnect the cylinder switch connector (B).



3. Remove the bolt securing the lock cylinder (A). Then turn the trunk lid lock cylinder clockwise, and remove it.

Fastener Location

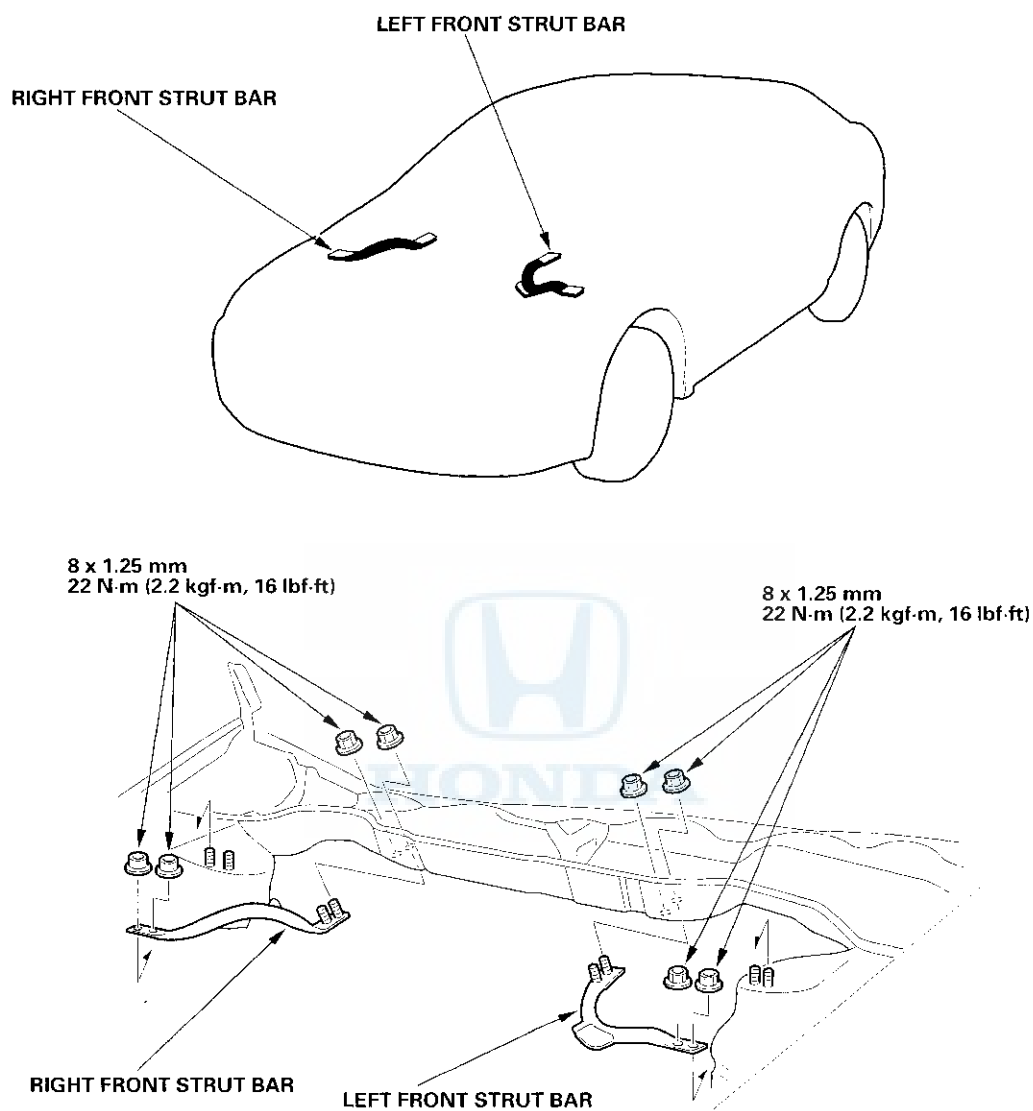
► : Bolt, 1



4. Install the lock cylinder in the reverse order of removal, and note these items:
 - Make sure the cylinder switch connector is plugged in properly and the cylinder rod is connected properly.
 - Make sure the trunk lid opens properly and locks securely.



Frame Brace Replacement

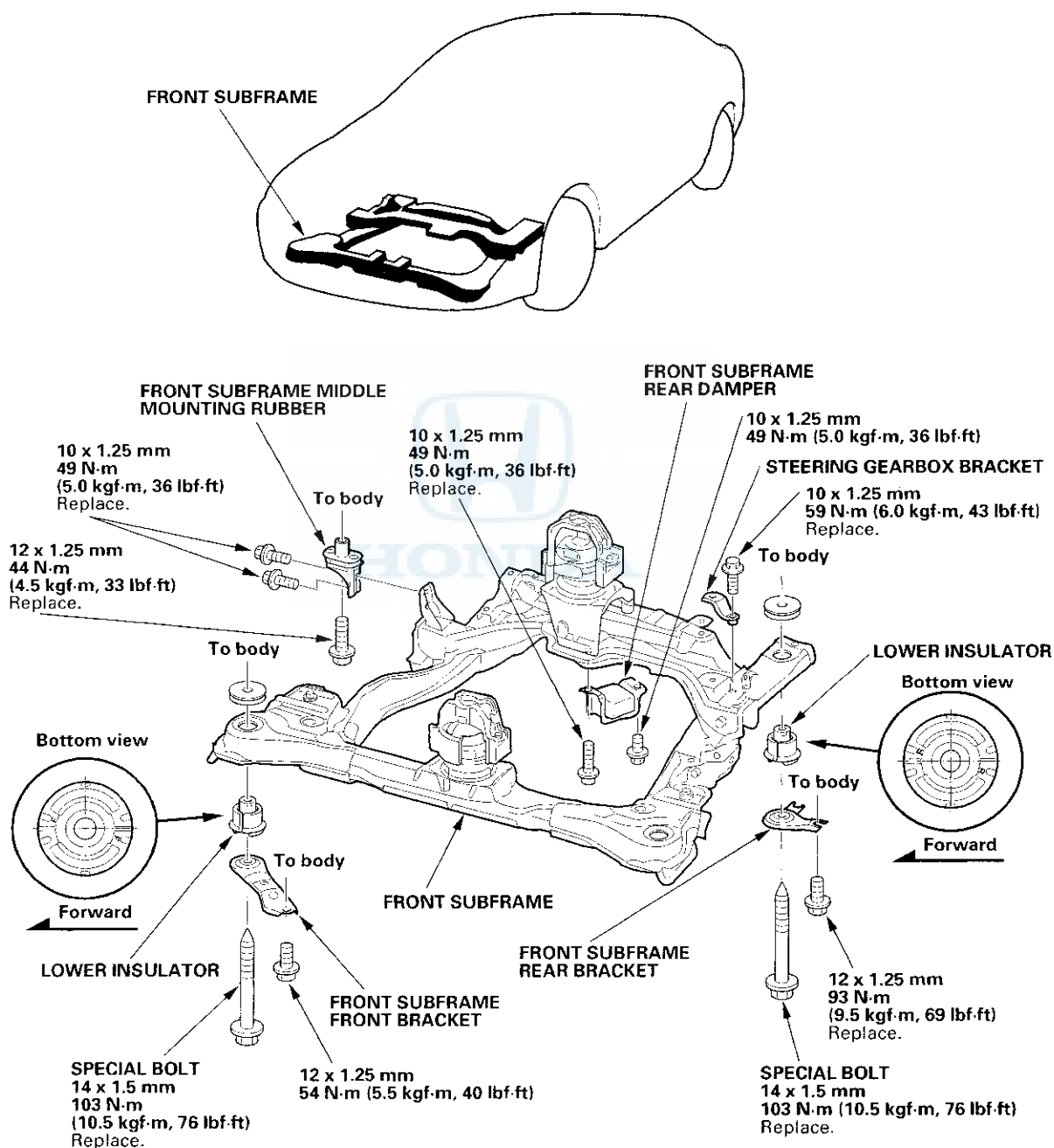


Frame

Subframe Replacement

Front Subframe Torque

After removing the subframe mounting bolts, front subframe middle mounting rubber mounting bolts, front subframe rear bracket mounting bolts, front subframe rear damper front mounting bolt, and steering gearbox bracket mounting bolt, be sure to replace them with new ones.

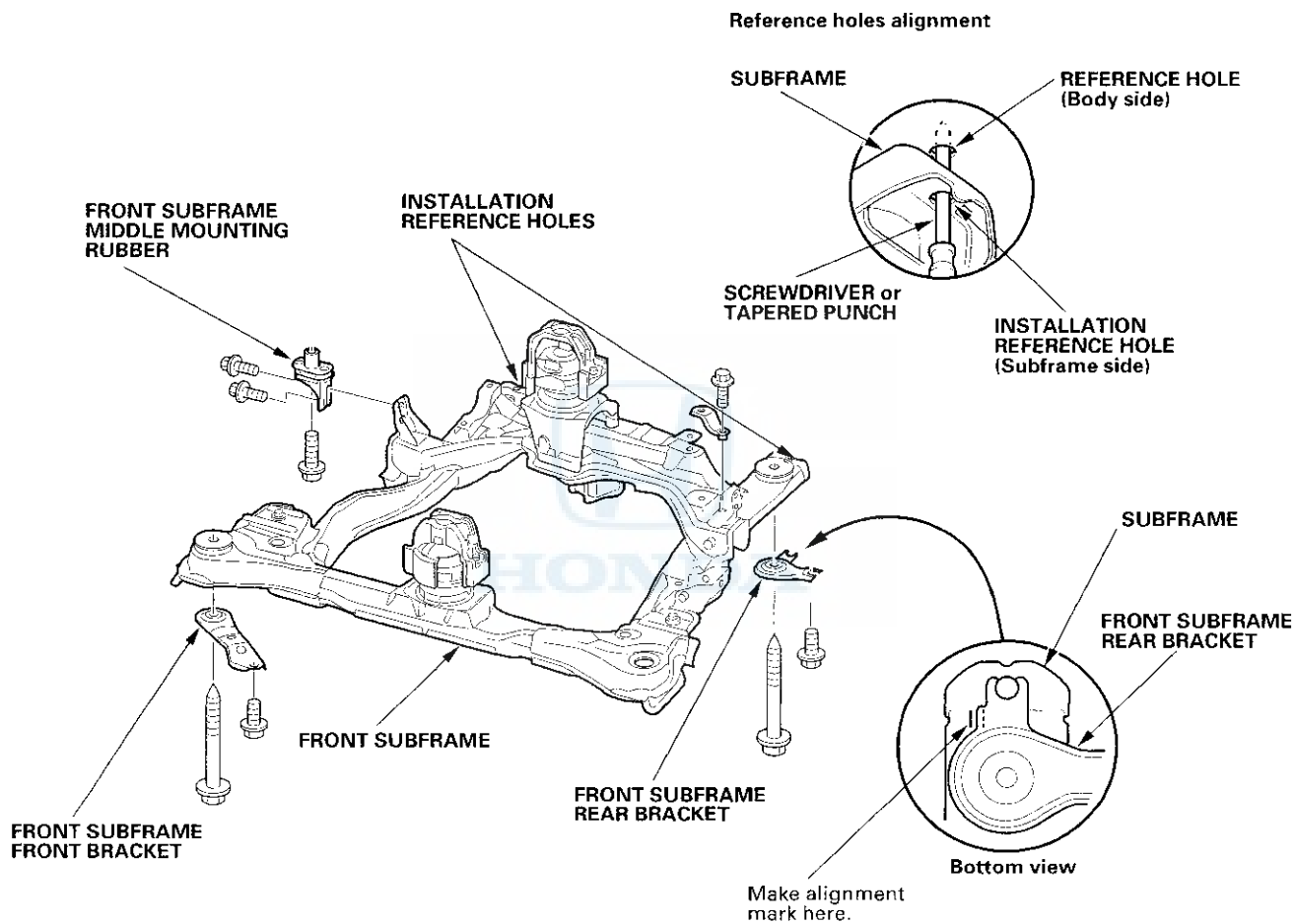




Front Subframe Alignment

NOTE:

- Before removing the subframe, make an alignment mark for the front subframe rear bracket as shown.
- When installing, align both installation reference holes in the subframe with both reference holes in the body using a screwdriver or tapered punch as a guide.
- After mounting the subframe and brackets loosely, align the reference marks with the edge of the rear brackets then tighten all bolts.



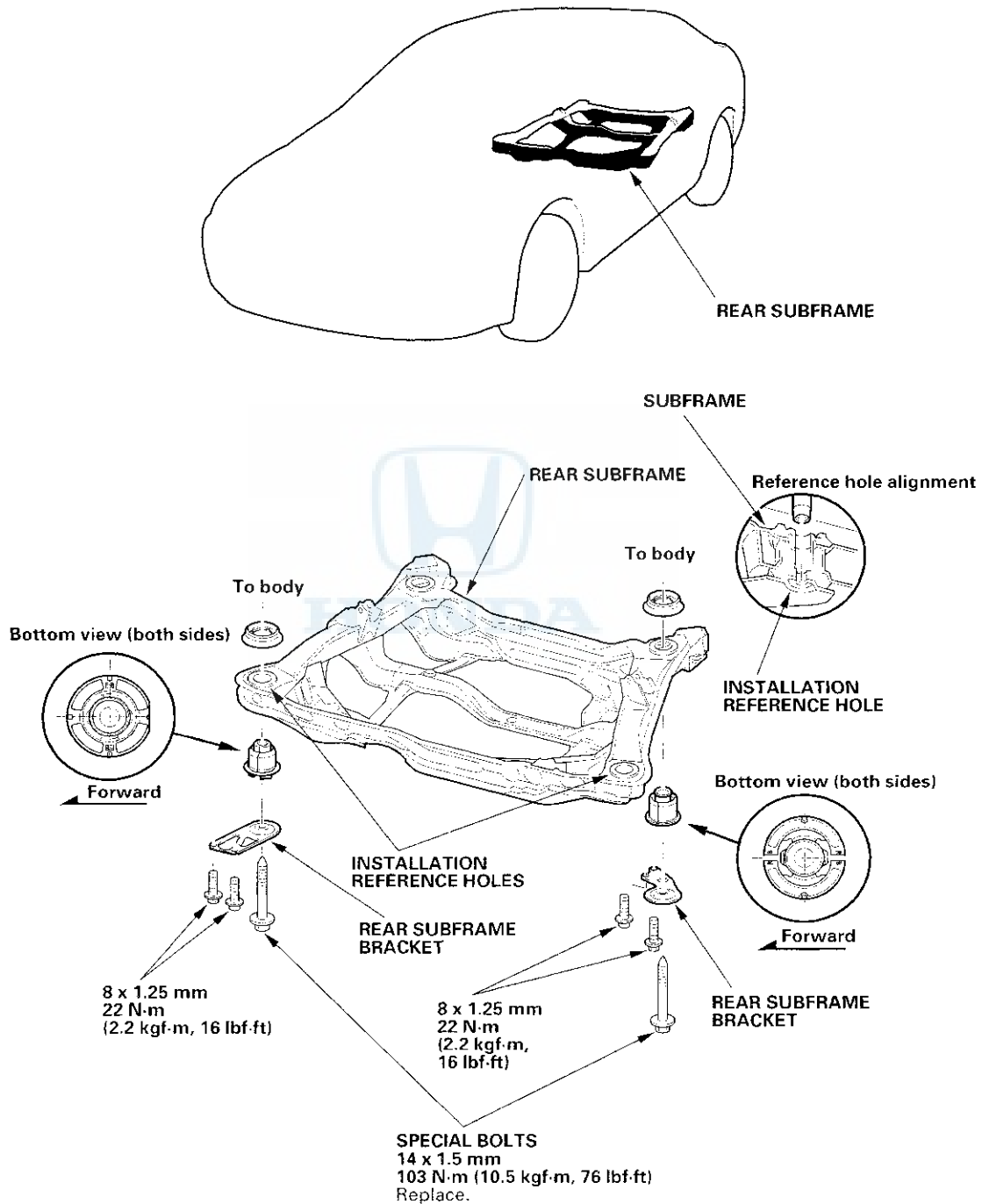
(cont'd)

Frame

Subframe Replacement (cont'd)

Rear Subframe Torque

After removing the subframe mounting bolts, be sure to replace them with new ones.





Frame

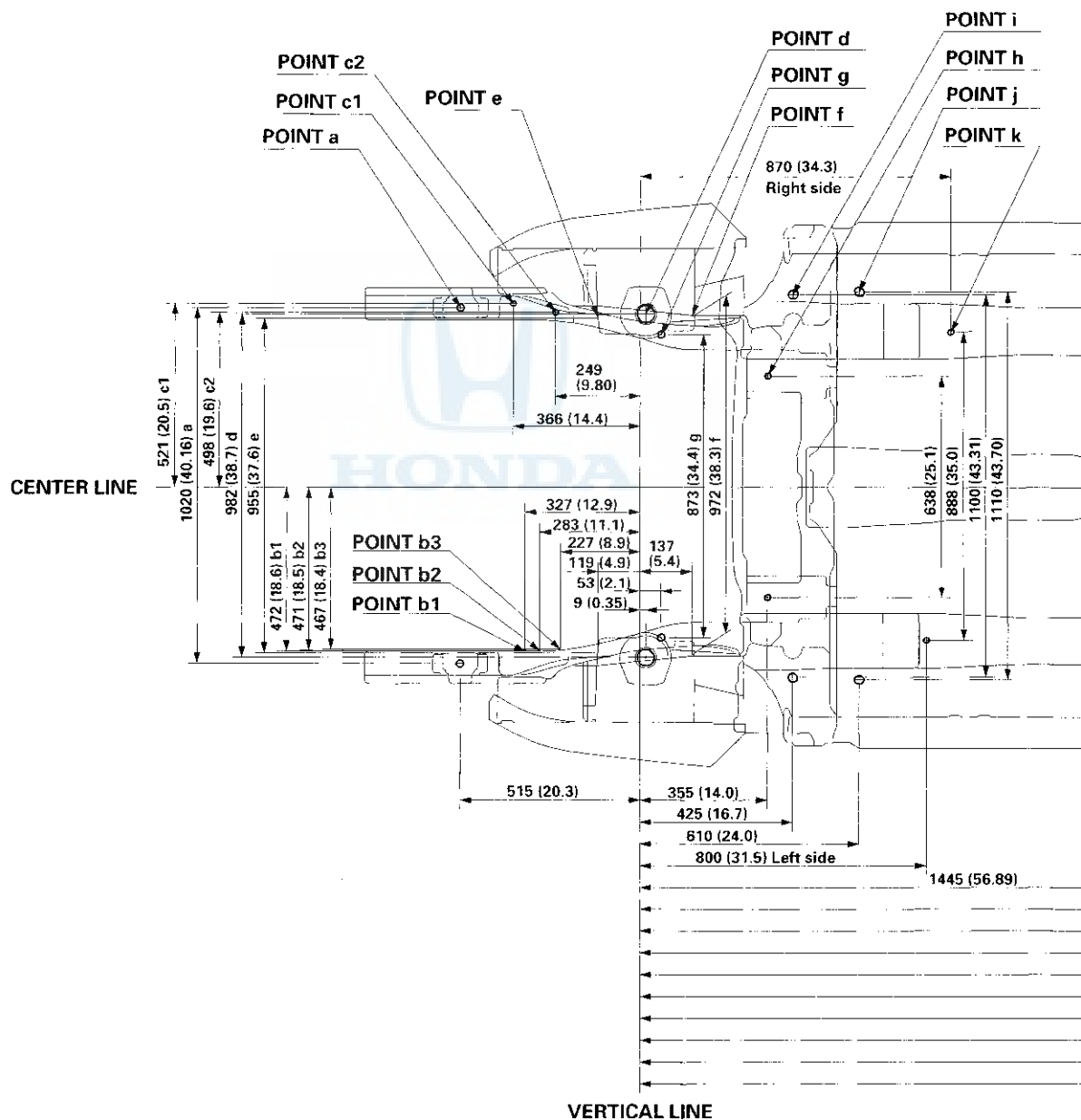
Frame Repair Chart

Top View

Unit: mm (in.)

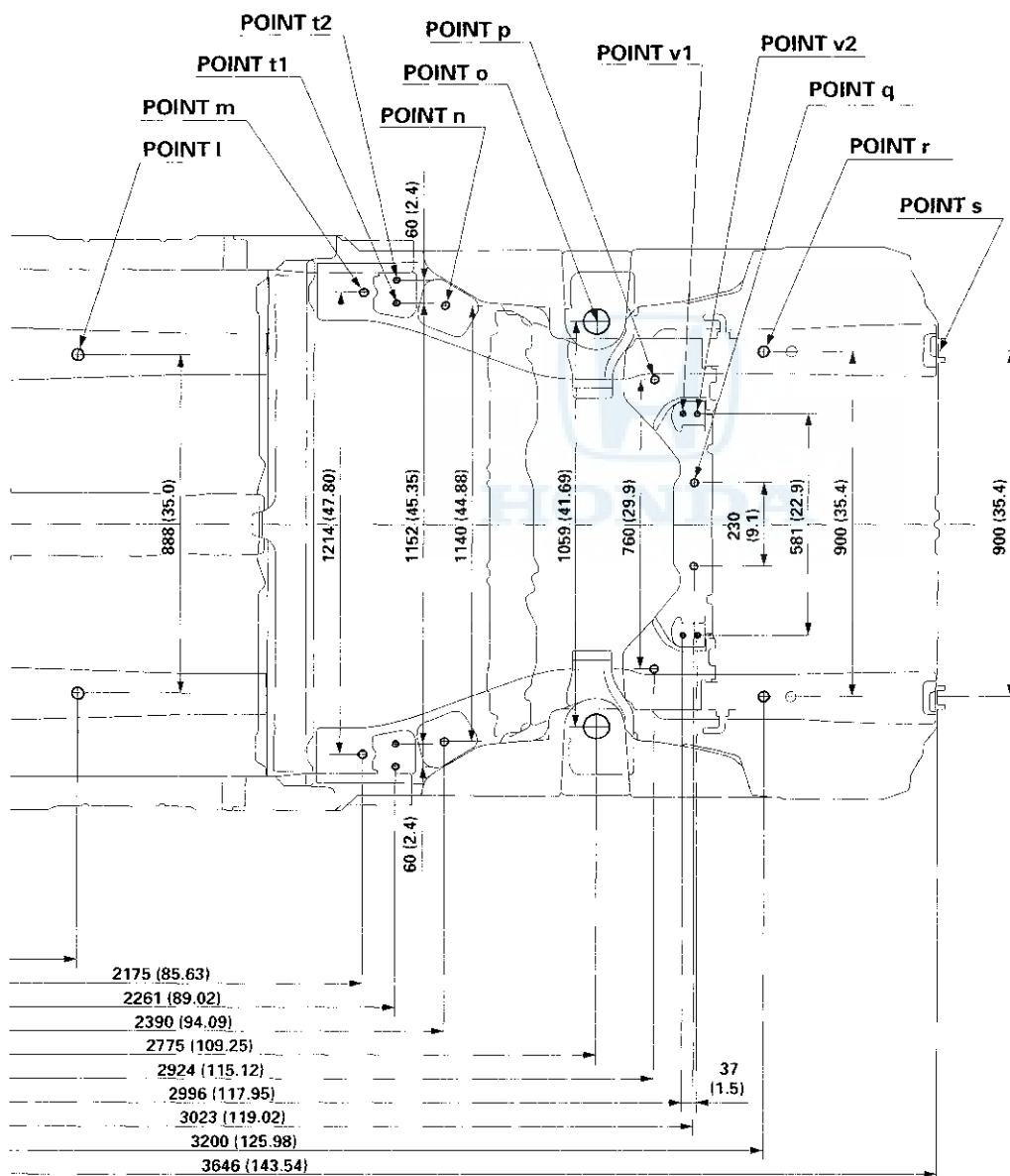
ø: Inner diameter

- | | | | |
|----|---|---|--------------------------------|
| a | For front subframe ø16 (0.63) | e | For front upper arm ø13 (0.51) |
| b1 | For transmission mount ø13 (0.51) Left side | f | For front upper arm ø13 (0.51) |
| b2 | For transmission mount ø15 (0.59) Left side | g | For front subframe ø15 (0.59) |
| b3 | For transmission mount ø13 (0.51) Left side | h | For front subframe ø16 (0.63) |
| c1 | For engine side mount ø15 (0.59) Right side | i | Locating hole ø25 (0.98) |
| c2 | For engine side mount ø15 (0.59) Right side | j | Locating hole ø25 (0.98) |
| d | Front damper center ø50 (1.97) | k | Locating hole ø15 (0.59) |





- | | | | |
|---|---|--------|---|
| l | Locating hole $\varnothing 25$ (0.98) | q | Locating hole $\varnothing 15$ (0.59) |
| m | Locating hole $\varnothing 20$ (0.79) | r | Locating hole $\varnothing 25$ (0.98) |
| n | For rear subframe $\varnothing 14.4$ (0.57) | s | Locating hole $\varnothing 11$ (0.43) |
| o | Rear damper center $\varnothing 52$ (2.05) | t1, t2 | For rear subframe stay $\varnothing 9$ (0.35) |
| p | For rear subframe $\varnothing 14.4$ (0.57) | v1, v2 | For rear subframe stay $\varnothing 9$ (0.35) |



(cont'd)

Frame

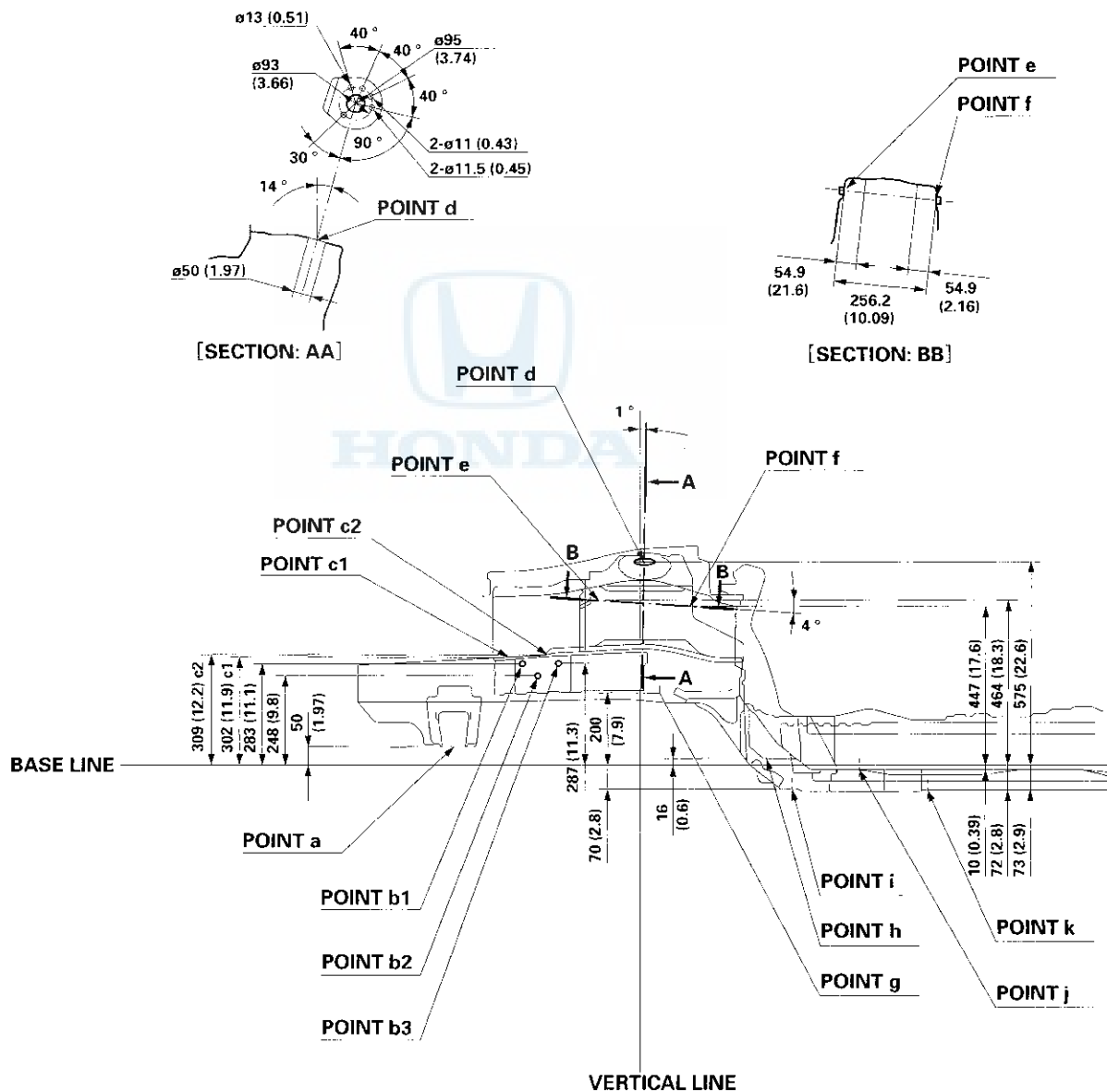
Frame Repair Chart (cont'd)

Side View

Unit: mm (in.)

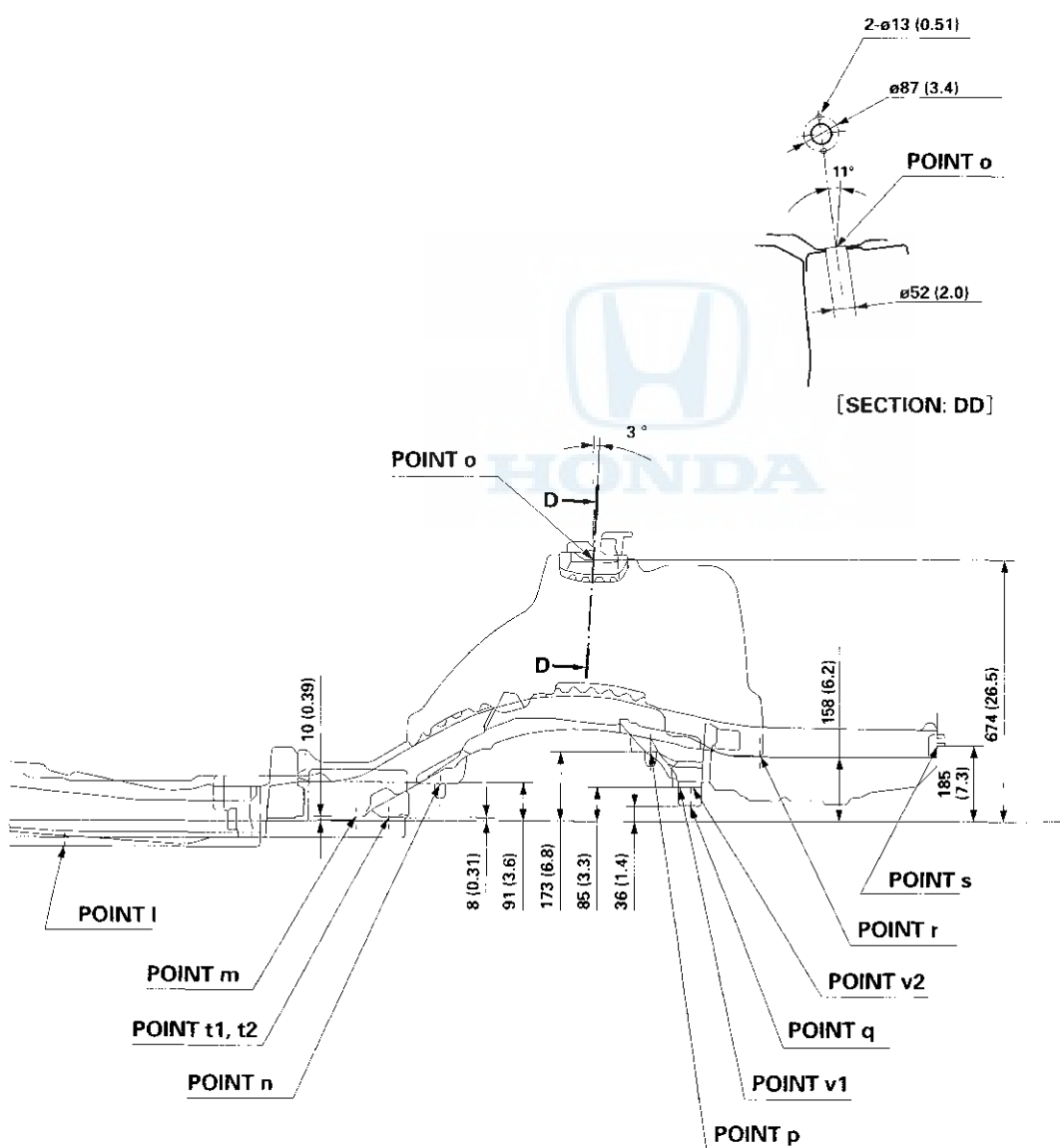
ø: Inner diameter

- | | | | |
|----|---|---|--------------------------------|
| a | For front subframe ø16 (0.63) | e | For front upper arm ø13 (0.51) |
| b1 | For transmission mount ø13 (0.51) Left side | f | For front upper arm ø13 (0.51) |
| b2 | For transmission mount ø15 (0.59) Left side | g | For front subframe ø15 (0.59) |
| b3 | For transmission mount ø13 (0.51) Left side | h | For front subframe ø16 (0.63) |
| c1 | For engine side mount ø15 (0.59) Right side | i | Locating hole ø25 (0.98) |
| c2 | For engine side mount ø15 (0.59) Right side | j | Locating hole ø25 (0.98) |
| d | Front damper center ø50 (1.97) | k | Locating hole ø15 (0.59) |





- | | | | |
|---|---|--------|---|
| l | Locating hole $\varnothing 25$ (0.98) | q | Locating hole $\varnothing 15$ (0.59) |
| m | Locating hole $\varnothing 20$ (0.79) | r | Locating hole $\varnothing 25$ (0.98) |
| n | For rear subframe $\varnothing 14.4$ (0.57) | s | Locating hole $\varnothing 11$ (0.43) |
| o | Rear damper center $\varnothing 52$ (2.05) | t1, t2 | For rear subframe stay $\varnothing 9$ (0.35) |
| p | For rear subframe $\varnothing 14.4$ (0.57) | v1, v2 | For rear subframe stay $\varnothing 9$ (0.35) |



SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If HVAC maintenance is required)

The Accord Hybrid SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



Navigation Tools: Click on the "Table of Contents" below, or use the Bookmarks to the left.

HVAC (Heating, Ventilation, and Air Conditioning)

HVAC (Heating, Ventilation, and Air Conditioning)

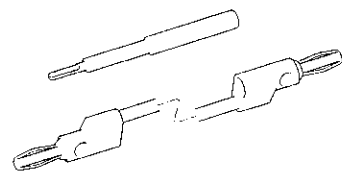
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HVAC (Heating, Ventilation, and Air Conditioning)

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07SAZ-001000A	Backprobe Set	2

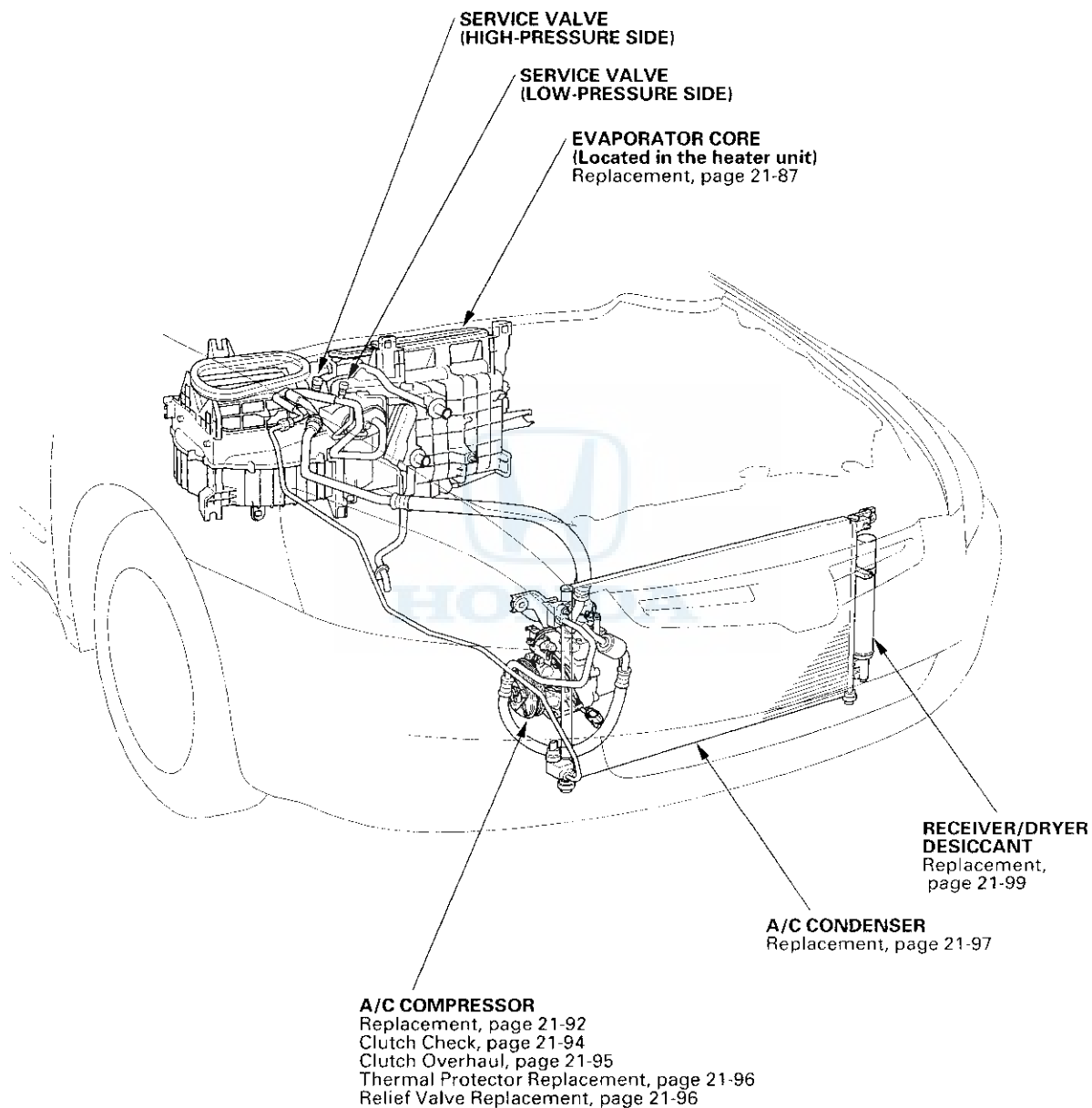


①





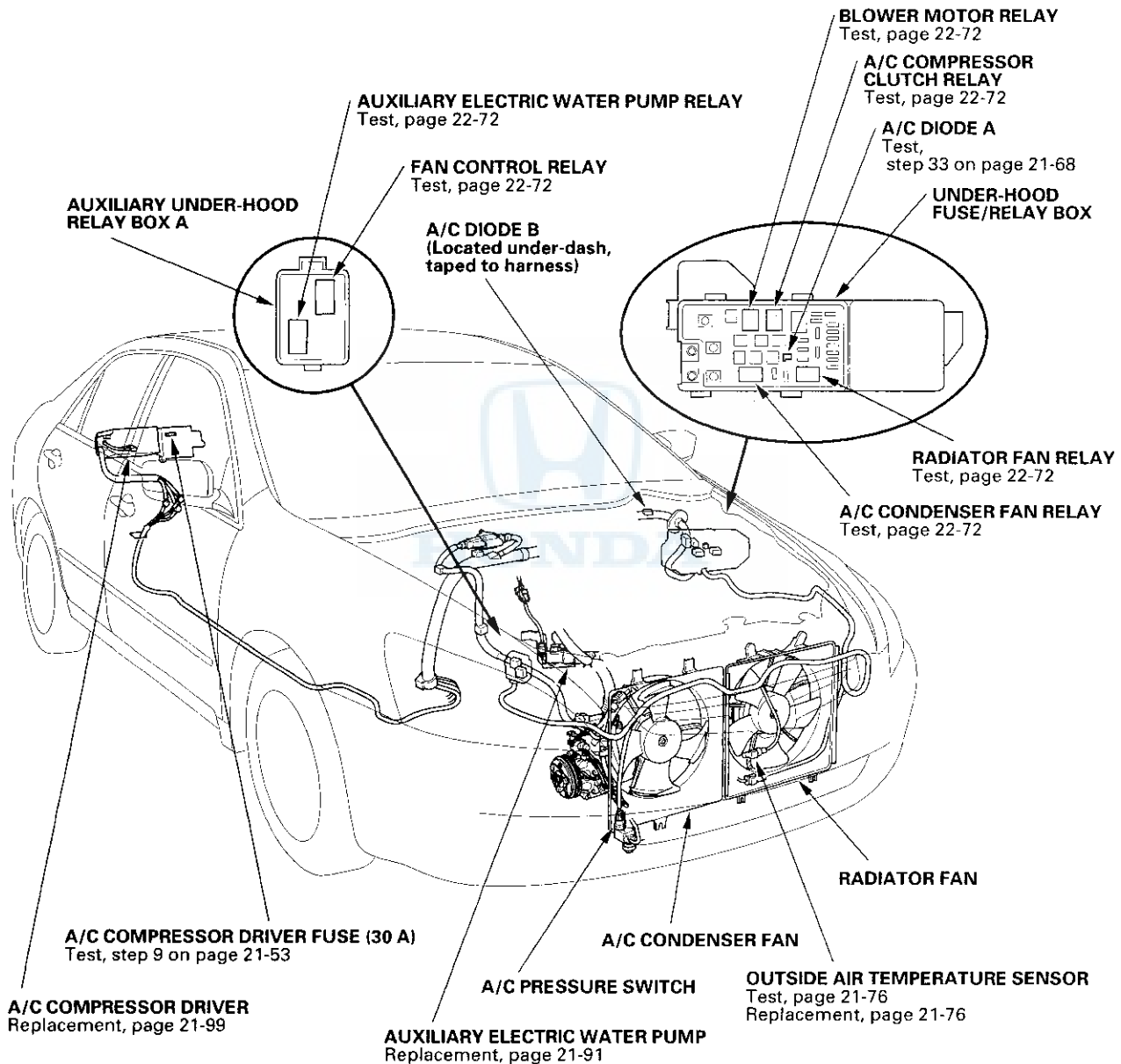
Component Location Index

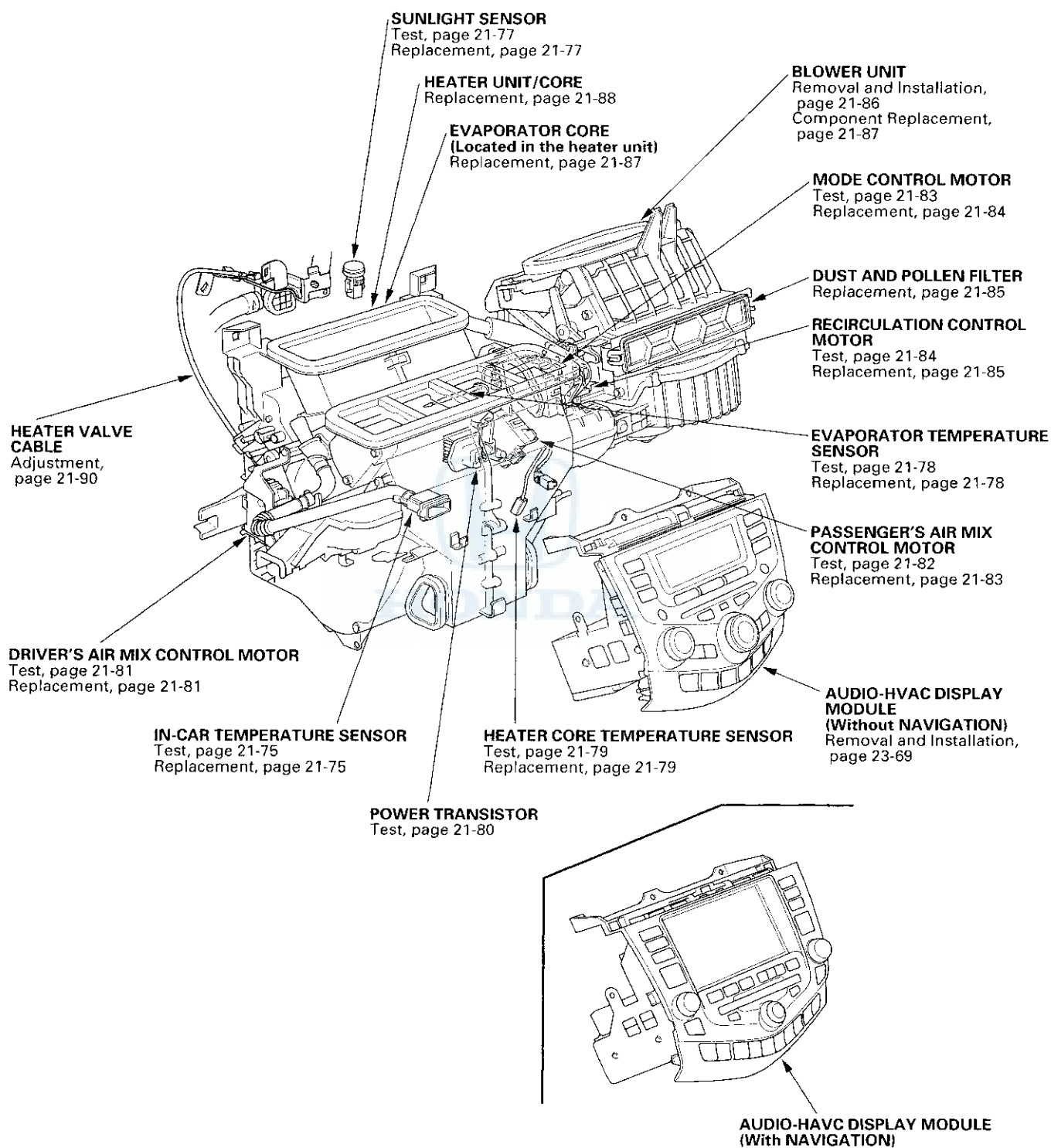


(cont'd)

Climate Control

Component Location Index (cont'd)





Climate Control

A/C Service Tips and Precautions

⚠ WARNING

- Compressed air mixed with the R-134a forms a combustible vapor.
- The vapor can burn or explode causing serious injury.
- Never use compressed air to pressure test R-134a service equipment or vehicle air conditioning systems.

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

The air conditioning system uses HFC-134a (R-134a) refrigerant and Polyol Ester (POE) refrigerant oil, which are not compatible with CFC-12 (R-12) refrigerant and mineral oil. Do not use R-12 refrigerant or mineral oil in this system, and do not attempt to use R-12 servicing equipment; damage to the air conditioning system or your servicing equipment will result. Use only service equipment that is U.L.-listed and is certified to meet the requirements of SAE J2210 to remove R-134a from the air conditioning system.

If accidental system discharge occurs, ventilate work area before resuming service.

R-134a service equipment or vehicle air conditioning systems should not be pressure tested or leak tested with compressed air.

Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

- Always disconnect the negative cable from the battery whenever replacing air conditioning parts.
- Keep moisture and dirt out of the system. When disconnecting any lines, plug or cap the fittings immediately; don't remove the caps or plugs until just before you reconnect each line.
- Before connecting any hose or line, apply a few drops of refrigerant oil to the O-ring.
- When tightening or loosening a fitting, use a second wrench to support the matching fitting.
- When discharging the system, use an R-134a refrigerant recovery/recycling/charging station; don't release refrigerant into the atmosphere.

A/C Refrigerant Oil Replacement

⚠ WARNING

Using the wrong refrigerant oil increases the chance of electric shock or death.

- Use only SANDEN SE-10Y refrigerant oil when servicing the A/C system.

Required POE refrigerant oil: SANDEN SE-10Y

- P/N 38899-RCJ-J01: 120 mL (4 fl-oz)

The A/C compressor in this vehicle is powered by the high-voltage (144 V) battery module, and this oil is required because it has unique electrical insulating qualities.

Adding refrigerant oil to the system

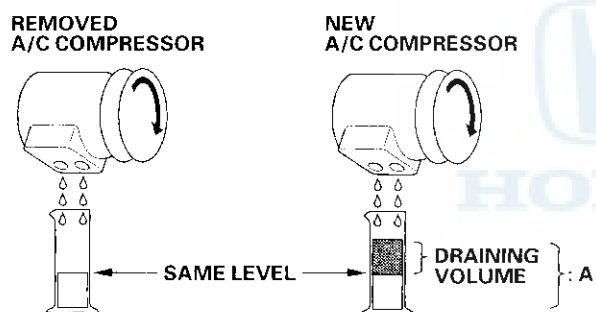
Add the recommended refrigerant oil to the suction port of the A/C compressor in the amount listed if you replace any of the following parts.

- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, dispose of any remaining oil in the container, due to moisture absorption and short shelf life.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if it gets on the paint, wash it off immediately.



A/C condenser25 mL (5/6 fl-oz)
Evaporator45 mL (1 1/2 fl-oz)
Line or hose10 mL (1/3 fl-oz)
Receiver/Dryer10 mL (1/3 fl-oz)
Leakage repair25 mL (5/6 fl-oz)
A/C compressorFor A/C compressor replacement, subtract the volume of oil drained from the removed A/C compressor from 130 mL (4 2/5 fl-oz), and drain the calculated volume of oil from the new A/C compressor: 130 mL (4 2/5 fl-oz) — Volume of removed A/C compressor = Volume to drain from new A/C compressor.

NOTE: Even if no oil is drained from the removed A/C compressor, don't drain more than 50 mL (1 2/3 fl-oz) from the new A/C compressor.



A: 130 mL (4 2/5 fl-oz)

Repairs needed if the wrong refrigerant oil was added

Use only the required Polyol Ester (POE) refrigerant oil SANDEN SE-10Y designed for the R-134a compressor. Intermixing the recommended (POE) refrigerant oil with any other refrigerant oil will result in A/C compressor failure. Using the wrong refrigerant oil can also be a safety hazard (see page 21-6).

If the wrong refrigerant oil was added, and the A/C system is operated, the following components must be replaced:

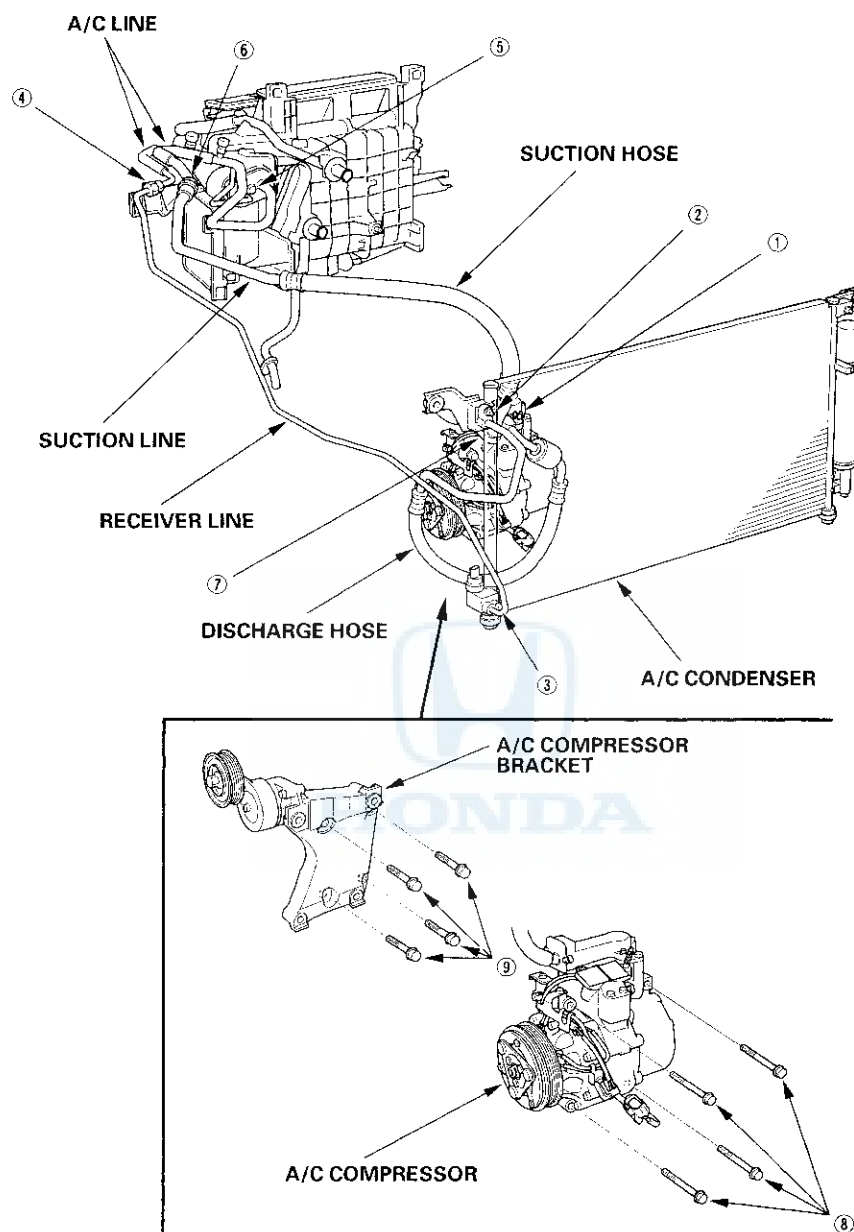
- A/C compressor
- A/C condenser
- A/C evaporator
- Receiver/dryer
- A/C system lines and hoses

If the A/C system was not operated, then only the A/C compressor needs to be replaced.

(cont'd)

Climate Control

A/C Refrigerant Oil Replacement (cont'd)



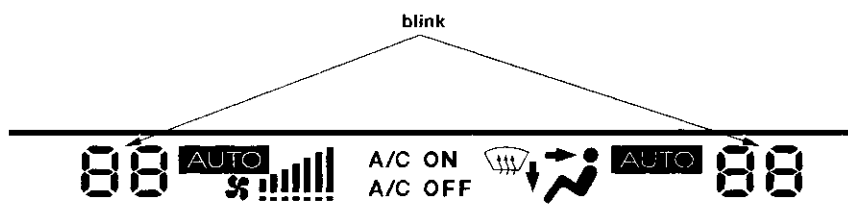
- ① Discharge hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)
- ② Discharge hose to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)
- ③ Receiver line to the A/C condenser (6 x 1.0 mm): 9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)
- ④ Receiver line to the A/C line: 13.2 N·m (1.4 kgf-m, 9.8 lbf-ft)
- ⑤ A/C line to the evaporator (6 x 1.0 mm): 9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)
- ⑥ Suction line to the A/C line: 31.9 N·m (3.3 kgf-m, 23.5 lbf-ft)
- ⑦ Suction hose to the A/C compressor (6 x 1.0 mm): 9.8 N·m (1.0 kgf-m, 7.2 lbf-ft)
- ⑧ A/C compressor to the A/C compressor bracket (8 x 1.25 mm): 22 N·m (2.2 kgf-m, 16 lbf-ft)
- ⑨ A/C compressor bracket to the engine block (10 x 1.25 mm): 44 N·m (4.5 kgf-m, 33 lbf-ft)



General Troubleshooting Information

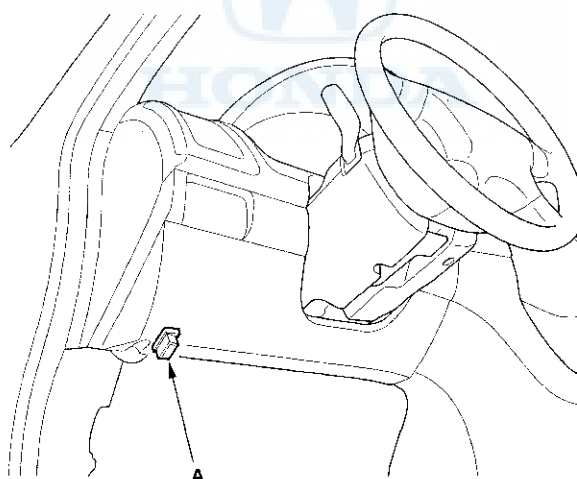
Temperature indicators blink

When both temperature indicators blink it indicates a problem in the climate control system, and the idle stop will not work. Check the Diagnostic Trouble Codes (DTC) and do the appropriate troubleshooting.



How to Check for DTCs with the HDS

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Turn the ignition switch ON (II).
4. Select DTCs in the BODY ELECTRICAL/CLIMATE CONTROL MODE menu of the HDS.
5. Check for DTCs. If any DTCs are indicated, write down the DTCs, then go to the indicated DTC troubleshooting. If no DTCs are indicated, refer to symptom troubleshooting.

NOTE: After troubleshooting, clear the DTCs with the HDS.

(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

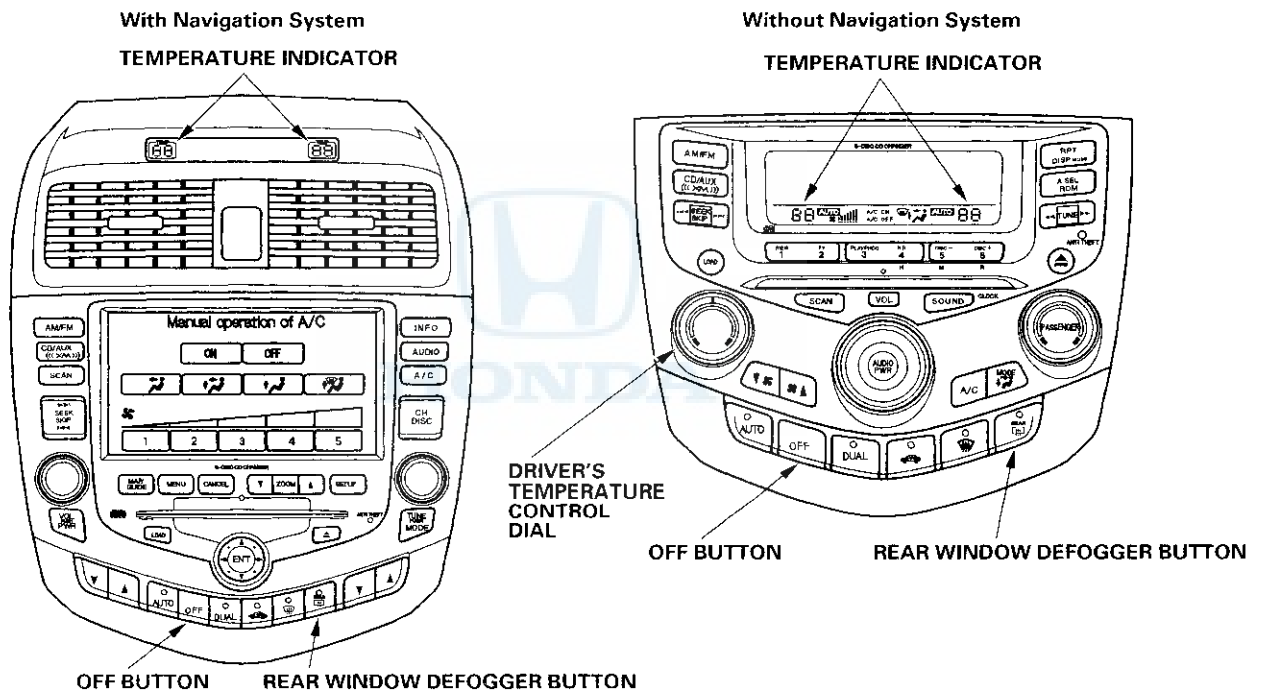
How to Use the Self-diagnostic Function without HDS

The audio-HVAC display panel has a self-diagnostic function. To run the self-diagnostic function, do the following:

NOTE: Before troubleshooting the climate control system, refer to B-CAN System Diagnosis Test Mode A Troubleshooting (see page 22-84).

1. Set the driver's temperature control dial on Max Cool (without navigation system).
2. Turn the ignition switch OFF, and then ON (II).
3. Press and hold the OFF button. While pressing the rear window defogger button five times within 10 seconds, then release the OFF button and the self-diagnostic will begin.

NOTE: The blower motor can run at any speed regardless of what the panel is displaying.



- If there is any problem in the system, the temperature indicator will light up the segment (A through Z) corresponding to the error. The temperature indicator will then alternate every second between displaying "88" (all segments lit) and the error code segment (A through Z). To determine the meaning of the DTC refer to Checking for DTCs.
- If there are no problems detected, the segments will not illuminate.

Canceling the Self-diagnostic Function

4. Turn the ignition switch OFF. After completing repair work, run the self-diagnostic function again to make sure that there are no other malfunctions.



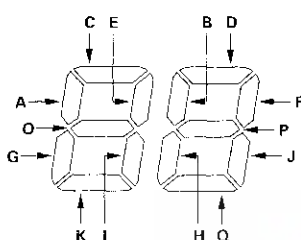
Checking for DTCs

1. Turn the ignition switch ON (II).
2. Press and hold the AUTO button, then the OFF button. Continue to hold both buttons, if a DTC is detected, the DTC segment will flash then alternate to all segments flash.

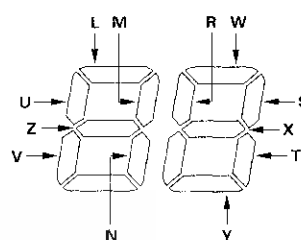
NOTE:

- If you release the buttons, the display will go blank. To return the display, simply press the AUTO, then the OFF buttons again.
- In the case of multiple DTCs, the temperature indicator will display all of them. If indicator segments A, C, E, G, I, L, O, R, T, and V are on at the same time, there may be an open in the common ground wire.

DRIVER'S TEMPERATURE INDICATOR



PASSENGER'S TEMPERATURE INDICATOR



DTC (Temperature Indicator Segment)	Detection Item
A	An open in the in-car temperature sensor circuit (see page 21-32)
B	A short in the in-car temperature sensor circuit (see page 21-33)
C	An open in the outside air temperature sensor circuit (see page 21-34)
D	A short in the outside air temperature sensor circuit (see page 21-35)
E	An open in the sunlight sensor circuit (see page 21-36)
F	A short in the sunlight sensor circuit (see page 21-37)
G	An open in the evaporator temperature sensor circuit (see page 21-38)
H	A short in the evaporator temperature sensor circuit (see page 21-39)
I	An open in the driver's air mix control motor circuit (see page 21-40)
J	A short in the driver's air mix control motor circuit (see page 21-41)
K	A problem in the driver's air mix control linkage, door, or motor (see page 21-43)
L	An open in the passenger's air mix control motor circuit (see page 21-43)
M	A short in the passenger's air mix control motor circuit (see page 21-44)
N	A problem in the passenger's air mix control linkage, door, or motor (see page 21-46)
O	An open or short in the mode control motor circuit (see page 21-46)
P	A problem in the mode control linkage, doors, or motor (see page 21-48)
Q	A problem in the blower motor circuit (see page 21-49)
R	A problem in the auxiliary electric water pump circuit (see page 21-56)
S	An open in the thermal protector circuit (see page 21-54)
T	A short in the thermal protector circuit (see page 21-55)
U	An open in the heater core temperature sensor circuit (see page 21-59)
V	A short in the heater core temperature sensor circuit (see page 21-60)
W	A problem in the A/C compressor motor (see page 21-52)
X	A problem in the A/C compressor driver (see page 21-53)
Y	A problem in the A/C compressor driver (see page 21-61)
Z	A problem in the A/C compressor delivery valve (see page 21-61)

(cont'd)

Climate Control

General Troubleshooting Information (cont'd)

Displaying Sensor Inputs at the Climate Control Unit

The climate control unit has a mode that displays sensor inputs it receives. This mode shows you what the climate control unit is receiving from each of the sensors, one at a time, and it can help you determine if a sensor is faulty.

Check these items before using the sensor input display mode

1. Turn the ignition switch ON (II), and check the recirculation door function; press the recirculation button to switch from FRESH to RECIRC. The air volume and sound should change slightly.
2. Set the temperature control knob to the desired test temperature. When selecting the test temperature, note these items:
 - "Lo" temperature setting will default to MAX COOL, VENT, and RECIRC.
 - "Hi" temperature setting will default to MAX HOT, FLOOR, and FRESH.
 - 58 through 86 °F settings will use the automatic climate control logic.
3. Turn the ignition switch OFF.

To run the sensor input display mode, follow these steps

1. Turn the ignition switch OFF.
2. Press and hold both the AUTO and DUAL buttons, then start the engine.
3. After the engine starts, release the buttons. The audio-HVAC display panel will flash the sensor number and then the value for that sensor. Record the value displayed.
4. To advance to the next sensor, press the rear window defogger button.

Sensor	Item	Displayed Value
1	In-car Temperature	°C
2	Outside Air Temperature	°C
3	Solar Radiation Sensor Value: Dark = 00, Flashlight = 04, Cloudy = 10, Sunny = 65	10 kcal/m2·h
4	Engine Coolant Temperature	°C
5	Evaporator Temperature	°C
6	Driver's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
7	Passenger's Air Mix Opening (Low value indicates cooler air distribution, higher value indicates warmer air distribution)	% of opening
8	Vehicle Speed (Vehicle must be driven to display speed)	10 km/h
9	Driver's Vent Temperature Air Out (TAO Dr)	°C
A	Heater Core Temperature	°C
B	A/C Compressor Revolution Feedback	100 rpm

NOTE:

- The sensor values will be displayed in degrees Celsius (°C) or an alphanumeric code. Use the chart to convert the value to degrees Fahrenheit (°F).
 - If the sensor value displays "Er", this indicates there is an open or short in the circuit or sensor. Check for DTCs using the HDS, or refer to checking DTCs by DTC indication to check for DTCs.
 - If necessary, compare the sensor input display to an alike, known-good vehicle under the same test conditions.
 - If the sensor is out of the normal range, refer to the sensor test or substitute with a known-good sensor, and recheck.
5. To cancel the sensor input display mode, press the AUTO button or turn the ignition switch off.



Celsius to Fahrenheit Conversion Table

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
0	32	10	50	20	68	30	86	40	104
1	34	11	52	21	70	31	88	41	106
2	36	12	54	22	72	32	90	42	108
3	37	13	55	23	73	33	91	43	109
4	39	14	57	24	75	34	93	44	111
5	41	15	59	25	77	35	95	45	113
6	43	16	61	26	79	36	97	46	115
7	45	17	63	27	81	37	99	47	117
8	46	18	64	28	82	38	100	48	118
9	48	19	66	29	84	39	102	49	120

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
50	122	60	140	70	158	80	176	90	194
51	124	61	142	71	160	81	178	91	196
52	126	62	144	72	162	82	180	92	198
53	127	63	145	73	163	83	181	93	199
54	128	64	147	74	165	84	183	94	201
55	131	65	149	75	167	85	185	95	203
56	133	66	151	76	169	86	187	96	205
57	135	67	152	77	170	87	188	97	207
58	136	68	154	78	172	88	190	98	208
59	139	69	158	79	174	89	192	99	210

Alphanumeric Conversion Table

Display Reading (Alphanumeric)	°C	°F	%
A1 thru A9	—1 thru —9	30 thru 16	—1 thru —9
B0 thru B9	—10 thru —19	14 thru —2	—10 thru —19
C0 thru C9	—20 thru —29	—4 thru —20	—20 thru —29
D0 thru D9	—30 thru —39	—22 thru —38	—30 thru —39
E0 thru E9	—40 thru —49	—40 thru —58	—
F0 thru F9	—50 thru —59	—58 thru —74	+100 thru +109

Climate Control

DTC Troubleshooting Index

Checking the DTCs by HDS

DTC	Detection Item or Symptom	ECU	DTC type	Page
B1200	Communication bus line error	Audio-HVAC display panel	Loss of communication	(see page 22-108)
B1202	Climate control unit internal error	Audio-HVAC display panel	Internal error	(see page 21-30)
B1205	Climate control unit lost communication with the gauge control module (VSP/NE message)	Audio-HVAC display panel	Loss of communication	(see page 21-30)
B1206	Climate control unit lost communication with the gauge control module (ECT message)	Audio-HVAC display panel	Loss of communication	(see page 21-31)
B1207	Climate control unit lost communication with the gauge control module (ILLUMI message)	Audio-HVAC display panel	Loss of communication	(see page 21-31)
B1225	An open in the in-car temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-32)
B1226	A short in the in-car temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-33)
B1227	An open in the outside air temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-34)
B1228	A short in the outside air temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-35)
B1229	An open in the sunlight sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-36)
B1230	A short in the sunlight sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-37)
B1231	An open in the evaporator temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-38)
B1232	A short in the evaporator temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-39)
B1233	An open in the driver's air mix control motor circuit	Audio-HVAC display panel	Signal error	(see page 21-40)
B1234	A short in the driver's air mix control motor circuit	Audio-HVAC display panel	Signal error	(see page 21-41)
B1235	A problem in the driver's air mix control linkage, door, or motor	Audio-HVAC display panel	Signal error	(see page 21-43)
B1236	An open in the passenger's air mix control motor circuit	Audio-HVAC display panel	Signal error	(see page 21-43)
B1237	A short in the passenger's air mix control motor circuit	Audio-HVAC display panel	Signal error	(see page 21-44)
B1238	A problem in the passenger's air mix control linkage, door, or motor	Audio-HVAC display panel	Signal error	(see page 21-46)
B1239	An open or short in the mode control motor circuit	Audio-HVAC display panel	Signal error	(see page 21-46)
B1240	A problem in the mode control linkage, doors, or motor	Audio-HVAC display panel	Signal error	(see page 21-48)
B1241	A problem in the blower motor circuit	Audio-HVAC display panel	Signal error	(see page 21-49)
B2989	A problem in the A/C compressor motor	Audio-HVAC display panel	Signal error	(see page 21-52)
B2990	A problem in the A/C compressor driver	Audio-HVAC display panel	Signal error	(see page 21-53)
B2992	An open in the thermal protector circuit	Audio-HVAC display panel	Signal error	(see page 21-54)
B2993	A short in the thermal protector circuit	Audio-HVAC display panel	Signal error	(see page 21-55)
B2995	A problem in the auxiliary electric water pump circuit	Audio-HVAC display panel	Signal error	(see page 21-56)
B2996	An open in the heater core temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-59)
B2997	A short in the heater core temperature sensor circuit	Audio-HVAC display panel	Signal error	(see page 21-60)
B2998	A problem in the A/C compressor driver	Audio-HVAC display panel	Signal error	(see page 21-61)
B2999	A problem in the A/C compressor delivery valve	Audio-HVAC display panel	Signal error	(see page 21-61)



Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Recirculation control doors do not change between Fresh and Recirculate	Recirculation control motor circuit troubleshooting (see page 21-62)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-9) Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box Cleanliness and tightness of all terminals
Blower, heater controls, and A/C do not work	Audio-HVAC display panel power and ground circuit troubleshooting (see page 21-64)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-9) Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box Poor ground at G503 Cleanliness and tightness of all terminals
Both fans do not run at low speed with the A/C on (but the A/C compressor runs with the A/C on)	Radiator and A/C condenser fan low speed circuit troubleshooting (see page 21-65)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-9) Blown fuse No. 9 (20 A) in the under-hood fuse/relay box, and No. 30 (7.5 A) in the under-dash fuse/relay box Poor ground at G301 Cleanliness and tightness of all terminals
The A/C condenser fan does not run at high speed (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C condenser fan high speed circuit troubleshooting (see page 21-69)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-9) Blown fuse No. 30 (7.5 A) in the under-dash fuse/relay box Poor ground at G301 Cleanliness and tightness of all terminals
Both fans do not run at high speed with the A/C on (but both fans run at low speed and the A/C compressor operates with the A/C on)	A/C pressure sensor circuit Low voltage troubleshooting (see page 11-328), high voltage troubleshooting (see page 11-330), and ETC troubleshooting (see page 11-3)	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3) Cleanliness and tightness of all terminals
The A/C compressor clutch does not engage (but both fans run with the A/C on)	A/C compressor clutch circuit troubleshooting (see page 21-71)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-9) Blown fuse No. 12 (7.5 A) in the under-hood fuse/relay box, and No. 30 (7.5 A) in the under-dash fuse/relay box Cleanliness and tightness of all terminals
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C signal circuit troubleshooting (see page 21-73)	<ul style="list-style-type: none"> HVAC DTCs (see page 21-9) Cleanliness and tightness of all terminals
During auto idle stop, the A/C does not work	A/C compressor driver power circuit troubleshooting (see page 21-74)	Blown fuse No. 29 (7.5 A) in the under-dash fuse/relay box
A/C system does not come on (both fans and the A/C compressor do not work); heater is OK	A/C pressure sensor circuit low voltage troubleshooting (see page 11-328), high voltage troubleshooting (see page 11-330)	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3) Cleanliness and tightness of all terminals
Blower fan runs slower than expected in cold weather	ECT troubleshooting (see page 11-86) NOTE: It is normal for the blower to run slowly until the engine coolant temperature begins to rise. If the blower continues to run slowly for an abnormal length of time, continue to troubleshoot the problem.	<ul style="list-style-type: none"> Powertrain DTCs (see page 11-3)
During the engine warm-up, the controlled air temperature is greatly different from the set temperature if the A/C system starts after the replacement of the audio-HVAC display panel	If the sensor 2 (outside air temperature) indication is greatly different from the outside air temperature indication of the gauge after replacing the audio-HVAC display panel, leave the vehicle until the engine coolant temperature falls under 140 °F (60 °C) and make sure the controlled air temperature does not differ significantly from the set temperature.	

(cont'd)

Climate Control

Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
AUTO button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the OFF button, then press the AUTO button and check the display. <ul style="list-style-type: none"> • If AUTO is displayed, but the climate control is not working properly, do the self-diagnostic (see page 21-9). • If AUTO is not displayed, check for poor connections at the audio-HVAC display panel connector, if the connections are OK, replace the audio-HVAC display panel. 	Audio-HVAC display panel power and ground circuit troubleshooting (see page 21-64).
OFF button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the AUTO button, then press the OFF button and check the display. <ul style="list-style-type: none"> • If climate control display turns off, go to self-diagnostic (see page 21-9). • If the audio-HVAC display does not turn on, replace the audio-HVAC display panel. 	
Dual button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the AUTO button, then press the DUAL button several times and check the DUAL button LED. The LED should toggle on and off as the button is pressed. <ul style="list-style-type: none"> • If the LED turns on and off, go to self-diagnostic (see page 21-9). • If the LED does not turn on or off, replace the audio-HVAC display panel. 	
Recirculation button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the recirculation button several times and check the button's LED. The LED should toggle on and off as the button is pressed. <ul style="list-style-type: none"> • If the LED turns on and off, go to recirculation control motor test (see page 21-84). • If the LED does not turn on or off, replace the audio-HVAC display panel. 	
Defroster button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the AUTO button, then press the defroster button several times and check the button's LED. The LED should toggle on and off as the button is pressed. <ul style="list-style-type: none"> • If the LED turns on and off, go to self-diagnostic (see page 21-9). • If the LED does not turn on or off, replace the audio-HVAC display panel. 	
Rear window defogger button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the rear window defogger button several times and check the button's LED. The LED should toggle on and off as the button is pressed. <ul style="list-style-type: none"> • If the LED turns on and off, go to rear window defogger troubleshooting (see page 22-254). • If the LED does not turn on or off, replace the audio-HVAC display panel. 	

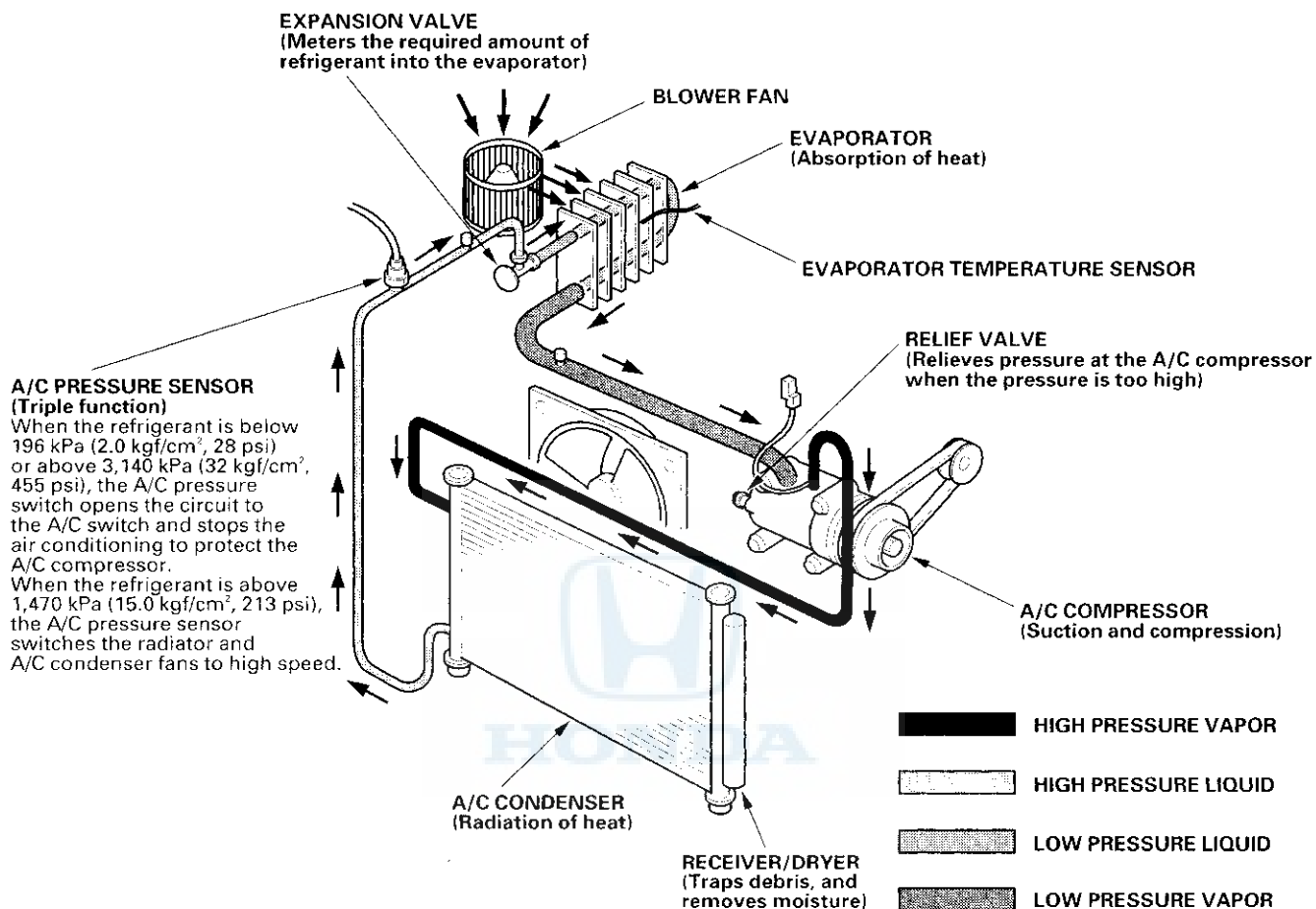


Symptom	Diagnostic procedure	Also check for
MODE button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the MODE button and check the display. <ul style="list-style-type: none"> • If the display scrolls through the modes as the MODE button is pressed, go to self-diagnostic (see page 21-9). • If the display does not scroll the modes as the MODE button is pressed, replace the audio-HVAC display panel. 	
Fan control button does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the AUTO button, then adjust the fan control button up/down and check the display. <ul style="list-style-type: none"> • If the display indicates the fan speed selection up/down, go to self-diagnostic (see page 21-9). • If the display does not indicate the fan speed selection up/down, replace the audio-HVAC display panel. 	
TEMP control dial does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the AUTO button, then adjust the TEMP control dial up/down and check the display. <ul style="list-style-type: none"> • If the display indicates the change in temperature up/down, go to self-diagnostic (see page 21-9). • If the display does not indicate the change in temperature up/down, replace the audio-HVAC display panel. 	
Passenger's TEMP dial does not work	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the AUTO button, press the DUAL button, then adjust the passenger's TEMP control dial up/down and check the display. <ul style="list-style-type: none"> • If the display indicates the change in temperature up/down for the passenger's side, go to self-diagnostic (see page 21-9). • If the display does not indicate the change in temperature up/down for the passenger's side, replace the audio-HVAC display panel. 	
Audio-HVAC display panel will not run self-diagnosis	<ol style="list-style-type: none"> 1. Turn the ignition switch ON (II). 2. Press the A/C button, and then OFF button and check the display. <ul style="list-style-type: none"> • If the display turns on and off as the buttons are pressed, there are no DTCs stored, troubleshoot the individual symptoms. • If the display does not respond as the buttons are pressed, check for loose or poor connections at the audio-HVAC display panel. If the connections are OK, replace the audio-HVAC display panel. 	
More than one button is not working	Audio-HVAC display panel power and ground circuit troubleshooting (see page 21-64).	HVAC DTCs (see page 21-9)
Audio-HVAC display/button illumination problems	Audio-HVAC display module illumination troubleshooting (see page 23-66).	

Climate Control

System Description

The air conditioning system removes heat from the passenger compartment by circulating refrigerant through the system.



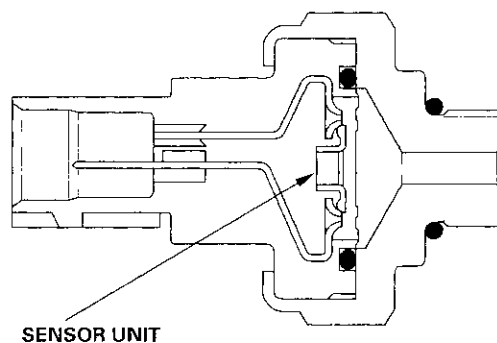
This vehicle uses HFC-134a (R-134a) refrigerant, which does not contain chlorofluorocarbons. Pay attention to the following service items:

- Do not mix refrigerants CFC-12 (R-12) and HFC-134a (R-134a). They are not compatible.
- Use only the required Polyol Ester (POE) refrigerant oil (SANDEN SE-10Y) designed for the R-134a A/C compressor. Intermixing the recommended (POE) refrigerant oil with any other refrigerant oil will result in A/C compressor failure. Using the wrong refrigerant oil can also be a safety hazard (see page 21-6).
- All A/C system parts (A/C compressor, discharge line, suction line, evaporator, A/C condenser, receiver/dryer, expansion valve, O-rings for joints) are designed for refrigerant R-134a. Do not exchange with R-12 parts.
- Use a halogen gas leak detector designed for refrigerant R-134a.
- R-12 and R-134a refrigerant servicing equipment are not interchangeable. Use only a recovery/recycling/charging station that is U.L.-listed and is certified to meet the requirements of SAE J2210 to service the R-134a air conditioning systems.
- Always recover refrigerant R-134a with an approved recovery/recycling/charging station before disconnecting any A/C fitting.

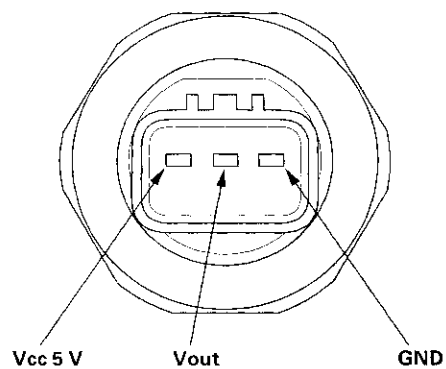
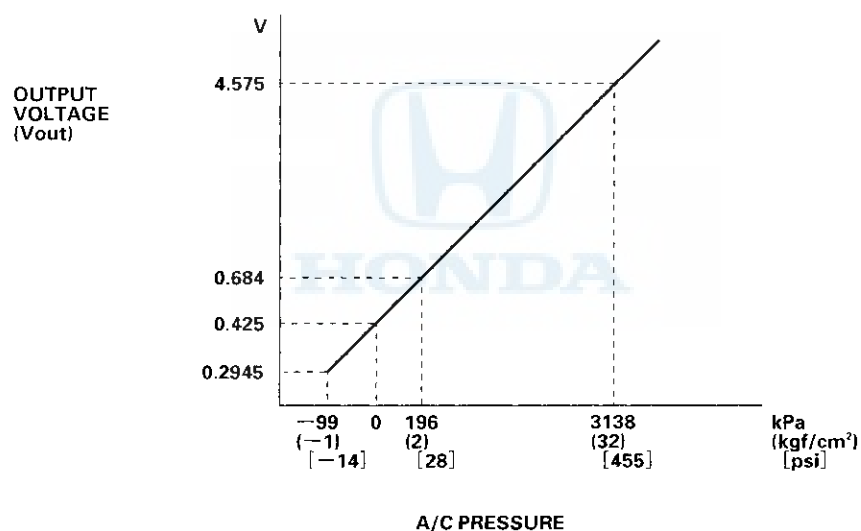


A/C Pressure Sensor

The A/C pressure sensor converts A/C pressure into electrical signals to the PCM.



The response of the A/C pressure sensor is shown in the graph.



(cont'd)

Climate Control

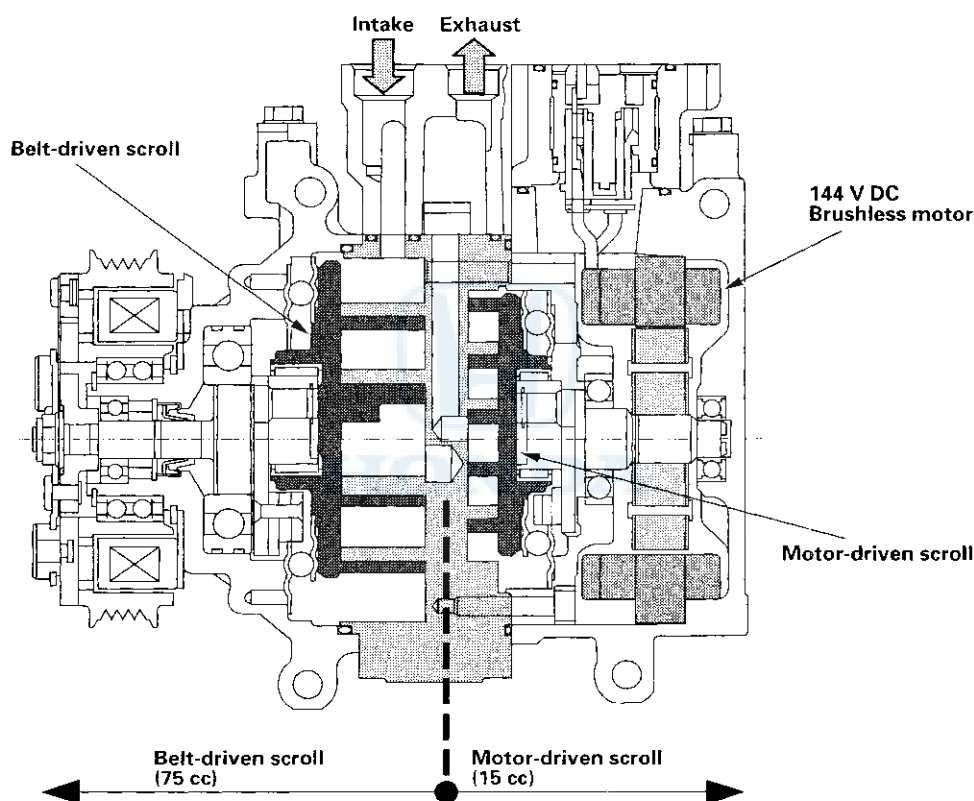
System Description (cont'd)

A/C Compressor

The dual scroll hybrid compressor is a twin chamber, dual compressor, that can use both mechanical (belt-driven) and electric power (motor-driven) to compress refrigerant.

The mechanical side uses a normal electric clutch controlled by the climate control module, and is diagnosed using traditional diagnostic procedures.

The electric motor side uses a high voltage, brushless, three-phase motor driven by a controller in the intelligent power unit (IPU). The climate control module controls the hybrid compressor motor operation, and actual motor speed is determined by the audio-HVAC display panel (via) the PCM.



Compressor Operation Logic

The Accord Hybrid A/C Compressor has 3 stages. The heater control module determines which stage the compressor should be in and sends the request to the PCM.

Stage 1 (start up)- combined operation (mechanical and electric power).

Stage 2-Mechanical only

Stage 3-Variable speed electric motor only

NOTE: The system will not transition from stage 1 to stage 3 directly or from stage 3 to stage 1 directly. The compressor transitions through each stage in sequence.



Stage 1. Uses both sides of the compressor for maximum cool down. The electric motor runs at highest RPM anytime the evaporator temperature is above a predetermined threshold and then drops the RPM as the evaporator temperature decreases.

Stage 2. The mechanically driven side is used when a stable temperature is reached inside the vehicle. This is determined by blower fan speed. If the fan speed is high, the electric compressor cannot maintain the evaporator temperature.

Stage 3. Once the vehicles' interior temperature stabilizes, the electric compressor is used to maintain the interior temperature. The PCM decides how fast to turn the electrical compressor based on all inputs. If the interior temperature rises above the threshold value, the system switches to the mechanically driven compressor, and shuts down the electric compressor.

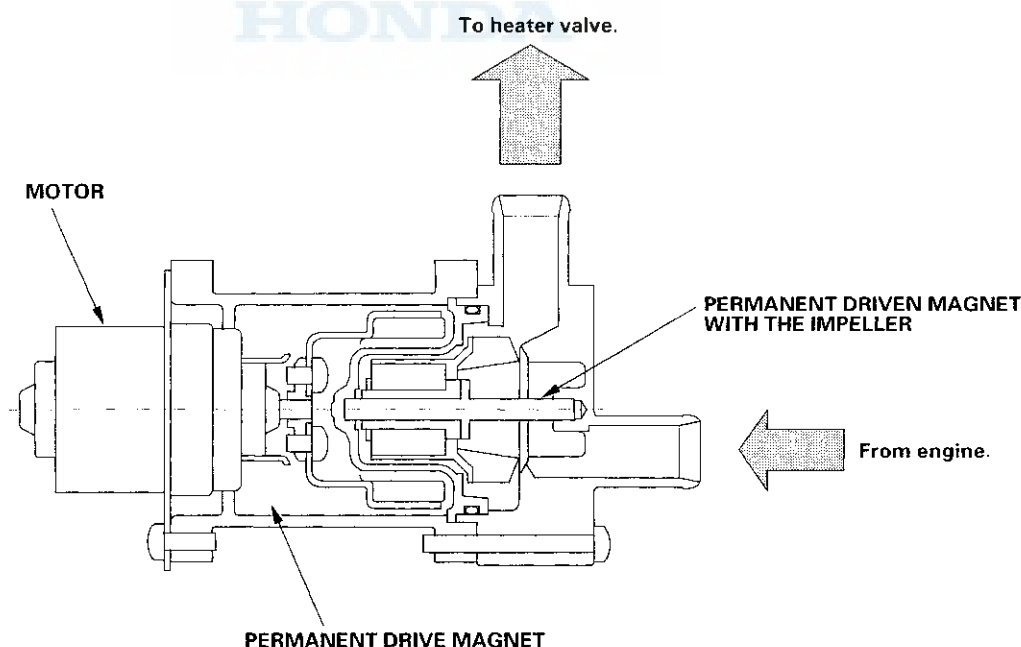
During idle stop, the compressor speed initially drops to a maximum of 1000 RPM to reduce under hood noise. The speed will then slowly increase when additional cooling is called for. Blower fan speed also adjusts with compressor speed.

Auxiliary Electric Water Pump

A 12 V auxiliary electric water pump is used to circulate coolant to maintain heater performance during idle stop.

Auxiliary Electric Water Pump logic

The heater control module operates the pump, based on an idle stop signal from the PCM. The pump maintains heater temperature during idle stop however using hot coolant from the engine will cool the engine. If the ECT temperature drops below a predetermined setting the engine will restart. There is also a temperature sensor located at the heater core. It is used to monitor the auxiliary electric water pump operation. If the pump fails the core cools quickly indicating a pump failure. In addition, the auxiliary electric water pump connector includes a second set of contacts to establish continuity through the connector. If these contacts open, the heater control module will set a DTC.



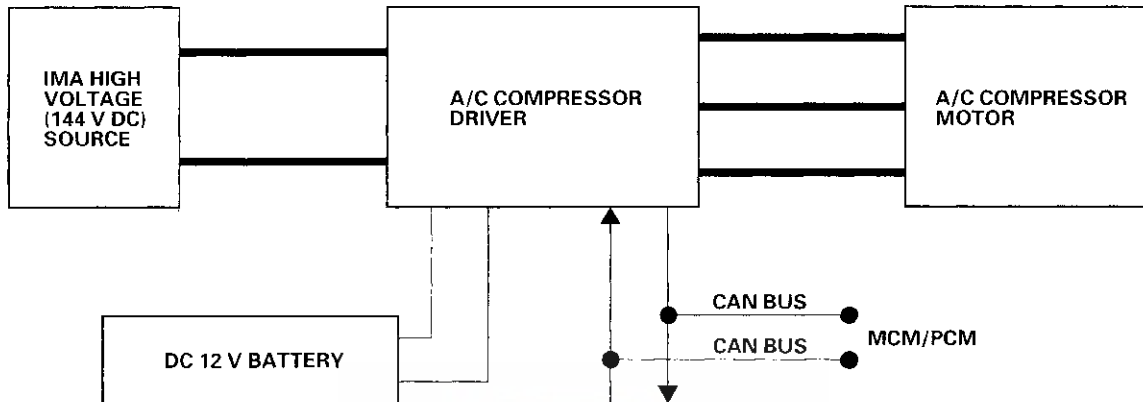
(cont'd)

Climate Control

System Description (cont'd)

A/C Compressor Driver

The A/C compressor driver supplies the A/C motor compressor with switched high voltage from the IMA high voltage (144 V DC) source. The A/C compressor driver receives rotation rate signals from the MCM/PCM and HVAC climate control panel through a CAN Bus to meet the driving conditions and cooling request. In case of a system failure the A/C compressor driver will communicate a DTC through the CAN Bus. The DTC is displayed through the HVAC and/or IMA system depending on the failure.

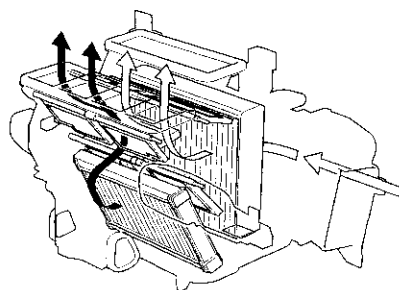




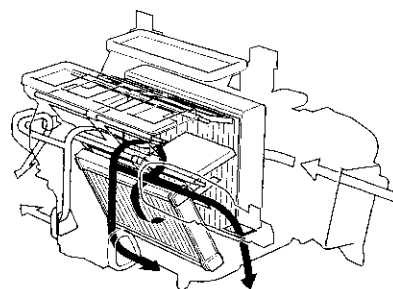
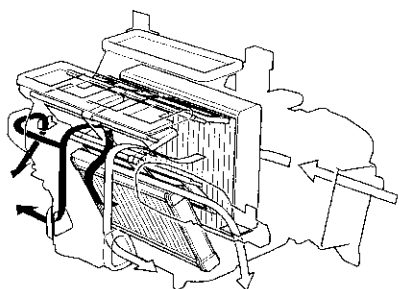
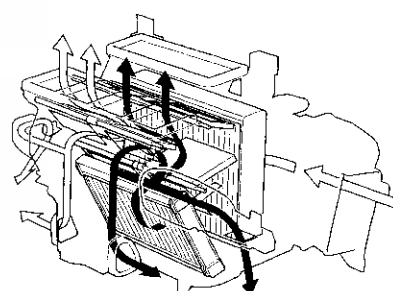
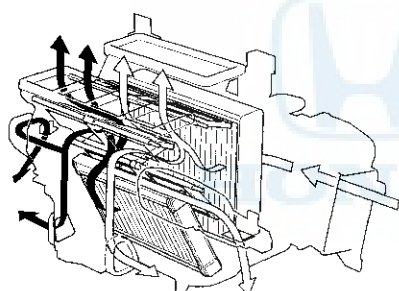
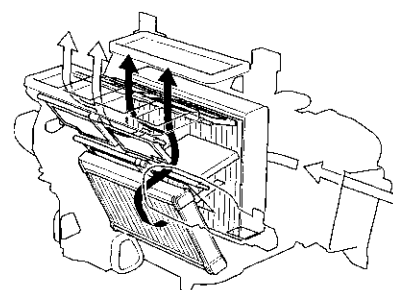
Dual Air Mix Control System



Driver's side: HOT ←
Passenger's side: COOL ←



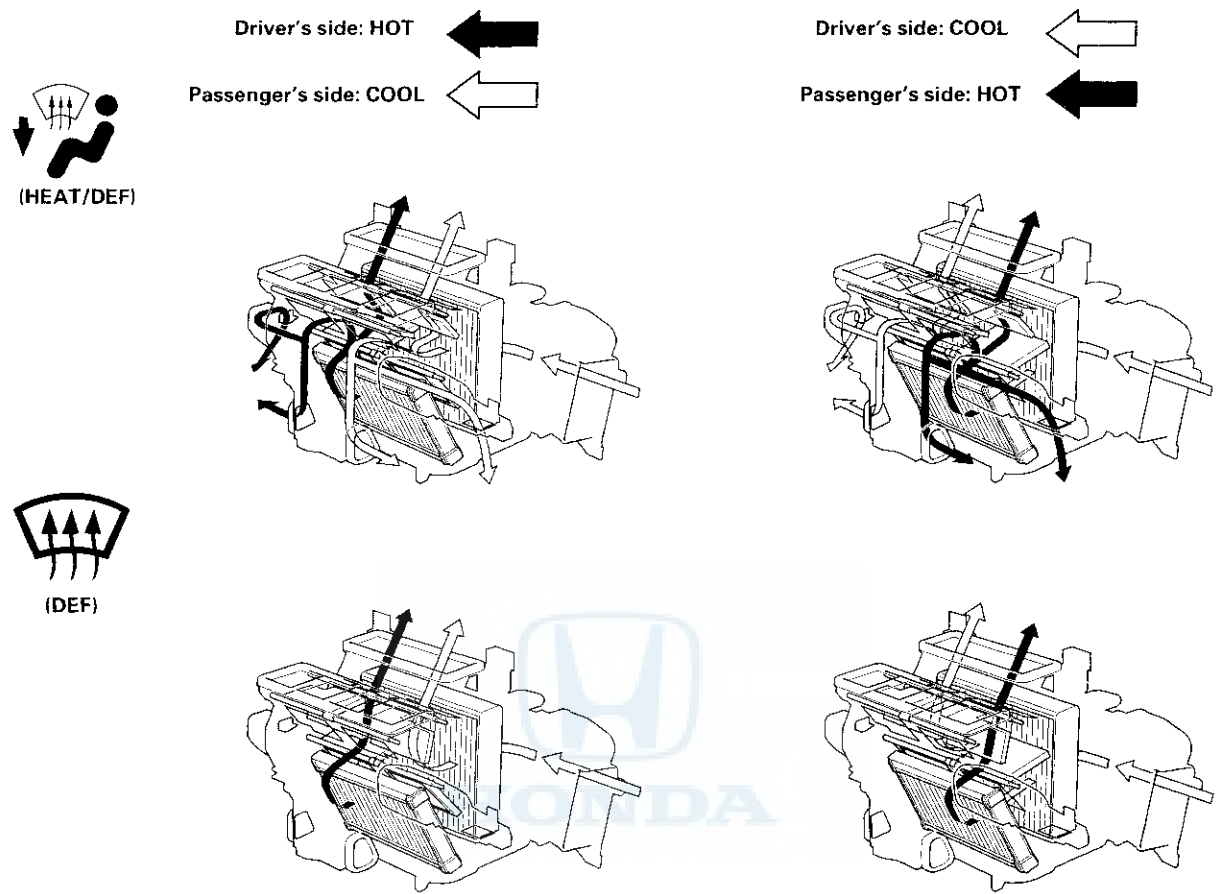
Driver's side: COOL ←
Passenger's side: HOT ←



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Climate Control

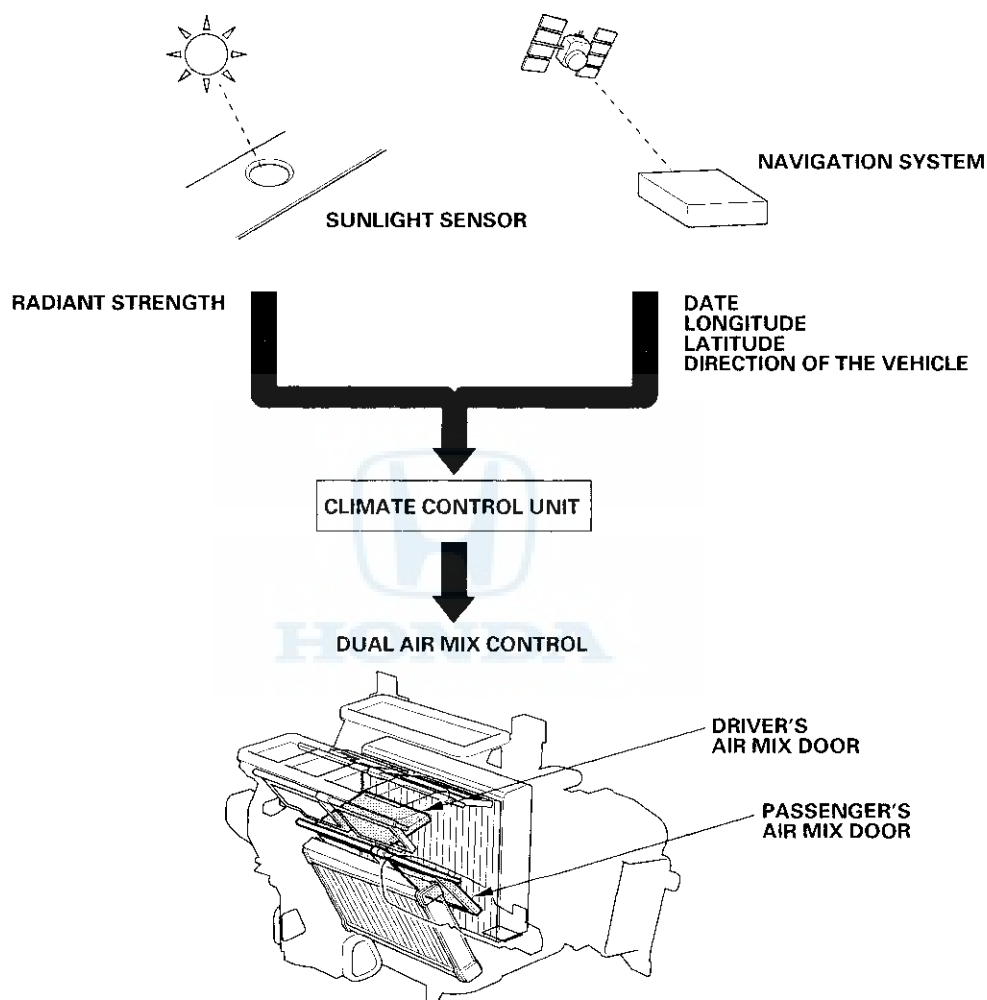
System Description (cont'd)





i-Dual Climate Control System (With navigation system)

This system automatically controls the temperature and the vent mode of the air direction to the driver and passenger's side, depending on the angle of the sun, and the direction of the vehicle. It calculates information such as date, time, longitude, and latitude from the navigation system, as well as the radiant strength of the sun from the sunlight sensor, to determine the appropriate mode position and temperature to be directed to each side.



In the event that the navigation system malfunctions, or when driving in areas where the navigation system cannot determine the vehicle position (non-coverage areas, tunnels, etc.), the climate control system will operate the same as a vehicle without a navigation system.

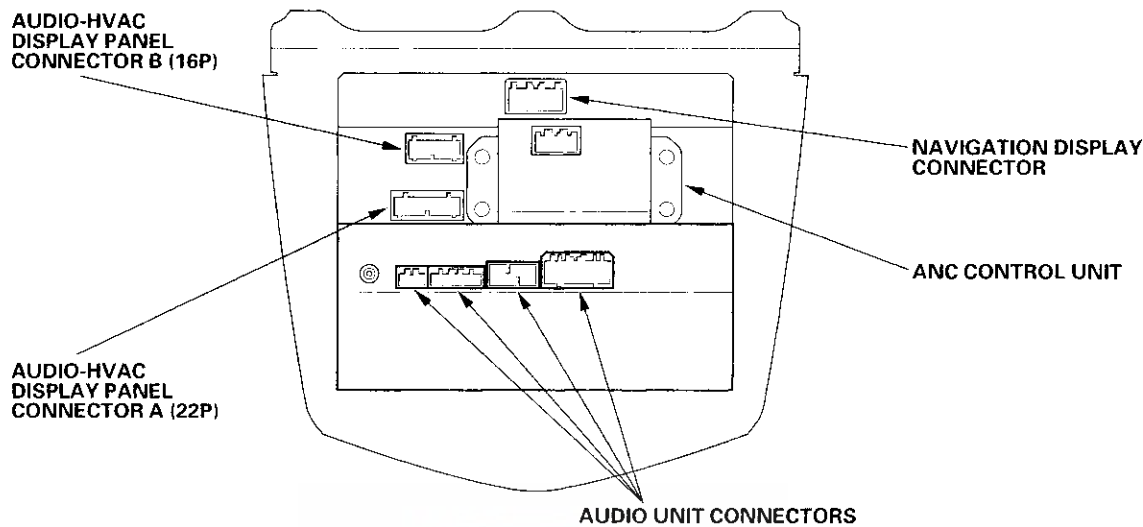
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Climate Control

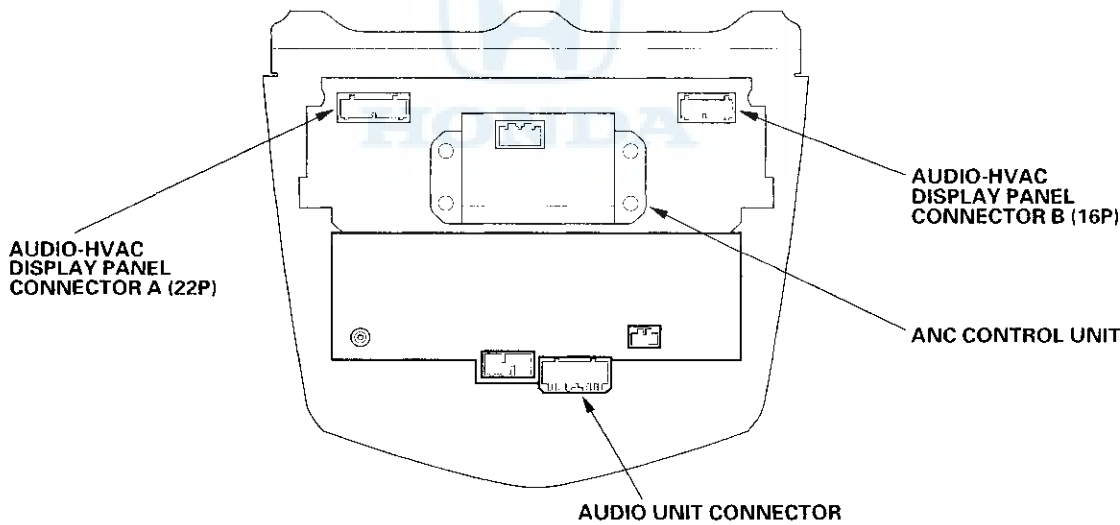
System Description (cont'd)

Climate Control Unit Inputs and Outputs

With Navigation



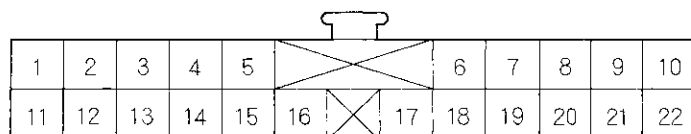
Without Navigation



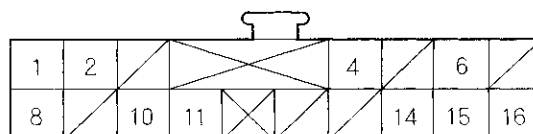


AUDIO-HVAC DISPLAY PANEL CONNECTORS

CONNECTOR A (22P)



CONNECTOR B (16P)



Wire side of female terminals

CONNECTOR A

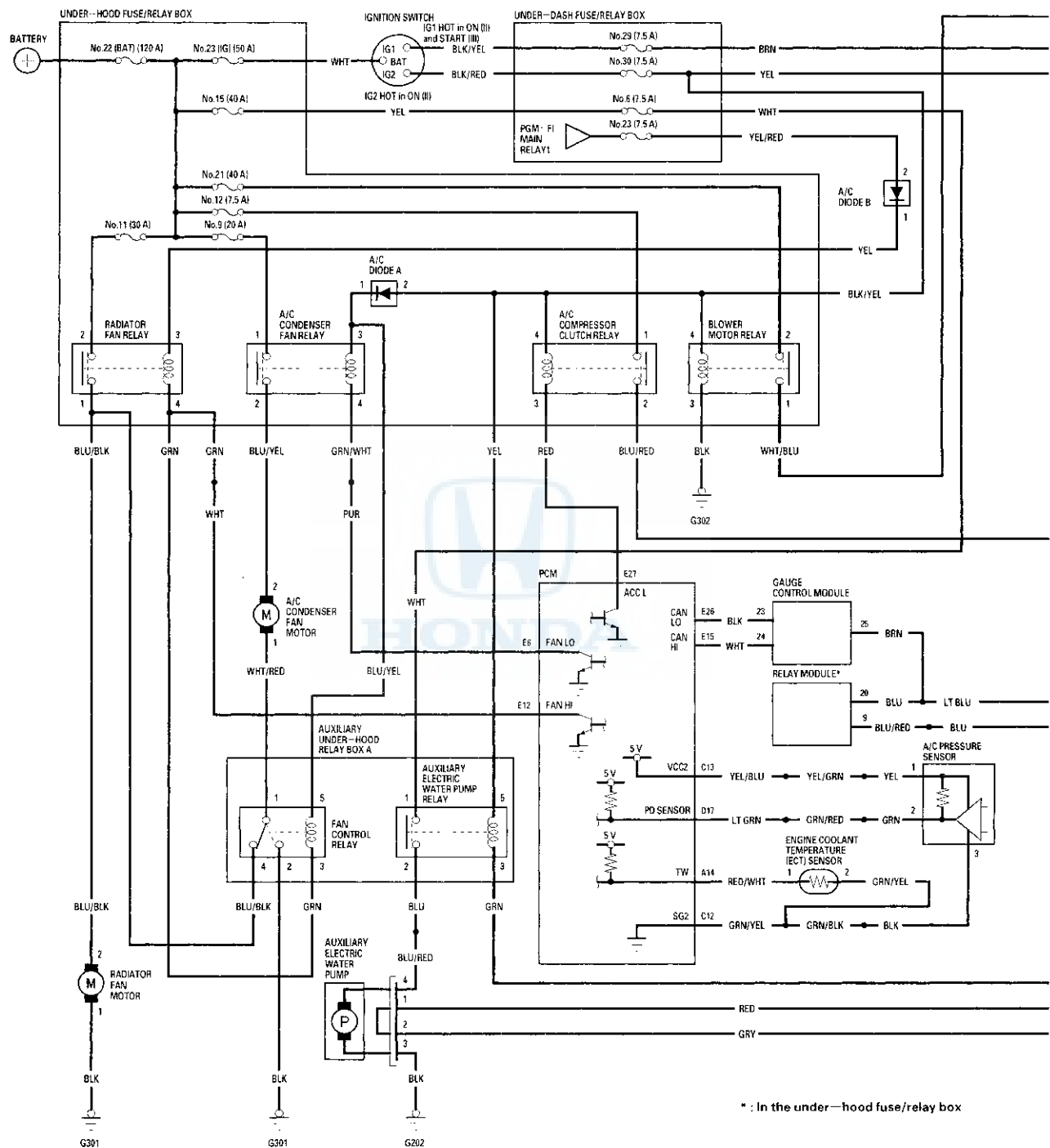
Cavity	Wire color	Signal	
1	PNK	DRIVER'S AIR MIX POTENTIAL	OUTPUT
2	WHT	PASSENGER'S AIR MIX POTENTIAL	OUTPUT
3	GRN	THERMAL PROTECTOR	OUTPUT
4	LT GRN	THERMAL PROTECTOR GROUND	INPUT
5	BLU	A/C SIGNAL	INPUT
6	PUR	MODE DEF	OUTPUT
7	LT GRN	MODE VENT	OUTPUT
8	GRN	DRIVER'S AIR MIX COOL	OUTPUT
9	BLU	DRIVER'S AIR MIX HOT	OUTPUT
10	ORN	PASSENGER'S AIR MIX COOL	OUTPUT
11	GRY	IN-CAR TEMPERATURE SENSOR	OUTPUT
12	RED	OUTSIDE AIR TEMPERATURE SENSOR	OUTPUT
13	ORN	SUNLIGHT SENSOR	OUTPUT
14	BRN	EVAPORATOR TEMPERATURE SENSOR	OUTPUT
15	PUR	SENSOR COMMON GROUND	INPUT
16	YEL	MODE 4	OUTPUT
17	WHT	MODE 3	OUTPUT
18	LT BLU	MODE 2	OUTPUT
19	RED	MODE 1	OUTPUT
20	GRY	AIR MIX POTENTIAL +5 V	OUTPUT
21	PNK	HEATER CORE TEMPERATURE SENSOR	OUTPUT
22	LT GRN	PASSENGER'S AIR MIX HOT	OUTPUT

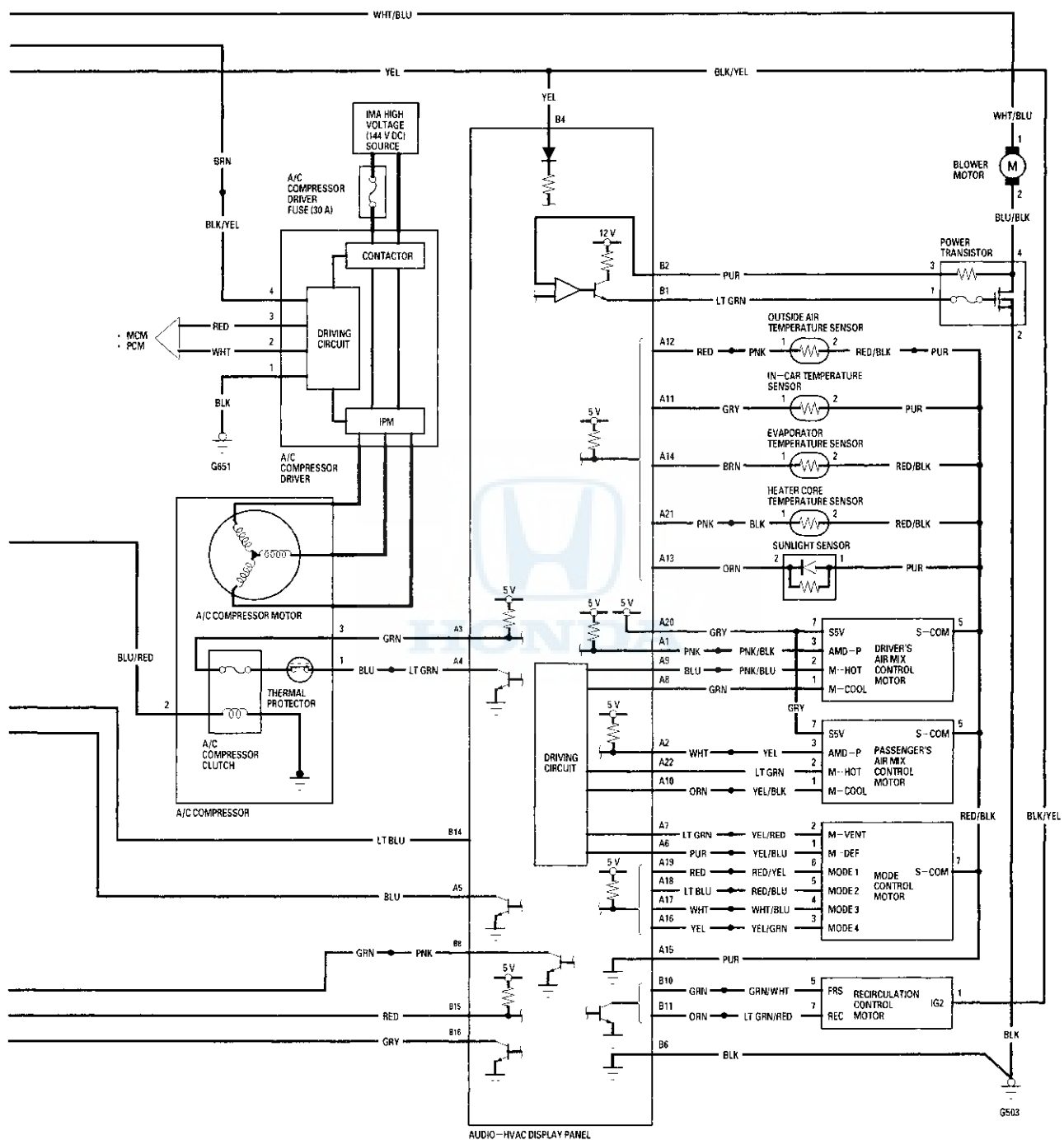
CONNECTOR B

Cavity	Wire color	Signal	
1	LT GRN	POWER TRANSISTOR CONTROL	OUTPUT
2	PUR	BLOWER FEEDBACK	INPUT
3			
4	YEL	IG2 (Power)	INPUT
5			
6	BLK	GROUND (G603)	INPUT
7			
8	PNK	ELECTRIC WATER PUMP RELAY	INPUT
9			
10	GRN	FRESH	INPUT
11	ORN	RECIRCULATE	INPUT
12			
13			
14	LT BLU	B-CAN LINE	INPUT/OUTPUT
15	RED	ELECTRIC WATER PUMP CONNECT SIGNAL	OUTPUT
16	GRY	ELECTRIC WATER PUMP CONNECT GROUND	INPUT

Climate Control

Circuit Diagram





Climate Control

DTC Troubleshooting

DTC B1202: Climate Control Unit Internal Error

NOTE:

- Check the battery condition (see page 22-71) and the charging system.
- If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-84).

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS.

Is DTC B1202 indicated?

YES—The climate control unit is faulty, replace the audio-HVAC display panel. ■

NO—Intermittent failure, the audio-HVAC display panel is OK at this time. ■

DTC B1205: Climate Control Unit Lost Communication with Gauge Control Module (VSP/NE messages)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-84).

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS.

Is DTC B1205 indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the gauge control module circuit. ■

4. Check for DTCs using the HDS.

Is DTC B1011, B1060, B1408, B1610, B1805, or B2160 indicated?

YES—Go to the gauge control module input test (see page 22-119). ■

NO—The climate control unit is faulty, replace the audio-HVAC display panel. ■



DTC B1206: Climate Control Unit Lost Communication with Gauge Control Module (ECT messages)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-84).

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS.

Is DTC B1206 indicated?

YES—The audio-HVAC display panel is faulty, replace the audio-HVAC display panel. ■

NO—Intermittent failure, check for loose wires or poor connections on the gauge control module circuit. ■

DTC B1207: Climate Control Unit Lost Communication with Gauge Control Module (ILLUMI messages)

NOTE: If you are troubleshooting multiple DTCs, be sure to follow the instructions in B-CAN system diagnosis test mode A (see page 22-84).

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS.

Is DTC B1207 indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the gauge control module circuit. ■

4. Check for DTCs using the HDS.

Is DTC B2157 indicated?

YES—Go to the gauge control module input test (see page 22-119). ■

NO—The audio-HVAC display panel is faulty, replace the audio-HVAC display panel. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1225 or DTC indicator A: An Open in the In-car Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1225 or A indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the in-car temperature sensor circuit. ■

4. Turn the ignition switch OFF.
5. Remove the in-car temperature sensor (see page 21-75), and test it (see page 21-75).

Is the in-car temperature sensor OK?

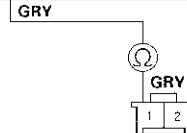
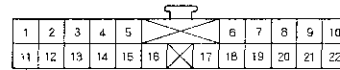
YES—Go to step 6.

NO—Replace the in-car temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

7. Check for continuity between the No. 11 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the in-car temperature sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

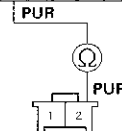
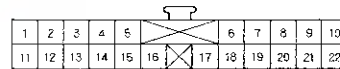
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the audio-HVAC display panel and the in-car temperature sensor. ■

8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the in-car temperature sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



IN-CAR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the in-car temperature sensor 2P connector. If the connections are good, substitute a known-good climate control unit, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair open in the wire between the audio-HVAC display panel and the in-car temperature sensor. ■



DTC B1226 or DTC indicator B: A Short in the In-car Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1226 or B indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Remove the in-car temperature sensor (see page 21-75), and test it (see page 21-75).

Is the in-car temperature sensor OK?

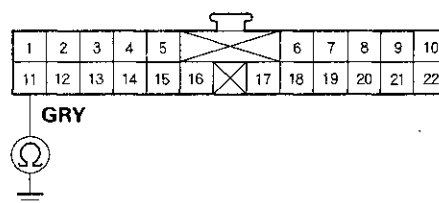
YES—Go to step 6.

NO—Replace the in-car temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

7. Check for continuity between the No. 11 terminal of audio-HVAC display panel connector A (22P) and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

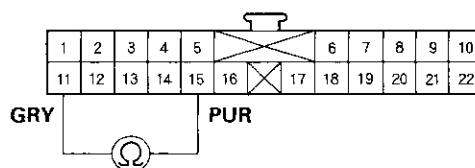
Is there continuity?

YES—Repair short to body ground in the wire between the audio-HVAC display panel and the in-car temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the No. 11 terminal and the No. 15 terminal of audio-HVAC display panel connector A (22P).

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the audio-HVAC display panel and the in-car temperature sensor. ■

NO—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1227 or DTC indicator C: An Open in the Outside Air Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1227 or C indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the outside air temperature sensor circuit. ■

4. Turn the ignition switch OFF.
5. Remove the outside air temperature sensor (see page 21-76), and test it (see page 21-76).

Is the outside air temperature sensor OK?

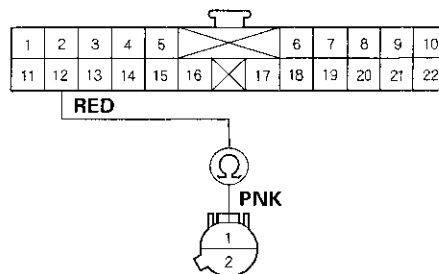
YES—Go to step 6.

NO—Replace the outside air temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

7. Check for continuity between the No. 12 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the outside air temperature sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

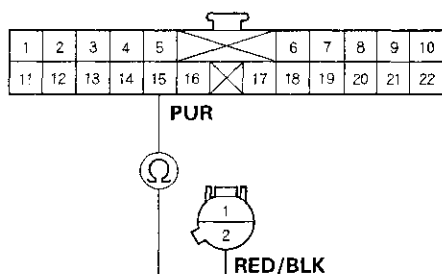
YES—Go to step 8.

NO—Repair open in the wire between the audio-HVAC display panel and the outside air temperature sensor. ■



8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the outside air temperature sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



OUTSIDE AIR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the outside air temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair open in the wire between the audio-HVAC display panel and the outside air temperature sensor. ■

DTC B1228 or DTC indicator D: A Short in the Outside Air Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1228 or D indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Remove the outside air temperature sensor (see page 21-76), and test it (see page 21-76).

Is the outside air temperature sensor OK?

YES—Go to step 6.

NO—Replace the outside air temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

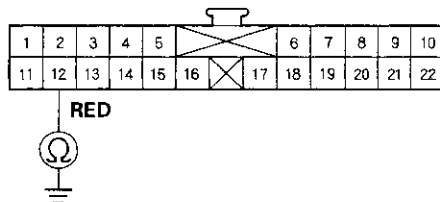
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Climate Control

DTC Troubleshooting (cont'd)

7. Check for continuity between the No. 12 terminal of audio-HVAC display panel connector A (22P) and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

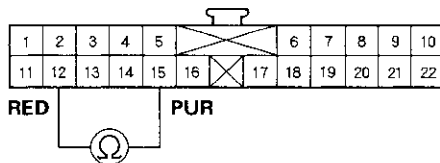
Is there continuity?

YES—Repair short to body ground in the wire between the audio-HVAC display panel and the outside air temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the No. 12 terminal and the No. 15 terminal of audio-HVAC display panel connector A (22P).

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the audio-HVAC display panel and the outside air temperature sensor. ■

NO—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

DTC B1229 or DTC indicator E: An Open in the Sunlight Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1229 or E indicated?

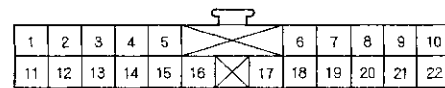
YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the sunlight sensor circuit. ■

4. Turn the ignition switch OFF.
5. Disconnect the sunlight sensor 2P connector.
6. Disconnect audio-HVAC display panel connector A (22P).
7. Check for continuity between the No. 13 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the sunlight sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)

Wire side of female terminals



ORN



ORN

SUNLIGHT SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

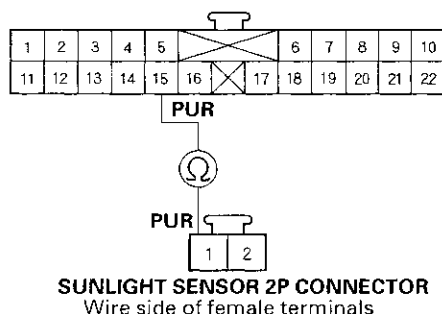
YES—Go to step 8.

NO—Repair open in the wire between the audio-HVAC display panel and the sunlight sensor. ■



8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the sunlight sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



Is there continuity?

YES—Go to step 9.

NO—Repair open in the wire between the audio-HVAC display panel and the sunlight sensor. ■

9. Reconnect the sunlight sensor 2P connector.
10. Reconnect audio-HVAC display panel connector A (22P).
11. Test the sunlight sensor (see page 21-77).

Is the sunlight sensor OK?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the sunlight sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Replace the sunlight sensor (see page 21-77). ■

DTC B1230 or DTC indicator F: A Short in the Sunlight Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

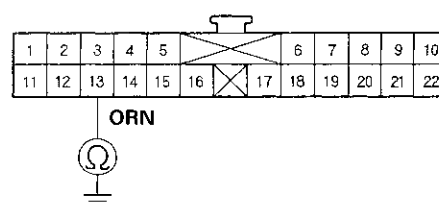
Is DTC B1230 or F indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Disconnect the sunlight sensor 2P connector.
6. Disconnect audio-HVAC display panel connector A (22P).
7. Check for continuity between the No. 13 terminal of audio-HVAC display panel connector A (22P) and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short to body ground in the wire between the audio-HVAC display panel and the sunlight sensor. ■

NO—Go to step 8.

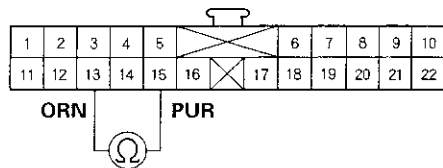
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Climate Control

DTC Troubleshooting (cont'd)

8. Check for continuity between the No. 13 terminal and the No. 15 terminal of audio-HVAC display panel connector A (22P).

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the audio-HVAC display panel and the sunlight sensor. ■

NO—Go to step 9.

9. Reconnect the sunlight sensor 2P connector.
10. Reconnect audio-HVAC display panel connector A (22P).
11. Test the sunlight sensor (see page 21-77).

Is the sunlight sensor OK?

YES—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Replace the sunlight sensor (see page 21-77). ■

DTC B1231 or DTC indicator G: An Open in the Evaporator Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1231 or G indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the evaporator temperature sensor circuit. ■

4. Turn the ignition switch OFF.
5. Remove the evaporator temperature sensor (see page 21-78), and test it (see page 21-78).

Is the evaporator temperature sensor OK?

YES—Go to step 6.

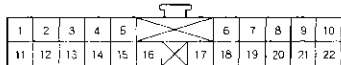
NO—Replace the evaporator temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).



7. Check for continuity between the No. 14 terminal of audio-HVAC display panel connector A (22P) and the No. 1 terminal of the evaporator temperature sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



BRN



BRN



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

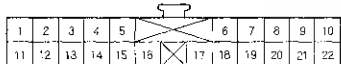
Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between audio-HVAC display panel and the evaporator temperature sensor. ■

8. Check for continuity between the No. 15 terminal of audio-HVAC display panel connector A (22P) and the No. 2 terminal of the evaporator temperature sensor 2P connector.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



PUR



RED/BLK



EVAPORATOR TEMPERATURE SENSOR 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the evaporator temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair open in the wire between the audio-HVAC display panel and the evaporator temperature sensor. ■

DTC B1232 or DTC indicator H: A Short in the Evaporator Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1232 or H indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Remove the evaporator temperature sensor (see page 21-78), and test it (see page 21-78).

Is the evaporator temperature sensor OK?

YES—Go to step 6.

NO—Replace the evaporator temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

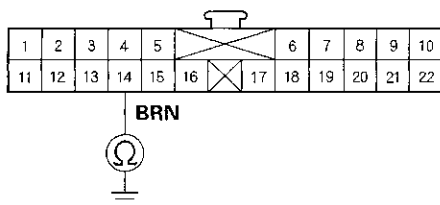
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Climate Control

DTC Troubleshooting (cont'd)

7. Check for continuity between the No. 14 terminal of audio-HVAC display panel connector A (22P) and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

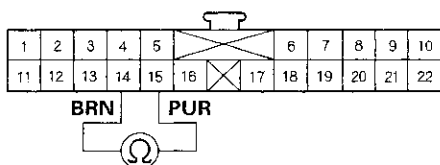
Is there continuity?

YES—Repair short to body ground in the wire between the audio-HVAC display panel and the evaporator temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between the No. 14 terminal and the No. 15 terminal of audio-HVAC display panel connector A (22P).

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the audio-HVAC display panel and the evaporator temperature sensor. ■

NO—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

DTC B1233 or DTC indicator I: An Open in the Driver's Air Mix Control Motor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1233 or I indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the driver's air mix control motor circuit. ■

4. Turn the ignition switch OFF.

5. Test the driver's air mix control motor (see page 21-81).

Is the driver's air mix control motor OK?

YES—Go to step 6.

NO—Replace the driver's air mix control motor (see page 21-81). ■

6. Disconnect the driver's air mix control motor 7P connector.

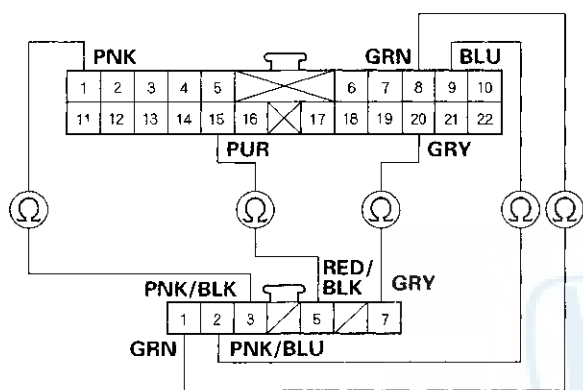
7. Disconnect audio-HVAC display panel connector A (22P).



8. Check for continuity between the following terminals of audio-HVAC display panel connector A (22P) and the driver's air mix control motor 7P connector.

22P:	7P:
No. 1	No. 3
No. 8	No. 1
No. 9	No. 2
No. 15	No. 5
No. 20	No. 7

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



DRIVER'S AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the driver's air mix control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair any open in the wire(s) between the audio-HVAC display panel and the driver's air mix control motor. ■

DTC B1234 or DTC indicator J: A Short in the Driver's Air Mix Control Motor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1234 or J indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Test the driver's air mix control motor (see page 21-81).

Is the driver's air mix control motor OK?

YES—Go to step 6.

NO—Replace the driver's air mix control motor (see page 21-81). ■

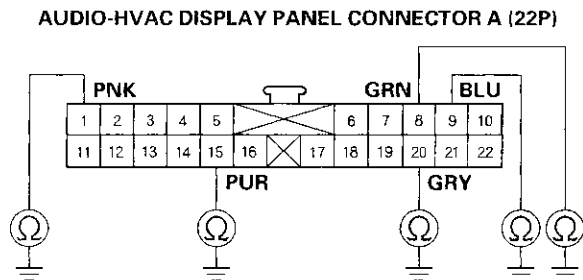
6. Disconnect the driver's air mix control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

8. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 1, 8, 9, 15, and 20 individually.



Wire side of female terminals

Is there continuity?

YES—Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the driver's air mix control motor. ■

NO—Go to step 9.

9. Check for continuity between the terminals of audio-HVAC display panel connector A (22P) as follows.

From terminal	To terminals
A1	A8, A9, A15, A20
A8	A9, A15, A20
A9	A15, A20
A15	A20

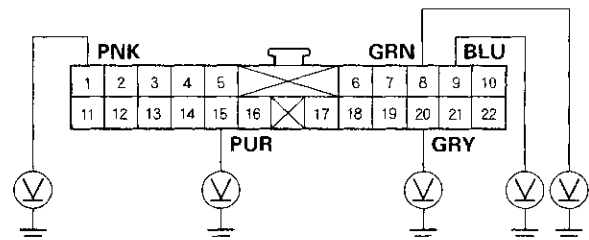
Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 10.

10. Turn the ignition switch ON (II), and check the same terminals for voltage.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the audio-HVAC display panel and the driver's air mix control motor. This short may also damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel. ■

NO—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■



DTC B1235 or DTC indicator K: A Problem in the Driver's Air Mix Control Linkage, Door, or Motor

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1235 or K indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Test the driver's air mix control motor (see page 21-81).

Is the driver's air mix control motor OK?

YES—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Replace the driver's air mix control motor (see page 21-81), or repair the driver's air mix control linkage or door. ■

DTC B1236 or DTC indicator L: An Open in the Passenger's Air Mix Control Motor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1236 or L indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the passenger's air mix control motor circuit. ■

4. Turn the ignition switch OFF.
5. Test the passenger's air mix control motor (see page 21-82).

Is the passenger's air mix control motor OK?

YES—Go to step 6.

NO—Replace the passenger's air mix control motor (see page 21-83). ■

6. Disconnect the passenger's air mix control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).

(cont'd)

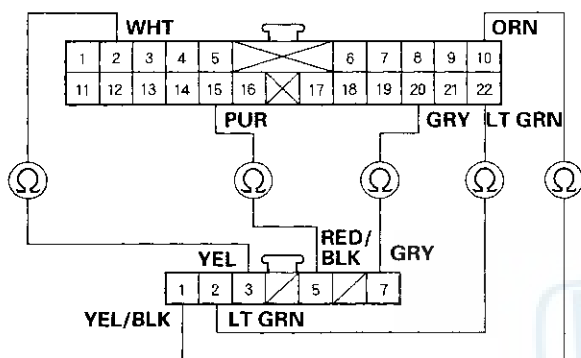
Climate Control

DTC Troubleshooting (cont'd)

8. Check for continuity between the following terminals of audio-HVAC display panel connector A (22P) and the passenger's air mix control motor 7P connector.

22P:	7P:
No. 2	No. 3
No. 10	No. 1
No. 15	No. 5
No. 20	No. 7
No. 22	No. 2

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
Wire side of female terminals



PASSENGER'S AIR MIX CONTROL MOTOR 7P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the passenger's air mix control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair any open in the wire(s) between the audio-HVAC display panel and the passenger's air mix control motor. ■

DTC B1237 or DTC indicator M: A Short in the Passenger's Air Mix Control Motor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1237 or M indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Test the passenger's air mix control motor (see page 21-82).

Is the passenger's air mix control motor OK?

YES—Go to step 6.

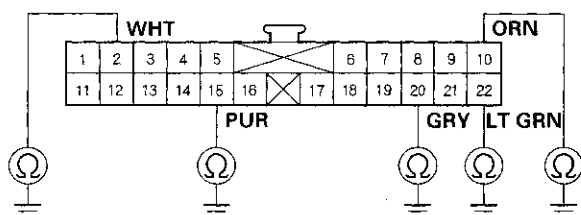
NO—Replace the passenger's air mix control motor (see page 21-83). ■

6. Disconnect the passenger's air mix control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).



8. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 2, 10, 15, 20, and 22 individually.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the passenger's air mix control motor. ■

NO—Go to step 9.

9. Check for continuity between the terminals of audio-HVAC display panel connector A (22P) as follows.

From terminal	To terminals
A2	A10, A15, A20, A22
A10	A15, A20, A22
A15	A20, A22
A20	A22

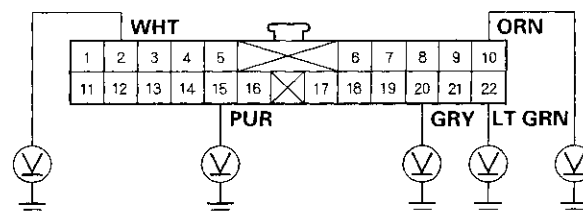
Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 10.

10. Turn the ignition switch ON (II), and check the same terminals for voltage.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the audio-HVAC display panel and the passenger's air mix control motor. This short may also damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel. ■

NO—Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the passenger's air mix control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B1238 or DTC indicator N: A Problem in the Passenger's Air Mix Control Linkage, Door, or Motor

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1238 or N indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Test the passenger's air mix control motor (see page 21-82).

Is the passenger's air mix control motor OK?

YES—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Replace the passenger's air mix control motor (see page 21-83), or repair the passenger's air mix control linkage or door. ■

DTC B1239 or DTC indicator O: An Open or Short in the Mode Control Motor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1239 or O indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the mode control motor circuit. ■

4. Turn the ignition switch OFF.
5. Test the mode control motor (see page 21-83).

Is the mode control motor OK?

YES—Go to step 6.

NO—Replace the mode control motor (see page 21-84). ■

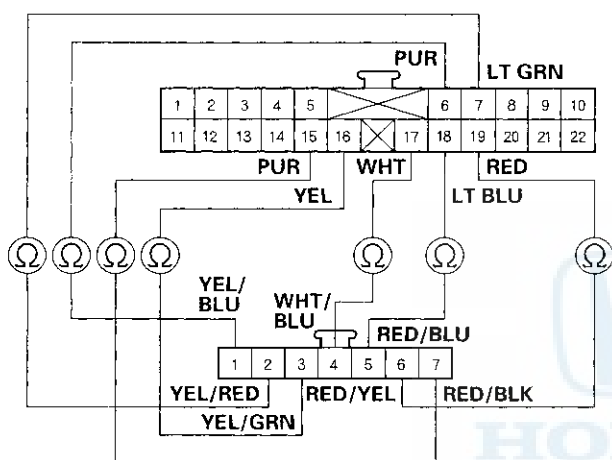
6. Disconnect the mode control motor 7P connector.
7. Disconnect audio-HVAC display panel connector A (22P).



8. Check for continuity between the following terminals of audio-HVAC display panel connector A (22P) and the mode control motor 7P connector.

22P: 7P:
 No. 6 No. 1
 No. 7 No. 2
 No. 15 No. 7
 No. 16 No. 3
 No. 17 No. 4
 No. 18 No. 5
 No. 19 No. 6

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)
 Wire side of female terminals



MODE CONTROL MOTOR 7P CONNECTOR
 Wire side of female terminals

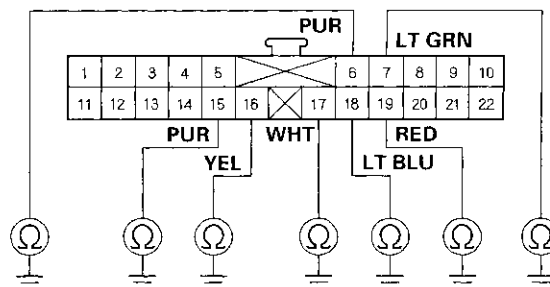
Is there continuity?

YES—Go to step 9.

NO—Repair any open in the wire(s) between the audio-HVAC display panel and the mode control motor. ■

9. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 6, 7, 15, 16, 17, 18, and 19 individually.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the mode control motor. ■

NO—Go to step 10.

10. Check for continuity between the terminals of audio-HVAC display panel connector A (22P) as follows.

From terminal	To terminals
A6	A7, A15, A16, A17, A18, A19
A7	A15, A16, A17, A18, A19
A15	A16, A17, A18, A19
A16	A17, A18, A19
A17	A18, A19
A18	A19

Is there continuity between any of the terminals?

YES—Repair the short in the wires. ■

NO—Go to step 11.

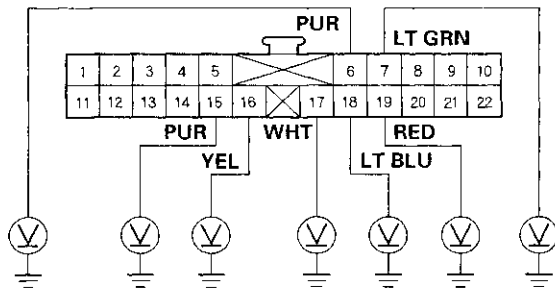
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

11. Turn the ignition switch ON (II), and check the same terminals for voltage.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the audio-HVAC display panel and the mode control motor. This short may also damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel. ■

NO—Check for loose wire or poor connections at audio-HVAC display panel connector A (22P) and at the mode control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

DTC B1240 or DTC indicator P: A Problem in the Mode Control Linkage, Doors, or Motor

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1240 or P indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Test the mode control motor (see page 21-83).

Is the mode control motor OK?

YES—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Replace the mode control motor (see page 21-84), or repair the mode control linkage or doors. ■



DTC B1241 or DTC indicator Q: A Problem in the Blower Motor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B1241 or Q indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the blower motor circuit. ■

4. Turn the ignition switch OFF.
5. Check the No. 21 (40 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

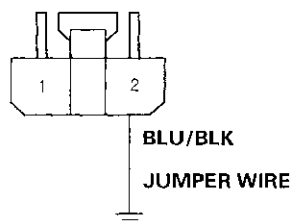
Are the fuses OK?

YES—Go to step 6.

NO—Replace the fuse(s), and recheck. ■

6. Connect the No. 2 terminal of the blower motor 2P connector to body ground with a jumper wire.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

7. Turn the ignition switch ON (II).

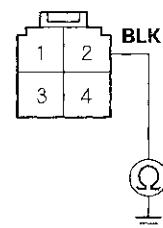
Does the blower motor run?

YES—Go to step 8.

NO—Go to step 23.

8. Turn the ignition switch OFF.
9. Disconnect the jumper wire.
10. Disconnect the power transistor 4P connector.
11. Check for continuity between the No. 2 terminal of the power transistor 4P connector and body ground.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

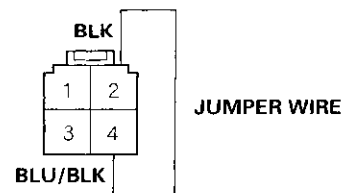
Is there continuity?

YES—Go to step 12.

NO—Check for an open in the BLK wire between the power transistor and body ground. If the wire is OK, check for poor ground at G503. ■

12. Connect the No. 2 and No. 4 terminals of the power transistor 4P connector with a jumper wire.

POWER TRANSISTOR 4P CONNECTOR



Wire side of female terminals

(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

13. Turn the ignition switch ON (II).

Does the blower motor run at high speed?

YES—Go to step 14.

NO—Repair open in the BLU/BLK wire between the power transistor and the blower motor. ■

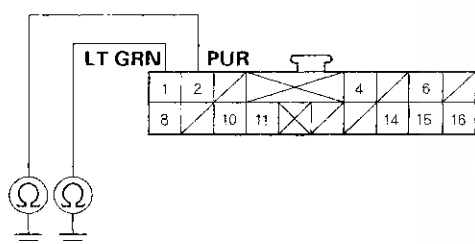
14. Turn the ignition switch OFF.

15. Disconnect the jumper wire.

16. Disconnect audio-HVAC display panel connector B (16P).

17. Check for continuity between the No. 1 and No. 2 terminals of audio-HVAC display panel connector B (16P) and body ground individually.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there continuity?

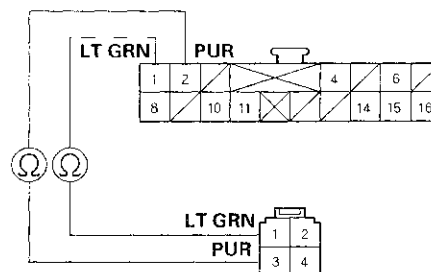
YES—Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the power transistor. ■

NO—Go to step 18.

18. Check for continuity between the following terminals of audio-HVAC display panel connector B (16P) and the power transistor 4P connector.

16P: 4P:
No. 1 No. 1
No. 2 No. 3

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)
Wire side of female terminals



POWER TRANSISTOR 4P CONNECTOR
Wire side of female terminals

Is there continuity?

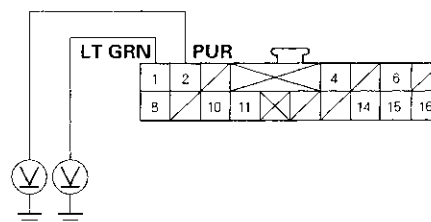
YES—Go to step 19.

NO—Repair any open in the wire(s) between the audio-HVAC display panel and the power transistor. ■

19. Start the engine.

20. Check for voltage between the No. 1 and No. 2 terminals of audio-HVAC display panel connector B (16P) and body ground individually.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there voltage?

YES—Repair short to power in the wires. ■

NO—Go to step 21.



21. Reconnect audio-HVAC display panel connector B (16P).

22. Test the power transistor (see page 21-80).

Is the power transistor OK?

YES—Check for loose wire or poor connections at audio-HVAC display panel connector B (16P) and at the power transistor 4P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

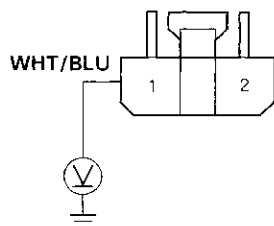
NO—Replace the power transistor. ■

23. Disconnect the jumper wire.

24. Disconnect the blower motor 2P connector.

25. Measure the voltage between the No. 1 terminal of the blower motor 2P connector and body ground.

BLOWER MOTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the blower motor. ■

NO—Go to step 26.

26. Turn the ignition switch OFF.

27. Remove the blower motor relay from the under-hood fuse/relay box, and test it (see page 22-72).

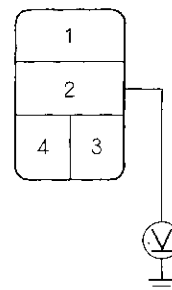
Is the relay OK?

YES—Go to step 28.

NO—Replace the blower motor relay. ■

28. Measure the voltage between the No. 2 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

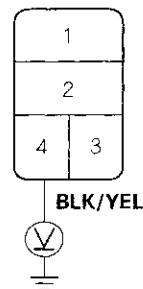
YES—Go to step 29.

NO—Replace the under-hood fuse/relay box. ■

29. Turn the ignition switch ON (II).

30. Measure the voltage between the No. 4 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 31.

NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and the blower motor relay. ■

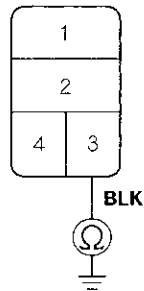
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Climate Control

DTC Troubleshooting (cont'd)

31. Turn the ignition switch OFF.
32. Check for continuity between the No. 3 terminal of the blower motor relay 4P socket and body ground.

BLOWER MOTOR RELAY 4P SOCKET



Is there continuity?

YES—Repair open in the WHT/BLU wire between the blower motor relay and the blower motor. ■

NO—Check for an open in the wire between the blower motor relay and body ground. If the wire is OK, check for poor ground at G302. ■

DTC B2989 or DTC indicator W: A Problem in the A/C Compressor Motor

1. Check the No. 29 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Stop the engine for at least 1 hour.
3. Clear the DTC by turning the ignition switch OFF, and then ON (II).
4. Operate the climate control system in several modes.
5. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2989 or W indicated?

YES—Go to step 6.

NO—Intermittent failure. ■

6. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2998 or Z indicated?

YES—Go to the troubleshooting DTC B2998 or DTC indicator Z (see page 21-61). ■

NO—Stop the A/C compressor motor for refrigerant pressure abnormally high. Substitute a known-good A/C compressor, and recheck. If the symptom/indication goes away, replace the original A/C compressor (see page 21-92). ■



DTC B2990 or DTC indicator X: A Problem in the A/C Compressor Driver

NOTE: Put on rubber gloves to protect against electrical shock.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Check the No. 29 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Stop the engine for at least 1 hour.
3. Clear the DTC with the HDS.
4. Operate the climate control system in several modes.
5. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2990, B2998, X, or Y indicated?

YES—

- B2990 or X indicated: go to step 6.
- B2998 or Y indicated: go to the troubleshooting DTC B2998 or DTC indicator Y (see page 21-61).

NO—Intermittent failure. ■

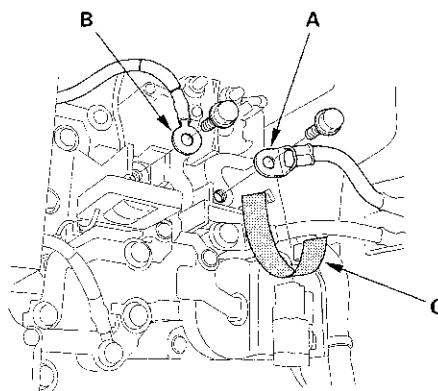
6. Remove the IPU lid (see page 12-140).
7. Check that the A/C compressor driver is properly connected.

Is it connected properly?

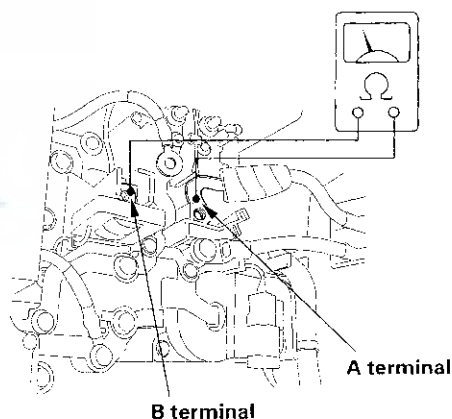
YES—Go to step 8.

NO—Reconnect the connector and cable, and recheck the function. ■

8. Remove the high voltage cable (A) and A/C compressor driver cable (B), then wrap the high voltage cable with insulating tape (C).



9. Check the A/C compressor driver fuse (30 A) in the junction board, by checking for continuity between A and B terminals.



Is there continuity?

YES—Go to step 10.

NO—Replace the fuse and recheck (see page 12-142). If the fuse blows again, replace the A/C compressor driver (see page 21-99) and fuse. ■

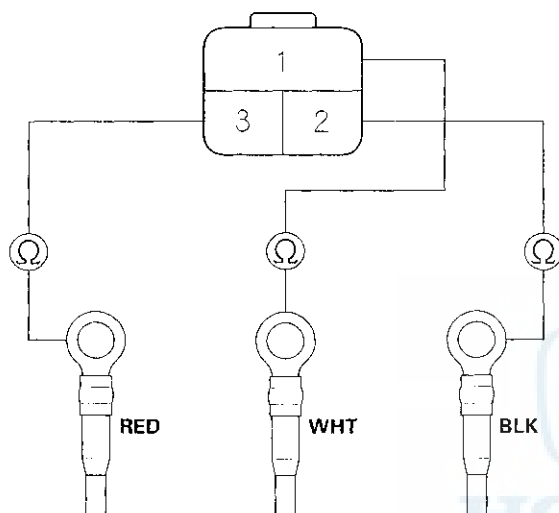
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Climate Control

DTC Troubleshooting (cont'd)

10. Disconnect the A/C compressor power 3P connector.
11. Disconnect A/C compressor power terminals.
12. Check for continuity between the A/C compressor power 3P connector and A/C compressor power terminals individually.

A/C COMPRESSOR POWER 3P CONNECTOR
Terminal side of female terminals



A/C COMPRESSOR POWER TERMINALS

Is there continuity?

YES—Repair any open in the wire(s) between the A/C compressor power 3P connector and the A/C compressor power terminal. ■

NO—Replace the A/C compressor (see page 21-92). ■

DTC B2992 or DTC indicator S: An Open in the Thermal Protector Circuit

1. Clear the DTC by turning the ignition switch OFF, and then start the engine.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

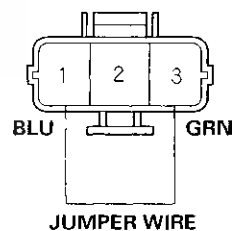
Is DTC B2992 or S indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the thermal protector circuit. ■

4. Turn the ignition switch OFF.
5. Disconnect the A/C compressor clutch 3P connector.
6. Connect the A/C compressor clutch 3P connector terminals No. 1 and No. 3 with a jumper wire.

A/C COMPRESSOR CLUTCH 3P CONNECTOR



Terminal side of male terminals

7. Start the engine, and push the A/C ON.
8. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2992 or T indicated?

YES—Go to step 9.

NO—Check for an open in the wire(s) between the A/C compressor clutch 3P connector female terminals No. 1 and No. 3 and check the A/C compressor clutch (see page 21-94) and the thermal protector (see page 21-96). ■

Climate Control

DTC Troubleshooting (cont'd)

7. Start the engine, and turn on the A/C.
8. Check for DTCs using the HDS or self-diagnostic.

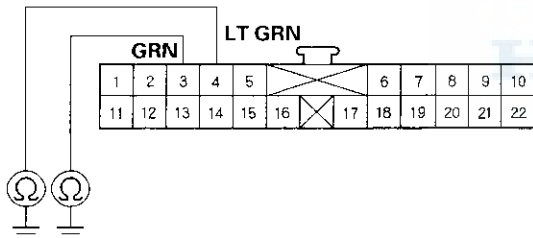
Is DTC B2993 or T indicated?

YES—Go to step 9.

NO—Check for a short to the wire(s) between the A/C compressor clutch 3P connector female terminals No. 1 and No. 3 and check the A/C compressor clutch (see page 21-94) and the thermal protector (see page 21-96). ■

9. Turn the ignition switch OFF.
10. Disconnect the jumper wire.
11. Disconnect audio-HVAC display panel connector A (22P).
12. Check for continuity between body ground and audio-HVAC display panel connector A (22P) terminals No. 3 and No. 4 individually.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the A/C compressor. ■

NO—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

DTC B2995 or DTC indicator R: A Problem in the Auxiliary Electric Water Pump Circuit

1. Clear the DTC with the HDS.
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2995 or R indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the auxiliary electric water pump circuit. ■

4. Check the No. 6 (7.5 A) and the No. 30 (7.5 A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 5.

NO—Replace the fuse(s), and recheck. ■

5. Warm up the engine (until the radiator fan comes on).
6. Turn the ignition switch OFF, and then ON (II).
7. Set the temperature control on Max Hot.

Does warm air come out?

YES—Go to step 8.

NO—Repair the heater valve. ■

8. Turn the ignition switch OFF.
9. Remove the auxiliary electric water pump relay from the auxiliary under-hood relay box A, and test it (see page 22-72).

Is the relay OK?

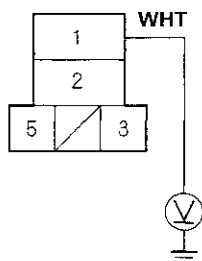
YES—Go to step 10.

NO—Replace the auxiliary electric water pump relay. ■



10. Measure the voltage between the auxiliary electric water pump relay 5P socket terminal No. 1 and body ground.

AUXILIARY ELECTRIC WATER PUMP RELAY 5P SOCKET



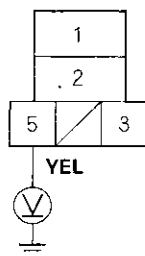
Is there battery voltage?

YES—Go to step 11.

NO—Repair open in the wire between the No. 6 fuse in the under-dash fuse/relay box and the auxiliary electric water pump relay. ■

11. Turn the ignition switch ON (II).
12. Measure the voltage between the auxiliary electric water pump relay 5P socket terminal No. 5 and body ground.

AUXILIARY ELECTRIC WATER PUMP RELAY 5P SOCKET



Is there battery voltage?

YES—Go to step 13.

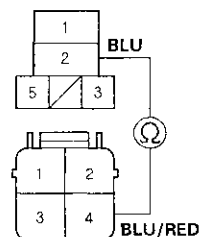
NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and the auxiliary electric water pump relay. ■

13. Turn the ignition switch OFF.

14. Disconnect the auxiliary electric water pump 4P connector.

15. Check for continuity between the auxiliary electric water pump relay 5P socket terminal No. 2 and the auxiliary electric water pump 4P connector terminal No. 4.

AUXILIARY ELECTRIC WATER PUMP RELAY 5P SOCKET



AUXILIARY ELECTRIC WATER PUMP 4P CONNECTOR
Wire side of female terminals

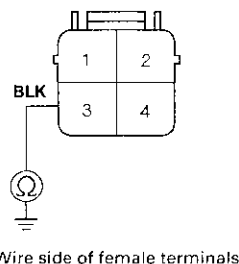
Is there continuity?

YES—Go to step 16.

NO—Repair open in the wire between the auxiliary electric water pump relay and the auxiliary electric water pump. ■

16. Check for continuity between the auxiliary electric water pump 4P connector terminal No. 3 and body ground.

AUXILIARY ELECTRIC WATER PUMP 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Check for an open in the wires between the auxiliary electric water pump and body ground. If the wire is OK, check for poor ground at G202. ■

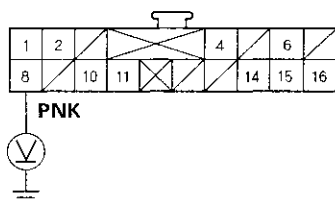
(cont'd)

Climate Control

DTC Troubleshooting (cont'd)

17. Reinstall the auxiliary electric water pump relay.
18. Disconnect audio-HVAC display panel connector B (16P).
19. Turn the ignition switch ON (II).
20. Measure the voltage between audio-HVAC display panel connector B (16P) terminal No. 8 and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there battery voltage?

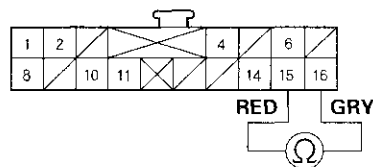
YES—Go to step 21.

NO—Repair open in the wire between the auxiliary electric water pump relay and the audio-HVAC display panel. ■

21. Turn the ignition switch OFF.
22. Reconnect the auxiliary electric water pump 4P connector.
23. Disconnect audio-HVAC display panel connector A (22P).

24. Check for continuity between audio-HVAC display panel connector B (16P) terminals No. 15 and No. 16.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire(s) to auxiliary electric water pump signal line. ■

25. Run the auxiliary electric water pump by selecting the CLIMATE CONTROL SELF TEST Menu from the HDS.
26. Check the auxiliary electric water pump operation by touching it with a flat-tip screw driver.

Does the auxiliary electric water pump run?

YES—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Replace the auxiliary electric water pump. ■



DTC B2996 or DTC indicator U: An Open in the Heater Core Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

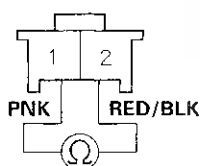
Is DTC B2996 or U indicated?

YES—Go to step 4.

NO—Intermittent failure, check for loose wires or poor connections on the heater core temperature sensor circuit. ■

4. Turn the ignition switch OFF.
5. Disconnect heater core temperature sensor 2P connector. Check the resistance between heater core temperature sensor 2P connector terminals No. 1 and No. 2.

HEATER CORE TEMPERATURE SENSOR 2P CONNECTOR



Wire side of female terminals

Is the resistance as specified (see page 21-79)?

YES—Go to step 6.

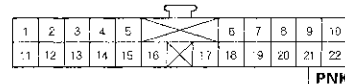
NO—Replace the heater core temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

7. Check for continuity between audio-HVAC display panel connector A (22P) terminal No. 21 and heater core temperature sensor 2P connector terminal No. 1.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)

Wire side of female terminals



HEATER CORE TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

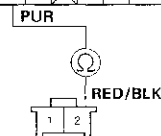
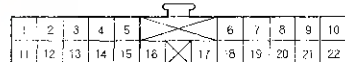
YES—Go to step 8.

NO—Repair open in the wire between the audio-HVAC display panel and the heater core temperature sensor. ■

8. Check for continuity between audio-HVAC display panel connector A (22P) terminal No. 15 and heater core temperature sensor 2P connector terminal No. 2.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)

Wire side of female terminals



HEATER CORE TEMPERATURE SENSOR 2P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector A (22P) and at the heater core temperature sensor 2P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair open in the wire between the audio-HVAC display panel and the heater core temperature sensor. ■

Climate Control

DTC Troubleshooting (cont'd)

DTC B2997 or DTC indicator V: A Short in the Heater Core Temperature Sensor Circuit

1. Clear the DTC by turning the ignition switch OFF, and then ON (II).
2. Operate the climate control system in several modes.
3. Check for DTCs using the HDS or self-diagnostic.

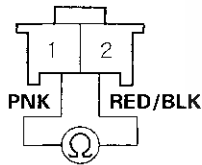
Is DTC B2997 or V indicated?

YES—Go to step 4.

NO—Intermittent failure. ■

4. Turn the ignition switch OFF.
5. Disconnect heater core temperature sensor 2P connector. Check the resistance between heater core temperature sensor 2P connector terminals No. 1 and No. 2.

HEATER CORE TEMPERATURE SENSOR 2P CONNECTOR



Wire side of female terminals

Is the resistance as specified (see page 21-79)?

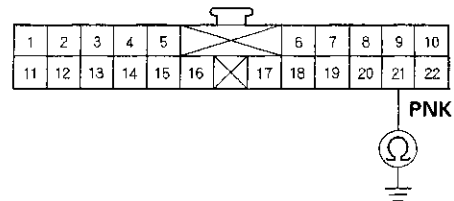
YES—Go to step 6.

NO—Replace the heater core temperature sensor. ■

6. Disconnect audio-HVAC display panel connector A (22P).

7. Check for continuity between the audio-HVAC display panel connector A (22P) terminal No. 21 and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

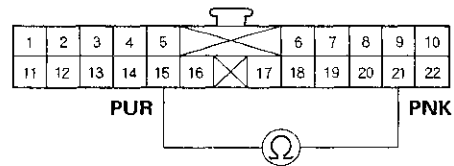
Is there continuity?

YES—Repair short to body ground in the wire between the audio-HVAC display panel and the heater core temperature sensor. ■

NO—Go to step 8.

8. Check for continuity between audio-HVAC display panel connector A (22P) terminals No. 15 and No. 21.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there continuity?

YES—Repair short in the wires between the audio-HVAC display panel and the heater core temperature sensor. ■

NO—Substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■



DTC B2998 or DTC indicator Y: A Problem in the A/C Compressor Driver

1. Check the No. 29 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Clear the DTC with the HDS.
3. Operate the climate control system in several modes.
4. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2998 or Y indicated?

YES—Substitute a known-good A/C compressor driver, and recheck. If the symptom/indication goes away, replace the original A/C compressor driver (see page 21-99). ■

NO—Intermittent failure. ■

DTC B2999 or DTC indicator Z: A problem in the A/C Compressor Delivery Valve

1. Check the No. 29 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Clear the DTC with the HDS.
3. Operate the climate control system in several modes.
4. Check for DTCs using the HDS or self-diagnostic.

Is DTC B2999 or Z indicated?

YES—Replace the A/C compressor (see page 21-92). ■

NO—Intermittent failure. ■



Climate Control

Recirculation Control Motor Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

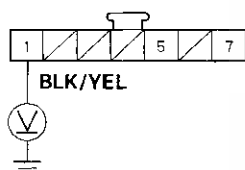
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect the recirculation control motor 7P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the recirculation control motor 7P connector terminal No. 1 and body ground.

RECIRCULATION CONTROL MOTOR 7P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 5.

NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and the recirculation control motor. ■

5. Turn the ignition switch OFF.

6. Test the recirculation control motor (see page 21-84).

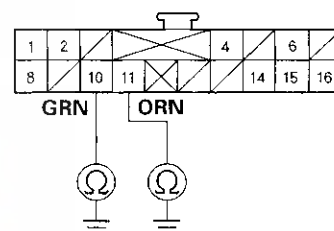
Is the recirculation control motor OK?

YES—Go to step 7.

NO—Replace the recirculation control motor (see page 21-85), or repair the recirculation control linkage or doors. ■

7. Disconnect audio-HVAC display panel connector B (16P).
8. Check for continuity between the No. 10 and No. 11 terminals audio-HVAC display panel connector B (16P) and body ground individually.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there continuity?

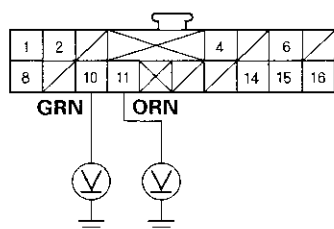
YES—Repair any short to body ground in the wire(s) between the audio-HVAC display panel and the recirculation control motor. ■

NO—Go to step 9.



9. Turn the ignition switch ON (II), and check the same wires for voltage to body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there any voltage?

YES—Repair any short to power in the wire(s) between the audio-HVAC display panel and the recirculation control motor. This short may also damage the audio-HVAC display panel. Repair the short to power before replacing the audio-HVAC display panel. ■

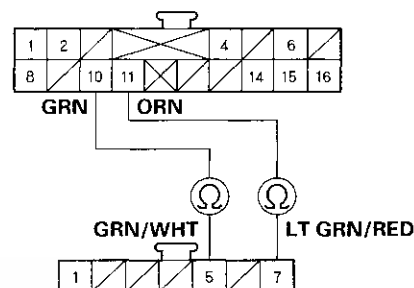
NO—Go to step 10.

10. Turn the ignition switch OFF.

11. Check for continuity between the following terminals of audio-HVAC display panel connector B (16P) and the recirculation control motor 7P connector.

16P: 7P:
No. 10 No. 5
No. 11 No. 7

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P) Wire side of female terminals



RECIRCULATION CONTROL MOTOR 7P CONNECTOR Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector B (16P) and at the recirculation control motor 7P connector. If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair any open in the wire(s) between the audio-HVAC display panel and the recirculation control motor. ■

Climate Control

Audio-HVAC Display Panel Power and Ground Circuit Troubleshooting

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

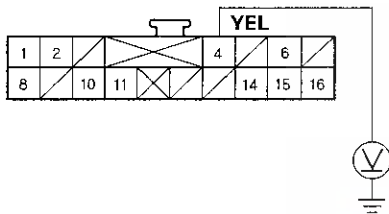
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Disconnect audio-HVAC display panel connector B (16P).
3. Turn the ignition switch ON (II).
4. Measure the voltage between audio-HVAC display panel connector B (16P) terminal No. 4 and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there battery voltage?

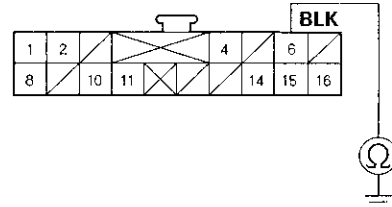
YES—Go to step 5.

NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and the audio-HVAC display panel. ■

5. Turn the ignition switch OFF.

6. Check for continuity between audio-HVAC display panel connector B (16P) terminal No. 6 and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR B (16P)



Wire side of female terminals

Is there continuity?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector B (16P). If the connections are good, substitute a known-good audio-HVAC display panel, and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Check for an open in the wire between the audio-HVAC display panel and body ground. If the wire is OK, check for poor ground at G503. ■



Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 9 (20 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s), and recheck. ■

2. Remove the A/C condenser fan relay from the under-hood fuse/relay box, and test it (see page 22-72).

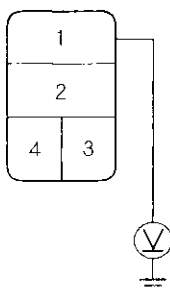
Is the relay OK?

YES—Go to step 3.

NO—Replace the A/C condenser fan relay. ■

3. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 1 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



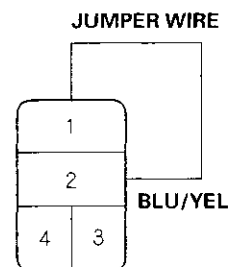
Is there battery voltage?

YES—Go to step 4.

NO—Replace the under-hood fuse/relay box. ■

4. Connect the A/C condenser fan relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C CONDENSER FAN RELAY 4P SOCKET



Do the A/C condenser and radiator fans run?

YES—Go to step 5.

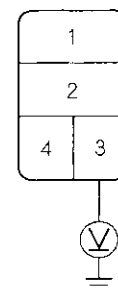
NO—Go to step 12.

5. Disconnect the jumper wire.

6. Turn the ignition switch ON (II).

7. Measure the voltage between the A/C condenser fan relay 4P socket terminal No. 3 and body ground.

A/C CONDENSER FAN RELAY 4P SOCKET



Is there battery voltage?

YES—Go to step 8.

NO—Go to step 32.

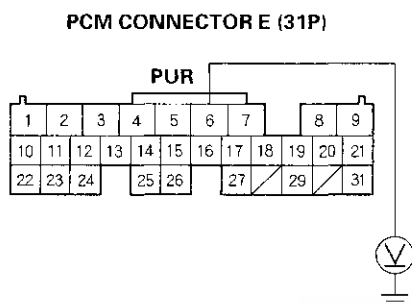
8. Turn the ignition switch OFF.

(cont'd)

Climate Control

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

9. Reinstall the A/C condenser fan relay.
10. Turn the ignition switch ON (II).
11. Using the backprobe set, measure the voltage between the PCM connector E (31P) and terminal No. 6 body ground with the PCM connectors connected.



Is there battery voltage?

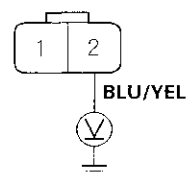
YES—Check for loose wires or poor connections at PCM connector A (31P) terminal No. 6. If the connections are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM, then perform the PCM idle learn procedure (see page 11-340). ■

NO—Repair open in the wire between the A/C condenser fan relay and the PCM. ■

12. Disconnect the jumper wire.
13. Reinstall the A/C condenser fan relay.
14. Disconnect the A/C condenser fan 2P connector.
15. Turn the ignition switch ON (II), then turn the A/C and fan control buttons ON.

16. Measure the voltage between the A/C condenser fan 2P connector terminal No. 2 and body ground.

A/C CONDENSER FAN 2P CONNECTOR



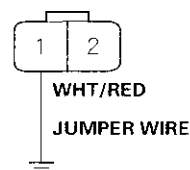
Is there battery voltage?

YES—Go to step 17.

NO—Repair open in the wire between the A/C condenser fan relay and the A/C condenser fan. ■

17. Push the OFF button, then turn the ignition switch OFF.
18. Reconnect the A/C condenser fan 2P connector.
19. Connect the A/C condenser fan 2P connector terminal No. 1 to body ground with a jumper wire.

A/C CONDENSER FAN 2P CONNECTOR



20. Turn the ignition switch ON (II), then push the A/C and fan control buttons ON.

Does the A/C condenser fan run?

YES—Go to step 21.

NO—Replace the A/C condenser fan motor. ■



21. Push the OFF button, then turn the ignition switch OFF.
22. Disconnect the jumper wire.
23. Remove the fan control relay from the auxiliary under-hood relay box A, and test it (see page 22-72).

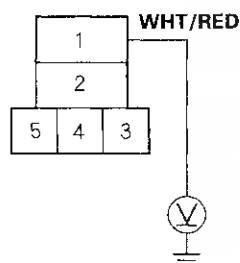
Is the relay OK?

YES—Go to step 24.

NO—Replace the fan control relay. ■

24. Turn the ignition switch ON (II), then push the A/C and fan control buttons ON.
25. Measure the voltage between the fan control relay 5P socket terminal No. 1 and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there battery voltage?

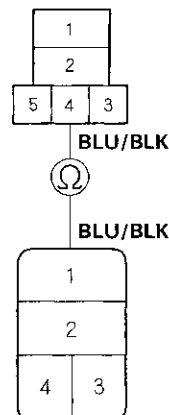
YES—Go to step 26.

NO—Repair open in the wire between the A/C condenser fan and the fan control relay. ■

26. Push the OFF button, then turn the ignition switch OFF.
27. Remove the radiator fan relay from the under-hood fuse/relay box.

28. Check for continuity between the fan control relay 5P socket terminal No. 4 and the radiator fan relay 4P socket terminal No. 1.

FAN CONTROL RELAY 5P SOCKET



RADIATOR FAN RELAY 4P SOCKET

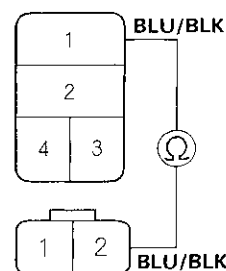
Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the fan control relay and the radiator fan relay. ■

29. Disconnect the radiator fan 2P connector.
30. Check for continuity between the radiator fan relay 4P socket terminal No. 1 and the radiator fan 2P connector terminal No. 2.

RADIATOR FAN RELAY 4P SOCKET



RADIATOR FAN 2P CONNECTOR
Wire side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the radiator fan relay and the radiator fan. ■

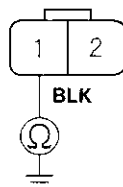
(cont'd)

Climate Control

Radiator and A/C Condenser Fan Low Speed Circuit Troubleshooting (cont'd)

31. Check for continuity between the radiator fan 2P connector terminal No. 1 and body ground.

RADIATOR FAN 2P CONNECTOR



Wire side of female terminals

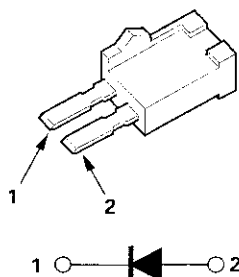
Is there continuity?

YES—Replace the radiator fan motor. ■

NO—Check for an open in the wire between the radiator fan and body ground. If the wire is OK, check for poor ground at G301. ■

32. Remove A/C diode A from under the dashboard.
33. Using the diode setting (↔) on a DVOM, check for current flow in both directions between the No. 1 and No. 2 terminals of A/C diode A.

A/C DIODE A



Is there current flow in only one direction?

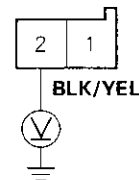
YES—Go to step 34.

NO—Replace A/C diode A. ■

34. Turn the ignition switch ON (II).

35. Measure the voltage between A/C diode A 2P socket terminal No. 2 and body ground.

A/C DIODE A 2P SOCKET



Is there battery voltage?

YES—Repair open in the wire between A/C diode A pin 1 and the A/C condenser fan relay. ■

NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and A/C diode A pin 2. ■



A/C Condenser Fan High Speed Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if the radiator fan and/or the A/C compressor is inoperative. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse, and recheck. ■

2. Remove the fan control relay from the auxiliary under-hood relay box A, and test it (see page 22-72).

Is the relay OK?

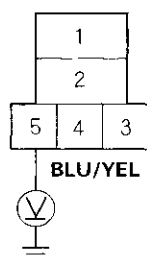
YES—Go to step 3.

NO—Replace the fan control relay. ■

3. Turn the ignition switch ON (II).

4. Measure the voltage between the fan control relay 5P socket terminal No. 5 and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there battery voltage?

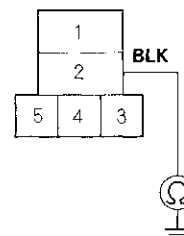
YES—Go to step 5.

NO—Go to step 9.

5. Turn the ignition switch OFF.

6. Check for continuity between the fan control relay 5P socket terminal No. 2 and body ground.

FAN CONTROL RELAY 5P SOCKET



Is there continuity?

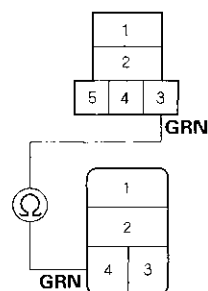
YES—Go to step 7.

NO—Check for an open in the wire between the fan control relay and body ground. If the wire is OK, check for poor ground at G301. ■

7. Remove the radiator fan relay from the under-hood fuse/relay box.

8. Check for continuity between the fan control relay 5P socket terminal No. 3 and the radiator fan relay 4P socket terminal No. 4.

FAN CONTROL RELAY 5P SOCKET



RADIATOR FAN RELAY 4P SOCKET

Is there continuity?

YES—Repair open in the wire between the radiator fan relay terminal No. 4 and the PCM terminal E12. ■

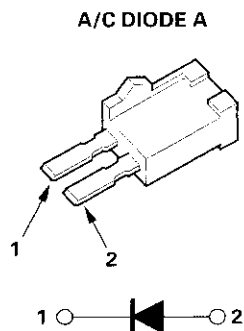
NO—Repair open in the wire between the fan control relay and the radiator fan relay. ■

(cont'd)

Climate Control

A/C Condenser Fan High Speed Circuit Troubleshooting (cont'd)

9. Remove A/C diode A from under the dashboard.
10. Using the diode setting (•◄►•) on a DVOM, check for current flow in both directions between the No. 1 and No. 2 terminals of A/C diode A.



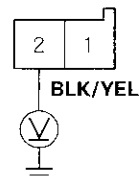
Is there current flow in only one direction?

YES—Go to step 11.

NO—Replace A/C diode A. ■

11. Turn the ignition switch ON (II).
12. Measure the voltage between the A/C diode A 2P socket terminal No. 2 and body ground.

A/C DIODE A 2P SOCKET



Is there battery voltage?

YES—Repair open in the BLU/YEL wire between A/C diode A and the fan control relay. ■

NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and A/C diode A. ■





A/C Compressor Clutch Circuit Troubleshooting

NOTE:

- It is normal for the A/C compressor to turn off under certain conditions, such as low idle, high engine coolant temperature, or hard acceleration.
- Do not use this troubleshooting procedure if the fans are also inoperative with the A/C on. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

1. Check the No. 12 (7.5 A) fuse in the under-hood fuse/relay box, and the No. 30 (7.5 A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Replace the fuse(s) and recheck. ■

2. Check the engine coolant temperature, and idle speed (use the HDS PGM-FI data list if possible).

ECT Sensor	187—201 °F (86—94 °C)
TPS	About 0.5 V
RPM	More than 680

Are the coolant temperature and idle speed OK?

YES—Go to step 3.

NO—Troubleshoot and repair the cause of the high engine coolant temperature, or low idle. ■

3. Remove the A/C compressor clutch relay from the under-hood fuse/relay box, and test it (see page 22-72).

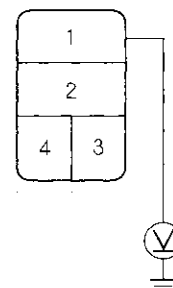
Is the relay OK?

YES—Go to step 4.

NO—Replace the A/C compressor clutch relay. ■

4. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 1 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



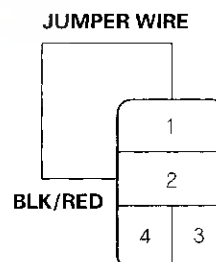
Is there battery voltage?

YES—Go to step 5.

NO—Replace the under-hood fuse/relay box. ■

5. Connect the A/C compressor clutch relay 4P socket terminals No. 1 and No. 2 with a jumper wire.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Does the A/C compressor clutch click?

YES—Go to step 6.

NO—Go to step 14.

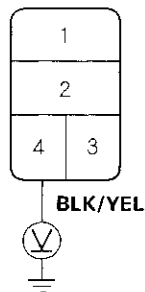
(cont'd)

Climate Control

A/C Compressor Clutch Circuit Troubleshooting (cont'd)

6. Disconnect the jumper wire.
7. Turn the ignition switch ON (II).
8. Measure the voltage between the A/C compressor clutch relay 4P socket terminal No. 4 and body ground.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



Is there battery voltage?

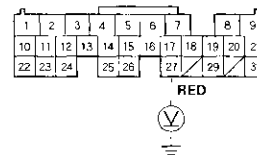
YES—Go to step 9.

NO—Repair open in the wire between the No. 30 fuse in the under-dash fuse/relay box and the A/C compressor clutch relay. ■

9. Turn the ignition switch OFF.
10. Reinstall the A/C compressor clutch relay.
11. Make sure the A/C button is OFF.
12. Turn the ignition switch ON (II).

13. Using the backprobe set, measure the voltage between PCM connector E (31P) terminal No. 27 and body ground with the PCM connectors connected.

PCM CONNECTOR E (31P)



Wire side of female terminals

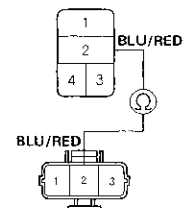
Is there battery voltage?

YES—Check for loose wires or poor connections at PCM connector E (31P). If the connections are good, check the PCM grounds. If the grounds are good, substitute a known-good PCM, and recheck. If the symptom/indication goes away, replace the original PCM then perform the PCM idle learn procedure (see page 11-340). ■

NO—Repair open in the wire between the A/C compressor clutch relay and the PCM. ■

14. Disconnect the jumper wire.
15. Disconnect the A/C compressor clutch 3P connector.
16. Check for continuity between the A/C compressor clutch relay 4P socket terminal No. 2 and the A/C compressor clutch 3P connector terminal No. 2.

A/C COMPRESSOR CLUTCH RELAY 4P SOCKET



A/C COMPRESSOR CLUTCH 3P CONNECTOR
Terminal side of male terminals

Is there continuity?

YES—Check the A/C compressor clutch clearance, and the A/C compressor clutch field coil (see page 21-94). Repair as needed. ■

NO—Repair open in the wire between the A/C compressor clutch relay and the A/C compressor clutch. ■



A/C Signal Circuit Troubleshooting

NOTE:

- Do not use this troubleshooting procedure if any of the following items are operative; A/C condenser fan, radiator fan, A/C compressor. Refer to the symptom troubleshooting index.
- Before performing symptom troubleshooting, check for powertrain DTCs (see page 11-3).

- Check for body DTCs using B-CAN system diagnosis test mode A troubleshooting (see page 22-84).

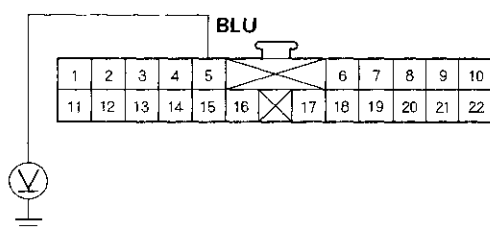
Are there any DTCs indicated?

YES—Do the appropriate troubleshooting for the DTC indicated. ■

NO—Go to step 2.

- Turn the ignition switch OFF.
- Disconnect audio-HVAC display panel connector A (22P).
- Turn the ignition switch ON (II).
- Measure the voltage between the No. 5 terminal of audio-HVAC display panel connector A (22P) and body ground.

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is there 5 V or more?

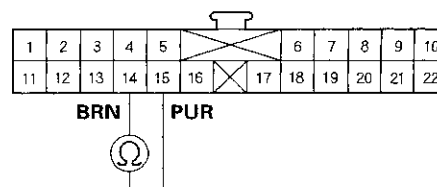
YES—Go to step 6.

NO—Repair open in the wire between the relay control module panel and the audio-HVAC display panel. ■

- Turn the ignition switch OFF.

- Measure the evaporator temperature sensor resistance between the No. 14 and No. 15 terminals of audio-HVAC display panel connector A (22P).

AUDIO-HVAC DISPLAY PANEL CONNECTOR A (22P)



Wire side of female terminals

Is the resistance less than 24 kΩ?

YES—Go to step 8.

NO—Test the evaporator temperature sensor (see page 21-78). ■

- Reconnect audio-HVAC display panel connector A (22P).
- Turn the ignition switch ON (II).
- Check that blower motor operates at all speeds.

Does the blower motor operate at all speeds?

YES—Check for loose wires or poor connections at audio-HVAC display panel connector A (22P). If the connections are good, substitute a known-good audio-HVAC display panel and recheck. If the symptom/indication goes away, replace the original audio-HVAC display panel. ■

NO—Repair the problem in the blower motor circuit. ■

Climate Control

A/C Compressor Driver Power Circuit Troubleshooting

NOTE: Put on gloves to protect your hands.

IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Check the No. 29 (7.5 A) fuse in the under-dash fuse/relay box.

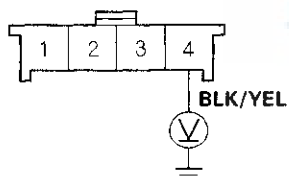
Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse and recheck. ■

2. Disconnect the A/C compressor driver 4P connector.
3. Turn the ignition switch ON (II).
4. Measure the voltage between the A/C compressor driver 4P connector No. 4 terminal and body ground.

A/C COMPRESSOR DRIVER 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Check for loose wires or poor connections at A/C compressor driver 4P connector. If the connections are good, substitute a known-good A/C compressor driver, and recheck. If the symptom/indication goes away, replace the A/C compressor driver. ■

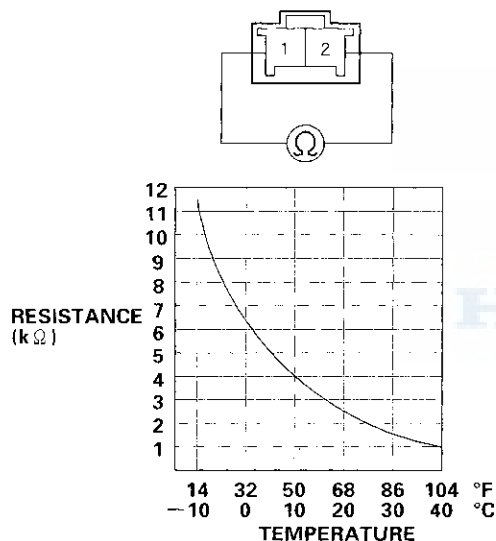
NO—Repair open in the wire between the No. 29 fuse in the under-dash fuse/relay box and the A/C compressor driver. ■



In-car Temperature Sensor Test

1. Remove the in-car temperature sensor (see page 21-75).
2. Test the in-car temperature sensor while holding it in front of the dashboard center vent
 - Measure the resistance with the system set to Max Cool.
 - Measure the resistance with the system set to Max Hot.
3. Compare the resistance reading between the No. 1 and No. 2 terminals of the in-car temperature sensor with the specifications shown in the graph; the resistance should be within the specifications for whatever the ambient temperature is.

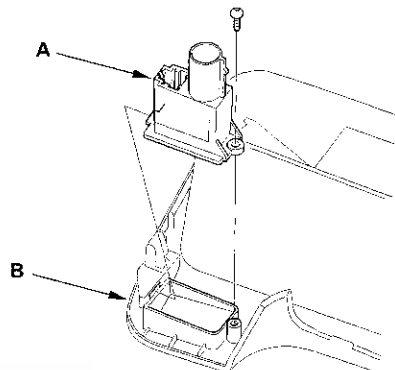
IN-CAR TEMPERATURE SENSOR



4. If the resistance is not as specified, replace the in-car temperature sensor (see page 21-75).

In-car Temperature Sensor Replacement

1. Remove the instrument panel (see page 20-66).
2. Remove the self-tapping screw and the in-car temperature sensor (A) from the instrument panel (B).



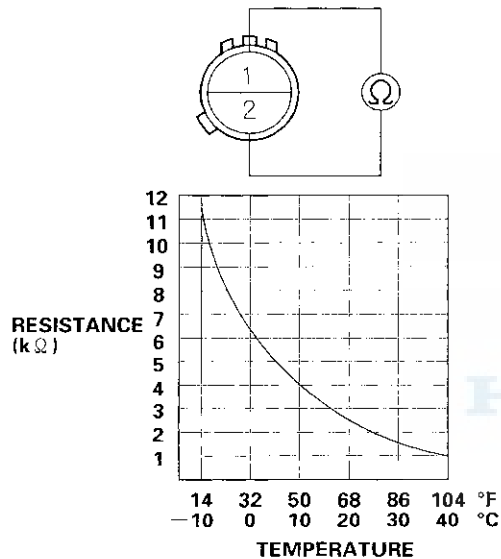
3. Install the sensor in the reverse order of removal. Be sure to connect the air hose securely.

Climate Control

Outside Air Temperature Sensor Test

1. Remove the outside air temperature sensor (see page 21-76).
2. Dip the sensor in ice water, and measure the resistance. Then pour warm water on the sensor, and check for a change in resistance.
3. Compare the resistance reading between the No. 1 and No. 2 terminals of the outside air temperature sensor with the specifications shown in the graph; the resistance should be within the specifications.

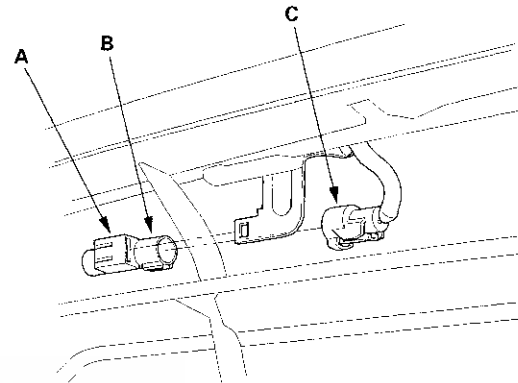
OUTSIDE AIR TEMPERATURE SENSOR



4. If the resistance is not as specified, replace the outside air temperature sensor (see page 21-76).

Outside Air Temperature Sensor Replacement

1. Lift the tab (A) to release the lock, then remove the outside air temperature sensor (B) from the back of the front bumper beam. Disconnect the 2P connector (C) from the outside air temperature sensor.

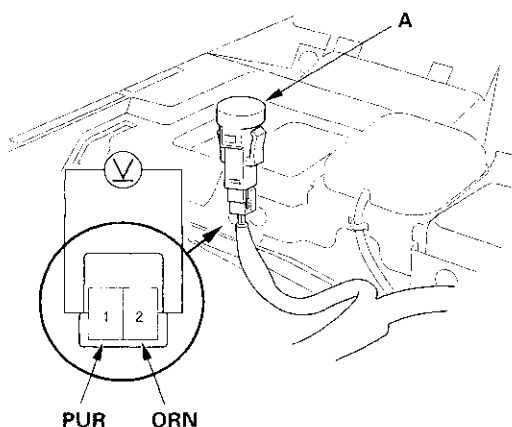


2. Install the sensor in the reverse order of removal.



Sunlight Sensor Test

1. Remove the sunlight sensor (A) (see page 21-77).



2. Turn the ignition switch ON (II). Measure the voltage between the terminals with the (+) probe on the No. 2 terminal and the (-) probe on the No. 1 terminal with the 2P connector connected.

NOTE: The voltage readings will not change under the light of a flashlight or a fluorescent lamp.

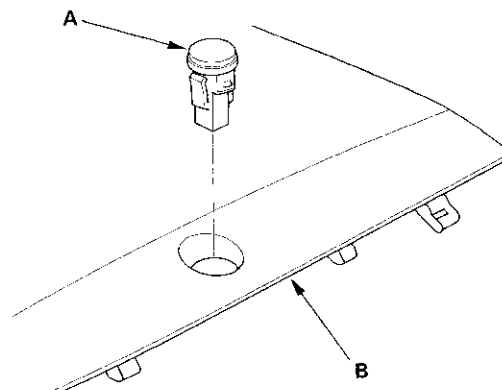
Voltage should be:

- 3.6—3.7 V or more with the sensor out of direct sunlight.
- 3.3—3.5 V or less with the sensor in direct sunlight.

3. If the voltage is not as specified, replace the sunlight sensor (see page 21-77).

Sunlight Sensor Replacement

1. Remove the upper panel from the dashboard (see page 20-68).
2. Remove the sunlight sensor (A) from the upper panel (B). Be careful not to damage the sensor.



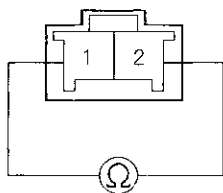
3. Install the sensor in the reverse order of removal.

Climate Control

Evaporator Temperature Sensor Test

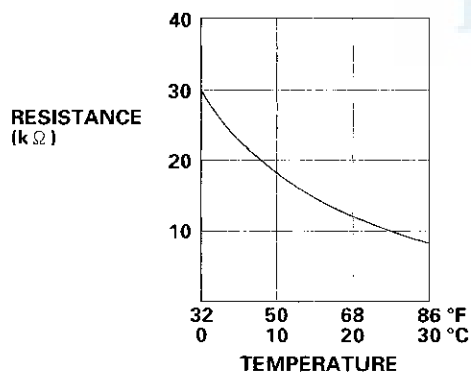
1. Remove the evaporator temperature sensor (see page 21-78).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

EVAPORATOR TEMPERATURE SENSOR



Terminal side of male terminals

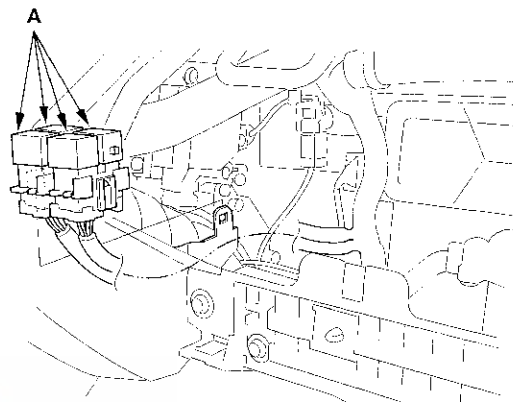
3. Then pour warm water on the sensor, and check for a change in resistance.
4. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



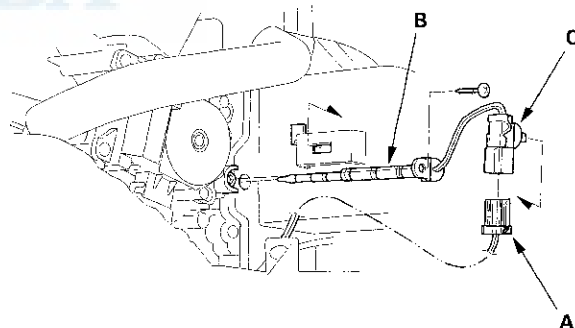
5. If the resistance is not as specified, replace the evaporator temperature sensor (see page 21-78).

Evaporator Temperature Sensor Replacement

1. Open the glove box. Remove the damper from the glove box, then release the glove box stops and let the glove box hang down (see page 20-70).
2. Remove the relays (A) from the bracket.



3. Disconnect the 2P connector (A) from the evaporator temperature sensor (B), then remove the connector clip (C). Remove the self-tapping screw, and carefully pull out the evaporator temperature sensor.



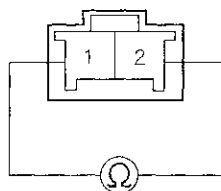
4. Install the sensor in the reverse order of removal.



Heater Core Temperature Sensor Test

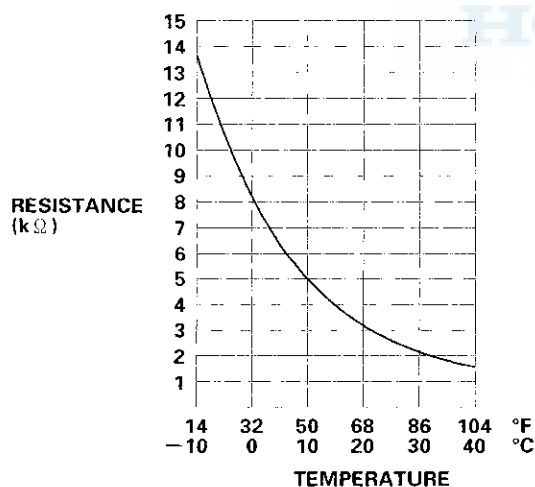
1. Remove the heater core temperature sensor (see page 21-79).
2. Dip the sensor in ice water, and measure the resistance between its terminals.

HEATER CORE TEMPERATURE SENSOR



Terminal side of male terminals

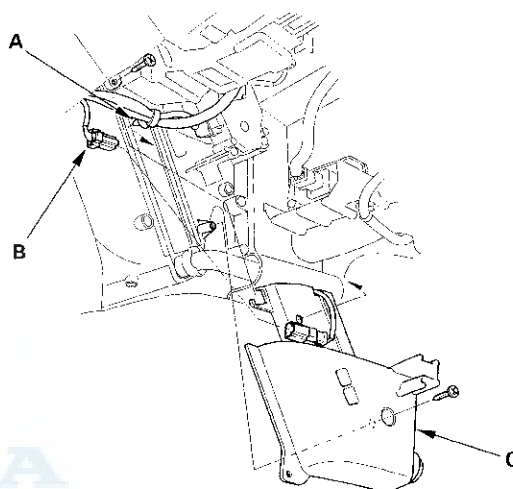
3. Then pour warm water on the sensor, and check for a change in resistance.
4. Compare the resistance readings with the specifications shown in the graph; the resistance should be within the specifications.



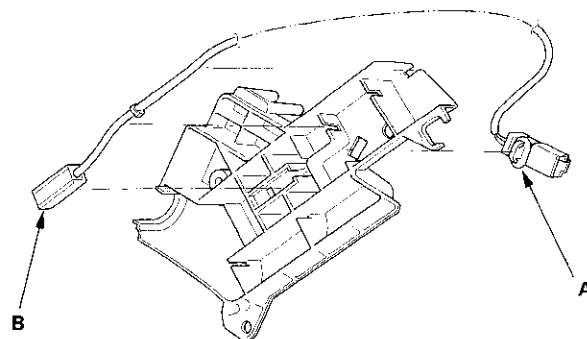
5. If the resistance is not as specified, replace the heater core temperature sensor (see page 21-79).

Heater Core Temperature Sensor Replacement

1. Remove the passenger's dashboard under cover (see page 20-72).
2. Remove the passenger's center lower cover (see page 20-72).
3. Remove the harness clip (A), then disconnect the 2P connector from the heater core temperature sensor (B). Remove the self-tapping screws and the heater core cover (C).



4. Remove the connector clip (A) and the heater core sensor (B).



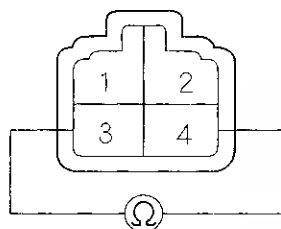
5. Install the sensor in the reverse order of removal.

Climate Control

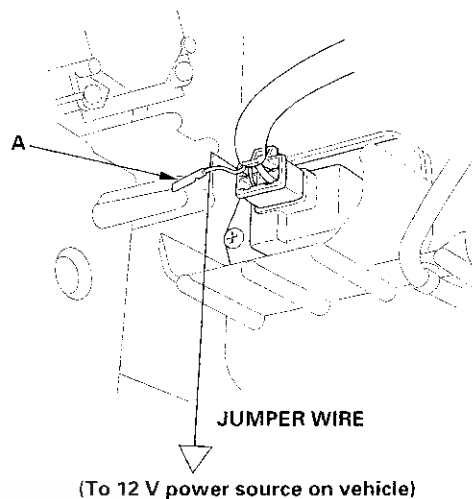
Power Transistor Test

1. Remove the passenger's dashboard under cover (see page 20-72).
2. Disconnect the 4P connector from the power transistor.
3. Measure the resistance between the No. 3 and No. 4 terminals of the power transistor. It should be about 1.5 k Ω .
 - If the resistance is within the specifications, go to step 3.
 - If the resistance is not within the specifications, replace the power transistor.

POWER TRANSISTOR



4. Carefully release the lock tab on the No. 1 terminal (LT GRN) (A) in the 4P connector, then remove the terminal and insulate it from body ground.



5. Reconnect the 4P connector to the power transistor.
6. Make sure the LT GRN wire is completely isolated, then supply 12 V to the No. 1 cavity with a jumper wire.
7. Turn the ignition switch ON (II), and check that the blower motor runs.
 - If the blower motor does not run, replace the power transistor.
 - If the blower motor runs, the power transistor is OK.



Driver's Air Mix Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

1. Disconnect the 7P connector from the driver's air mix control motor.

NOTICE

Incorrectly applying power and ground to the driver's air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the driver's air mix control motor, and ground the No. 2 terminal; the driver's air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the driver's air mix control motor should run, and stop at Max Hot. When the driver's air mix control motor stops running, disconnect battery power immediately.
3. If the driver's air mix control motor did not run in step 2, remove it, then check the driver's air mix control linkage and door for smooth movement.
 - If the linkage and door move smoothly, replace the driver's air mix control motor (see page 21-81).
 - If the linkage or door sticks or binds, repair them as needed.
 - If the driver's air mix control motor runs smoothly, go to step 4.
4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 k Ω .

DRIVER'S AIR MIX CONTROL MOTOR



5. Reconnect the driver's air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Using the backprobe set, measure the voltage between the No. 3 and No. 5 terminals.

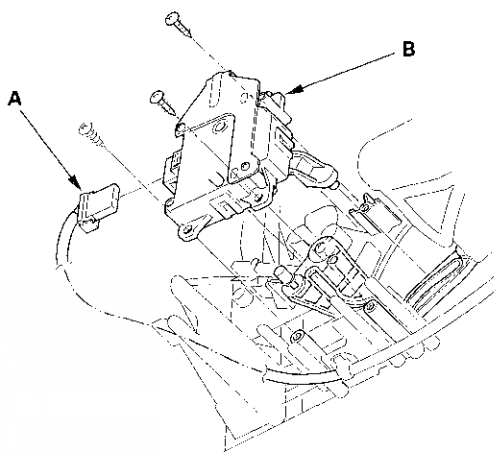
Max Cool—about 0.5 V

Max Hot—about 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the driver's air mix control motor (see page 21-81).

Driver's Air Mix Control Motor Replacement

1. Remove the driver's dashboard lower cover, then remove the driver's dashboard under cover (see page 20-67).
2. Disconnect the 7P connector (A) from the driver's air mix control motor (B). Remove the self-tapping screws and the driver's air mix control motor from the heater unit.



3. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Climate Control

Passenger's Air Mix Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

1. Disconnect the 7P connector from the passenger's air mix control motor.

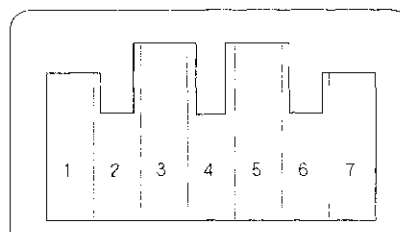
NOTICE

Incorrectly applying power and ground to the passenger's air mix control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the passenger's air mix control motor, and ground the No. 2 terminal; the passenger's air mix control motor should run, and stop at Max Cool. If it doesn't, reverse the connections; the passenger's air mix control motor should run, and stop at Max Hot. When the passenger's air mix control motor stops running, disconnect battery power immediately.
3. If the passenger's air mix control motor did not run in step 2, remove it, then check the passenger's air mix control linkage and door for smooth movement.
 - If the linkage and door move smoothly, replace the passenger's air mix control motor (see page 21-83).
 - If the linkage or door sticks or binds, repair them as needed.
 - If the passenger's air mix control motor runs smoothly, go to step 4.

4. Measure the resistance between the No. 5 and No. 7 terminals. It should be between 4.2 to 7.8 k Ω .

PASSENGER'S AIR MIX CONTROL MOTOR



5. Reconnect the passenger's air mix control motor 7P connector, then turn the ignition switch ON (II).
6. Using the backprobe set, measure the voltage between the No. 3 and No. 5 terminals.

Max Cool—about 1.5 V

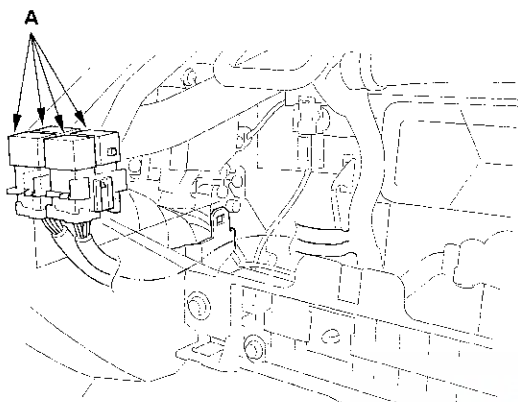
Max Hot—about 4.5 V

7. If either the resistance or voltage readings are not as specified, replace the passenger's air mix control motor (see page 21-83).

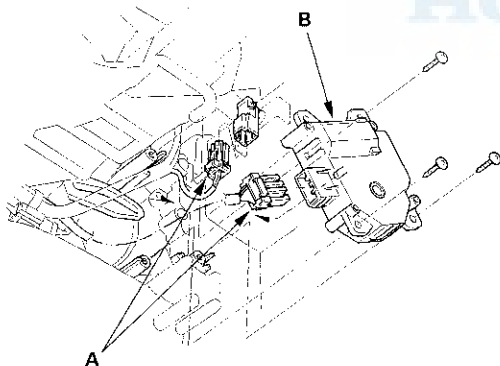


Passenger's Air Mix Control Motor Replacement

1. Open the glove box. Remove the damper from the glove box, then release the glove box stops and let the glove box hang down (see page 20-70).
2. Remove the relays (A) from the bracket.



3. Disconnect the connectors (A) from the evaporator temperature sensor and the passenger's air mix control motor. Remove the self-tapping screws and the passenger's air mix control motor (B) from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Mode Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

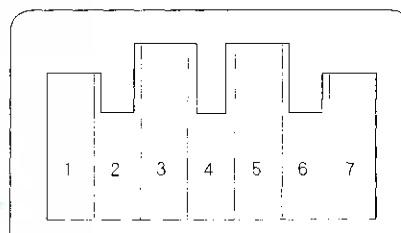
1. Disconnect the 7P connector from the mode control motor.

NOTICE

Incorrectly applying power and ground to the mode control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the mode control motor, and ground the No. 2 terminal; the mode control motor should run smoothly, and stop at Defrost. If it doesn't, reverse the connections; the mode control motor should run smoothly, and stop at Vent. When the mode control motor stops running, disconnect battery power immediately.

MODE CONTROL MOTOR

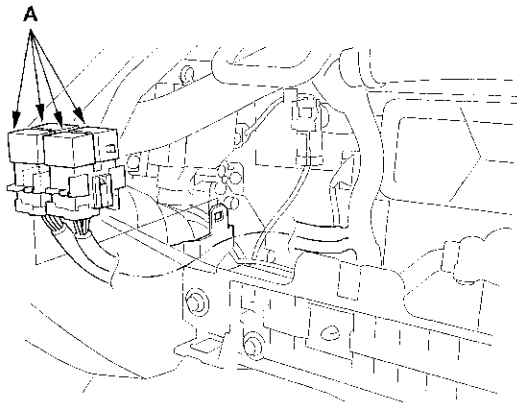


3. If the mode control motor did not run in step 2, remove it, then check the mode control linkage and doors for smooth movement.
 - If the linkage and doors move smoothly, replace the mode control motor (see page 21-84).
 - If the linkage or doors stick or bind, repair them as needed.
 - If the mode control motor runs smoothly, go to step 4.
4. Use a digital multimeter with an output of 1 mA or less at the 20 k Ω range. With the mode control motor running as in step 2, check for continuity between the No. 3, 4, 5, and 6 terminals and the No. 7 terminal individually. There should be continuity for a moment at each terminal as the motor moves past the switch's terminal.
5. If there is no continuity for a moment at each terminal, replace the mode control motor (see page 21-84).

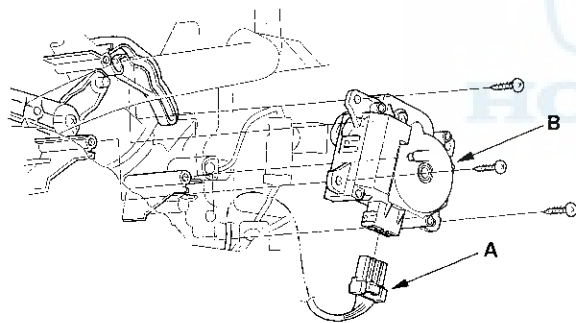
Climate Control

Mode Control Motor Replacement

1. Open the glove box. Remove the damper from the glove box, then release the glove box stops and let the glove box hang down (see page 20-70).
2. Remove the relays (A) from the bracket.



3. Disconnect the 7P connector (A) from the mode control motor (B). Remove the self-tapping screws and the mode control motor from the heater unit.



4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

Recirculation Control Motor Test

NOTE: Before testing, check for HVAC DTCs (see page 21-9).

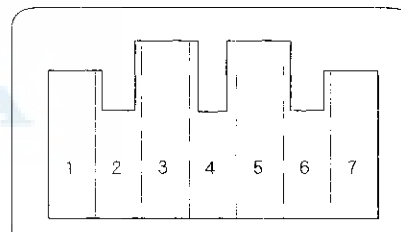
1. Disconnect the 7P connector from the recirculation control motor.

NOTICE

Incorrectly applying power and ground to the recirculation control motor will damage it. Follow the instructions carefully.

2. Connect battery power to the No. 1 terminal of the recirculation control motor, and ground the No. 5 or No. 7 terminals; the recirculation control motor should run smoothly. To avoid damaging the recirculation control motor, do not reverse power and ground. Disconnect the No. 5 or No. 7 terminal from ground; the recirculation control motor should stop at Fresh (when the No. 7 terminal is disconnected) or Recirculate (when the No. 5 terminal is disconnected). Don't cycle the recirculation control motor for a long time.

RECIRCULATION CONTROL MOTOR

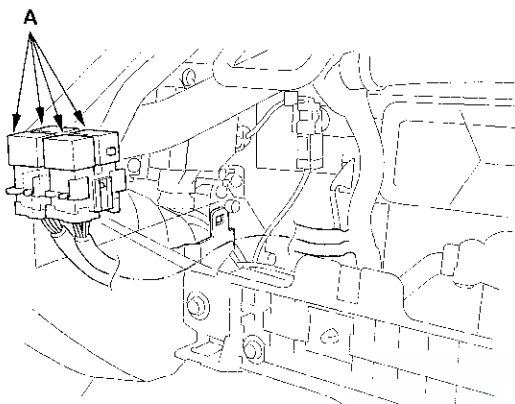


3. If the recirculation control motor did not run in step 2, remove it, then check the recirculation control linkage and doors for smooth movement.
 - If the linkage and doors move smoothly, replace the recirculation control motor (see page 21-85).
 - If the linkage or doors stick or bind, repair them as needed.

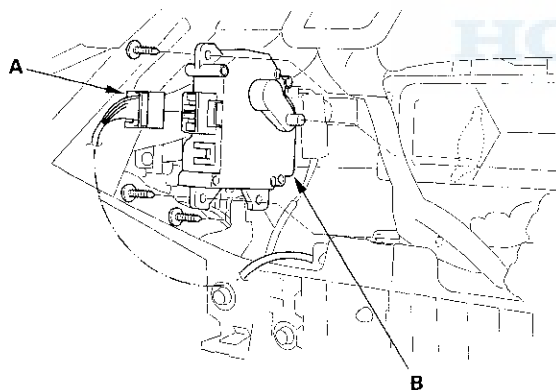


Recirculation Control Motor Replacement

1. Open the glove box. Remove the damper from the glove box, then release the glove box stops and let the glove box hang down (see page 20-70).
2. Remove the relays (A) from the bracket.



3. Disconnect the 7P connector (A) from the recirculation control motor (B). Remove the self-tapping screws and the recirculation control motor from the blower unit.

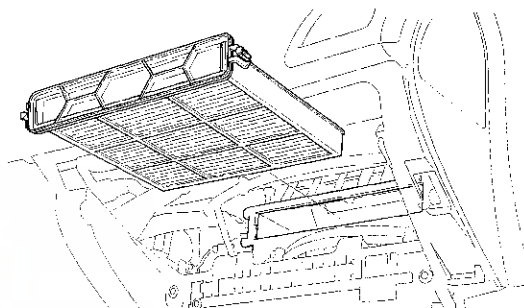


4. Install the motor in the reverse order of removal. Make sure the pin on the motor is properly engaged with the linkage. After installation, make sure the motor runs smoothly.

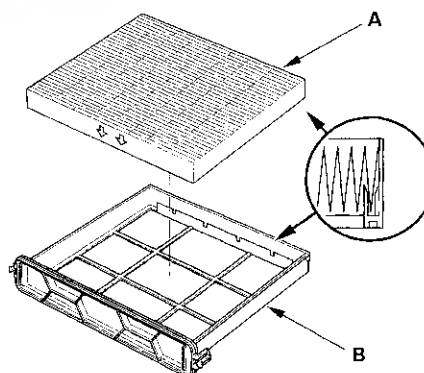
Dust and Pollen Filter Replacement

The dust and pollen filter should be replaced every 30,000 miles (48,000 km) or 24 months, whichever comes first. Replace the filter more often if the airflow is less than usual, or if the vehicle is driven in areas that have high concentrations of soot from industry or diesel powered vehicles.

1. Open the glove box. Remove the damper from the glove box then let the glove box hang down (see page 20-70).
2. Remove the dust and pollen filter assembly from the evaporator case.



3. Remove the filter (A) from the housing (B), and replace the filter.

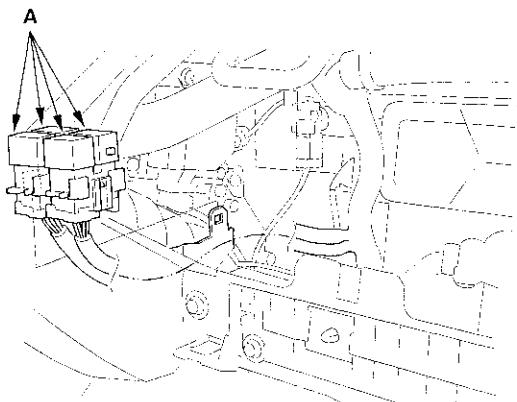


4. Install the filter in the reverse order of removal. Make sure that there is no air leaking out of the evaporator.

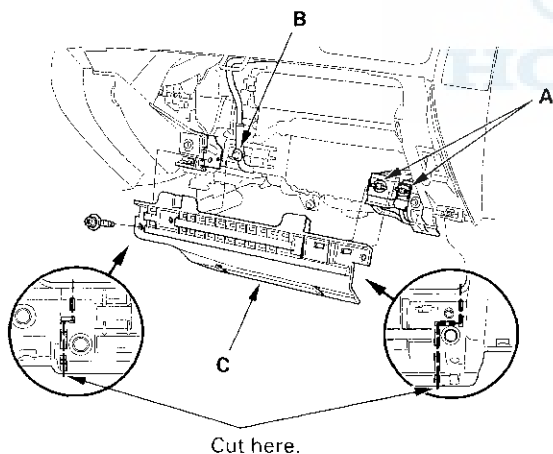
Climate Control

Blower Unit Removal and Installation

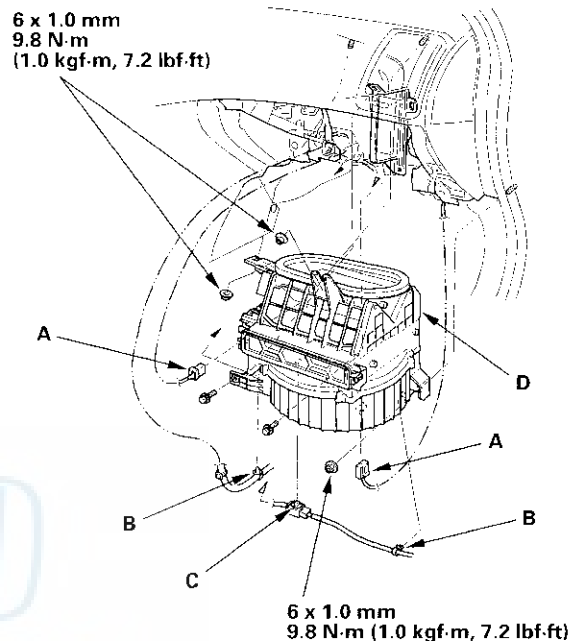
1. Remove the glove box (see page 20-70), passenger's dashboard lower cover (see page 20-72), and the passenger's kick panel (see page 20-45).
2. Remove the relays (A) from the bracket.



3. Remove the connector clips (A), the wire harness clip (B), and bolt. Cut the plastic cross brace (C) in the glove box opening with diagonal cutters in the area shown. Retain these parts to be reinstalled later.



4. Disconnect the connectors (A) from the blower motor and the recirculation control motor, then remove the wire harness clips (B) and the connector clip (C). Remove the mounting nuts, the mounting bolts, and the blower unit (D).



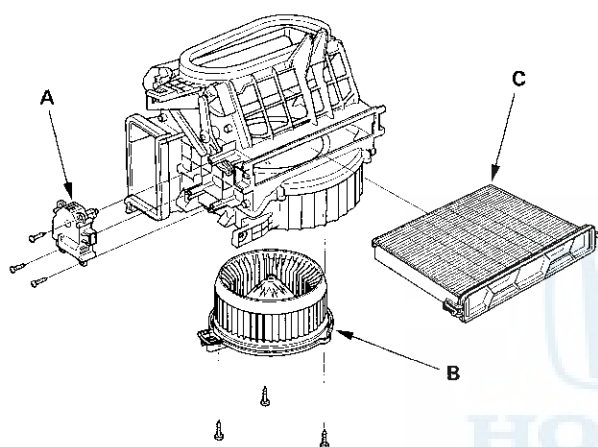
5. Install the unit in the reverse order of removal. Make sure that there is no air leakage.



Blower Unit Component Replacement

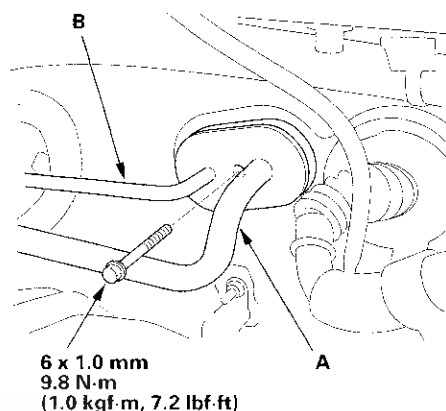
Note these items when overhauling the blower unit:

- The recirculation control motor (A), the blower motor (B), and the dust and pollen filter (C) can be replaced without removing the blower unit.
- Before reassembly, make sure the recirculation control linkage and doors move smoothly without binding.
- After reassembly, make sure the recirculation control motor runs smoothly (see page 21-85).

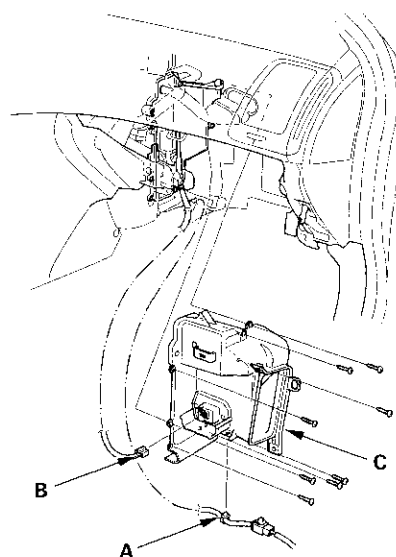


Evaporator Core Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-103).
2. Remove the bolt, then disconnect the suction line (A) and the receiver line (B) from the evaporator core.



3. Remove the blower unit (see page 21-86).
4. Remove the evaporator temperature sensor (see page 21-78).
5. Remove the harness clip (A), disconnect the connector (B) from the power transistor, then remove the self-tapping screws, and the expansion valve cover (C).

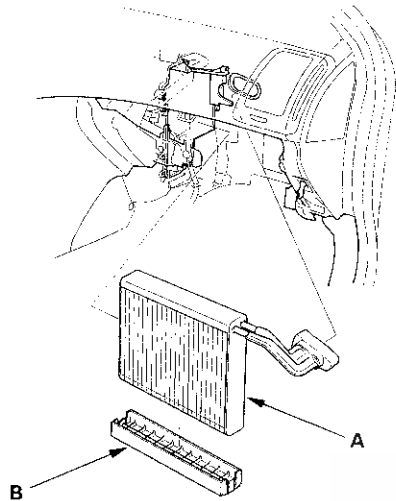


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Climate Control

Evaporator Core Replacement (cont'd)

6. Carefully pull out the evaporator core (A) and the plate (B) without bending the pipes.



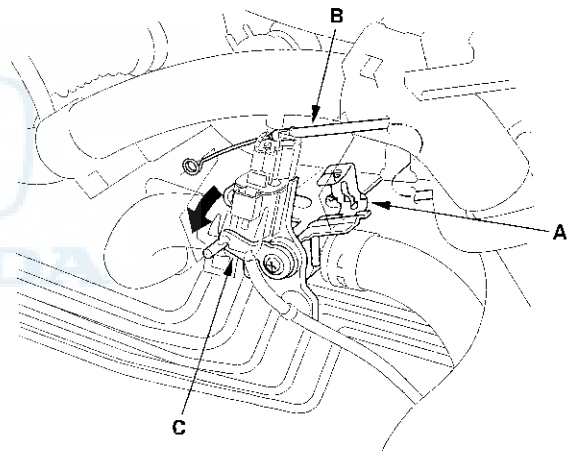
7. Install the core in the reverse order of removal, and note these items:

- If you're installing a new evaporator core, add refrigerant oil (SANDEN SE-10Y). Using the wrong refrigerant oil can be a safety hazard (see page 21-6).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, dispose of any remaining oil in the container, due to moisture absorption and short shelf life.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Make sure that there is no air leakage.
- Charge the system (see page 21-105).

Heater Unit/Core Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs of service.

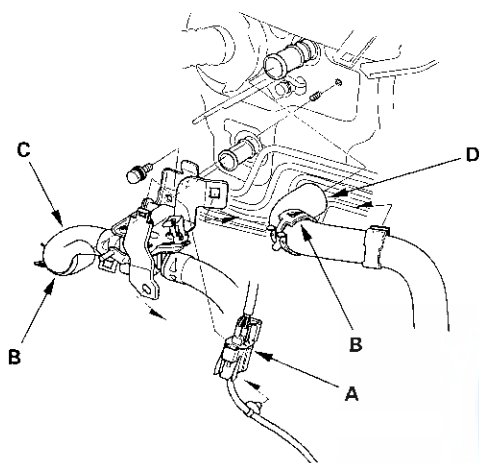
1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the frequencies for the customer's audio preset buttons.
2. Disconnect the negative cable from the battery.
3. Disconnect the suction and receiver lines from the evaporator core (see page 21-87).
4. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C). Turn the heater valve arm to the fully opened position as shown.



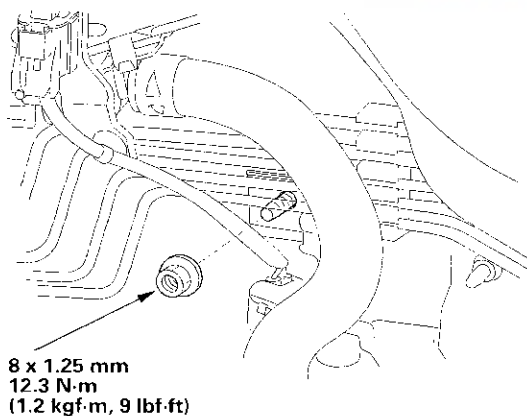
5. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).



6. Remove the connector clip (A). Slide the hose clamps (B) back. Remove the bolt and heater valve bracket, then disconnect the inlet heater hose (C) and the outlet heater hose (D) from the heater unit. Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.

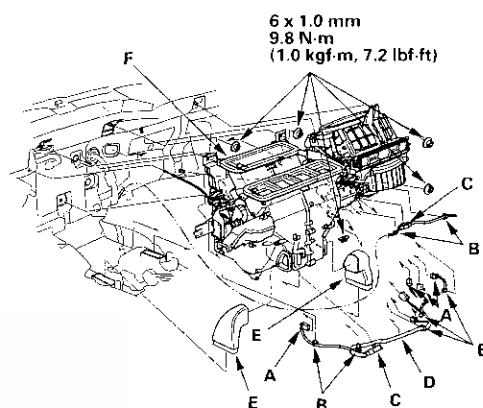


7. Remove the mounting nut from the heater unit. Take care not to damage or bend the fuel lines and the brake lines, etc..

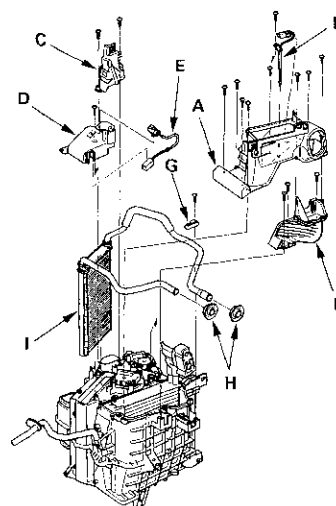


8. Remove the dashboard (see page 20-73).

9. Disconnect the connectors (A) from the driver's air mix control motor, the passenger's air mix control motor, the evaporator temperature sensor, the heater core sensor, the power transistor, and the recirculation control motor, then remove the wire harness clips (B), the connector clips (C) and the wire harness (D). Remove the heater ducts (E), then remove the mounting nuts and the blower-heater unit (F).



10. Remove the self-tapping screws, then remove the passenger's heater outlet (C), and the heater core cover (D), and the heater core sensor (E). Remove the self-tapping screws, the evaporator temperature sensor (F) and the joint duct A, then remove the self-tapping screws and the joint duct B. Remove the self-tapping screws, the heater pipe bracket (G), the grommets (H), and carefully pull out the heater core (I) so you don't bend the inlet and outlet pipes.



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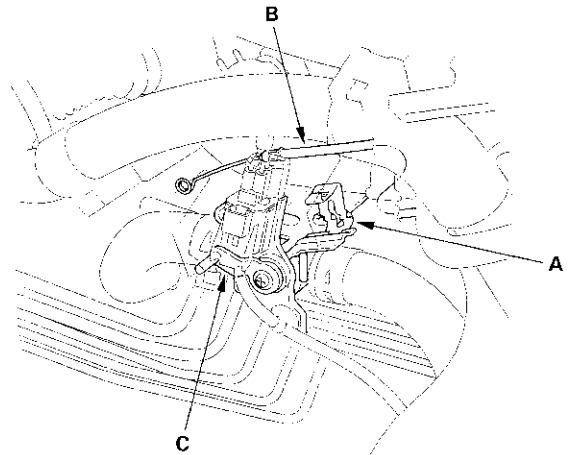
Climate Control

Heater Unit/Core Replacement (cont'd)

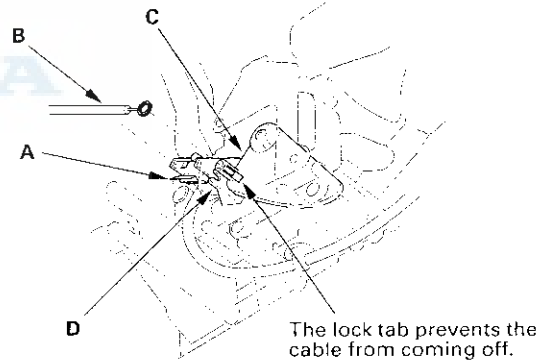
11. Install the heater core, and the evaporator core in the reverse order of removal.
12. Install the heater unit in the reverse order of removal, and note these items:
 - Do not interchange the inlet and outlet heater hoses, and install the hose clamps securely.
 - Refill the cooling system with engine coolant (see page 10-6).
 - Adjust the heater valve cable (see page 21-90).
 - Make sure that there is no coolant leakage.
 - Make sure that there is no air leakage.
 - Refer to the evaporator core replacement (see step 7 on page 21-88).
 - Reset the power window control unit (see page 22-200).
 - Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
 - If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

Heater Valve Cable Adjustment

1. From under the hood, open the cable clamp (A), then disconnect the heater valve cable (B) from the heater valve arm (C).



2. From under the dash, disconnect the heater valve cable housing from the cable clamp (A), and disconnect the heater valve cable (B) from the air mix control linkage (C).

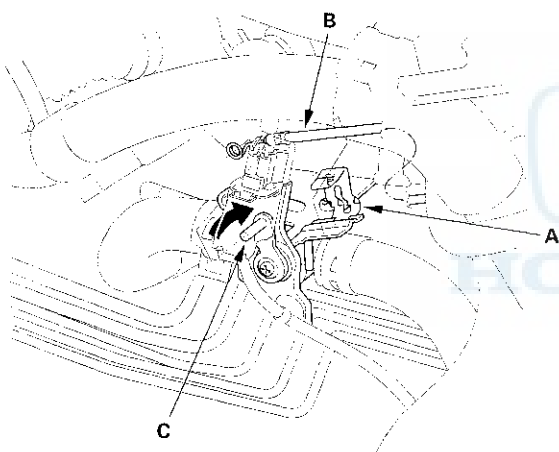




3. Set the temperature control dial to Max Cool (LO) with the ignition switch ON (II).
4. Attach the heater valve cable (B) to the air mix control linkage (C) as shown step 2. Hold the end of the heater valve cable housing against the stop (D), then snap the heater valve cable housing into the cable clamp (A).

NOTE: Insert the ring-end of the cable securely to the linkage pin. Insert the ring over the nail, making sure it is correctly attached.

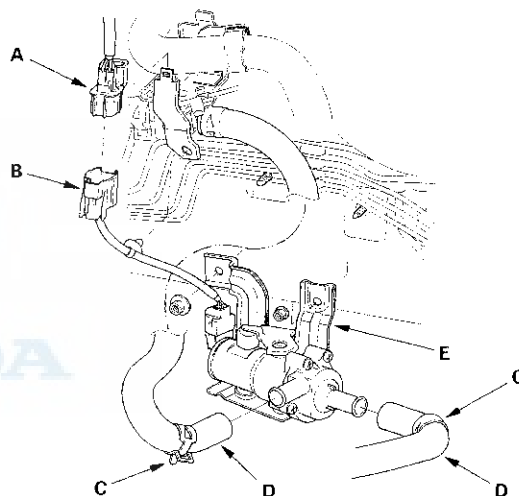
5. From under the hood, turn the heater valve arm (C) to the fully closed position as shown, and hold it. Attach the heater valve cable (B) to the heater valve arm, and gently pull on the heater valve cable housing to take up any slack, then install the heater valve cable housing into the cable clamp (A).



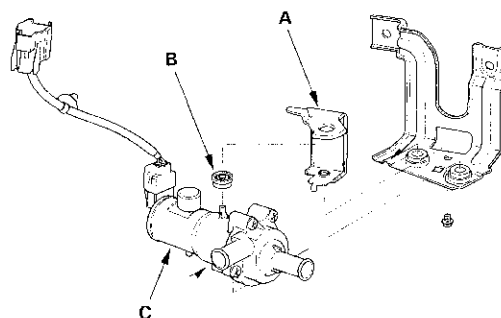
Auxiliary Electric Water Pump Replacement

1. When the engine is cool, drain the engine coolant from the radiator (see page 10-6).
2. Disconnect the connector (A). Remove the connector clip (B). Slide the hose clamps (C) back, then disconnect the hoses (D) from the auxiliary electric water pump. Remove the nuts and lower bracket (E).

NOTE: Engine coolant will run out when the hoses are disconnected; drain it into a clean drip pan. Be sure not to let coolant spill on the auxiliary electrical parts or the painted surfaces. If any coolant spills, rinse it off immediately.



3. Remove the bolt, the upper bracket (A), bushing (B), and the auxiliary electric water pump (C).



4. Install the pump in the reverse order of removal.

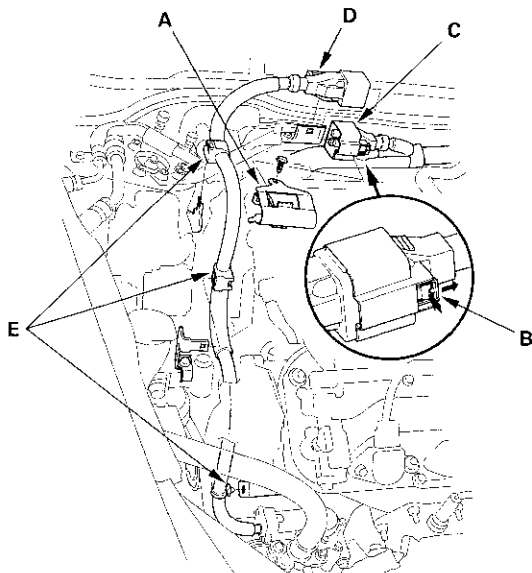
Climate Control

A/C Compressor Replacement

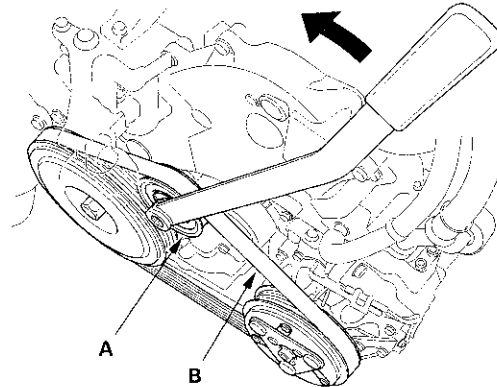
NOTE:

- Do not install the A/C compressor into a system unless you are completely sure that the system is free of contamination. Installing the A/C compressor into a contaminated system can result in premature A/C compressor failure.
- IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA information before performing repairs or service (see page 12-3).

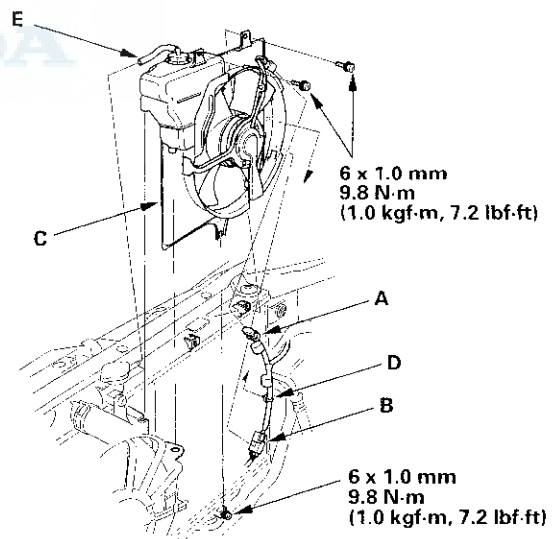
1. If the A/C compressor is marginally operable, run the engine at idle speed, and let the air conditioning work for a few minutes, then shut the engine off.
2. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's audio presets.
3. Turning off power to the high voltage circuit (see page 12-3).
4. Recover the refrigerant with a recovery/recycling/charging station (see page 21-103).
5. Remove the ignition coil cover (see page 4-22).
6. Remove the shield connector cover (A). Slide the retainer (B), then disconnect the connector (C). Remove the connector clip (D) and the wire harness clips (E).



7. Move the auto-tensioner (A) to relieve tension from the drive belt (B), then remove the drive belt.



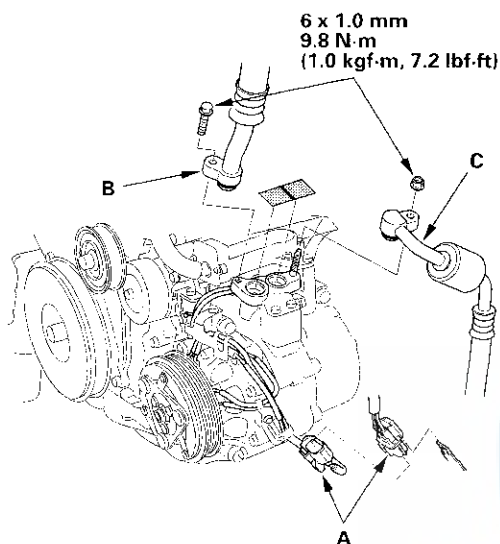
8. Disconnect the connector (A) from the A/C condenser. Remove the A/C compressor clutch connector (B) from the A/C condenser shroud (C), then remove the wire harness clip (D). Remove the hose (E) from the radiator. Loosen the lower mounting bolt, then remove the upper mounting bolts and the radiator fan shroud. Be careful not to damage the radiator fins when removing the A/C condenser fan shroud.



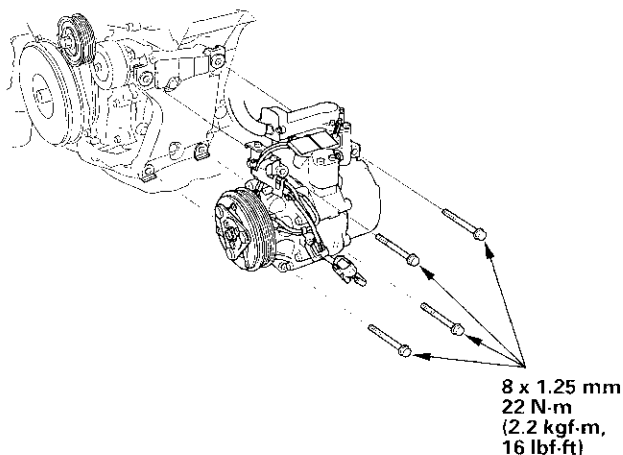


9. Remove the PCV valve (see page 11-407).

10. Disconnect the A/C compressor clutch connector (A). Remove the bolt and the nut, then disconnect the suction line (B) and discharge line (C) from the A/C compressor. Plug or cap the lines immediately after disconnecting them to avoid moisture and dust contamination.



11. Remove the mounting bolts and the A/C compressor. Be careful not to damage the radiator fins when removing the A/C compressor.



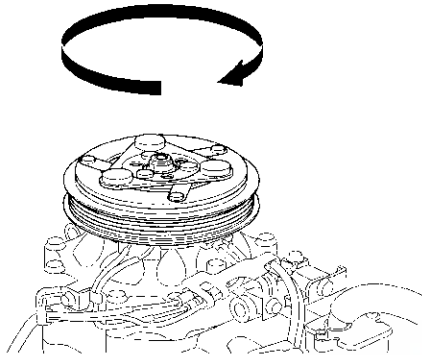
12. Install the A/C compressor in the reverse order of removal, and note these items:

- Inspect the A/C lines for any signs of contamination.
- If you're installing a new A/C compressor, you must calculate the amount of refrigerant oil to be removed from it (see page 21-6). A new A/C compressor comes with a full charge of oil.
- Using the wrong refrigerant oil can be a safety hazard (see page 21-6).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- To avoid contamination, do not return the oil to the container once dispensed, and never mix it with other refrigerant oils.
- Immediately after using the oil, dispose of any remaining oil in the container, due to moisture absorption short shelf life.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Be careful not to damage the radiator fins when installing the A/C compressor, the alternator or the A/C condenser fan shroud.
- Charge the system (see page 21-105).
- Reset the power window control unit (see page 22-200).
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.

Climate Control

A/C Compressor Clutch Check

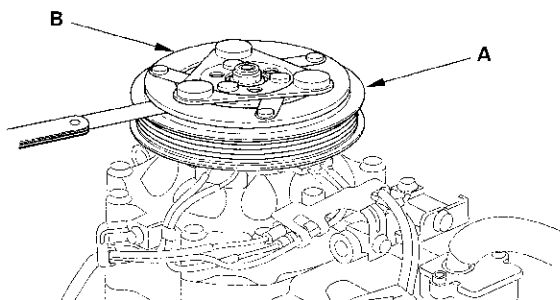
1. Check the armature plate for discoloration, peeling, or other damage. If there is damage, replace the clutch set (see page 21-95).
2. Check the rotor pulley bearing play and drag by rotating the rotor pulley by hand. Replace the clutch set with a new one if it is noisy or has excessive play/drag (see page 21-95).



3. Measure the clearance between the rotor pulley (A) and the armature plate (B) all the way around. If the clearance is not within specified limits, remove the armature plate (see page 21-95) and add or remove shims as needed to increase or decrease clearance.

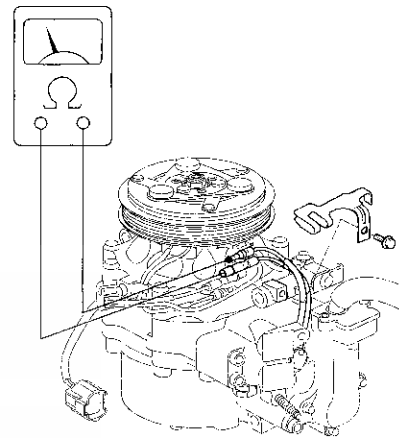
Clearance: 0.35—0.65 mm (0.014—0.026 in.)

NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



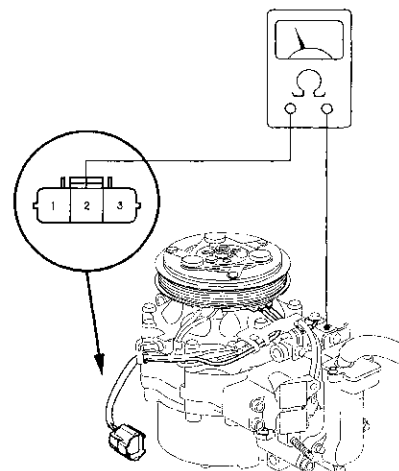
4. Remove the bolt and holder, then disconnect the field coil connectors. Check the thermal protector for continuity. If there is no continuity, replace the thermal protector (see page 21-96).

NOTE: The thermal protector will have no continuity above 252 to 262 °F (122 to 128 °C). When the temperature drops below 241 to 219 °F (116 to 104 °C), the thermal protector will have continuity.



5. Check the resistance between the A/C compressor clutch 3P connector terminal No. 2 and the A/C compressor housing. If resistance is not within specifications, replace the field coil (see page 21-95).

Field Coil Resistance: 3.05—3.35 Ω at 68 °F (20 °C)



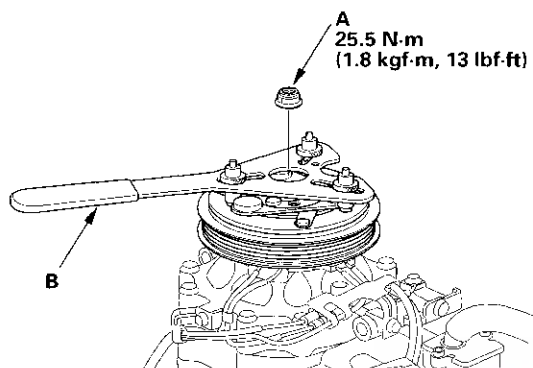


A/C Compressor Clutch Overhaul

Special Tools Required

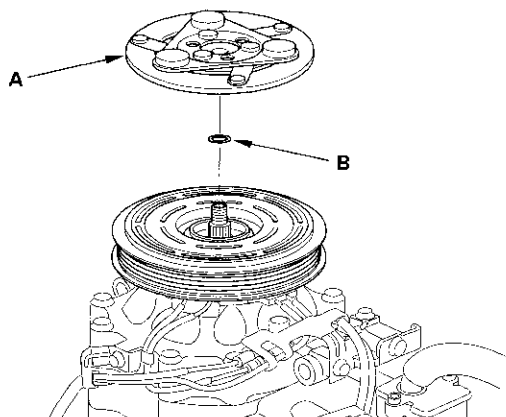
A/C clutch holder, Robinair 10204 or Kent-Moore J37872, or Honda Tool and Equipment KMT-J33939, commercially available

1. Remove the center nut (A) while holding the armature plate with a commercially available A/C clutch holder (B).

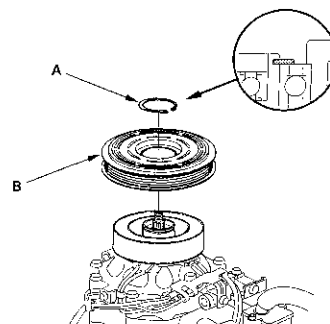


2. Remove the armature plate (A) and shim(s) (B), taking care not to lose the shim(s). If the clutch needs adjustment, increase or decrease the number and thickness of shims as necessary, then reinstall the armature plate, and recheck its clearance (see page 21-94).

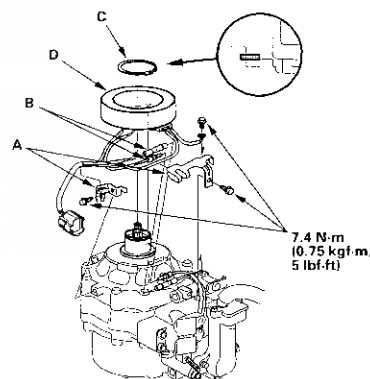
NOTE: The shims are available in four thicknesses: 0.1 mm, 0.2 mm, 0.4 mm, and 0.5 mm.



3. If you are replacing the field coil, remove the snap ring (A) with snap ring pliers, then remove the rotor pulley (B). Be careful not to damage the rotor pulley and A/C compressor.



4. Remove the bolts and holders (A), then disconnect the thermal protector connectors (B). Remove the bolt from the field coil ground terminal. Remove the snap ring (C) with snap ring pliers, then remove the field coil (D). Be careful not to damage the field coil and A/C compressor.



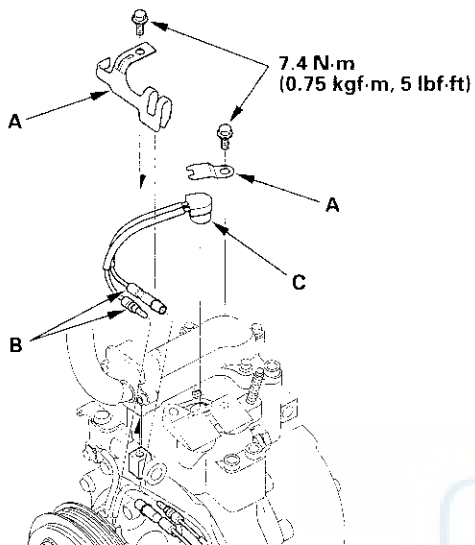
5. Reassemble the clutch in the reverse order of disassembly, and note these items:

- Install the field coil with the wire side facing down, and align the boss on the field coil with the hole in the compressor.
- Clean the rotor pulley and A/C compressor sliding surfaces with contact cleaner or other non-petroleum solvent.
- Install new snap rings, note the installation direction, and make sure they are fully seated in the groove.
- Make sure that the rotor pulley turns smoothly after it's reassembled.
- Route and clamp the wires properly or they can be damaged by the rotor pulley.

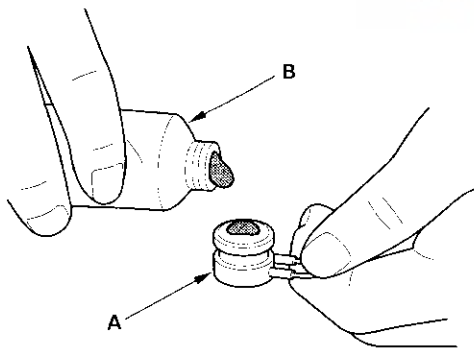
Climate Control

A/C Compressor Thermal Protector Replacement

1. Remove the bolts, and the holders (A). Disconnect the thermal protector connectors (B), then remove the thermal protector (C).



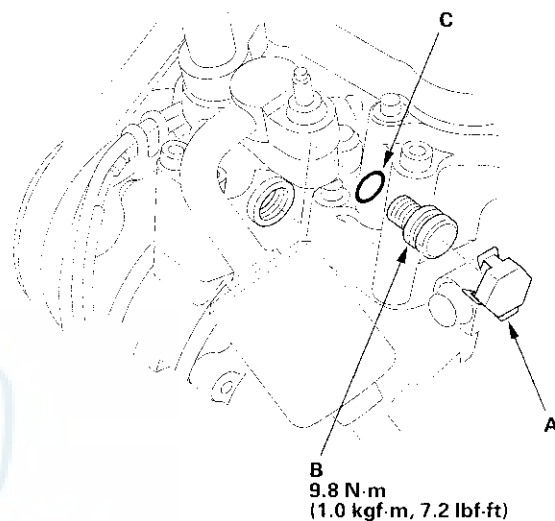
2. Replace the thermal protector (A) with a new one, and apply silicone sealant (B) to the bottom of the thermal protector.



3. Install the thermal protector in the reverse order of removal.

A/C Compressor Relief Valve Replacement

1. Recover the refrigerant with a recovery/recycling/charging station (see page 21-103).
2. Remove the relief valve cover (A), the relief valve (B), and the O-ring (C). Plug the opening to keep foreign matter from entering the system and the A/C compressor oil from running out.

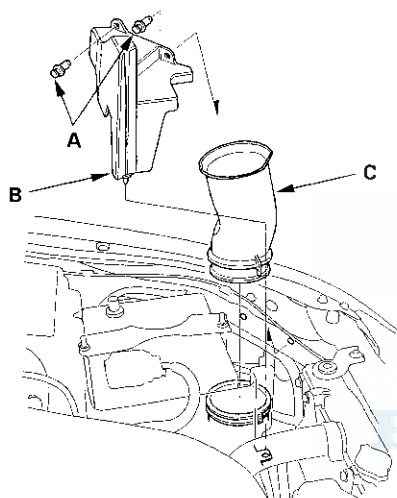


3. Clean the mating surfaces.
4. Replace the O-ring with a new one, and apply a thin coat of refrigerant oil before installing it.
5. Remove the plug, and install and tighten the relief valve.
6. Charge the system (see page 21-105).

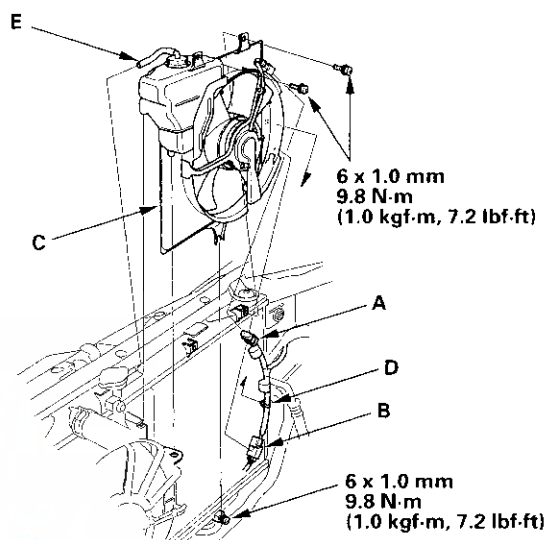


A/C Condenser Replacement

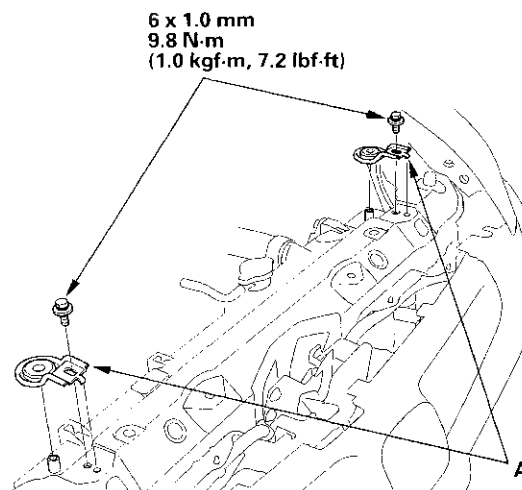
1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's audio presets.
2. Recover the refrigerant with a recovery/recycling (see page 21-103).
3. Remove the front grille cover (see page 20-101).
4. Remove the battery and the battery box.
5. Remove the clips (A), then remove the air intake cover (B) and the air intake tube or duct (C).



6. Disconnect the connector (A) from the A/C condenser. Remove the A/C compressor clutch connector (B) from the A/C condenser shroud (C), then remove the wire harness clip (D). Remove the hose (E) from the radiator. Loosen the lower mounting bolt, then remove the upper mounting bolts and the radiator fan shroud. Be careful not to damage the radiator fins when removing the A/C condenser fan shroud.



7. Remove the bolts and the radiator upper mount brackets (A).

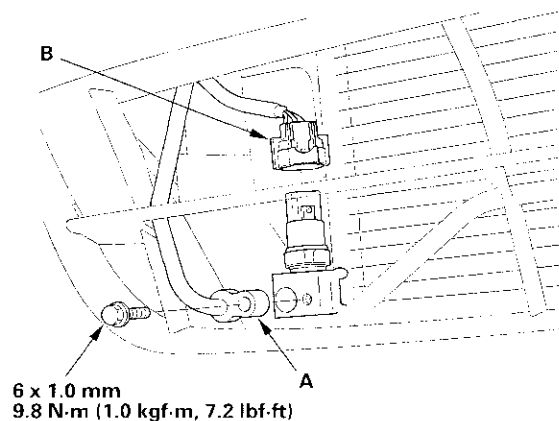


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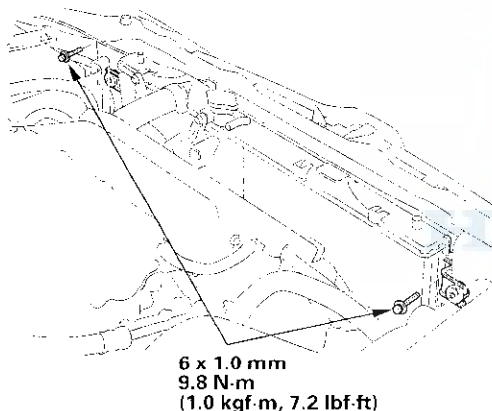
Climate Control

A/C Condenser Replacement (cont'd)

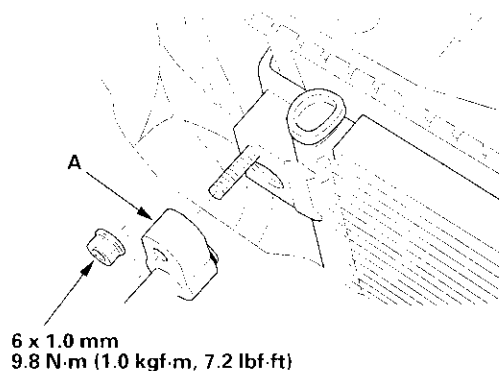
8. Remove the bolt, then disconnect the receiver line (A) from the A/C condenser. Disconnect the A/C pressure switch connector (B).



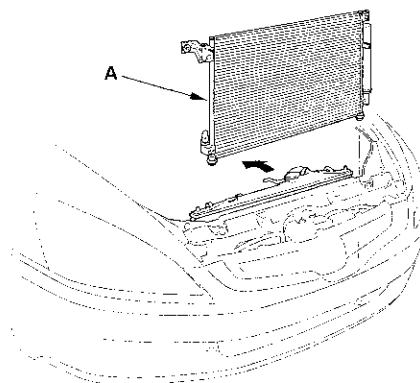
9. Remove the bolts from the A/C condenser.



10. Remove the nut, then disconnect the discharge line (A) from the A/C condenser.



11. Remove the A/C condenser (A) by lifting it up. Be careful not to damage the radiator and A/C condenser fins when removing the A/C condenser.



12. Install the A/C condenser in the reverse order of removal, and note these items:

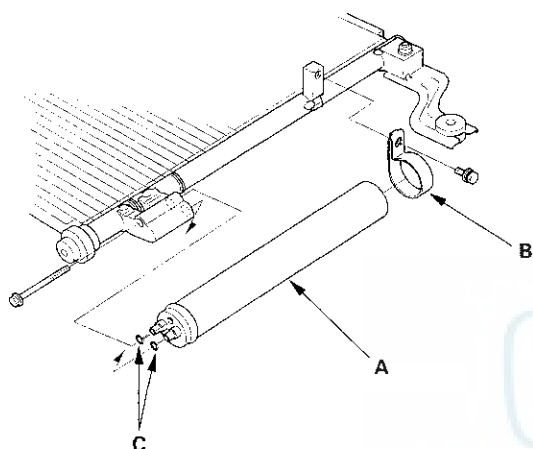
- If you're installing a new A/C condenser, add refrigerant oil (SANDEN SE-10Y). Using the wrong refrigerant oil can be a safety hazard (see page 21-6).
- Replace the O-rings with new ones at each fitting, and apply a thin coat of refrigerant oil before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.
- Immediately after using the oil, dispose of any remaining oil in the container, due to moisture absorption and short shelf life.
- Do not spill the refrigerant oil on the vehicle; it may damage the paint; if the refrigerant oil contacts the paint, wash it off immediately.
- Be careful not to damage the radiator or the A/C condenser fins when installing the A/C condenser.
- Charge the system (see page 21-105).
- Reset the power window control unit (see page 22-200).
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.



Receiver/Dryer Desiccant Replacement

NOTE: Install the receiver/dryer as quickly as possible to prevent the system from absorbing moisture from the air.

1. Remove the A/C condenser (see page 21-97).
2. Remove the bolts from the A/C condenser, then remove the receiver/dryer (A), the bracket (B), and the O-rings (C).



3. Install the receiver/dryer in the reverse order of removal, and note these items:

Replace the O-rings with new ones, and apply a thin coat of only recommended polyol ester (POE) refrigerant oil (SANDEN SE-10Y) before installing them. Be sure to use the correct O-rings for HFC-134a (R-134a) to avoid leakage.

Using the wrong refrigerant oil can be a safety hazard (see page 21-6).

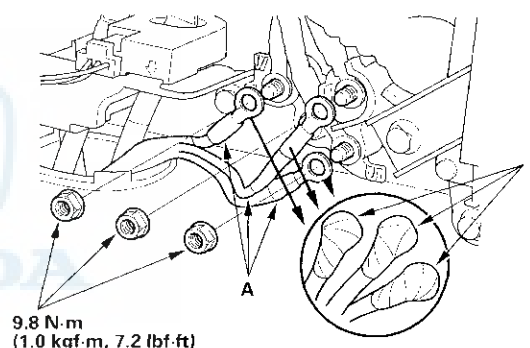
A/C Compressor Driver Replacement

NOTE: Put on gloves to protect your hands.

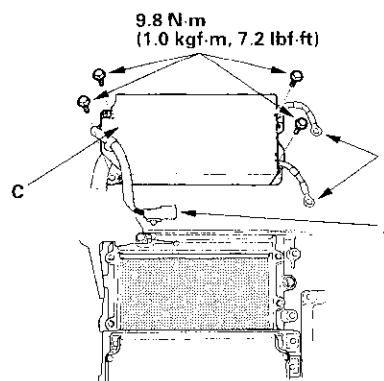
IMA components are located in this area. The IMA is a high-voltage system. You must be familiar with the IMA system before working on or around it. Make sure you have read the IMA service precaution before doing repairs or service (see page 12-3).

1. Remove the IPU lid (see page 12-140).
2. Disconnect the A/C compressor power cables (A) from the terminal stay, then wrap them with insulating tape (B).

NOTE: Check the position of the U phase, V phase, and W phase cables before disconnecting the A/C compressor motor power cables.



3. Disconnect A/C compressor driver connector (A), and wires (B).

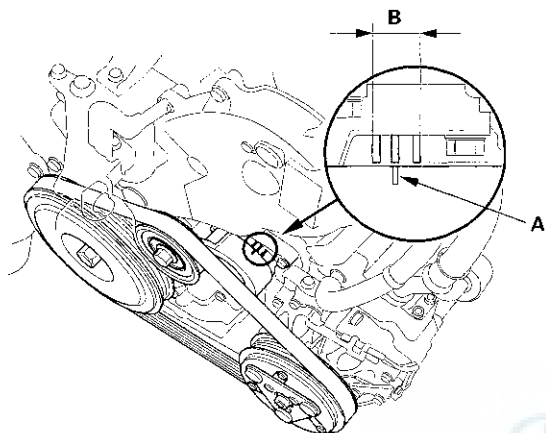


4. Remove the A/C compressor driver (C).
5. Install the parts in the reverse order of removal.

Climate Control

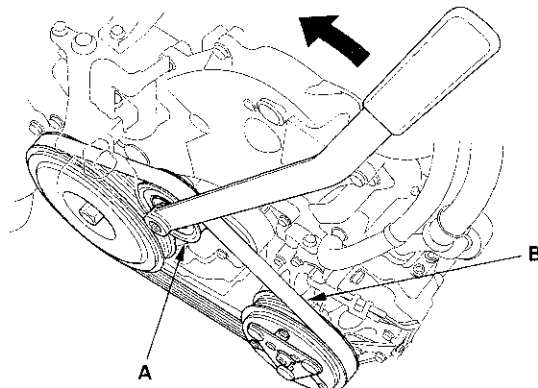
Drive Belt Inspection

1. Inspect the belt for cracks and damage. If the belt is cracked or damaged, replace it.
2. Check that the auto-tensioner indicator (A) is within the standard range (B) as shown. If it is out of the standard range, replace the drive belt (see page 21-100).

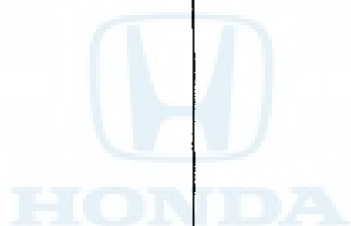


Drive Belt Replacement

1. Move the auto-tensioner (A) to relieve tension from the drive belt (B), and remove the drive belt.



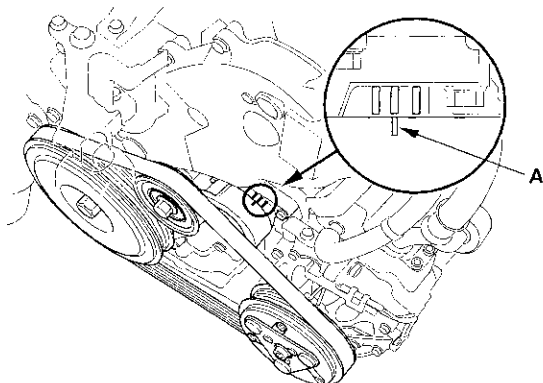
2. Install the new belt in the reverse order of removal.



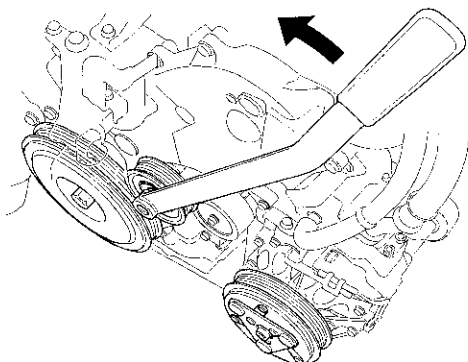


Drive Belt Auto-tensioner Inspection

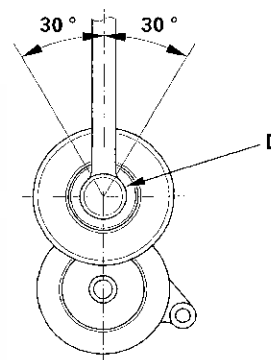
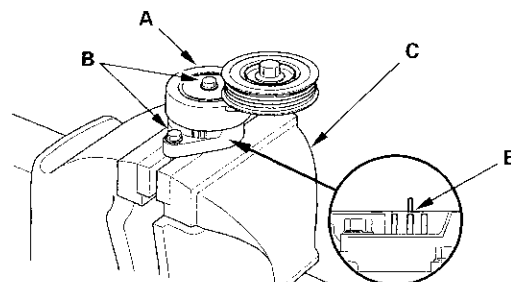
1. With the engine OFF, check the position of the auto-tensioner indicator pointer (A). Start the engine, then check the position again with the engine idling. If the position of the indicator moves or fluctuates, replace the auto-tensioner (see page 21-102).



2. Check for abnormal noise from the tensioner pulley. If you hear abnormal noise, replace the tensioner pulley (see page 21-102).
3. Remove the drive belt (see page 21-100).
4. Move the auto-tensioner within its limit with the wrench in the direction shown. Check that the tensioner moves smoothly and without any abnormal noise. If the tensioner does not move smoothly or there is abnormal noise, replace the auto-tensioner (see page 21-102).



5. Remove the auto-tensioner (see page 21-102).
6. Clamp the auto-tensioner (A) by using two 8 mm bolts (B) and a vise (C) as shown. Do not clamp the auto-tensioner itself.



7. Set the torque wrench (D) in the pulley bolt in the direction shown.
8. Align the indicator (E) on the tensioner base with center mark on the tensioner arm by using the torque wrench, and measure the torque. If the torque value is out of specification, replace the auto-tensioner.

NOTE: If the indicator exceeds the center mark, recheck the torque.

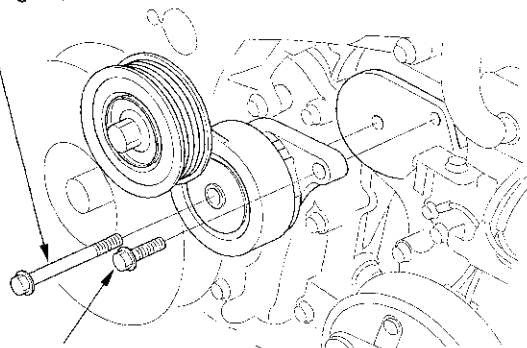
Auto-tensioner spring torque
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)

Climate Control

Drive Belt Auto-tensioner Replacement

1. Remove the drive belt (see page 21-100).
2. Remove the auto-tensioner.

6 x 1.0 mm
11.8 N·m
(1.2 kgf·m, 9 lbf·ft)

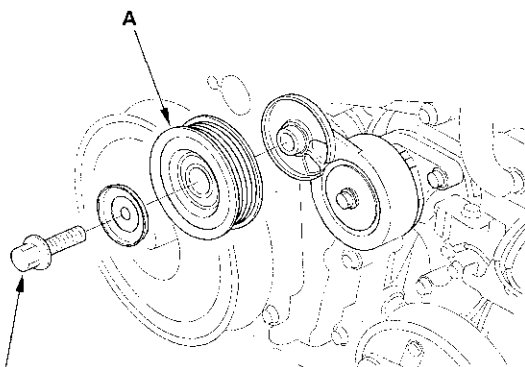


6 x 1.0 mm
11.8 N·m
(1.2 kgf·m, 9 lbf·ft)

3. Install the auto-tensioner in the reverse order of removal.

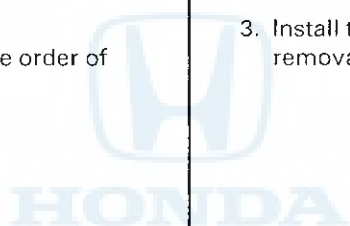
Drive Belt Auto-tensioner Pulley Replacement

1. Remove the drive belt (see page 21-100).
2. Remove the pulley bolt (left-hand threads) and remove the tensioner pulley (A).



22.0 N·m (2.2 kgf·m, 16 lbf·ft)

3. Install the tensioner pulley in the reverse order of removal.





Refrigerant Recovery

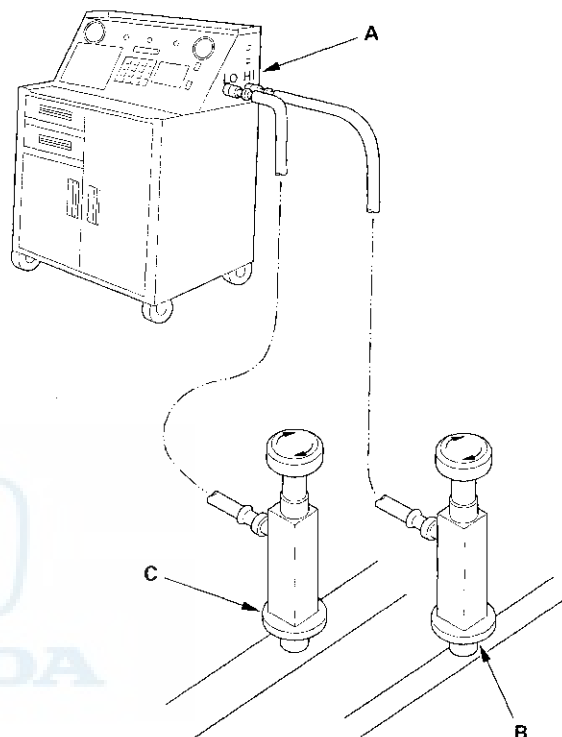
⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
- Do not recover refrigerant oil using the charging station.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Measure the amount of refrigerant oil removed from the A/C system after the recovery process is completed. Be sure to put the same amount of new refrigerant oil back into the A/C system before charging.

Climate Control

System Evacuation

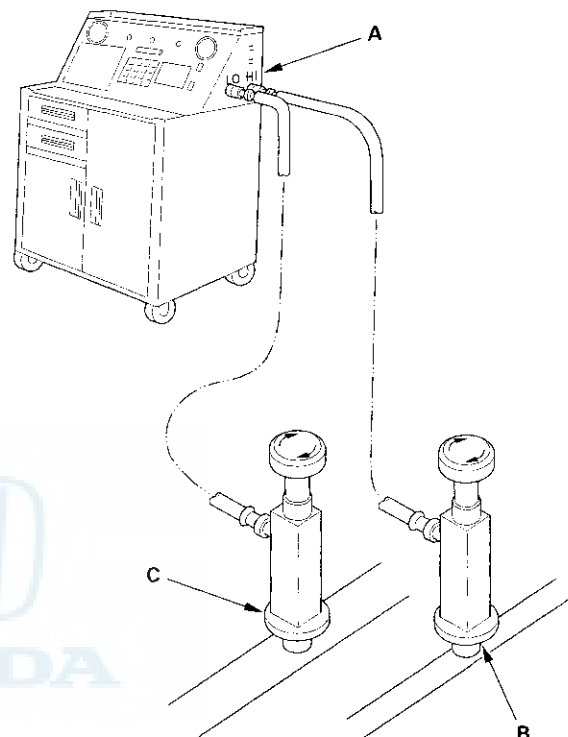
⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. When an A/C System has been opened to the atmosphere, such as during installation or repair, it must be evacuated using an R-134a refrigerant recovery/recycling/charging station. (If the system has been open for several days, the receiver/dryer should be replaced, and the system should be evacuated for several hours.)

2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions. Evacuate the system.



3. If the low-pressure does not reach more than 93.3 kPa (700 mmHg, 27.6 in.Hg) in 15 minutes, there is probably a leak in the system. Partially charge the system, and check for leaks (see step 3 on page 21-106).



System Charging

CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

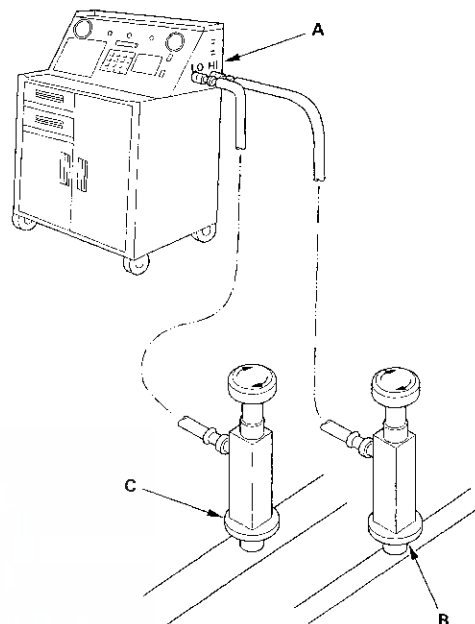
NOTE:

- If accidental system discharge occurs, ventilate work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Add the same amount of new refrigerant oil to the system that was removed during recovery. Use only SANDEN SE-10Y refrigerant oil. Using the wrong refrigerant oil can be a safety hazard (see page 21-6).

NOTE: Add the refrigerant oil to the suction port of the compressor only. Adding refrigerant oil with a refrigerant recovery/recycling/charging station may cause oil contamination.

2. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



3. Evacuate the system (see page 21-104).
4. Charge the system with the specified amount of R-134a refrigerant. Do not overcharge the system; the A/C compressor will be damaged.

Select the appropriate units of measure for your refrigerant charging station.

Refrigerant capacity:

500 to 550 g
0.50 to 0.55 kg
1.1 to 1.2 lbs
17.6 to 19.4 oz

5. Check for refrigerant leaks (see page 21-106).
6. Check for system performance (see page 21-107).

Climate Control

Refrigerant Leak Test

Special Tools Required

Leak detector, Honda Tool and Equipment YGK-H-10PM commercially available

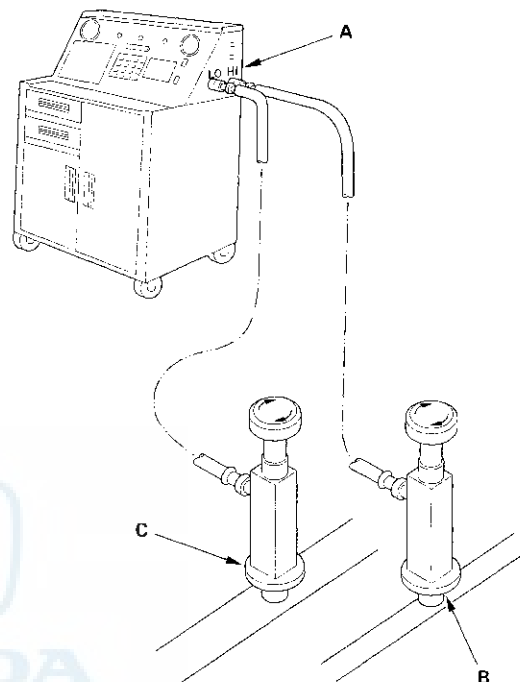
CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

NOTE:

- If accidental system discharge occurs, ventilate work area before resuming service.
- Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.

1. Connect an R-134a refrigerant recovery/recycling/charging station (A) to the high-pressure service port (B) and the low-pressure service port (C), as shown, following the equipment manufacturer's instructions.



2. Open high pressure valve to charge the system to the specified capacity, then close the supply valve, and disconnect the charging station fittings.

Select the appropriate units of measure for your refrigerant charging station.

Refrigerant capacity:

500 to 550 g
0.50 to 0.55 kg
1.1 to 1.2 lbs
17.6 to 19.4 oz

3. Check the system for leaks using an R-134a refrigerant leak detector with an accuracy of 14 g (0.5 oz) per year or better.
4. If you find leaks that require the system to be opened (to repair or replace hoses, fittings, etc.), recover the system.
5. After checking and repairing leaks, the system must be evacuated.



A/C System Test

Performance Test

⚠ CAUTION

- Air conditioning refrigerant or lubricant vapor can irritate your eyes, nose, or throat.
- Be careful when connecting service equipment.
- Do not breathe refrigerant or vapor.

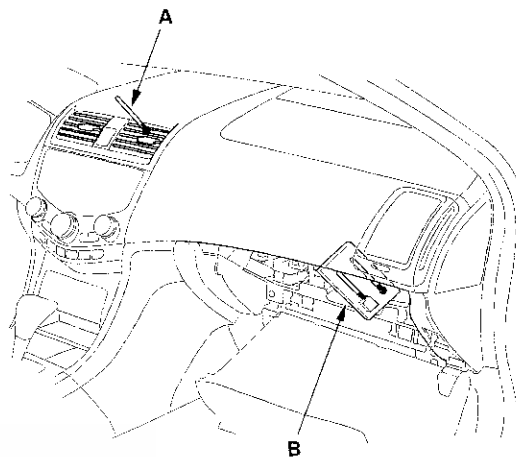
The performance test will help determine if the A/C system is operating within specifications.

NOTE:

- If accidental system discharge occurs, ventilate work area before resuming service.
 - Additional health and safety information may be obtained from the refrigerant and lubricant manufacturers.
1. Connect an R-134a refrigerant recovery/recycling/charging station to the high-pressure service port and the low-pressure service port, following the equipment manufacturer's instructions.
 2. Determine the relative humidity and air temperature.

3. Open the glove box. Remove the damper from the glove box, then let the glove box hang down (see page 20-70).

4. Insert a thermometer (A) in the center vent.



5. Place a thermometer (B) near the blower unit's recirculation inlet duct.

6. Test conditions:

- Avoid direct sunlight.
- Open hood.
- Open front doors.
- Set the temperature control dial to Max Cool, the mode control switch to Vent and the recirculation control button to Recirculate.
- Push the A/C switch on and the fan button to Max.
- Run the engine at 1,500 rpm.
- No driver or passengers in vehicle.

7. After running the air conditioning for 10 minutes under the above test conditions, read the delivery temperature from the thermometer in the center vent, the intake temperature near the blower unit, and the discharge (high) and suction (low) pressures on the A/C gauges.

(cont'd)

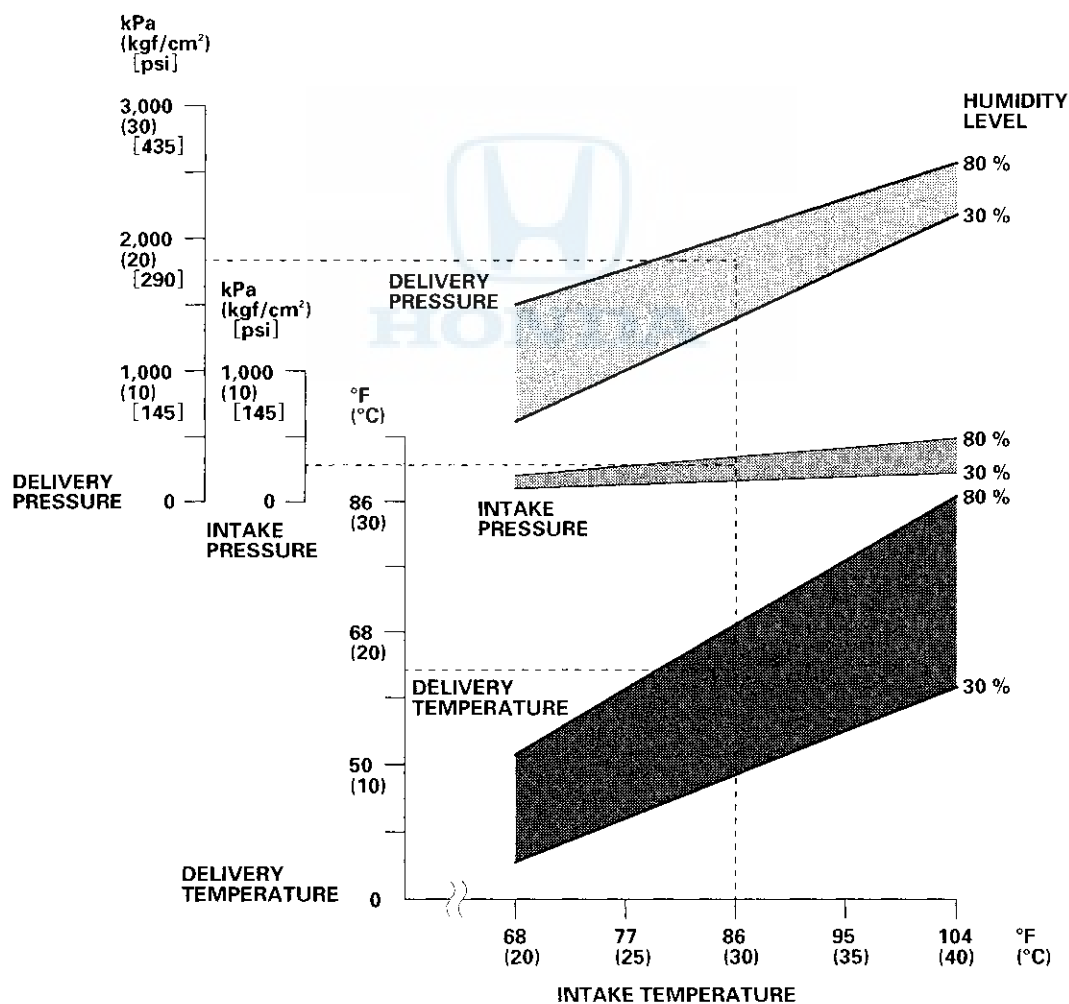
Climate Control

A/C System Test (cont'd)

8. To complete the charts:

- Mark the delivery temperature along the vertical line.
- Mark the intake temperature (ambient air temperature) along the bottom line.
- Draw a line straight up from the air temperature to the humidity.
- Mark a point 10 % above and 10 % below the humidity level.
- From each point, draw a horizontal line across the delivery temperature.
- The delivery temperature should fall between the two lines.
- Complete the low-side pressure test and high-side pressure test in the same way.
- Any measurements outside the line may indicate the need for further inspection.

Example Intake temperature (dry): 86 °F (30 °C) Humidity level 70 %
 Intake temperature (wet): 77.9 °F (25.5 °C)
 Delivery temperature: 62 °F (16.5 °C)
 Intake pressure: 272 kPa (2.8 kgf/cm²) (39 psi)
 Delivery pressure: 1,818 kPa (18.5 kgf/cm²) (263 psi)
Results: Within normal range





Pressure Test

Test results	Related symptoms	Probable cause	Remedy
Discharge (high) pressure abnormally high	After stopping A/C compressor, pressure drops about 196 kPa (2.0 kgf/cm ² , 28 psi) quickly, and then falls gradually.	Air in system	Recover, evacuate (see page 21-104), and recharge with specified amount (see page 21-105).
	Reduced or no airflow through A/C condenser.	<ul style="list-style-type: none"> • Clogged A/C condenser or radiator fins • A/C condenser or radiator fan not working properly 	<ul style="list-style-type: none"> • Clean. • Check voltage and fan rpm. • Check fan direction.
	Line to A/C condenser is excessively hot.	Restricted flow of refrigerant in system	Restricted lines.
Discharge pressure abnormally low	High and low-pressure are balanced soon after stopping A/C compressor. Low side is higher than normal.	<ul style="list-style-type: none"> • Faulty A/C compressor discharge valve • Faulty A/C compressor seal 	Replace the A/C compressor.
	Outlet of expansion valve is not frosted, low-pressure gauge indicates vacuum.	<ul style="list-style-type: none"> • Faulty expansion valve • Moisture in system 	<ul style="list-style-type: none"> • Replace. • Recover, evacuate, and recharge with specified amount.
Suction (low) pressure abnormally low	Expansion valve is not frosted, and low-pressure line is not cold. Low-pressure gauge indicates vacuum.	<ul style="list-style-type: none"> • Frozen expansion valve (Moisture in system) • Faulty expansion valve 	<ul style="list-style-type: none"> • Recover, evacuate, and recharge with specified amount. • Replace the expansion valve.
	Discharge temperature is low, and the airflow from vents is restricted.	Frozen evaporator	Run the fan with A/C compressor off, then check evaporator temperature sensor.
	Expansion valve is frosted.	Clogged expansion valve	Clean or replace.
Suction pressure abnormally high	Low-pressure hose and check joint are cooler than the temperature around evaporator.	Expansion valve open too long	Repair or replace.
	Suction pressure is lowered when A/C condenser is cooled by water.	Excessive refrigerant in system	Recover, evacuate, and recharge with specified amount.
	High and low-pressure are equalized as soon as the A/C compressor is stopped, and both gauges fluctuate while running.	<ul style="list-style-type: none"> • Faulty gasket • Faulty high-pressure valve • Foreign particle stuck in high-pressure valve 	Replace the A/C compressor.
Suction and discharge pressures abnormally high	Reduced airflow through A/C condenser.	<ul style="list-style-type: none"> • Clogged A/C condenser or radiator fins • A/C condenser or radiator fan not working properly 	<ul style="list-style-type: none"> • Clean. • Check voltage and fan rpm. • Check fan direction.
Suction and discharge pressures abnormally low	Low-pressure hose and metal end areas are cooler than evaporator.	Clogged or kinked low-pressure hose parts	Repair or replace.
	Temperature around expansion valve is too low compared with that around receiver/dryer.	Clogged high-pressure line	Repair or replace.
Refrigerant leaks	A/C compressor clutch is dirty.	A/C compressor shaft seal leaking	Replace the A/C compressor.
	A/C compressor bolt(s) are dirty.	Leaking around bolt(s)	Tighten bolt(s) or replace A/C compressor.
	A/C compressor gasket is wet with oil.	Gasket leaking	Replace the A/C compressor.

SUPPLEMENTAL RESTRAINT SYSTEM (SRS) (If electrical maintenance is required)

The Accord Hybrid SRS includes a driver's airbag in the steering wheel hub, a passenger's airbag in the dashboard above the glove box, seat belt tensioners in the front seat belt retractors, side curtain airbags in the sides of the roof, and side airbags in the front seat-backs. Information necessary to safely service the SRS is included in this Service Manual. Items marked with an asterisk (*) on the contents page include or are located near SRS components. Servicing, disassembling, or replacing these items require special precautions and tools, and should be done only by an authorized Honda dealer.

- To avoid rendering the SRS inoperative, which could lead to personal injury or death in the event of a severe frontal or side collision, all SRS service work must be performed by an authorized Honda dealer.
- Improper service procedures, including incorrect removal and installation of the SRS, could lead to personal injury caused by unintentional deployment of the airbags and/or side airbags.
- Do not bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF; otherwise, the system may fail in a collision, or the airbags may deploy.
- SRS electrical connectors are identified by yellow color coding. Related components are located in the steering column, front console, dashboard, dashboard lower panel, in the dashboard above the glove box, in the front seats, in the roof side, and around the floor. Do not use electrical test equipment on these circuits.



INTEGRATED MOTOR ASSIST (IMA) SYSTEM (If electrical maintenance is required)

IMA components are located in this area. The IMA is a high-voltage system. The high voltage cables and their covers are identified by orange coloring. The safety labels are attached to high voltage and other related parts (see page 1-4). You must be familiar with the IMA system before working on or around it. Make sure you have read the Service Precautions in the IMA section before performing repairs or service (see page 12-3).



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Reminder Systems, Key Light Timer, and Engine Oil Pressure Indicator Systems

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Immobilizer System

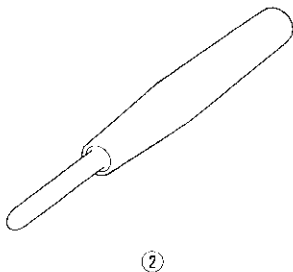
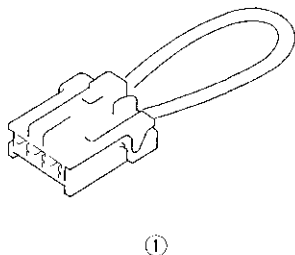
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Body Electrical

Special Tools

Ref. No.	Tool Number	Description	Qty
①	07WAZ-001010A	MPCS (MCIC) Service Connector	1
②	07TAZ-001020A	Back Probe Adaptor	1





General Troubleshooting Information

Tips and Precautions

Before Troubleshooting

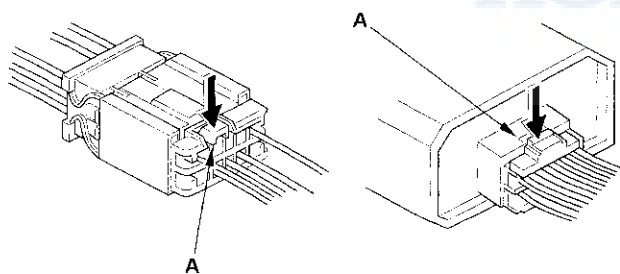
1. Check applicable fuses in the appropriate fuse/relay box.
2. Check the battery for damage, state of charge, and clean and tight connections.

NOTICE

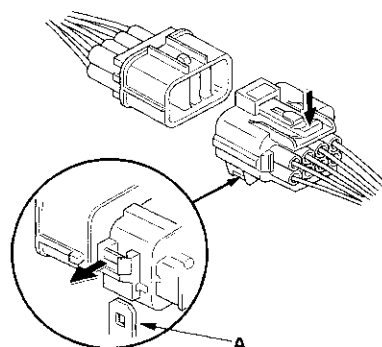
- Do not quick-charge a battery unless the battery ground cable has been disconnected, otherwise you will damage the alternator diodes.
- Do not attempt to crank the engine with the battery ground cable loosely connected or you will severely damage the wiring.

Handling Connectors

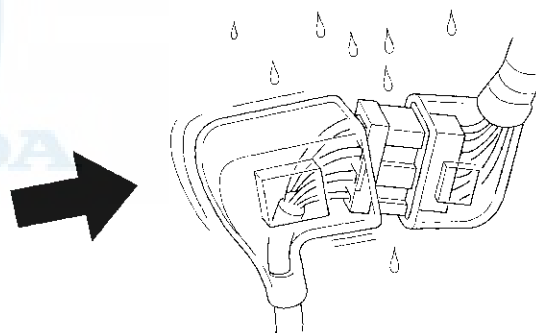
- Make sure the connectors are clean and have no loose wire terminals.
- Make sure multiple cavity connectors are packed with dielectric grease (except watertight connectors).
- All connectors have push-down release type locks (A).



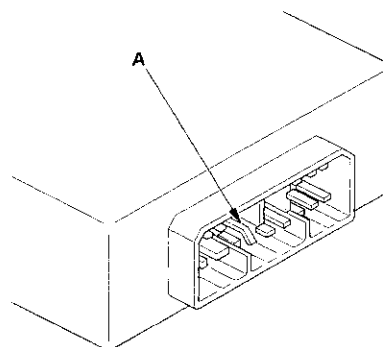
- Some connectors have a clip on their side used to attach them to a mount bracket on the body or on another component. This clip has a pull type lock.
- Some mounted connectors cannot be disconnected unless you first release the lock and remove the connector from its mount bracket (A).



- Never try to disconnect connectors by pulling on their wires; pull on the connector halves instead.
- Always reinstall plastic covers.



- Before connecting connectors, make sure the terminals (A) are in place and not bent.

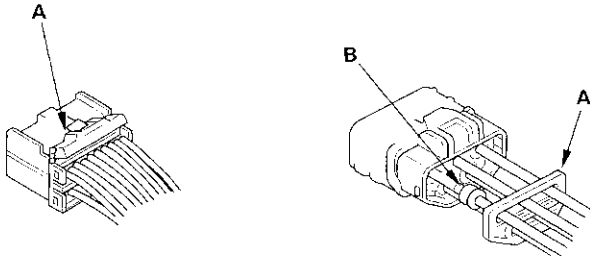


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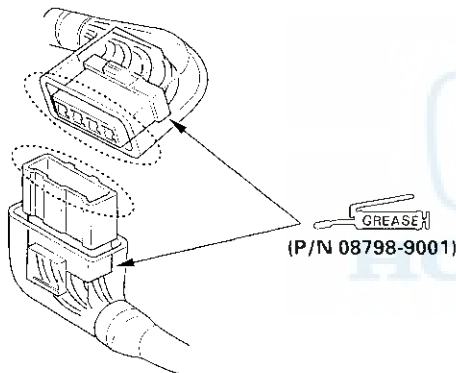
Body Electrical

General Troubleshooting Information (cont'd)

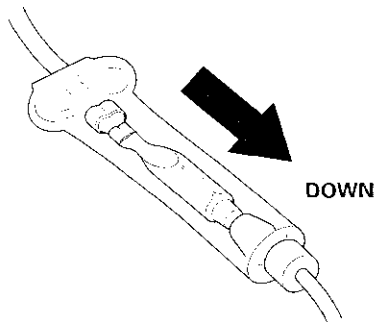
- Check for loose retainer (A) and rubber seals (B).



- The backs of some connectors are packed with dielectric grease. Add grease if necessary. If the grease is contaminated, replace it.

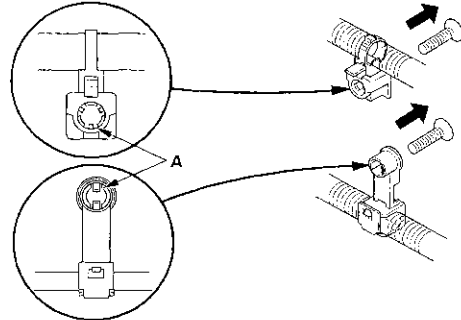


- Insert the connector all the way and make sure it is securely locked.
- Position wires so that the open end of the cover faces down.

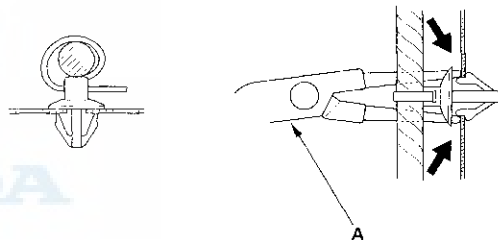


Handling Wires and Harnesses

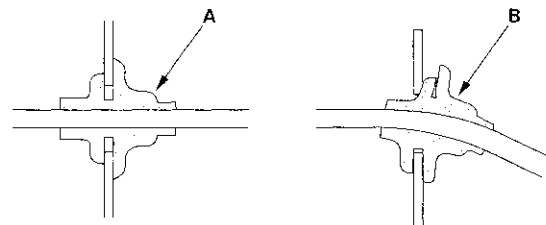
- Secure wires and wire harnesses to the frame with their respective wire ties at the designated locations.
- Remove clips carefully; don't damage their locks (A).

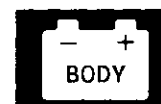


- Slip pliers (A) under the clip base and through the hole at an angle, then squeeze the expansion tabs to release the clip.



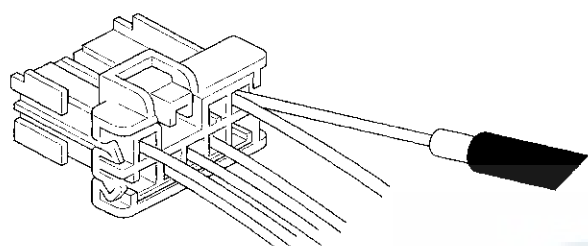
- After installing harness clips, make sure the harness doesn't interfere with any moving parts.
- Keep wire harnesses away from exhaust pipes and other hot parts, from sharp edges of brackets and holes, and from exposed screws and bolts.
- Seat grommets in their grooves properly (A). Do not leave grommets distorted (B).



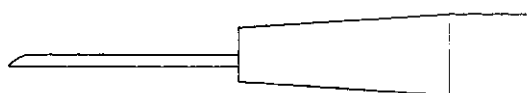


Testing and Repairs

- Do not use wires or harnesses with broken insulation. Replace them or repair them by wrapping the break with electrical tape.
- After installing parts, make sure that no wires are pinched under them.
- When using electrical test equipment, follow the manufacturer's instructions and those described in this manual.
- If possible, insert the probe of the tester from the wire side (except waterproof connector).



- Use back probe adaptor 07TAZ-001020A.



- Refer to the instructions in the Honda Terminal Kit for identification and replacement of connector terminals.

Five-step Troubleshooting

1. Verify The Complaint

Turn on all the components in the problem circuit to verify the customer complaint. Note the symptoms. Do not begin disassembly or testing until you have narrowed down the problem area.

2. Analyze The Schematic

Look up the schematic for the problem circuit. Determine how the circuit is supposed to work by tracing the current paths from the power feed through the circuit components to ground. If several circuits fail at the same time, the fuse or ground is a likely cause.

Based on the symptoms and your understanding of the circuit operation, identify one or more possible causes of the problem.

3. Isolate The Problem By Testing The Circuit

Make circuit tests to check the diagnosis you made in step 2. Keep in mind that a logical, simple procedure is the key to efficient troubleshooting. Test for the most likely cause of failure first. Try to make tests at points that are easily accessible.

4. Fix The Problem

Once the specific problem is identified, make the repair. Be sure to use proper tools and safe procedures.

5. Make Sure The Circuit Works

Turn on all components in the repaired circuit in all modes to make sure you've fixed the entire problem. If the problem was a blown fuse, be sure to test all of the circuits on the fuse. Make sure no new problems turn up and the original problem does not recur.

(cont'd)

Body Electrical

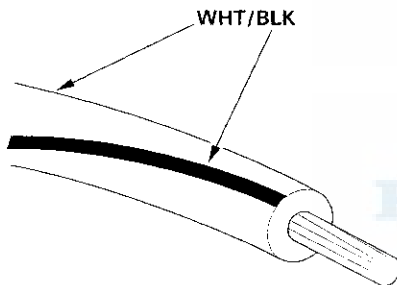
General Troubleshooting Information (cont'd)

Wire Color Codes

The following abbreviations are used to identify wire colors in the circuit schematics:

WHT	White
YEL	Yellow
BLK	Black
BLU	Blue
GRN	Green
RED	Red
ORN	Orange
PNK	Pink
BRN	Brown
GRY	Gray
PUR	Purple
LT BLU	Light Blue
LT GRN	Light Green

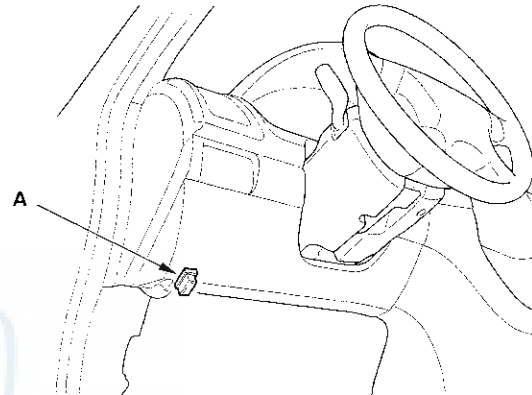
The wire insulation has one color or one color with another color stripe. The second color is the stripe.



How to Check for DTCs with the Honda Diagnostic System (HDS)

1. Connect the Honda Diagnostic System (HDS) to the Data Link Connector (DLC) (A) located under the driver's side of the dashboard.

NOTE: For specific operations, refer to the user's manual that came with the Honda Diagnostic System (HDS).

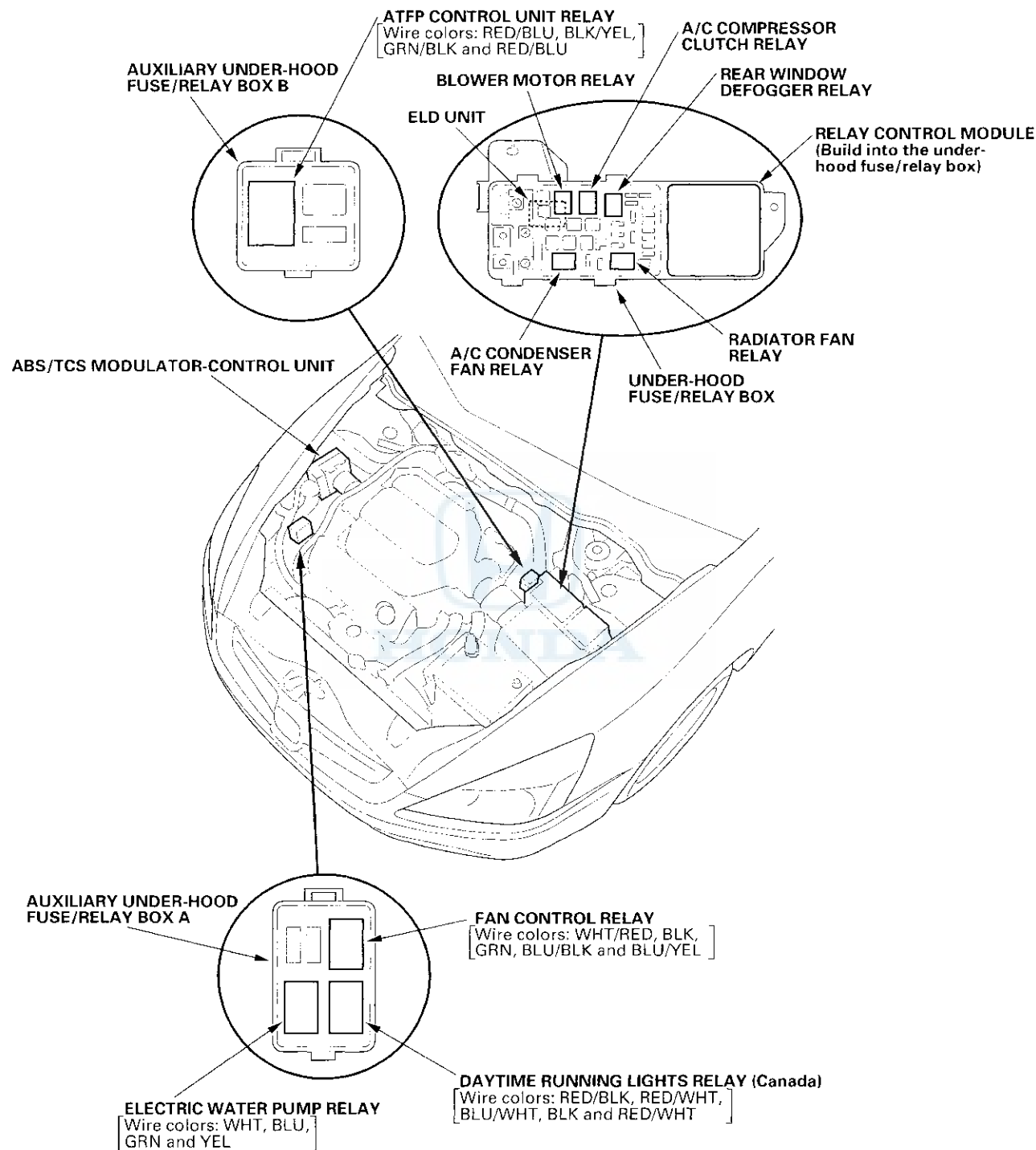


2. Select the TEST MODE MENU and check for Diagnostic Trouble Code (DTCs), and note them. Refer to the Troubleshooting and begin the appropriate troubleshooting procedure.



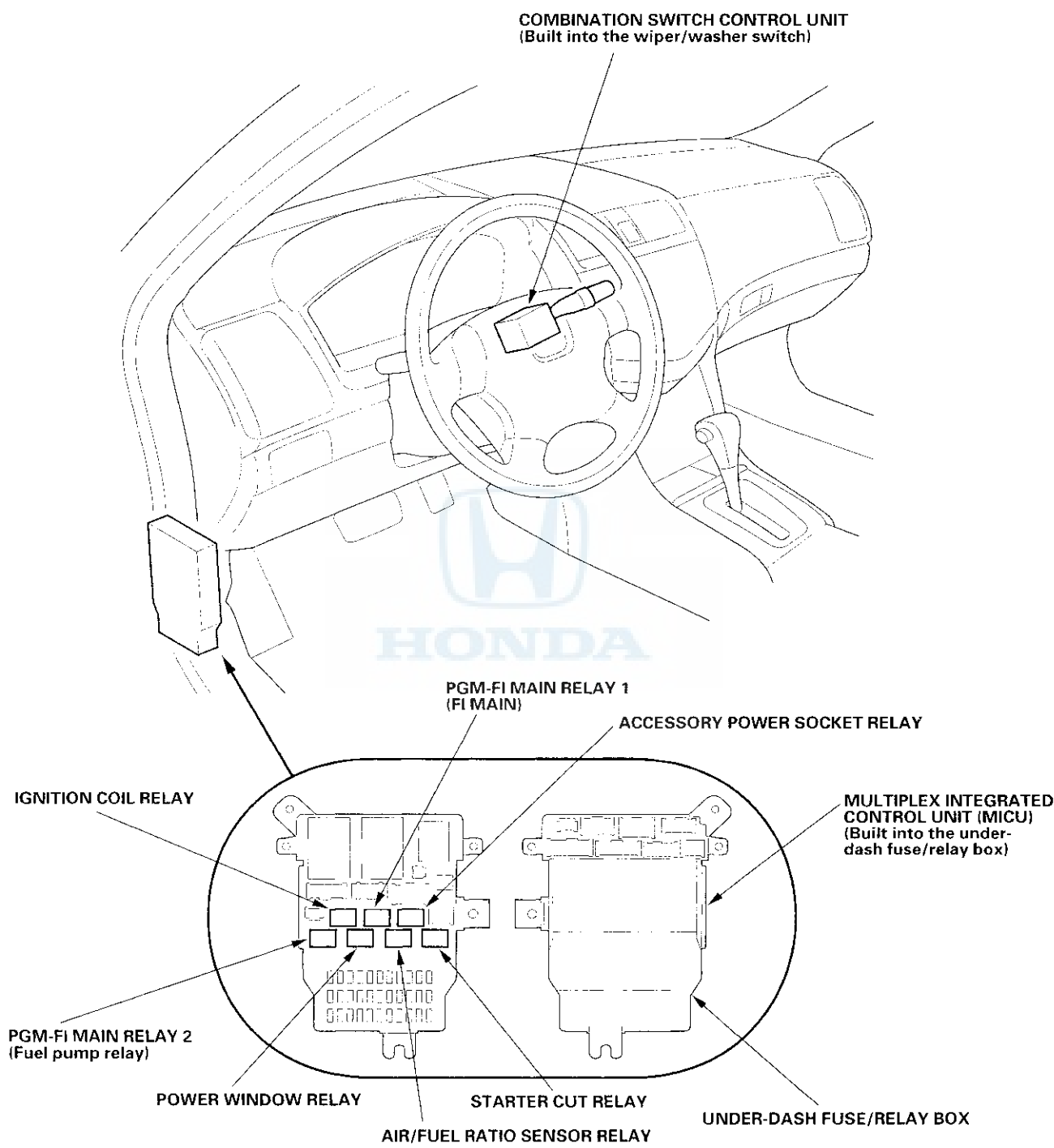
Relay and Control Unit Locations

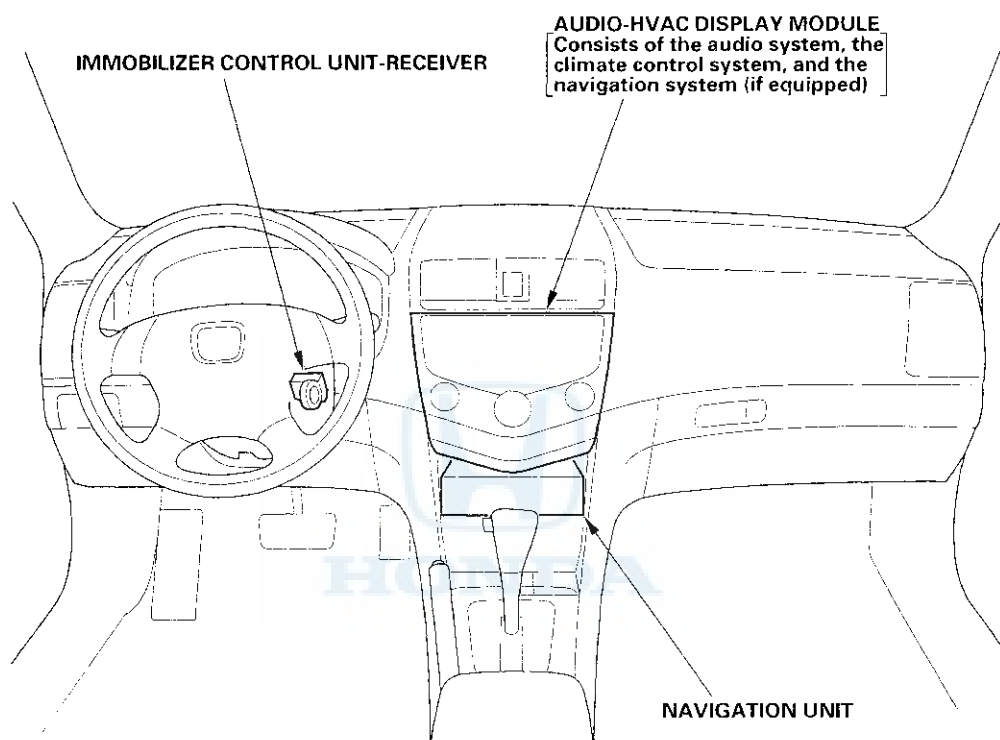
Engine Compartment



Relay and Control Unit Locations

Dashboard

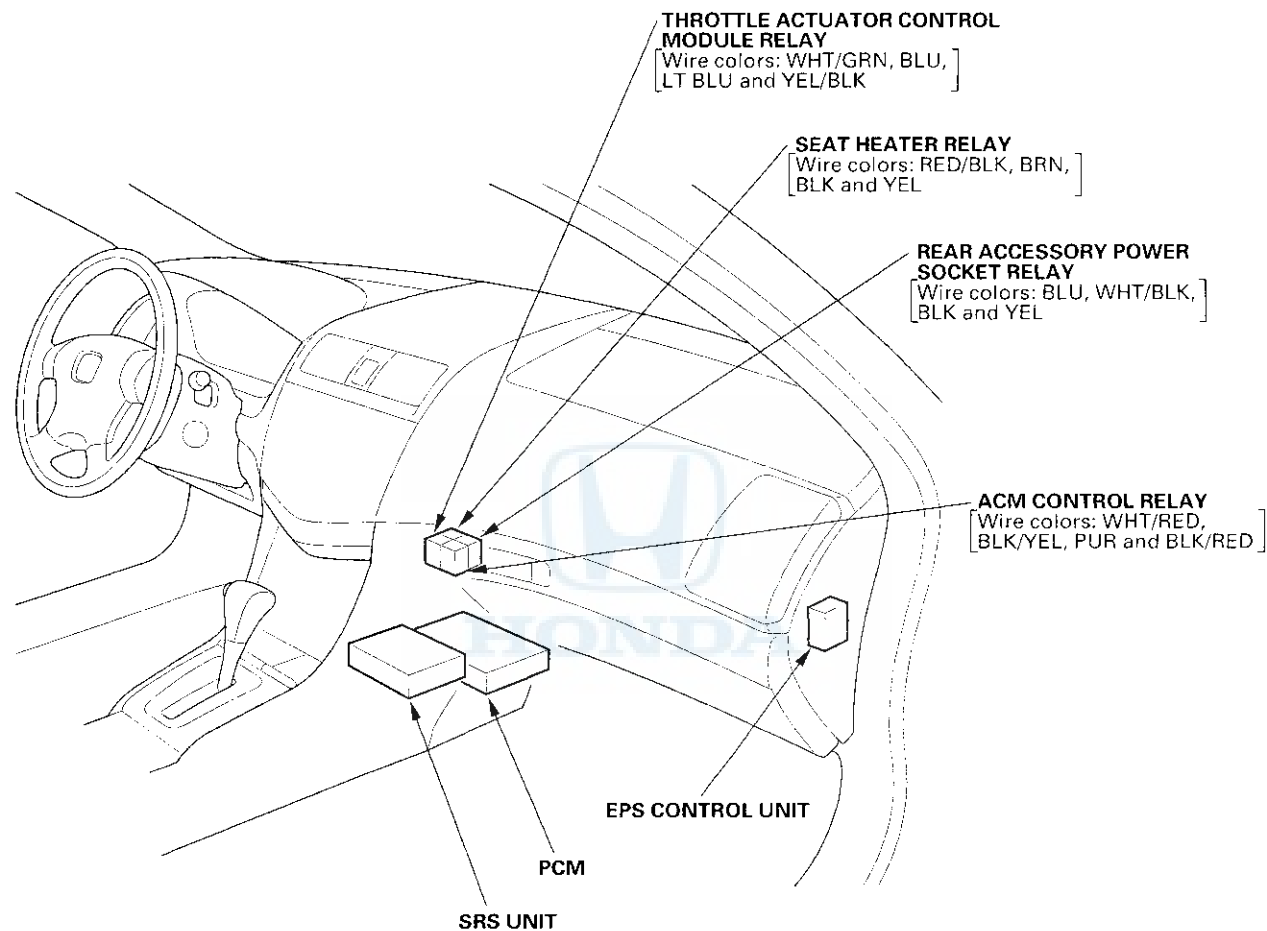




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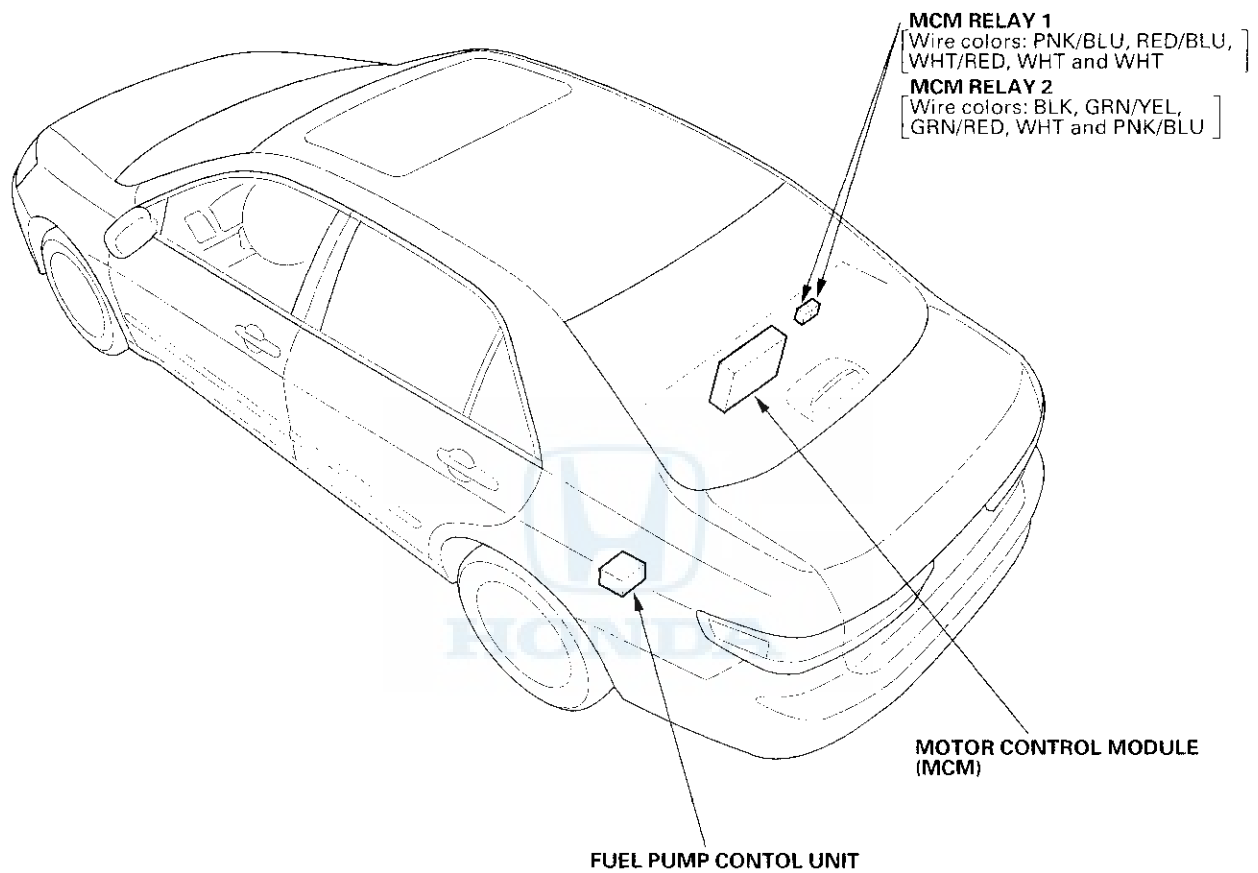
Relay and Control Unit Locations

Dashboard (cont'd)





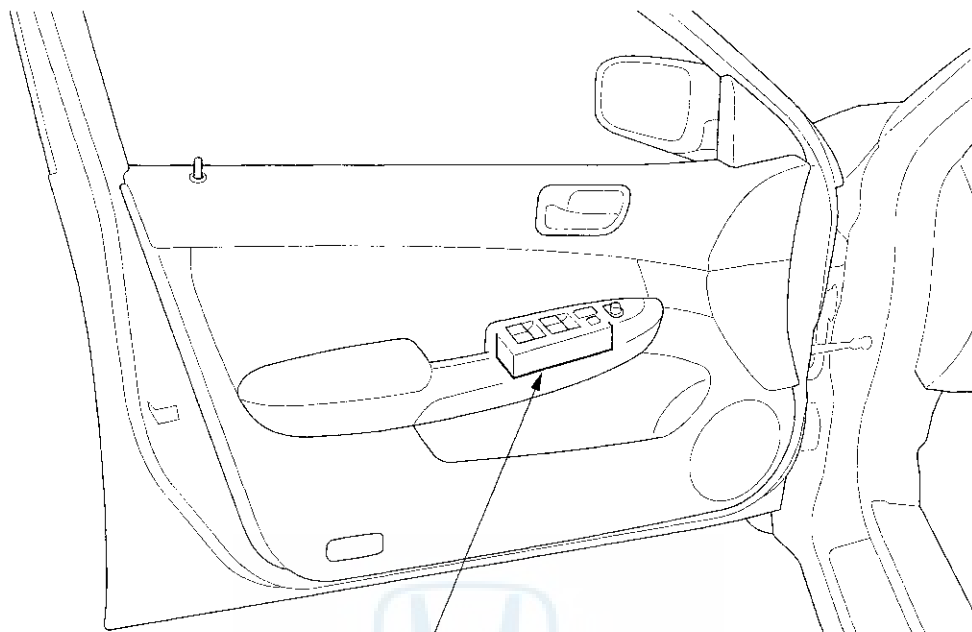
Rear



Relay and Control Unit Locations

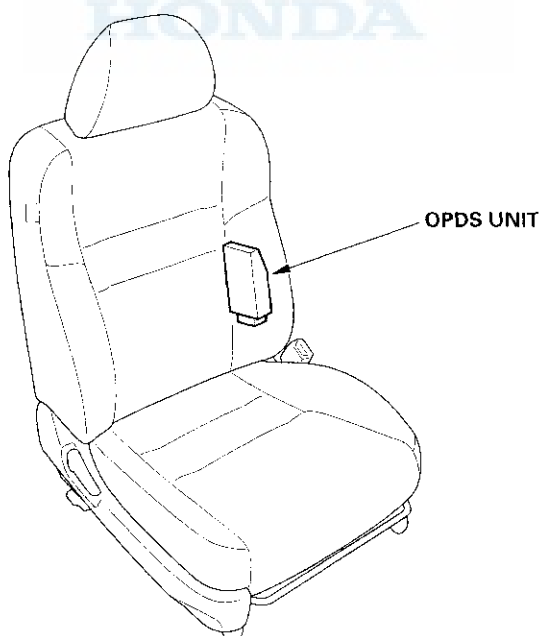
Door and Seat

Driver's Door:



DOOR MULTIPLEX CONTROL UNIT
(Built in the power window master switch)

Front Passenger's Seat:





Connectors and Harnesses

Connector Index

Identification numbers have been assigned to in-line connectors. The number is preceded by the letter "C" for connectors, "G" for ground terminals or "T" for non-ground terminals.

Harness	Location			Notes
	Engine Compartment	Dashboard	Others (Floor, Door, Trunk, and Roof)	
Battery ground cable	(-)			(see page 22-14)
Engine ground cable A	G1			(see page 22-14)
Engine ground cable B	T1			(see page 22-14)
Starter cable	G2			(see page 22-14)
Engine Wire harness	T2			(see page 22-14)
	G3			(see page 22-14)
	C181			(see page 22-14)
	T3 and (+)			(see page 22-14)
	T101			(see page 22-14)
	C101 through C103			(see page 22-16)
	C154 and C155			(see page 22-16)
	C161			(see page 22-16)
	C201 through C203			(see page 22-16)
	G101 and G102			(see page 22-16)
Front engine compartment wire harness (left branch)	C301, C302			(see page 22-22)
	G301			(see page 22-22)
Front engine compartment wire harness (right branch)	C303			(see page 22-20)
Engine compartment wire harness (left branch)	G201			(see page 22-20)
	C101, C181, C301, C302, C310, C415	C401 through C405		(see page 22-26)
	G302			(see page 22-24)
Engine compartment wire harness (right branch)	C303			(see page 22-24)
	G202 and G203			(see page 22-24)
Knock sensor subharness	C154			(see page 22-28)
Transmission range switch subharness	C161			(see page 22-28)
CKP sensor subharness	C155			(see page 22-28)
EPS subharness	C351			(see page 22-28)
Dashboard wire harness (left branch)		C401 through C408, C416, C501 and C502, C601 G501 and G502, G504		(see page 22-30)
Dashboard wire harness (right branch)		C251, C551, C552, C554 through C557, C651, C731 and C732, C851 G503, G505 and G506		(see page 22-34)
PCM wire harness	C201 through C203	C251, C281		(see page 22-54)
Throttle actuator control module subharness		C281		(see page 22-54)
Cable reel subharness				(see page 22-55)
Fuel pump subharness				(see page 22-38)
Left floor wire harness		C501 and C502	C531 and C532	(see page 22-38)
			C531, C532, C681 through C685, C701, C704, C751, C752, C901, G601, G602	(see page 22-38)
Right floor wire harness (front branch)	C351	C551 and C552	C681 through C685, C781, C801	(see page 22-40)
	G351		G651, G652	(see page 22-40)
	T102		C951 and C952	(see page 22-42)
Right floor wire harness (rear branch)			G653 through G655	(see page 22-42)
Rear window defogger ground wire			G603	(see page 22-42)
Rear wire harness			C701 through C705	(see page 22-44)
			G701	(see page 22-44)
IPU compartment wire harness			C951 through C955	(see page 22-46)
Roof wire harness		C601, C651	G901 and G902	(see page 22-48)
OPDS unit harness			C602	(see page 22-48)
Driver's door wire harness			C801	(see page 22-57)
Driver's door subharness			C631 and C632	(see page 22-50)
Front passenger's door wire harness			C631 and C632	(see page 22-50)
			C731 and C732	(see page 22-51)
Left rear door wire harness			C751	(see page 22-52)
Right rear door wire harness			C781	(see page 22-53)
Driver's seat wire harness			C901	(see page 22-56)
A/C wire harness		C851		(see page 22-58)
Side curtain airbag harness				(see page 22-49)

Connectors and Harnesses

Connector to Harness Index

Starter Cable

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ATFP control unit relay	3	4	In auxiliary under-hood fuse/relay box B		
C181	5	3	Left-side of engine compartment	Engine compartment wire harness (see page 22-26)	
T3	11		Left side of engine compartment	Starter motor	
T101	3		Left side of engine compartment	Under-hood fuse/relay box	
(+)	8		Battery	Battery positive terminal	

Battery Ground Cable

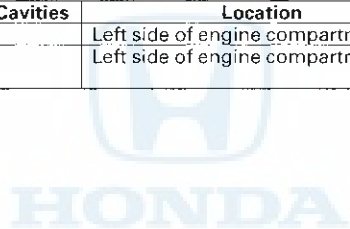
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
G1	10		Left side of engine compartment	Body ground, via battery ground cable	
(-)	9		Battery	Battery negative terminal	

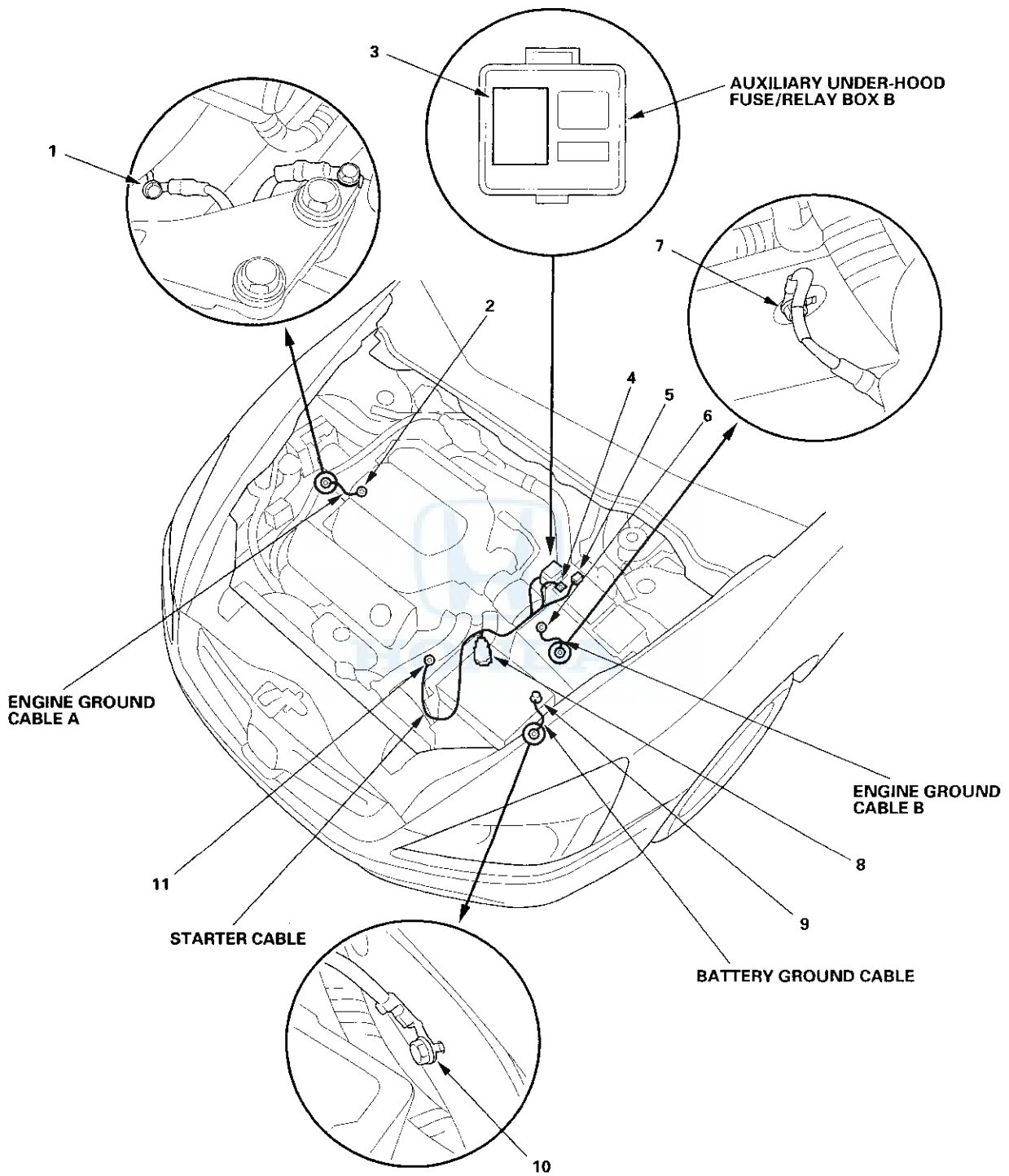
Engine Ground Cable A

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T1	2		Right side of engine compartment	Body ground, via battery ground cables	
G2	1		Right side of engine compartment	Body ground, via engine ground cable A	

Engine Ground Cable B

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
T2	6		Left side of engine compartment	Transmission housing	
G3	7		Left side of engine compartment	Body ground, via engine ground cable B	



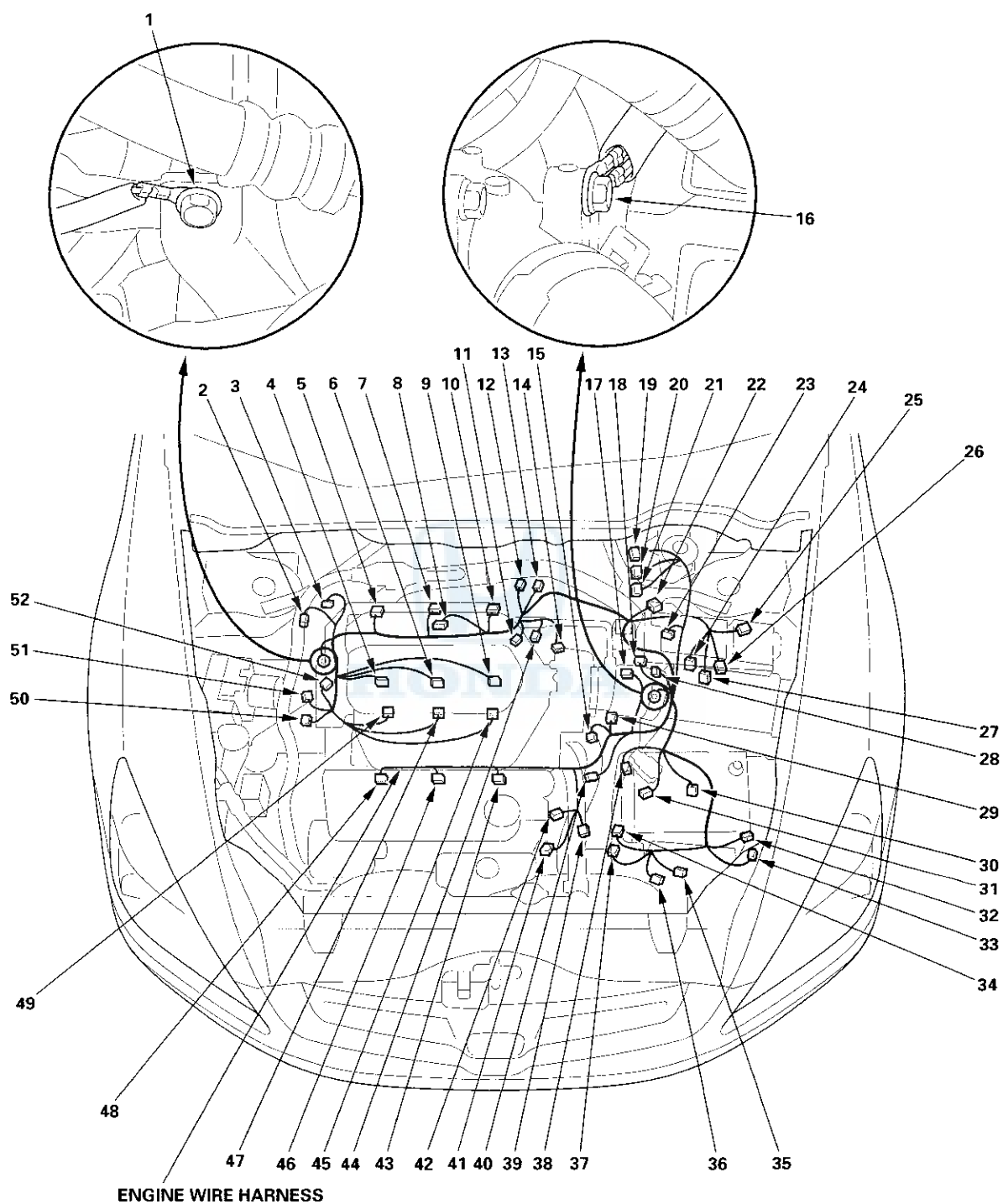


Connectors and Harnesses

Connector to Harness Index (cont'd)

Engine Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/T clutch pressure control solenoid valve	30	5	Left side of engine compartment		
ATF temperature sensor	24	2	Left side of engine compartment		
ATFP	33	3	Left side of engine compartment		
CMP sensor	50	3	Right side of engine compartment		
EGR-valve and EGR valve position sensor	40	6	Left side of engine compartment		
Engine coolant temperature (ECT) sensor	15	2	Left side of engine compartment		
Engine coolant temperature (ECT) sensor 2	18	2	Middle of engine wire compartment		
Engine oil pressure switch	2	1	Right side of engine compartment		
EOP sensor	11	3	Middle of engine compartment		
EVAP canister purge valve	14	2	Middle of engine wire compartment		
Front A/F sensor (Bank 2)	41	8	Middle of engine wire compartment		
Front secondary heated oxygen sensor (H2OS) (Bank 2)	39	4	Middle of engine wire compartment		
Ignition coil No. 1	5	3	Middle of engine wire compartment		
Ignition coil No. 2	7	3	Middle of engine wire compartment		
Ignition coil No. 3	10	3	Middle of engine wire compartment		
Ignition coil No. 4	48	3	Middle of engine wire compartment		
Ignition coil No. 5	46	3	Middle of engine wire compartment		
Ignition coil No. 6	43	3	Middle of engine wire compartment		
Injector No. 1	4	3	Middle of engine wire compartment		
Injector No. 2	6	3	Middle of engine wire compartment		
Injector No. 3	9	3	Middle of engine wire compartment		
Injector No. 4	49	3	Middle of engine wire compartment		
Injector No. 5	47	3	Middle of engine wire compartment		
Injector No. 6	45	3	Middle of engine wire compartment		
Input shaft (mainshaft) speed sensor	32	3	Left side of engine compartment		
Intake air temperature (IAT) sensor	29	2	Left side of engine compartment		
Intake manifold tuning (IMT) actuator	51	5	Right side of engine compartment		
MAP sensor	17	3	Left side of engine compartment		
Motor rotor position sensor	42	6	Middle of engine compartment		
Output shaft (countershaft) speed sensor	26	3	Left side of engine compartment		
Rear A/F sensor (Bank 1)	12	8	Middle of engine compartment		
Rear secondary heated oxygen sensor (H2OS) (Bank 1)	13	4	Middle of engine compartment		
Shift control solenoid valve A	34	2	Left side of of engine compartment		
Shift control solenoid valve B	38	2	Left side of of engine compartment		
Shift control solenoid valve C	37	2	Left side of of engine compartment		
Starter solenoid	31	1	Left side of engine compartment		
TP sensor/throttle actuator	28	6	Left side of engine compartment		
VTEC solenoid valve	44	2	Middle of engine compartment		
2 nd clutch pressure switch	22	1	Middle of engine compartment		
3 rd clutch pressure switch	25	1	Left side of engine compartment		
4 th clutch pressure switch	36	1	Left side of engine compartment		



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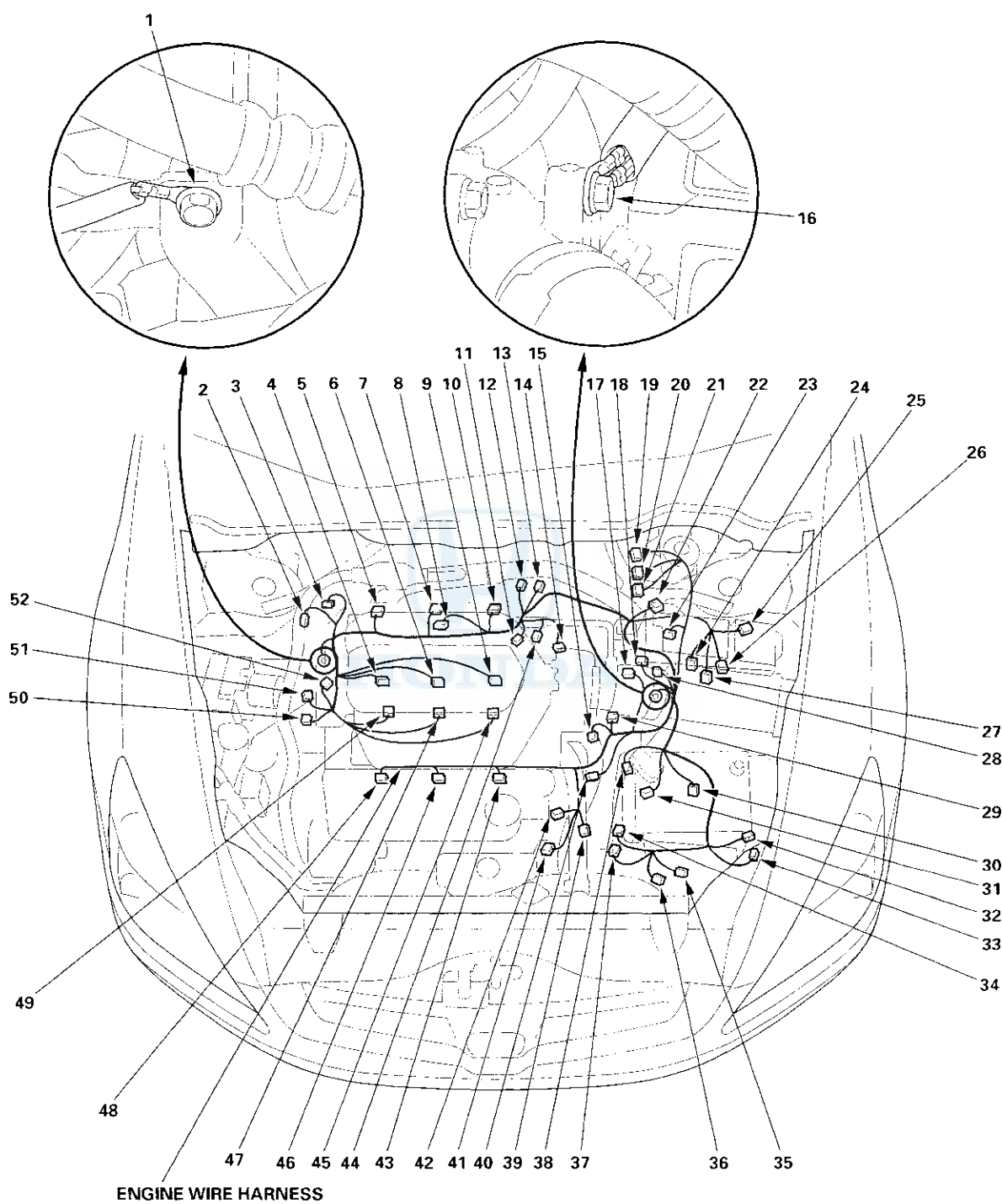
Connectors and Harnesses

Connector to Harness Index (cont'd)

Engine Wire Harness (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C101	35	10	Left side of engine compartment	Engine compartment wire harness (see page 22-26)	
C102 (Junction connector)	8	24	Middle of engine compartment		
C103 (Junction connector)	23	24	Middle of engine compartment		
C154	52	1	Right side of engine compartment	Knock sensor subharness (see page 22-28)	
C155	3	6	Right side of engine compartment	CKP sensor subharness (see page 22-28)	
C161	27	10	Left side of engine compartment	Transmission range switch subharness (see page 22-28)	
C201	20	33	Left side of engine compartment	PCM wire harness (see page 22-54)	
C202	19	33	Left side of engine compartment	PCM wire harness (see page 22-54)	
C203	21	23	Left side of engine compartment	PCM wire harness (see page 22-54)	
G101	16		Right side of engine compartment	Engine ground, via engine wire harness	
G102	1		Left side of engine compartment	Engine ground, via engine wire harness	





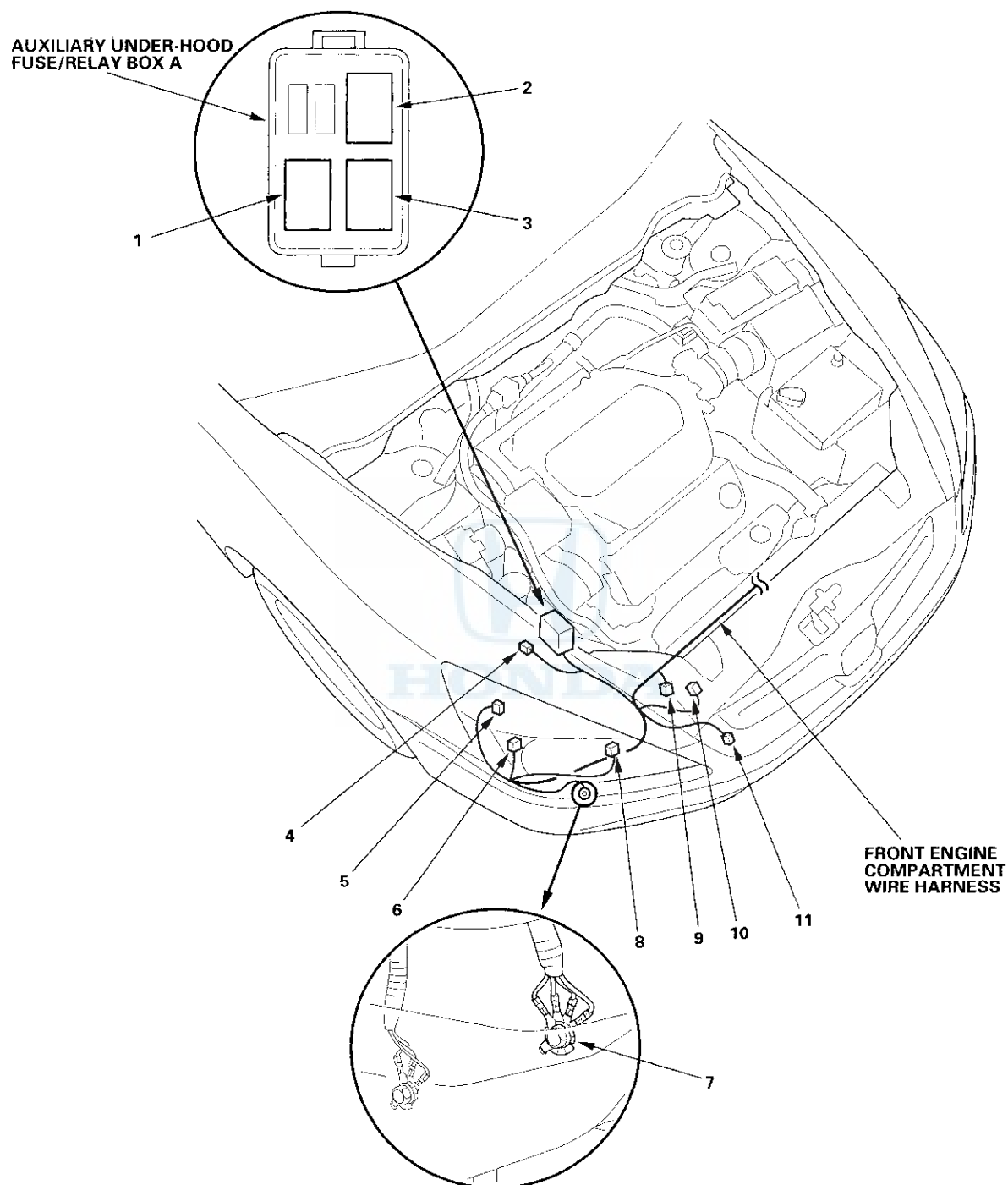
Connectors and Harnesses

Connector to Harness Index (cont'd)

Front Engine Compartment Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C condenser fan motor	10	2	Right side of engine compartment	Engine compartment wire harness (see page 22-24)	Canada
A/C pressure sensor	9	3	Right side of engine compartment		
A/C pressure switch	11	3	Right side of engine compartment		
Daytime running lights relay	3	5	In auxiliary under-hood fuse/relay box A		
Electric water pump relay	1	4	In auxiliary under-hood fuse/relay box A		
Fan control relay	2	5	In auxiliary under-hood fuse/relay box A		
Right front turn signal/side marker light	5	3	Behind right headlight		
Right headlight (high)	8	2	Behind right headlight		
Right headlight (low)	6	2	Behind right headlight		
C303	4	10	Right side of engine compartment		
G201	7		Right side of engine compartment	Body ground, via front engine compartment wire harness	





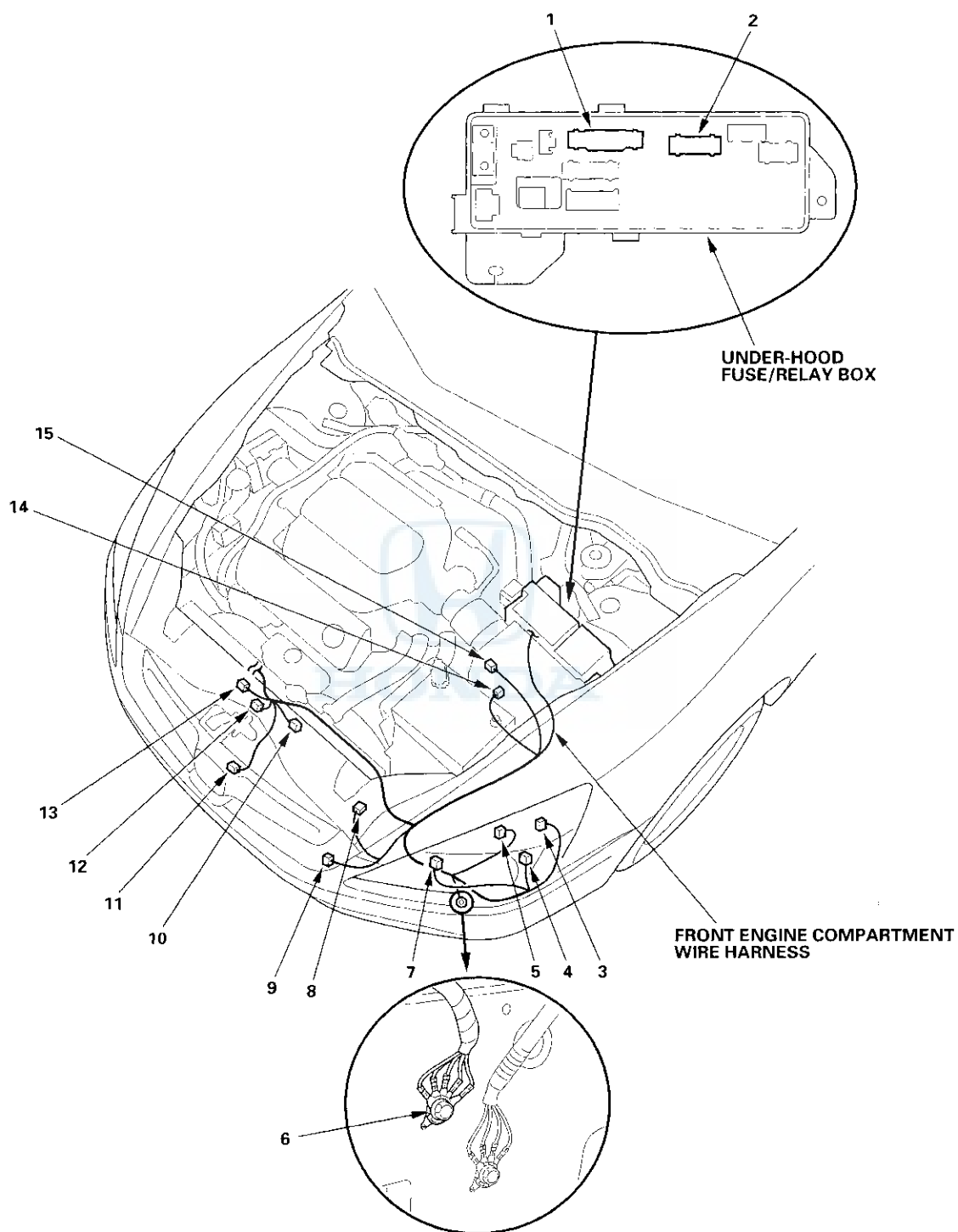
Connectors and Harnesses

Connector to Harness Index (cont'd)

Front Engine Compartment Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front engine mount solenoid	8	2	Left side of engine compartment		
Hood switch	12	2	Behind middle of front bumper		
Horn (high)	10	1	Behind middle of front bumper		
Horn (low)	13	1	Behind middle of front bumper		
Left front turn signal/side marker light	3	3	Behind left headlight		
Left headlight (high)	7	2	Behind left headlight		
Left headlight (low)	4	2	Behind left headlight		
MAF sensor	15	5	Left side of engine compartment		
Outside air temperature sensor	11	2	Middle of engine compartment		
Radiator fan motor	9	2	Left side of engine compartment		
Under-hood fuse/relay box connector F (see page 22-59)	1	20	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector H (see page 22-59)	2	14	Behind under-hood fuse/relay box		
C301	5	6	Left side of engine compartment	Engine compartment wire harness (see page 22-26)	
C302	14	8	Left side of engine compartment	Engine compartment wire harness (see page 22-26)	
G301	6		Left side of engine compartment	Body ground, via front engine compartment wire harness	





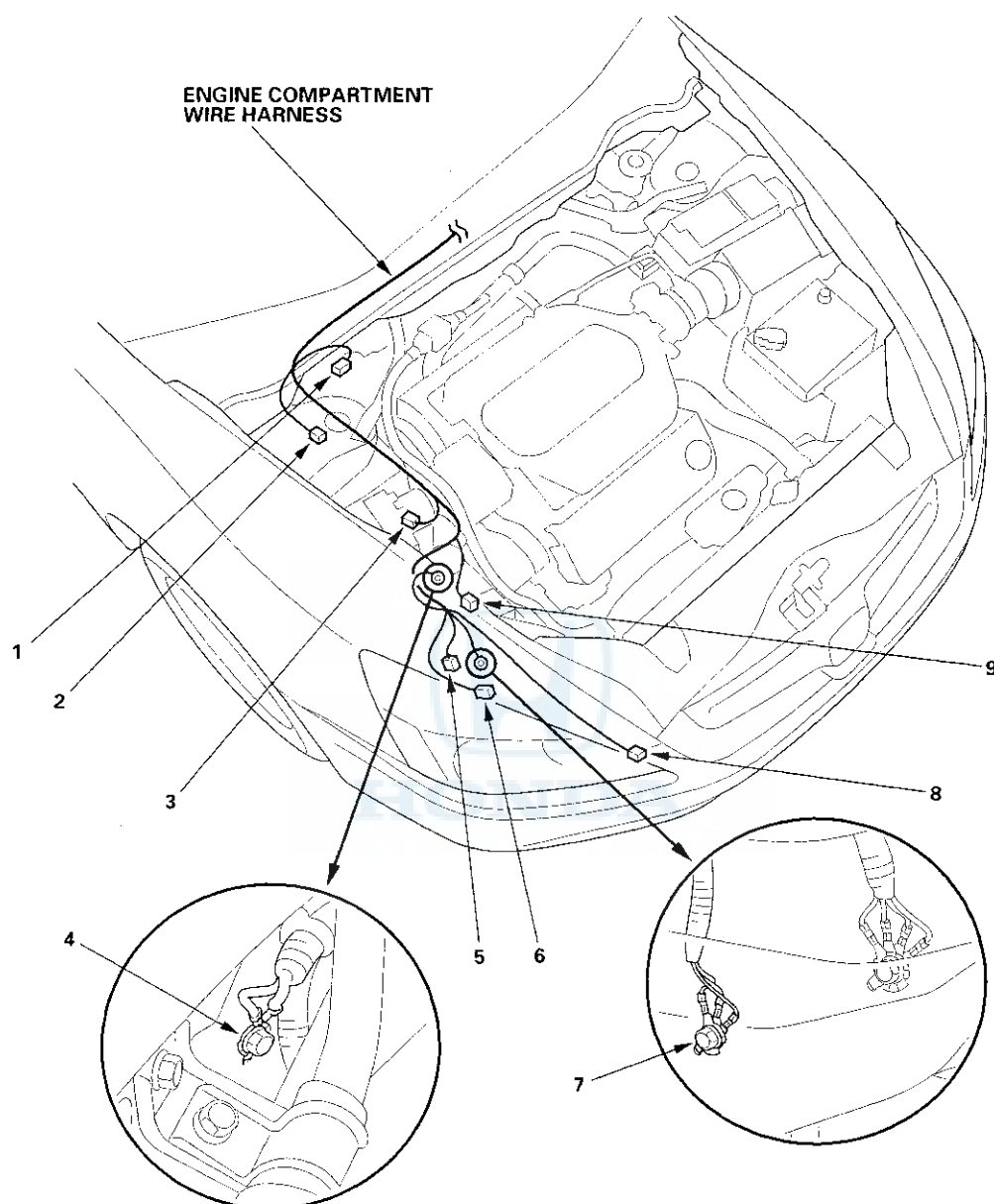
Connectors and Harnesses

Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ABS modulator-control unit	3	25	Right side of engine compartment	Front engine compartment wire harness (see page 22-20)	Canada
Cruise control actuator	1	4	Right side of engine compartment		
Right front impact sensor	8	2	Right side of engine compartment		
Right front wheel sensor	2	2	Right side of engine compartment		
Washer fluid level switch	6	2	Behind right of front bumper		
Windshield washer motor	5	2	Behind right of front bumper		
C303	9	10	Right side of engine compartment		
G202	7		Right side of engine compartment	Body ground, via engine compartment wire harness	
G203	4		Right side of engine compartment	Body ground, via engine compartment wire harness	



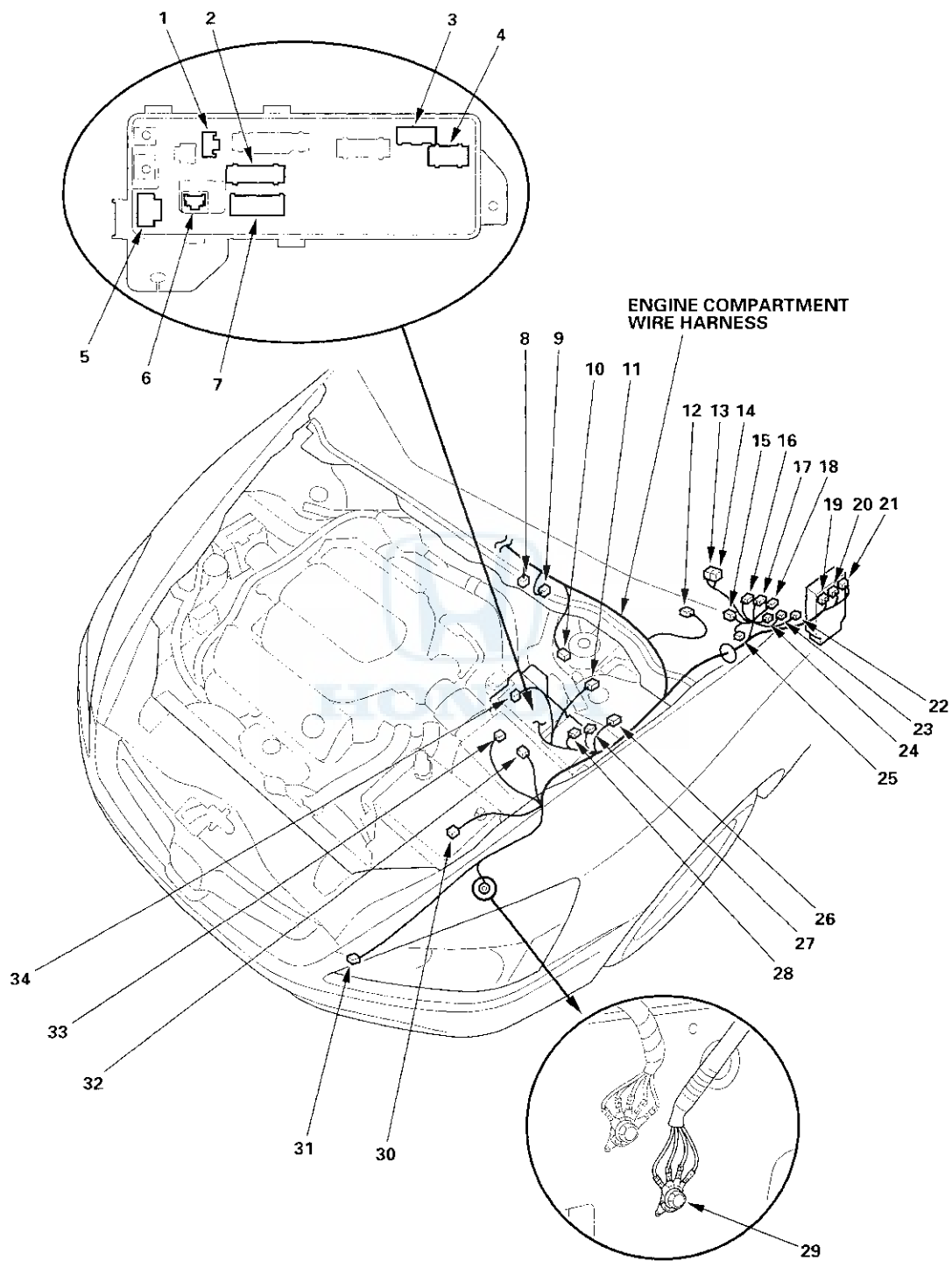


Connectors and Harnesses

Connector to Harness Index (cont'd)

Engine Compartment Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Auxiliary electric water pump	8	4	Left side of engine compartment		
Auxiliary fuse holder A	13		Under left side of dash		
Auxiliary fuse holder B	14		Under left side of dash		
Auxiliary transmission fluid pump (ATFP) control unit	11	10	Left side of engine compartment		
Brake booster pressure sensor	9	3	Left side of engine compartment		
Brake fluid level switch	10	2	Left side of engine compartment		
Diode (radiator fan)	25	2	Under left side of dash		
Engine mount control unit	22	20	Under left side of dash		
Left front impact sensor	31	2	Left side of engine compartment		
Left front wheel sensor	26	2	Left side of engine compartment		
Test tachometer connector	27	2	Left side of engine compartment		
Under-dash fuse/relay box connector B (see page 22-61)	20	6	Under left side of dash		
Under-dash fuse/relay box connector C (see page 22-61)	19	12	Under left side of dash		
Under-dash fuse/relay box connector D (see page 22-61)	21	17	Under left side of dash		
Under-hood fuse/relay box connector A (ELD unit) (see page 22-59)	6	3	In under-hood fuse/relay box		
Under-hood fuse/relay box connector C (see page 22-59)	1	2	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector D (see page 22-59)	7	9	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector E (see page 22-59)	2	16	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector G (see page 22-59)	5	2	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector I (see page 22-59)	4	10	Behind under-hood fuse/relay box		
Under-hood fuse/relay box connector J (see page 22-59)	3	5	Behind under-hood fuse/relay box		
Windshield wiper motor	12	5	Left side of engine compartment		
C101	32	10	Left side of engine compartment	Engine wire harness (see page 22-16)	
C181	34	3	Left side of engine compartment	Starter cable (see page 22-14)	
C301	33	6	Left side of engine compartment	Front engine compartment wire harness (see page 22-22)	
C302	30	6	Left side of engine compartment	Front engine compartment wire harness (see page 22-22)	
C310 (Optional connector A)	15	3	Left side of engine compartment		
C401	16	20	Under left side of dash	Dashboard wire harness (see page 22-30)	
C402	17	5	Under left side of dash	Dashboard wire harness (see page 22-30)	
C403	18	4	Under left side of dash	Dashboard wire harness (see page 22-30)	
C404	23	21	Under left side of dash	Dashboard wire harness (see page 22-30)	
C405	24	13	Under left side of dash	Dashboard wire harness (see page 22-30)	
C415 (Optional connector B)	28	3	Left side of engine compartment		
G302	29		Left side of engine compartment	Body ground, via engine compartment wire harness	



Connectors and Harnesses

Connector to Harness Index (cont'd)

Knock Sensor Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Knock sensor C154	1	1	Middle of engine compartment	Engine wire harness (see page 22-16)	
	2	1	Right side of engine compartment		

Transmission Range Switch Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Transmission range switch C161	9	10	Transmission housing	Engine wire harness (see page 22-16)	
	8	10	Transmission housing		

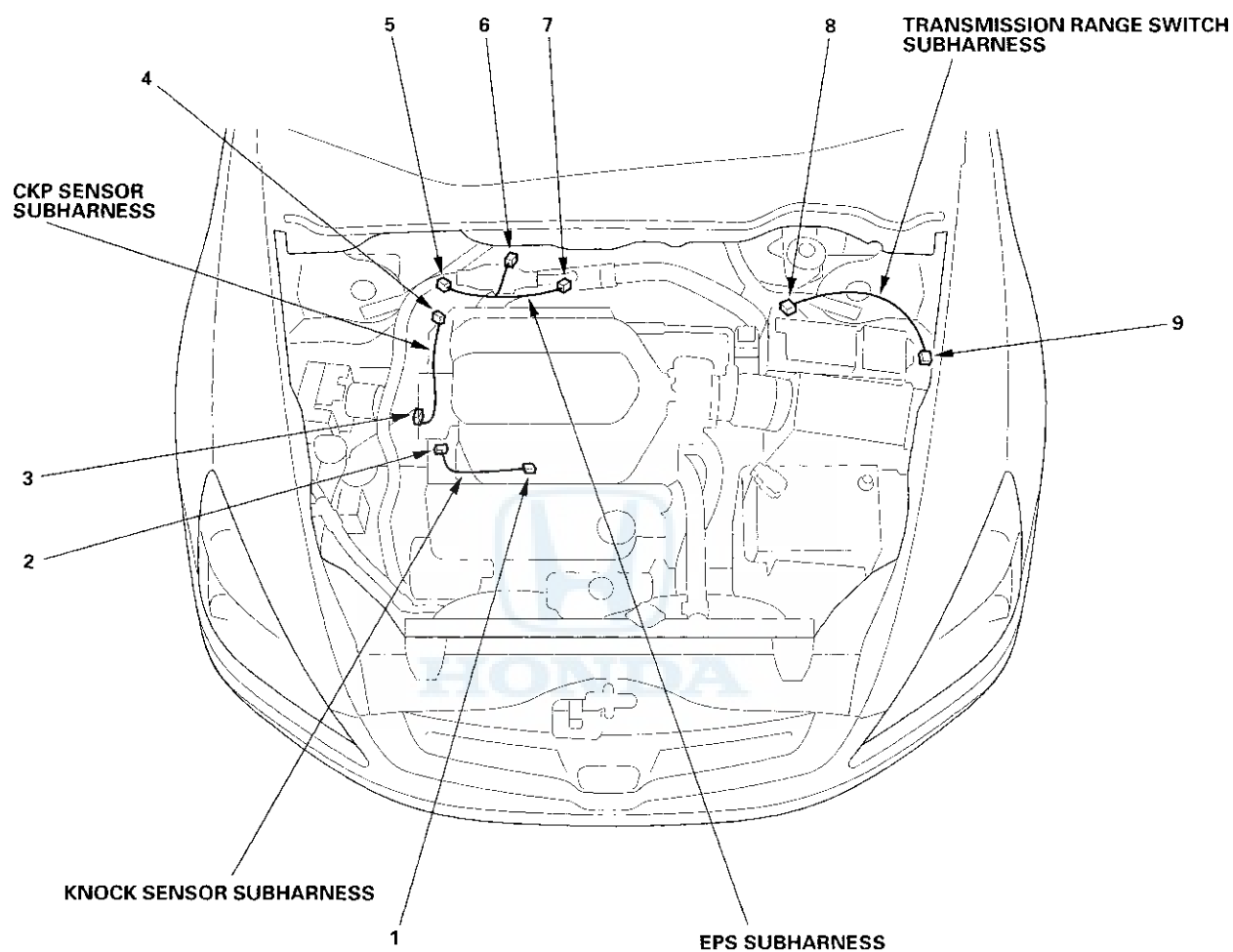
CKP Sensor Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
CKP sensor A, B C155	3	6	Right side of engine compartment	Engine wire harness (see page 22-16)	
	4	6	Right side of engine compartment		

EPS Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
EPS torque sensor	7	3	Right side of engine compartment	Right floor wire harness (see page 22-40)	
Rear engine mount control	6	2	Right side of engine compartment		
C351	5	6	Right side of engine compartment		



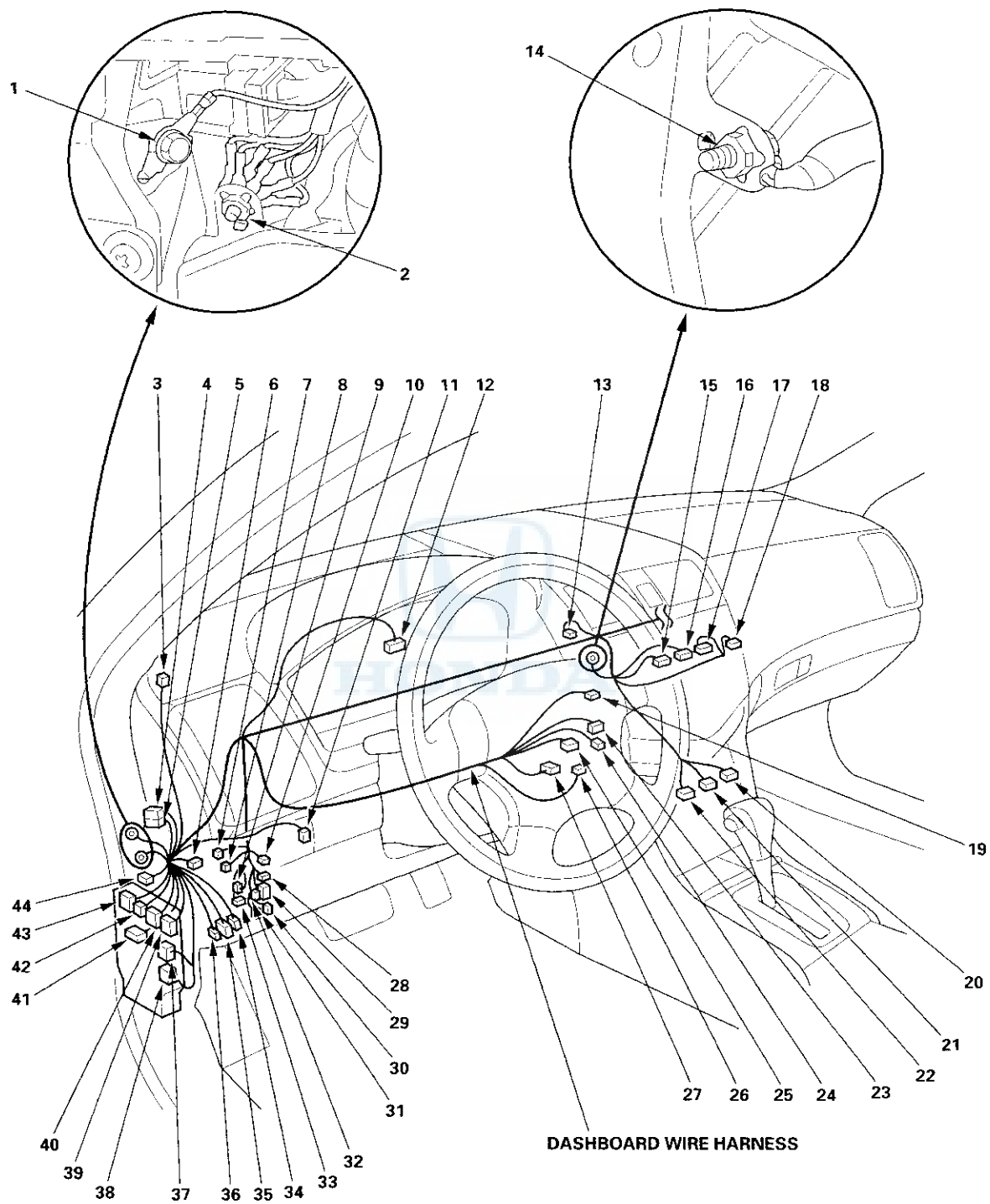


Connectors and Harnesses

Connector to Harness Index (cont'd)

Dashboard Wire Harness (Left branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Active noise control unit	18	5	Under middle of dash	Cable reel connector C (see page 22-55)	Navigation
Audio unit connector A	15	20	Under middle of dash		
Audio unit connector B	16	14	Under middle of dash		
Brake pedal position switch	9	4	Under left side of dash		
Cable reel connector A	26	4	Under left side of dash		
Cable reel connector B	25	13	In steering column cover		
Cruise control unit	33	14	Under left side of dash		
Data link connector (DLC)	34	16	Under left side of dash		
Gauge control module	12	30	Behind gauges assembly		
Idle stop switch	8	2	Under left side of dash		
Ignition key switch/key light	23	6	In steering column cover		
Ignition switch	27	7	In steering column cover		
Immobilizer control unit-receiver	24	7	In steering column cover		
In-car temperature sensor	13	2	Under middle of dash		
Left tweeter	3	2	Under left side of dash		
Navigation display unit connector A	17	10	Under middle of dash		
Navigation service check connector	7	2	Under left side of dash		
Navigation unit connector A	21	20	Under middle of dash		
Navigation unit connector B	20	8	Under middle of dash		
Navigation unit connector C	22	14	Under middle of dash		
TCS off switch	12	5	Under left side of dash		
Under-dash fuse/relay box connector A (see page 22-61)	41	6	Left kick panel		
Under-dash fuse/relay box connector N (see page 22-61)	40	45	Left kick panel		
Under-dash fuse/relay box connector P [Multiplex integrated control unit (MICU)] (see page 22-61)	38	30	Left kick panel		
Under-dash fuse/relay box connector Q [Multiplex integrated control unit (MICU)] (see page 22-61)	37	14	Left kick panel		
Under-dash fuse/relay box connector R (see page 22-61)	42	2	Left kick panel		
Under-dash fuse/relay box connector S (see page 22-61)	43	2	Left kick panel		
Under-dash fuse/relay box connector X (see page 22-61)	39	39	Left kick panel		
Wiper/washer switch connector A	19	8	In steering column cover		



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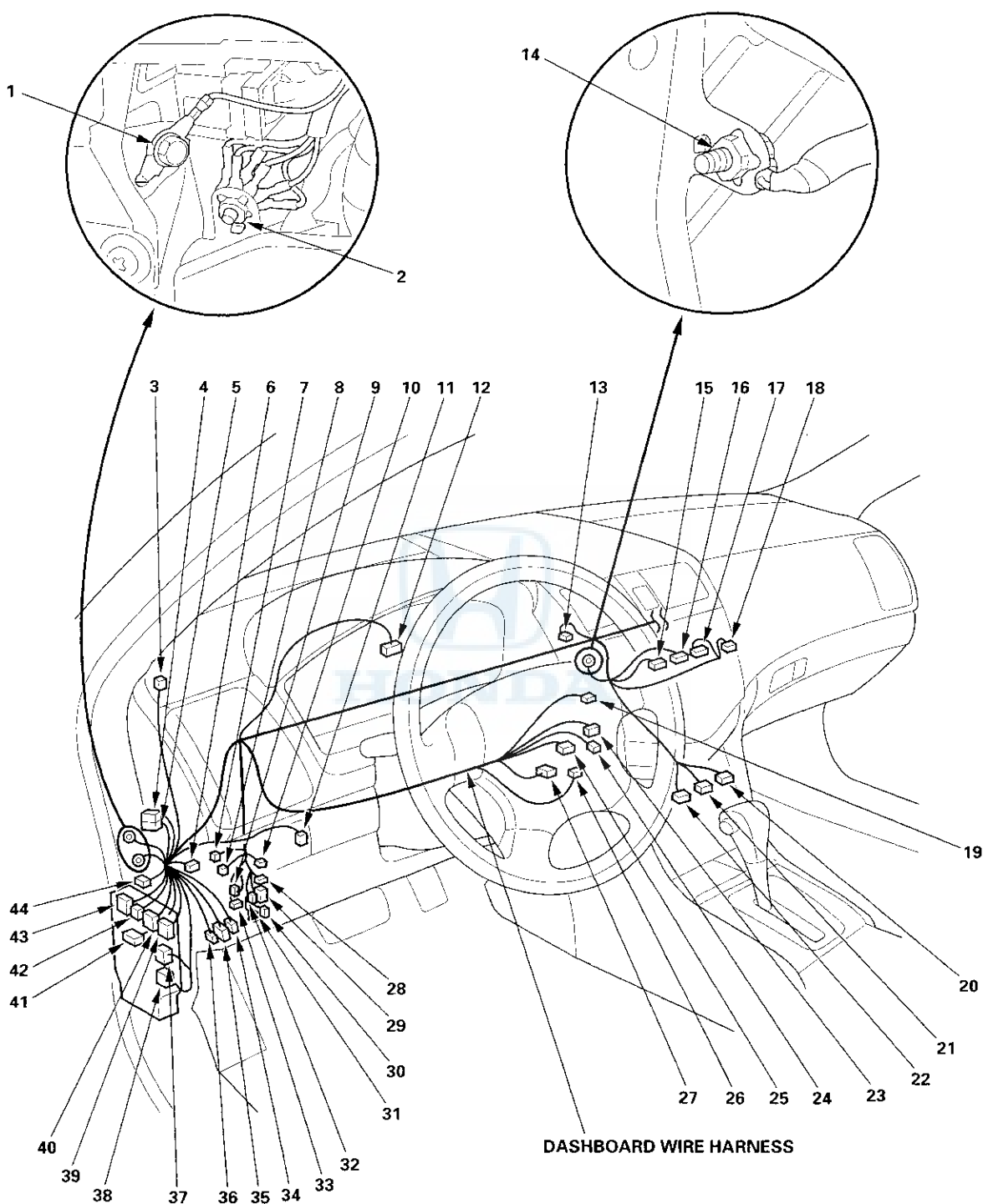
Connectors and Harnesses

Connector to Harness Index (cont'd)

Dashboard Wire Harness (Left branch) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C401	29	20	Under left side of dash	Engine compartment wire harness (see page 22-26)	
C402	32	5	Under left side of dash	Engine compartment wire harness (see page 22-26)	
C403	28	4	Under left side of dash	Engine compartment wire harness (see page 22-26)	
C404	31	21	Under left side of dash	Engine compartment wire harness (see page 22-26)	
C405	30	13	Under left side of dash	Engine compartment wire harness (see page 22-26)	
C406 (Junction connector)	6	28	Behind left side of dash		
C407 (Junction connector)	4	28	Behind left side of dash		
C408 (Junction connector)	5	28	Behind left side of dash		
C416 (Optional connector)	10	2	Left side of dash		
C501	35	24	Under left side of dash	Left floor wire harness (see page 22-38)	
C502	36	4	Under left side of dash	Left floor wire harness (see page 22-38)	
C601	44	8	Under left side of dash	Roof wire harness (see page 22-48)	
G501	2		Behind left side of dash	Body ground, via dashboard wire harness	
G502	1		Behind left side of dash	Body ground, via dashboard wire harness	
G504	14		Under middle of dash	Body ground, via dashboard wire harness	





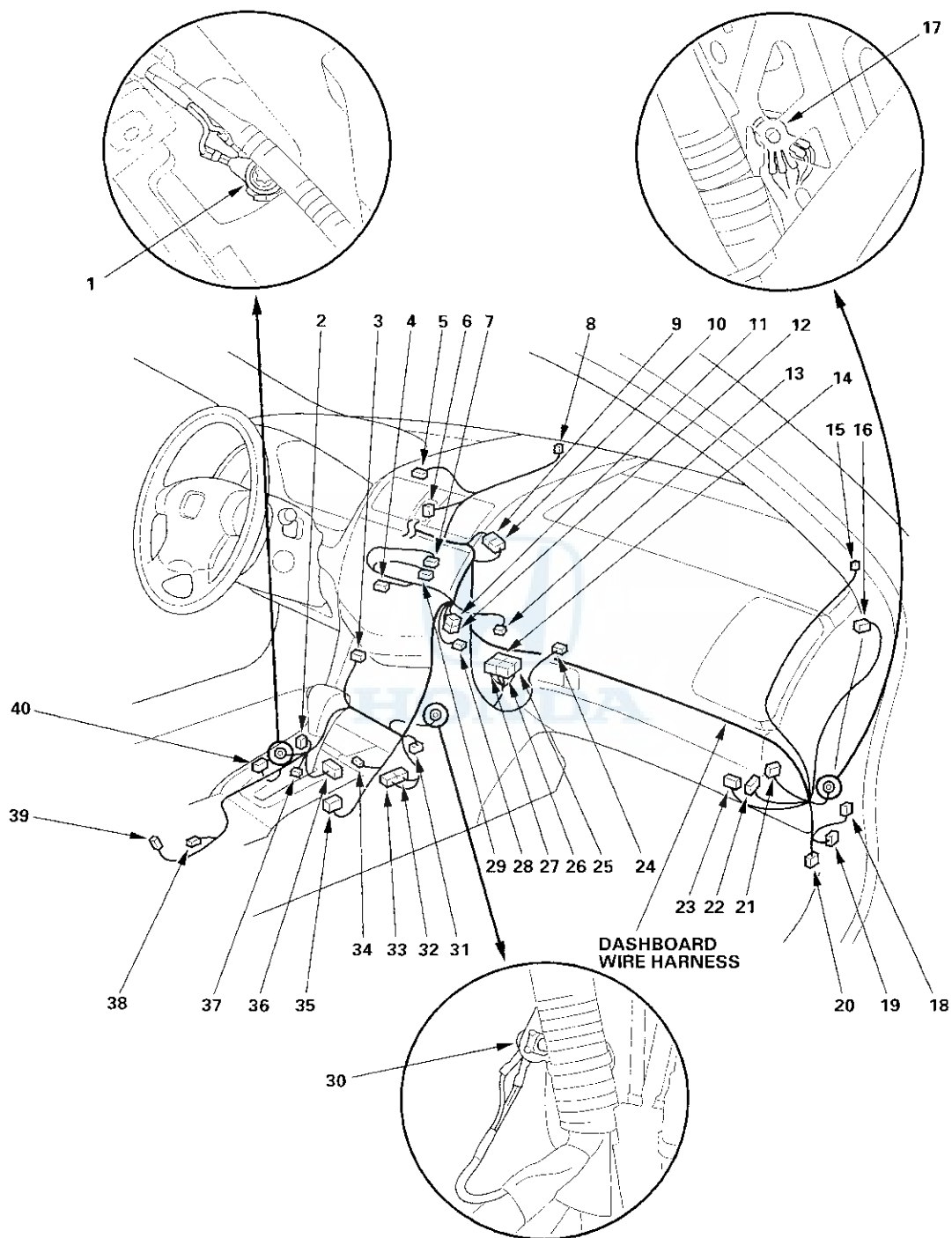
Connectors and Harnesses

Connector to Harness Index (cont'd)

Dashboard Wire Harness (Right branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
ACM control relay	26	4	Under right side of dash		Navigation
Audio-HVAC subdisplay/clock	5	10	Middle of dash		
Audio-HVAC display panel connector A	7	22	Under middle of dash		
Audio HVAC display panel connector B	4	16	Under middle of dash		
Blower motor	21	2	Under right side of dash		
Blower power transistor	24	4	Under right side of dash		
Driver's seat heater switch	40	6	Under console panel		
EPS control unit connector C	18	13	Under right side of dash		
Front accessory power socket	34	2	Under console panel		
Front passenger's airbag inflator	28	4	Under right side of dash		
Front passenger's seat heater switch	35	6	Under console panel		
Glove box light	13	2	Under right side of dash		
Hazard warning switch	6	5	Middle of dash		
Navigation display unit connector B	29	20	Middle of dash		
Park pin switch/A/T gear position console light	2	4	Under console panel		
Parking brake switch	38	1	Behind rear console		
PCM connector D	33	17	Under middle of dash		
PCM connector E	32	31	Under middle of dash		
Rear accessory power socket	39	2	Behind rear console		
Rear accessory power socket relay	25	4	Under right side of dash		
Right tweeter	15	2	Right side of dash		
SRS unit connector A	36	28	Under left side of dash		
Seat heater relay	14	4	Under right side of dash		
Shift lock solenoid	37	2	Under console panel		
Sunlight sensor	8	2	Middle of dash		
Throttle actuator control module relay	27	4	Under right side of dash		





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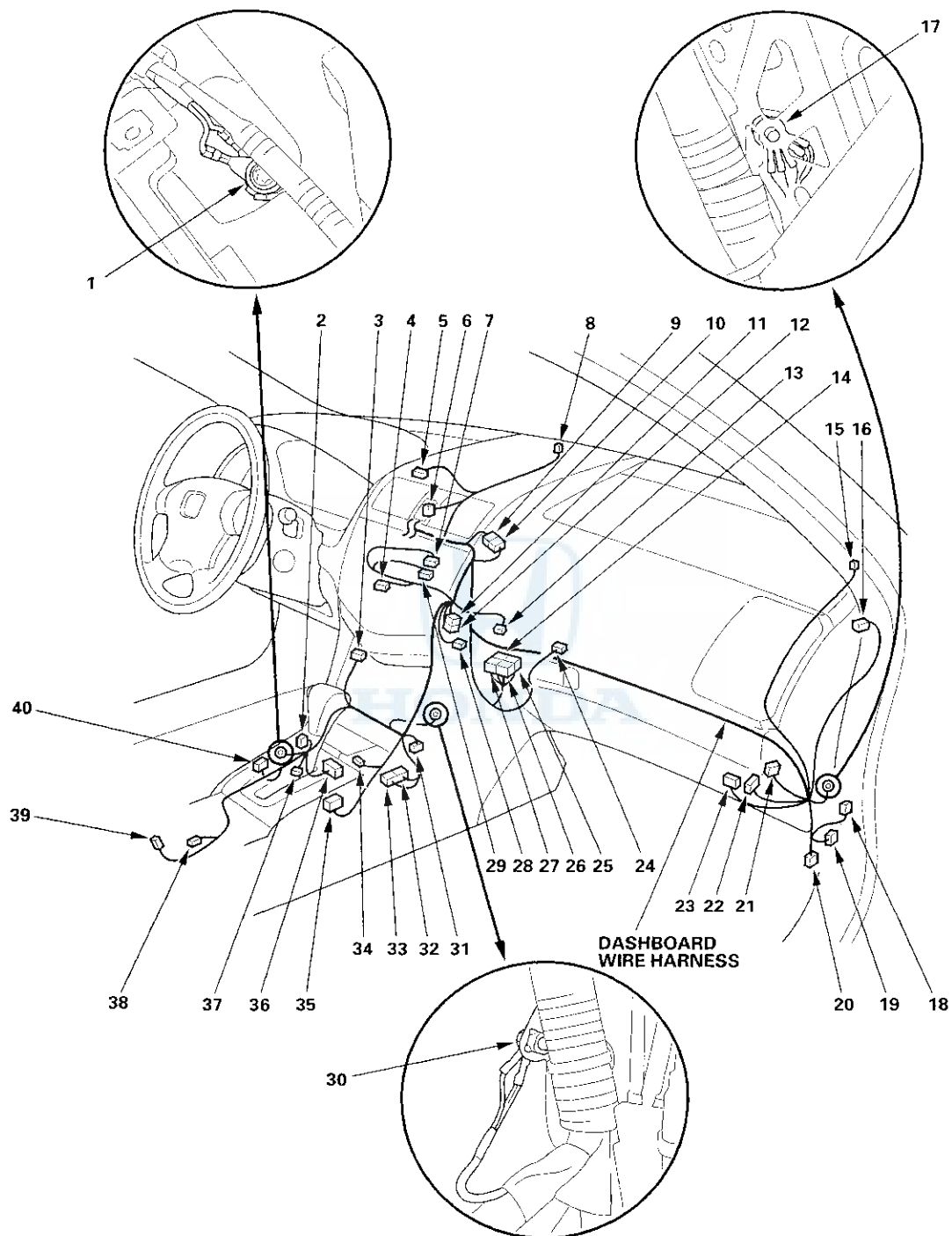
Connectors and Harnesses

Connector to Harness Index (cont'd)

Dashboard Wire Harness (Right branch) (cont'd)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
C251	31	13	Under middle of dash	PCM wire harness (see page 22-54)	Navigation
C551	20	21	Under right side of dash	Right floor wire harness (see page 22-40)	
C552	19	6	Under right side of dash	Right floor wire harness (see page 22-40)	
C554 (Junction connector)	9	28	Under right side of dash	Roof wire harness (see page 22-48)	
C555 (Junction connector)	10	28	Under right side of dash		
C556 (Junction connector)	12	28	Under right side of dash		
C557 (Junction connector)	11	28	Under right side of dash		
C651	16	6	Right side of dash		
C731	22	13	Under right side of dash	Front passenger's door wire harness (see page 22-51)	
C732	23	12	Under right side of dash	Front passenger's door wire harness (see page 22-51)	
C851	3	21	Under middle of dash	A/C wire harness (see page 22-58)	
G503	17		Behind right side of dash	Body ground, via dashboard wire harness	
G505	1		Under middle of dash	Body ground, via dashboard wire harness	
G506	30		Under middle of dash	Body ground, via dashboard wire harness	





Connectors and Harnesses

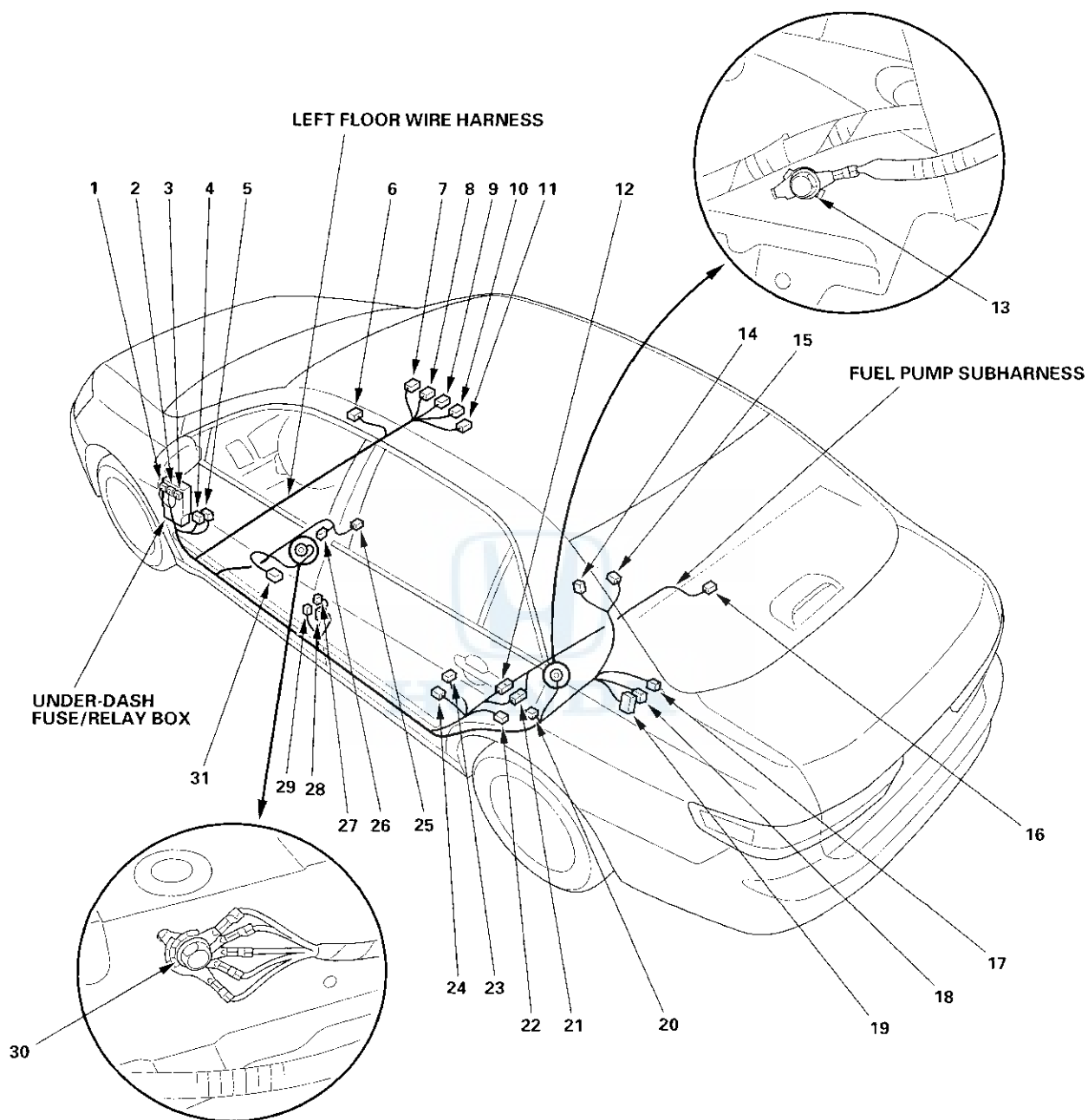
Connector to Harness Index (cont'd)

Left Floor Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door switch	29	1	Left B-pillar		
Driver's seat belt tensioner	27	4	Left B-pillar		
Driver's side airbag inflator	26	2	Under driver's seat		
Driver's side impact sensor	31	2	Under driver's seat		
EVAP canister vent shut valve	23	2	Left side of trunk		
Fuel tank pressure (FTP) sensor	24	3	Left side of trunk		
Left rear door switch	20	1	Left C-pillar		
Left rear wheel sensor	22	2	Under rear floor		
Rear active noise control microphone	14	4	Left C-pillar		
Rear window defogger connector (+)	15	1	Left C-pillar		
SRS unit connector B	6	28	Under middle of dash		
Under-dash fuse/relay box connector E (see page 22-61)	2	16	Under left side of dash		
Under-dash fuse/relay box connector F (see page 22-61)	1	14	Under left side of dash		
Under-dash fuse/relay box connector H (see page 22-61)	3	14	Under left side of dash		
C501	5	24	Under left side of dash	Dashboard wire harness (see page 22-30)	
C502	4	4	Under left side of dash	Dashboard wire harness (see page 22-30)	
C531	12	2	Under rear floor	Fuel pump subharness	
C532	21	2	Under rear floor	Fuel pump subharness	
C681	11	8	Under middle of dash	Right floor wire harness (see page 22-40)	
C682	9	4	Under middle of dash	Right floor wire harness (see page 22-40)	
C683	10	2	Under middle of dash	Right floor wire harness (see page 22-40)	
C684	7	2	Under middle of dash	Right floor wire harness (see page 22-40)	
C685	8	2	Under middle of dash	Right floor wire harness (see page 22-40)	
C701	18	14	Left side of trunk	Rear wire harness (see page 22-44)	
C704	17	12	Left side of trunk	Rear wire harness (see page 22-44)	
C751	28	10	Left B-pillar	Left rear door wire harness (see page 22-52)	
C752 (Junction connector)	19	18	Left C-pillar	Rear wire harness connectors C702 and C703 via junction connector (see page 22-44)	
C901	25	10	Under driver's seat	Driver's seat wire harness (see page 22-56)	
G601	30		Left side of floor	Body ground, via floor wire harness	
G602	13		C-pillar	Body ground, via floor wire harness	

Fuel pump subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Fuel pump/fuel gauge sending unit	16	5	Fuel tank		
C531	12	2	Under rear floor	Left floor wire harness	
C532	21	2	Under rear floor	Left floor wire harness	

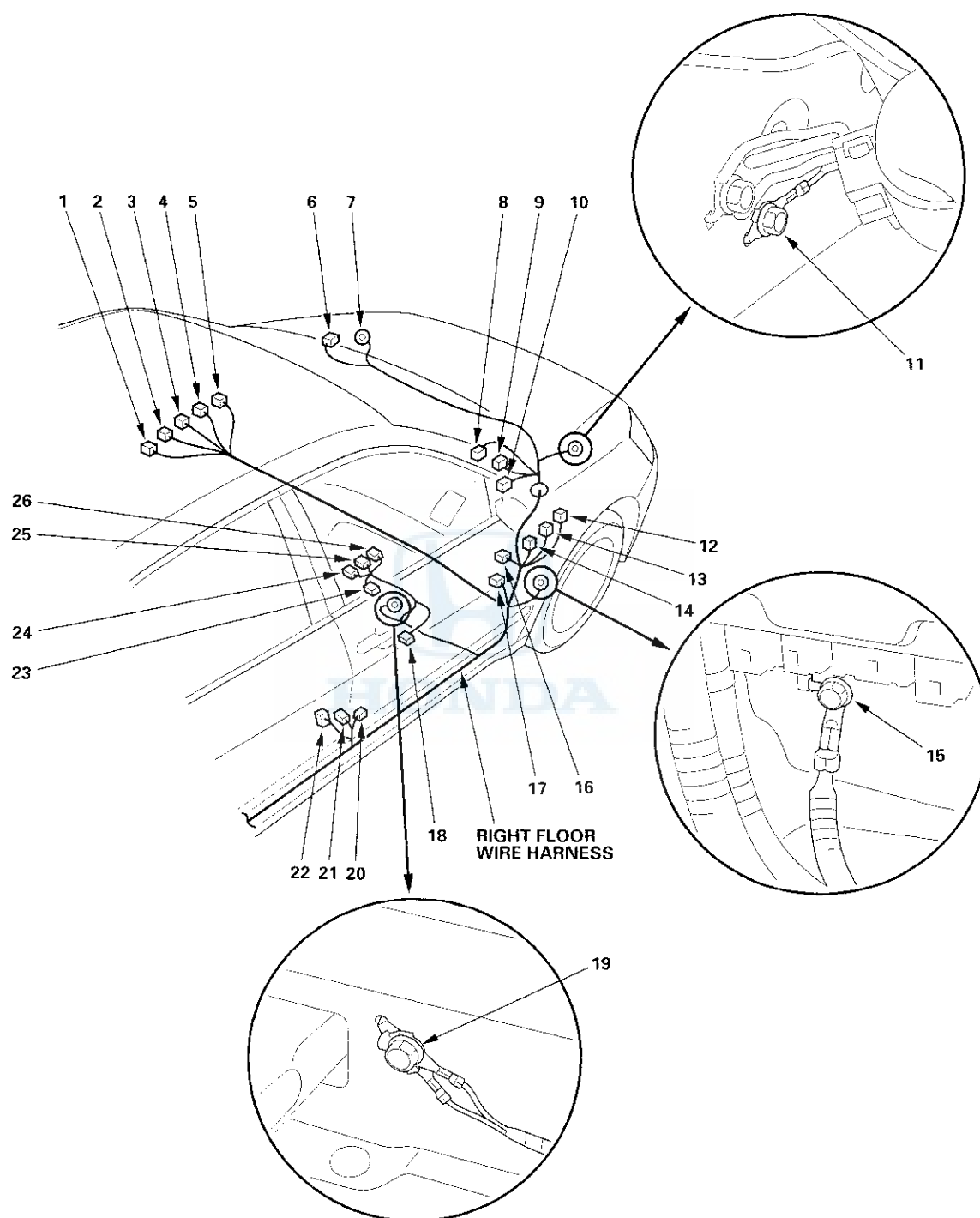


Connectors and Harnesses

Connector to Harness Index (cont'd)

Right Floor Wire Harness (Front branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
EPS control unit connector A	12	2	Under right side of dash		
EPS control unit connector B	14	2	Under right side of dash		
EPS control unit connector D	13	3	Under right side of dash		
Front passenger's door switch	20	1	Right B-pillar		
Front passenger's seat belt switch	26	3	Under front passenger's seat		
Front passenger's seat belt tensioner	21	4	Right B-pillar		
Front passenger's seat heater	25	4	Under front passenger's seat		
Front passenger's side airbag inflator	23	2	Under front passenger's seat		
Power steering gearbox connector A	8	2	Right side of engine compartment		
Power steering gearbox connector B	10	1	Right side of engine compartment		
Right side impact sensor (first)	18	2	Under front passenger's seat		
Under-hood fuse/relay box connector B	6	1	Behind under-hood fuse/relay box		
C351	9	6	Left side of engine compartment	EPS subharness (see page 22-28)	
C551	17	21	Under right side of dash	Dashboard wire harness (see page 22-34)	
C552	16	6	Under right side of dash	Dashboard wire harness (see page 22-34)	
C681	1	8	Under middle of dash	Left floor wire harness (see page 22-38)	
C682	3	4	Under middle of dash	Left floor wire harness (see page 22-38)	
C683	2	2	Under middle of dash	Left floor wire harness (see page 22-38)	
C684	5	2	Under middle of dash	Left floor wire harness (see page 22-38)	
C685	4	2	Under middle of dash	Left floor wire harness (see page 22-38)	
C781	22	10	Right B-pillar	Right rear door wire harness (see page 22-53)	
C801	24	4	Under front passenger's seat	OPDS unit harness (see page 22-57)	
T102	7		Behind under-hood fuse/relay box		
G351	11		Right side of engine compartment	Body ground, via right floor wire harness	
G651	15		Under right side of dash	Body ground, via right floor wire harness	
G652	19		Under front passenger's seat	Body ground, via right floor wire harness	



Connectors and Harnesses

Connector to Harness Index (cont'd)

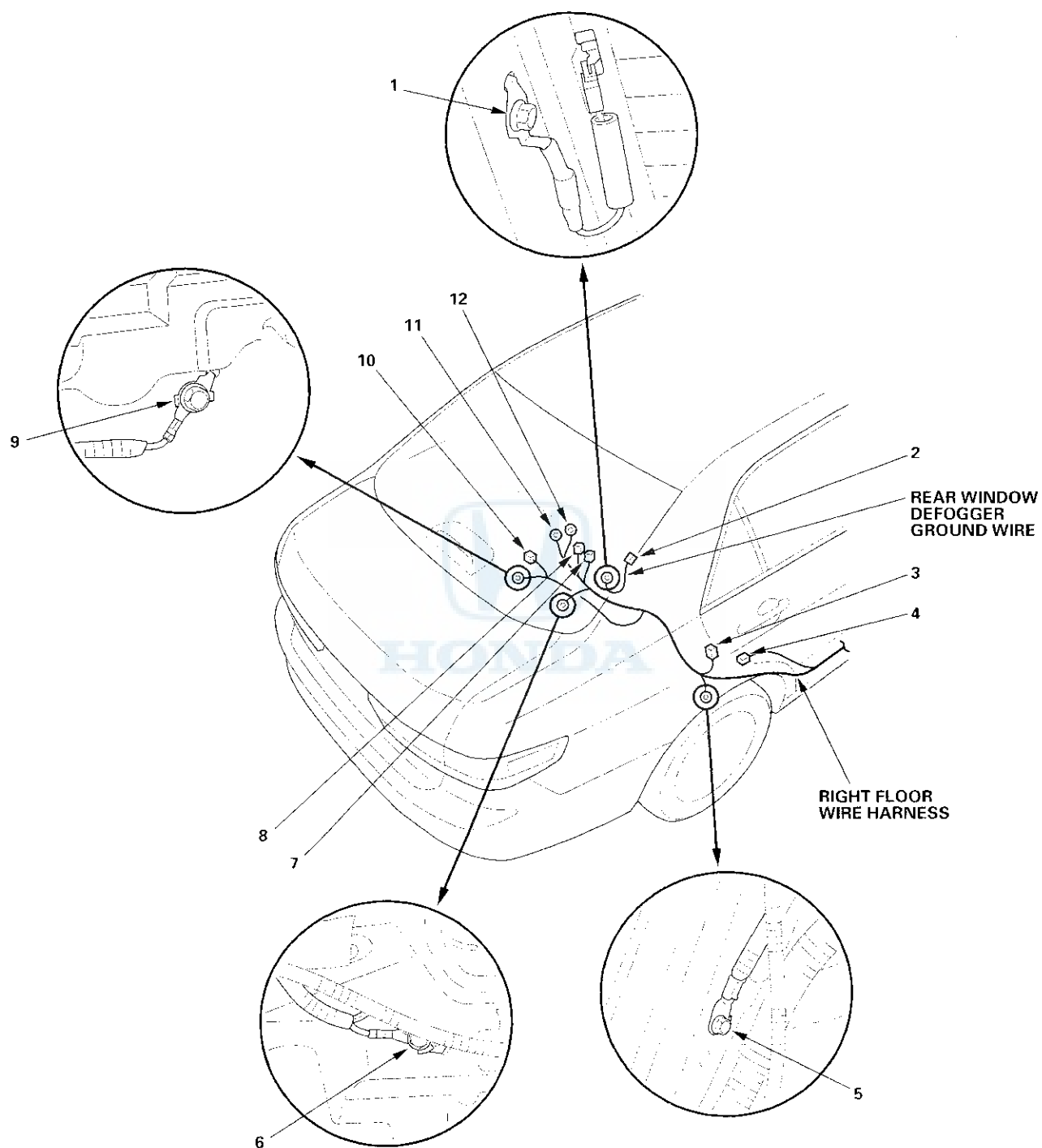
Right Floor Wire Harness (Rear branch)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
DC-DC converter terminal (+)	12		DC-DC converter		
DC-DC converter terminal (—)	11		DC-DC converter		
Intelligent power unit module fan	10	4	Under right side of rear shelf		
Right rear door switch	3	1	Right C-pillar		
Right rear wheel sensor	4	2	Under rear floor		
C951	7	6	Under right side of rear shelf	IPU compartment wire harness (see page 22-46)	
C952	8	20	Under right side of rear shelf	IPU compartment wire harness (see page 22-46)	
G653	5		Right C-pillar	Body ground, via right floor wire harness	
G654	6		Under right side of rear shelf	Body ground, via right floor wire harness	
G655	9		Under right side of rear shelf	Body ground, via right floor wire harness	

Rear Window Defogger Ground Wire

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Rear window defogger connector B	2	2	Right C-pillar		
G603	1		Right C-pillar	Body ground, via rear window defogger ground wire	





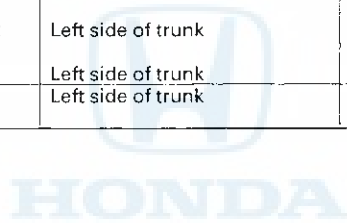
Connectors and Harnesses

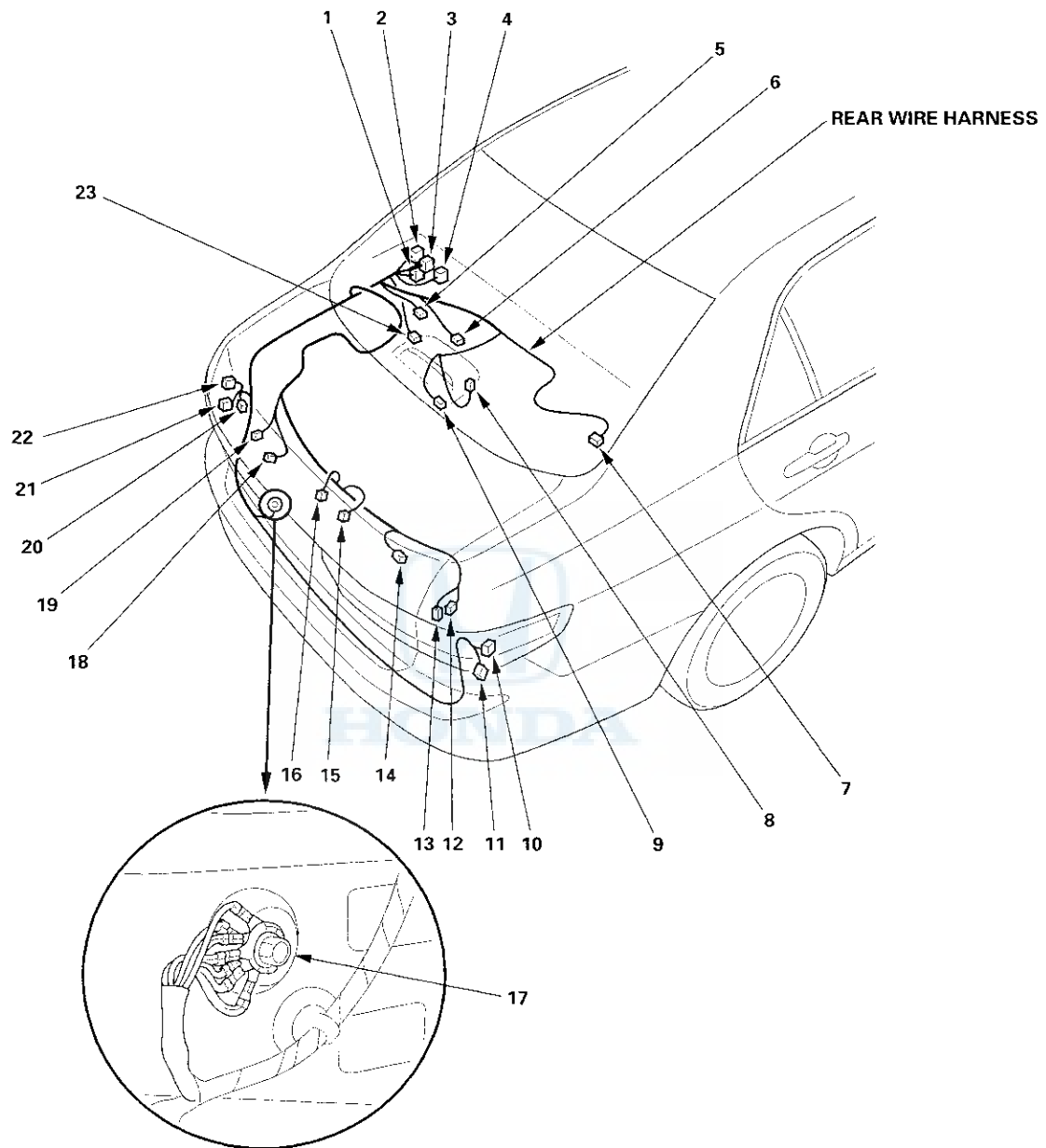
Connector to Harness Index (cont'd)

Rear Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Fuel pump control module	23	10	Under left side		
High mount brake light	7	2	Middle of rear shelf		
Left back-up light	17	3	Left side of trunk		
Left inner brake light/taillight	18	2	Left side of trunk		
Left rear speaker	5	2	Left side of rear shelf		
Left rear turn signal light	20	3	Left side of trunk		
Left taillight	21	4	Left side of trunk		
License plate light	14	2	Behind middle of trunk lid		
Right back-up light	12	3	Right side of trunk		
Right inner brake light/taillight	11	2	Right side of trunk		
Right rear speaker	7	2	Right side of rear shelf		
Right rear turn signal light	11	3	Right side of trunk		
Right taillight	10	4	Right side of trunk		
Trunk key cylinder switch	14	3	Behind right side of trunk lid		
Trunk latch switch/trunk lid opener solenoid	11	3	Behind middle of trunk lid		
Trunk light	9	2	Under middle of rear shelf		
XM receiver	6	14	Middle of rear shelf		
C701	3	14	Left side of trunk	Left floor wire harness (see page 22-38)	
C702 (Junction connector)	2	14	Left side of trunk	Left floor wire harness connector C752 via junction connector (see page 22-38)	
C703 (Junction connector)	1	10	Left side of trunk	Left floor wire harness connector C752 via junction connector (see page 22-38)	
C704	4	12	Left side of trunk	Left floor wire harness (see page 22-38)	
C705	20	2	Left side of trunk		
G701	17		Left side of trunk	Body ground, via rear wire harness	

Without navigation





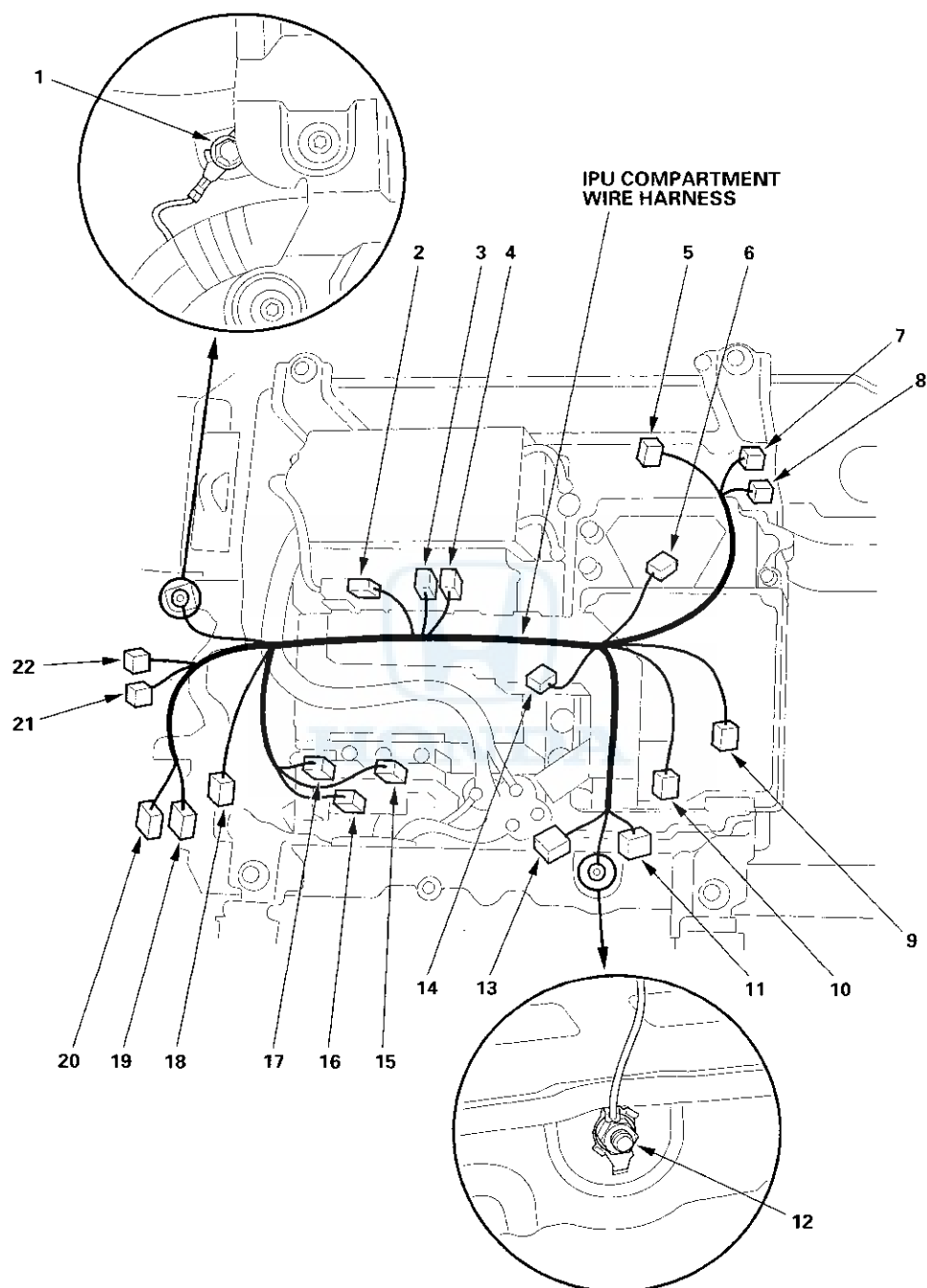
Connectors and Harnesses

Connector to Harness Index (cont'd)

IPU Compartment Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
A/C compressor driver	2	4	Behind the IPU cover		
Battery current sensor	6	3	Front of the MCM		
Battery module	10	6	On top of the MCM		
Bypass contactor (+)	7	1	Above the MCM		
Bypass contactor (—)	8	1	Above the MCM		
DC-DC converter	9	4	On top of the MCM		
High voltage contactor	5	2	Above the MCM		
MCM connector A	13	31	Under the MCM		
MCM connector B	11	24	Under the MCM		
MCM relay 1	4	4	Behind the IPU cover		
MCM relay 2	3	4	Behind the IPU cover		
MPI module	18	16	Behind the IPU cover		
U phase motor current sensor	17	3	Behind the IPU cover		
V phase motor current sensor	15	3	Behind the IPU cover		
W phase motor current sensor	16	3	Behind the IPU cover		
C951	20	6	Behind the rear seat	Right floor wire harness (see page 22-42)	
C952	19	20	Behind the rear seat	Right floor wire harness (see page 22-42)	
C953 (Junction connector)	14	20	Front of the MCM		
C954 (Junction connector)	21	12	Behind the rear seat		
C955 (Junction connector)	22	12	Behind the rear seat		
G901	1		Right side of MCM	Body ground, via right floor wire harness	
G902	12		Under the MCM	Body ground, via right wire harness	



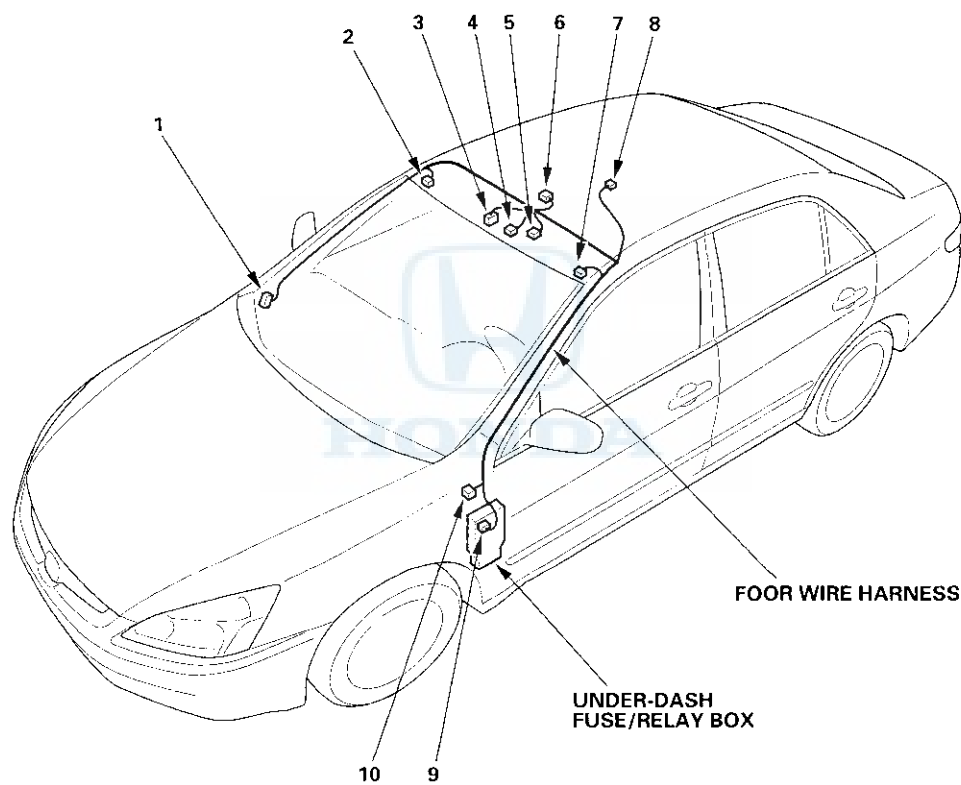


Connectors and Harnesses

Connector to Harness Index (cont'd)

Roof Wire Harness

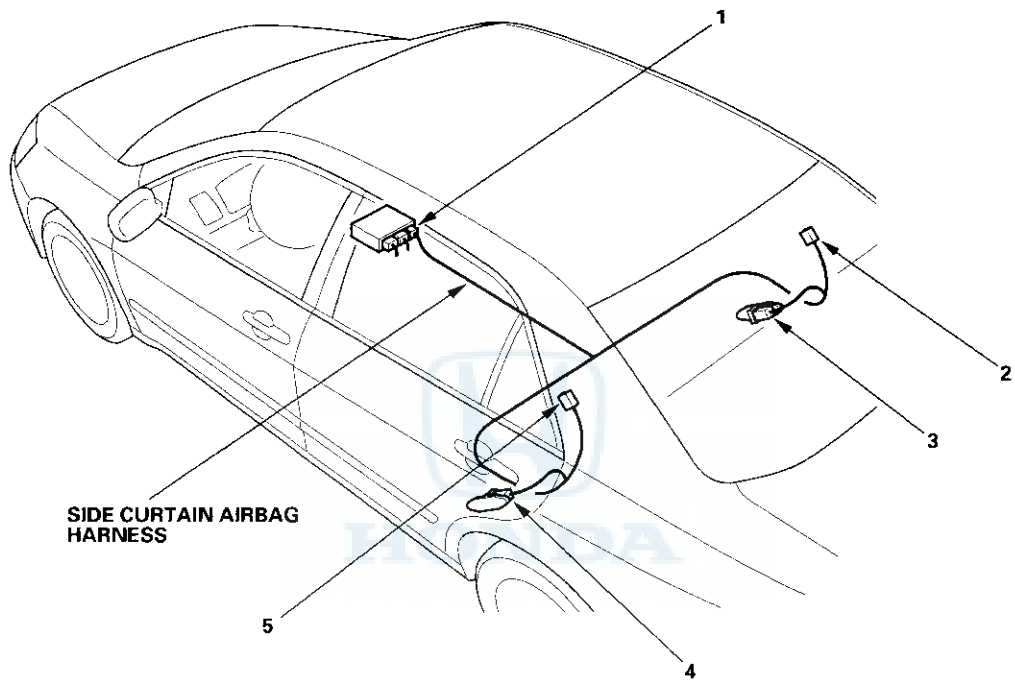
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Active noise control microphone	6	5	Roof		
Ambient light	3	10	Roof		
Ceiling light	8	3	Roof		
Driver's vanity mirror light	7	2	Roof		
Front passenger's vanity mirror light	2	2	Roof		
Individual map light	4	3	Roof		
Under-dash fuse/relay box connector I (see page 22-61)	9	5	Under left side of dash		
C601	10	8	Under left side of dash	Dashboard wire harness (see page 22-30)	
C602 (Optional connector)	5	3	Behind rear view mirror		
C651	1	6	Under right side of dash	Dashboard wire harness (see page 22-34)	Navigation





Side Curtain Airbag Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left side impact sensor (2nd)	4	2	Left quarter panel		4-door
Left side curtain airbag	5	2	Left C-pillar		
Right side curtain airbag	2	2	Right quarter panel		4-door
Right side impact sensor (2nd)	3	2	Right C-pillar		
SRS unit connector C	1	16	Under middle of dash		



Connectors and Harnesses

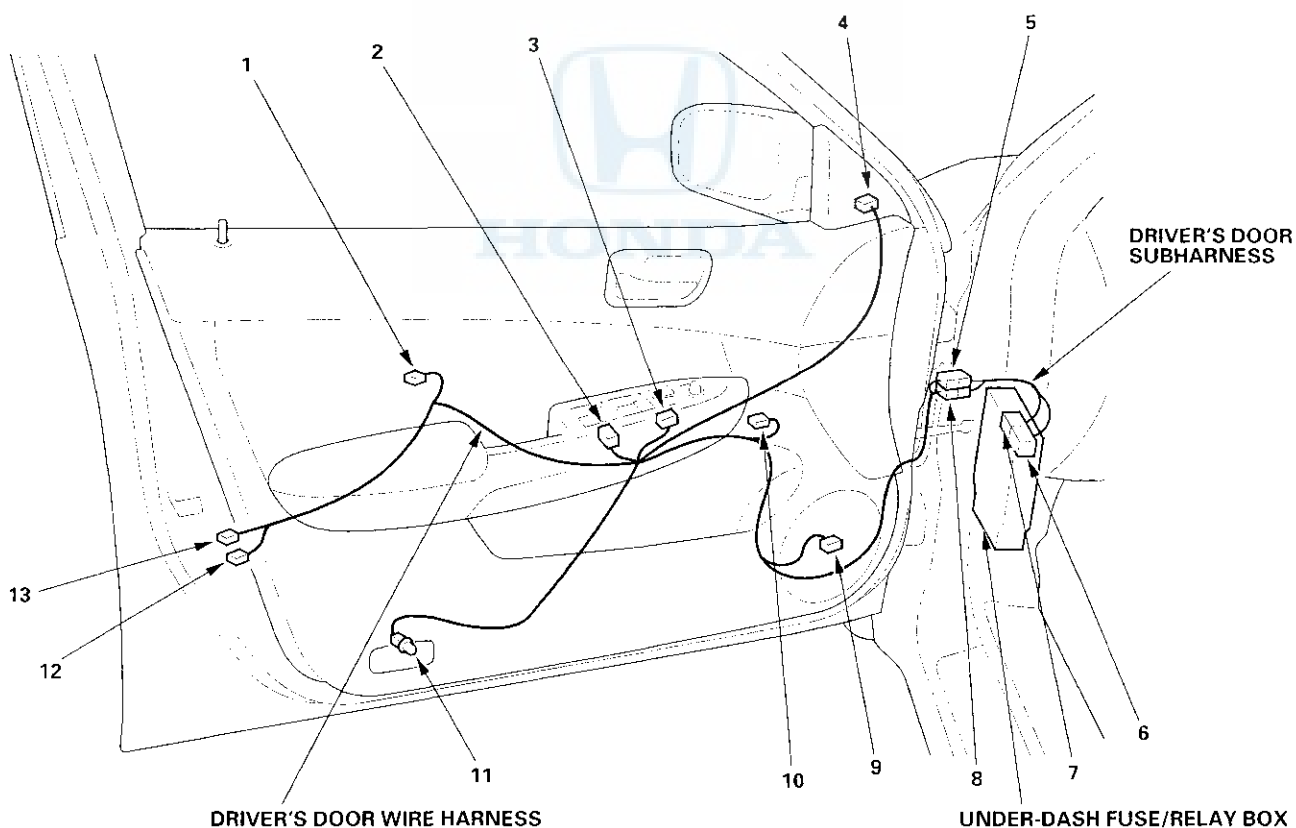
Connector to Harness Index (cont'd)

Driver's Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's door courtesy light	11	2	Driver's door		
Driver's door key cylinder switch	1	3	Driver's door		
Driver's door lock actuator	12	2	Driver's door		
Driver's door lock knob switch	13	3	Driver's door		
Driver's door speaker	9	2	Driver's door		
Driver's power window motor	10	6	Driver's door		
Left power mirror	4	8	Driver's door		
Power mirror switch	3	13	Driver's door		
Power window master switch (door multiplex control unit)	2	23	Driver's door		
C631	5	20	Driver's door	Driver's door subharness	
C632	8	17	Driver's door	Driver's door subharness	

Driver's Door Subharness

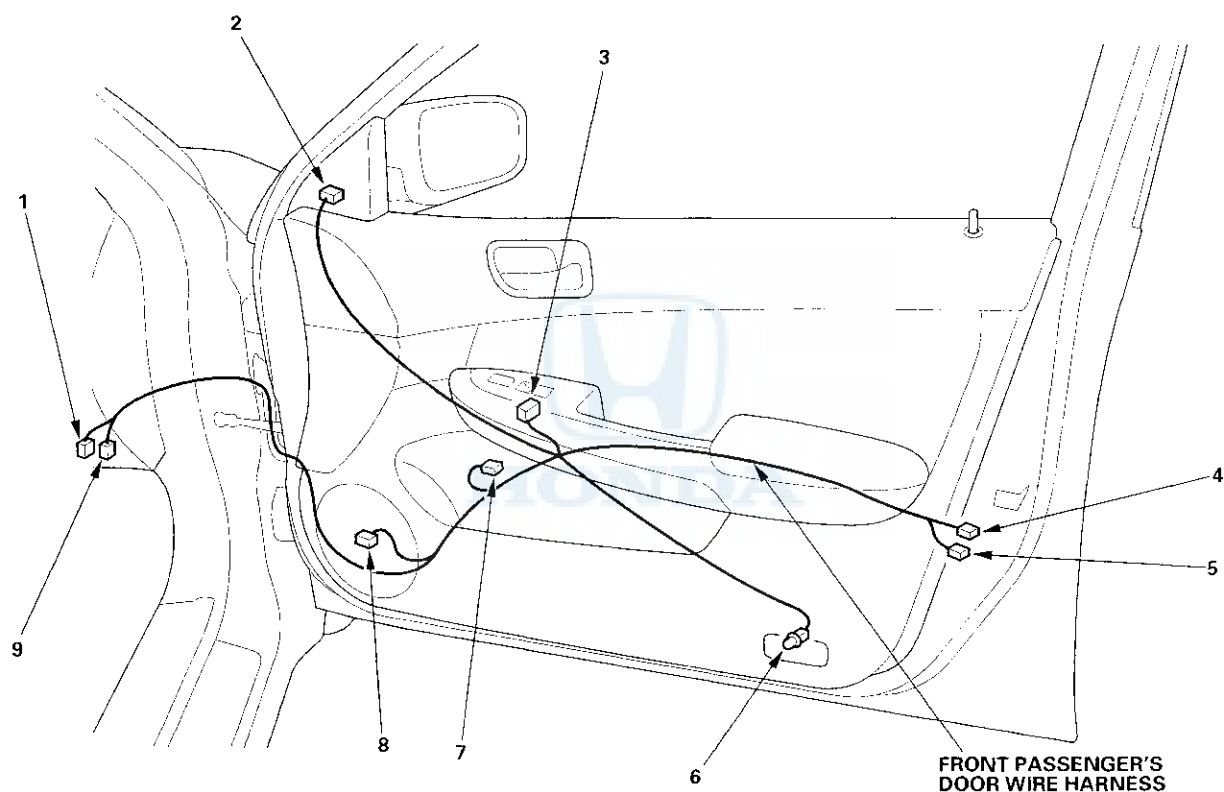
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Under-dash fuse/relay box connector J (see page 22-61)	6	21	Left kick panel		
Under-dash fuse/relay box connector K (see page 22-61)	7	12	Left kick panel		
C631	5	20	Driver's door	Driver's door wire harness	
C632	8	17	Driver's door	Driver's door wire harness	





Front Passenger's Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Front passenger's door courtesy light	6	2	Front passenger's door		
Front passenger's door lock actuator	5	2	Front passenger's door		
Front passenger's door lock knob switch	4	3	Front passenger's door		
Front passenger's door speaker	8	2	Front passenger's door		
Front passenger's power window motor	7	6	Front passenger's door		
Front passenger's power window switch	3	10	Front passenger's door		
Right power mirror	2	8	Front passenger's door		
C731	9	13	Under right side of dash	Dashboard wire harness (see page 22-34)	
C732	1	12	Under right side of dash	Dashboard wire harness (see page 22-34)	

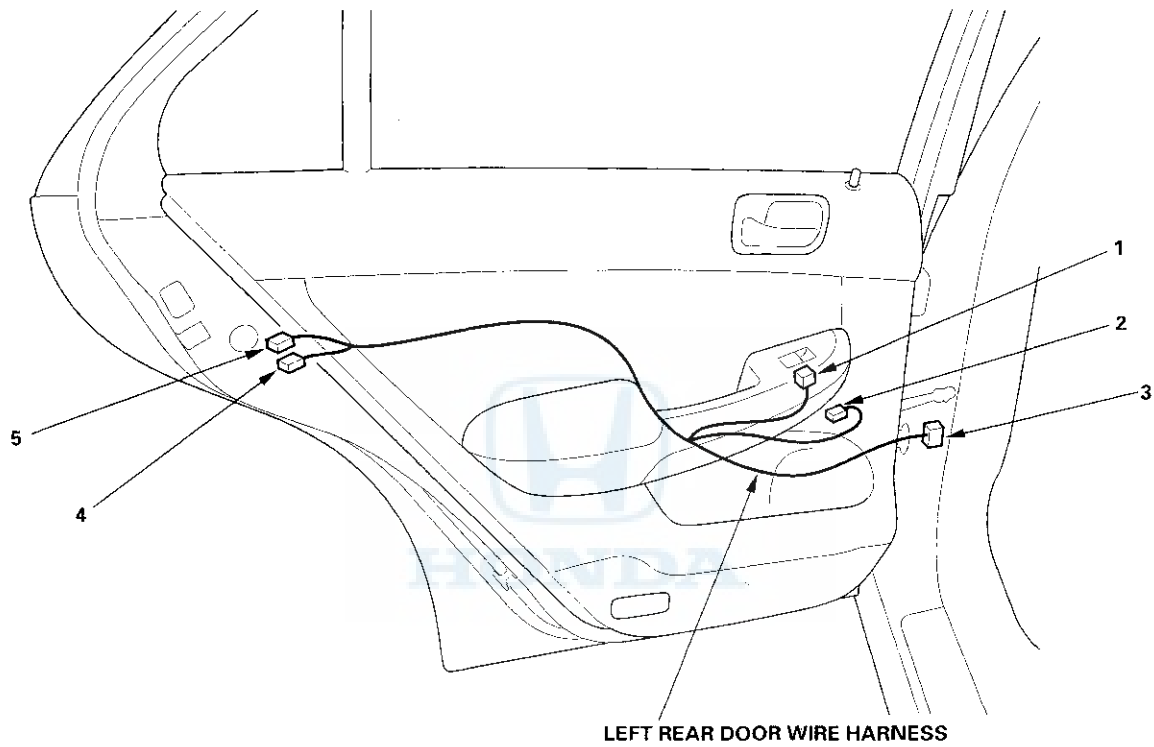


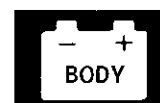
Connectors and Harnesses

Connector to Harness Index (cont'd)

Left Rear Door Wire Harness

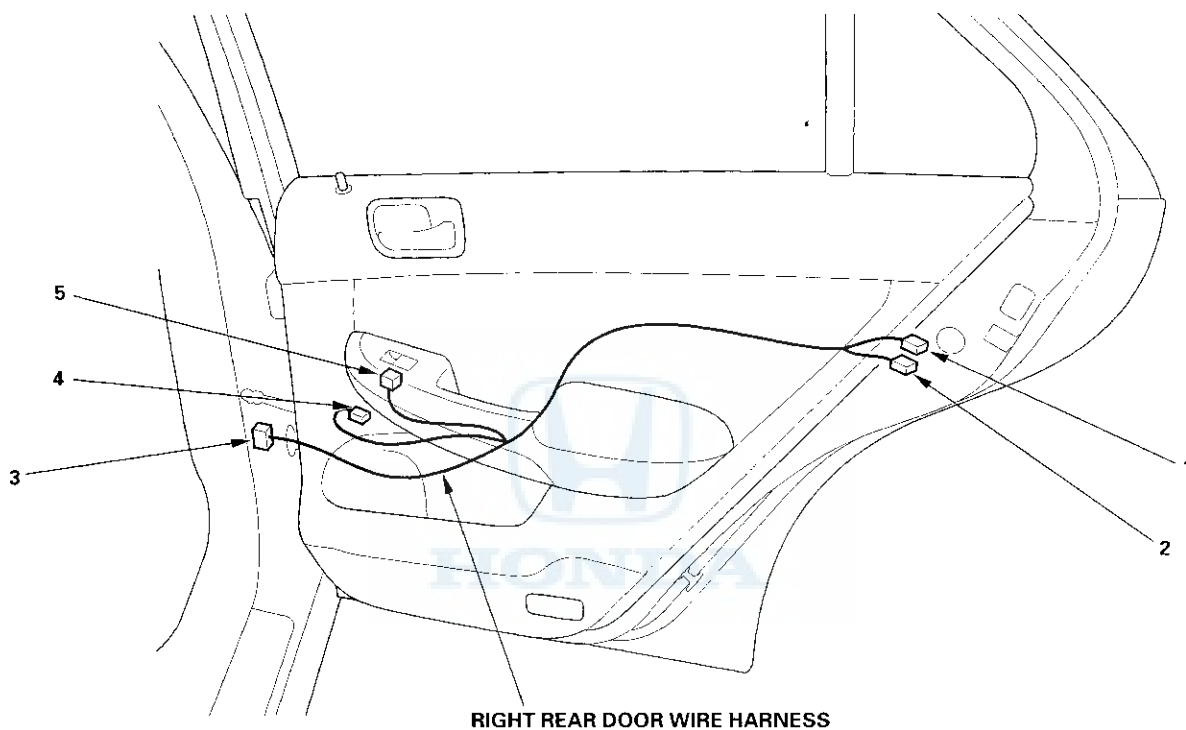
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Left rear power door lock actuator	4	2	Left rear door	Left floor wire harness (see page 22-38)	
Left rear power door lock knob switch	5	3	Left rear door		
Left rear power window motor	2	6	Left rear door		
Left rear power window switch	1	6	Left rear door		
C751	3	10	Left B-pillar		





Right Rear Door Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Right rear power door lock actuator	2	2	Right rear door		
Right rear power door lock knob switch	1	3	Right rear door		
Right rear power window motor	4	6	Right rear door		
Right rear power window switch	5	6	Right rear door		
C781	3	10	Right B-pillar	Floor wire harness (see page 22-40)	



Connectors and Harnesses

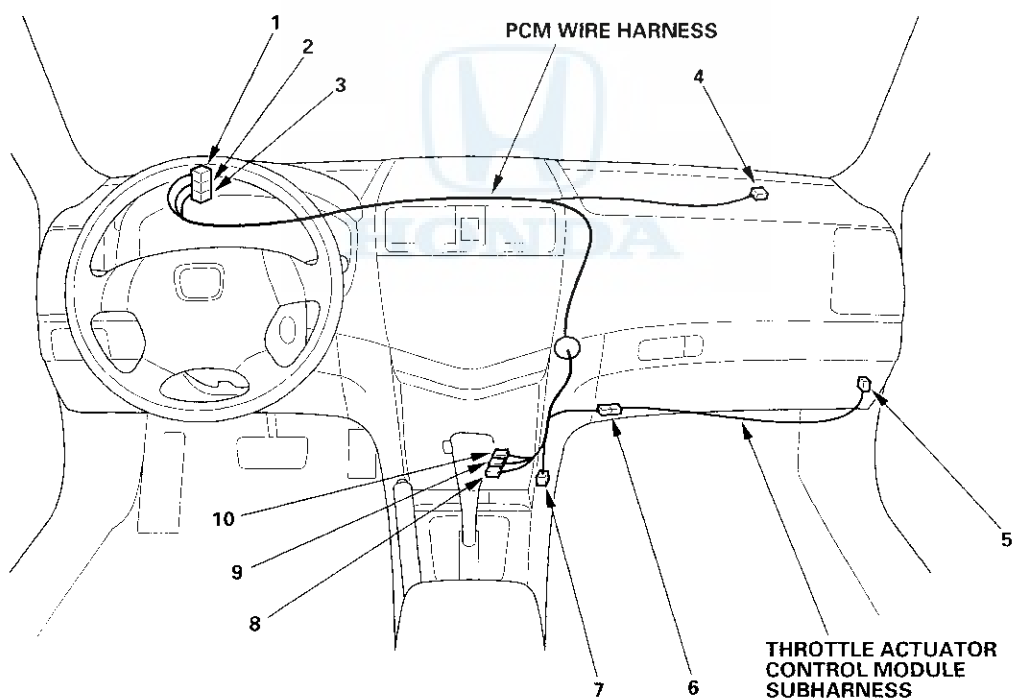
Connector to Harness Index (cont'd)

PCM Wire Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
APP sensor	4	6	Right side of engine compartment		
PCM connector A	10	31	Under middle of dash		
PCM connector B	8	24	Under middle of dash		
PCM connector C	9	22	Under middle of dash		
C201	2	33	Left side of engine compartment	Engine wire harness (see page 22-16)	
C202	1	33	Left side of engine compartment	Engine wire harness (see page 22-16)	
C203	3	23	Left side of engine compartment	Engine wire harness (see page 22-16)	
C251	7	13	Under middle of dash	Dashboard wire harness (see page 22-34)	
C281	6	13	Under right side of dash	Throttle actuator control module subharness	

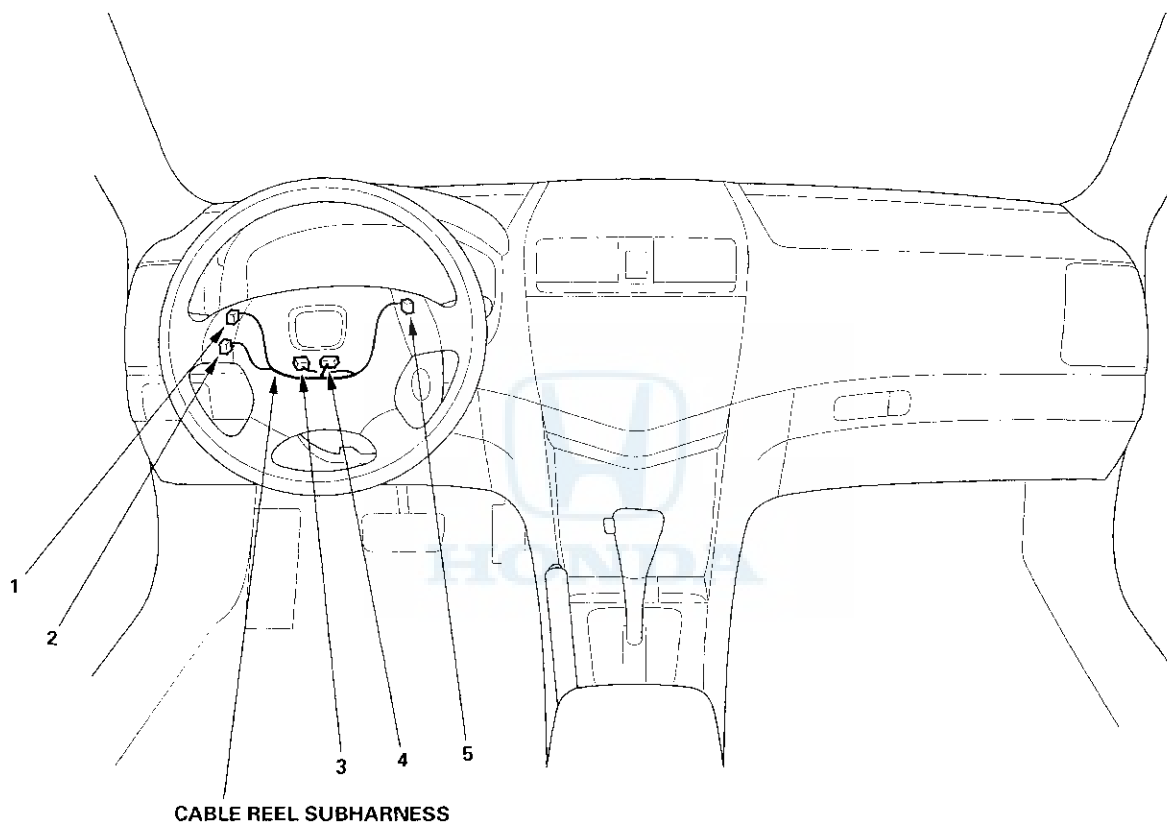
Throttle Actuator Control Module Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Throttle actuator control module	5	16	Under right side of dash		
C281	6	13	Under right side of dash	PCM wire harness	



Cable Reel Subharness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Cable reel connector C	4	13	In steering column cover	Cable reel connector B (see page 22-30)	
Cruise control combination switch	5		In steering column cover		
Horn switch	3	1	In steering column cover		
Radio remote switch	2		In steering column cover		
Voice control switch	1	5	In steering column cover		

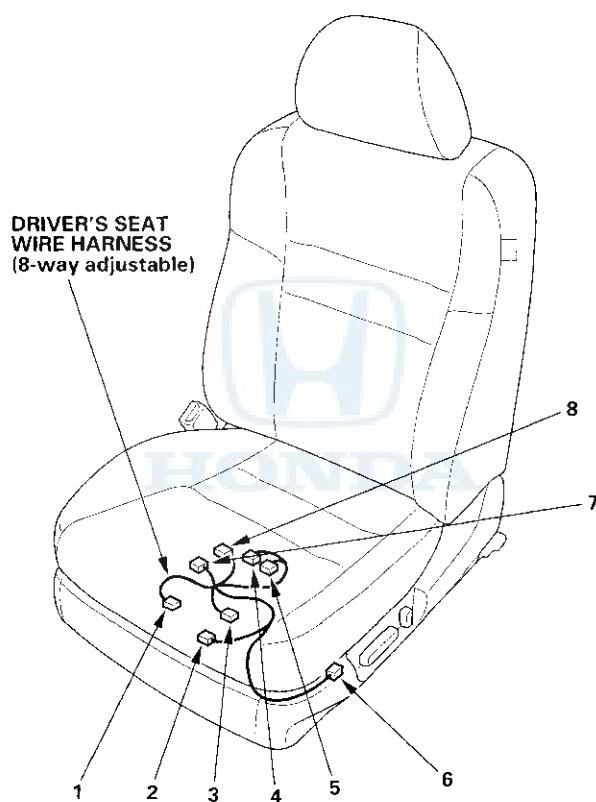


Connectors and Harnesses

Connector to Harness Index (cont'd)

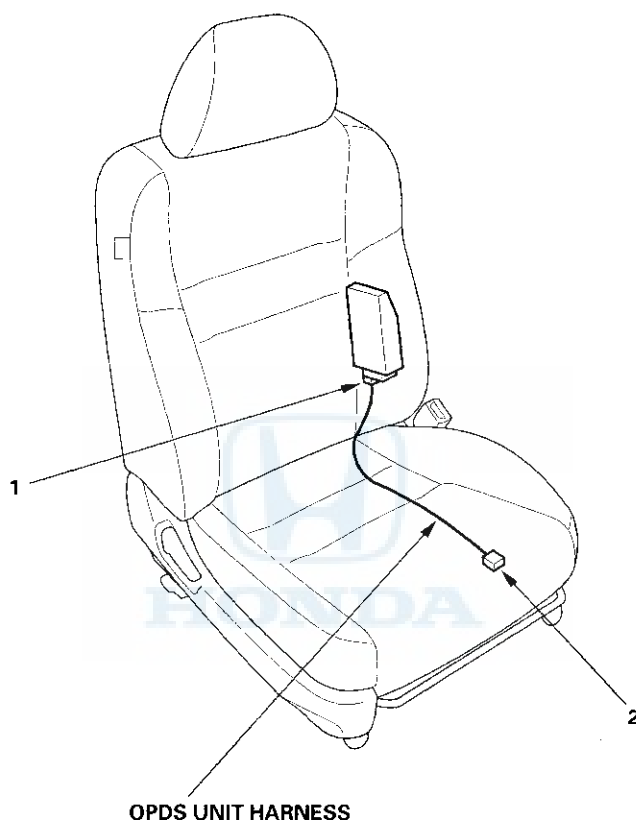
Driver's Seat Wire Harness (8-way adjustable)

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's power seat adjustment switch	6	12	Left side of driver's seat	Left floor wire harness (see page 22-38)	
Driver's seat belt switch	4	3	Under driver's seat		
Driver's seat heater	5	4	Under driver's seat		
Front up-down motor	7	2	Under driver's seat		
Rear up-down motor	1	2	Under driver's seat		
Recline motor	8	5	Under driver's seat		
Slide motor	2	2	Under driver's seat	Left floor wire harness (see page 22-38)	
C901	3	10	Under driver's seat		



OPDS Unit Harness

Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
OPDS unit C801	1	4	Front passenger's seat	Right floor wire harness (see page 22-40)	
	2	4	Under front passenger's seat		

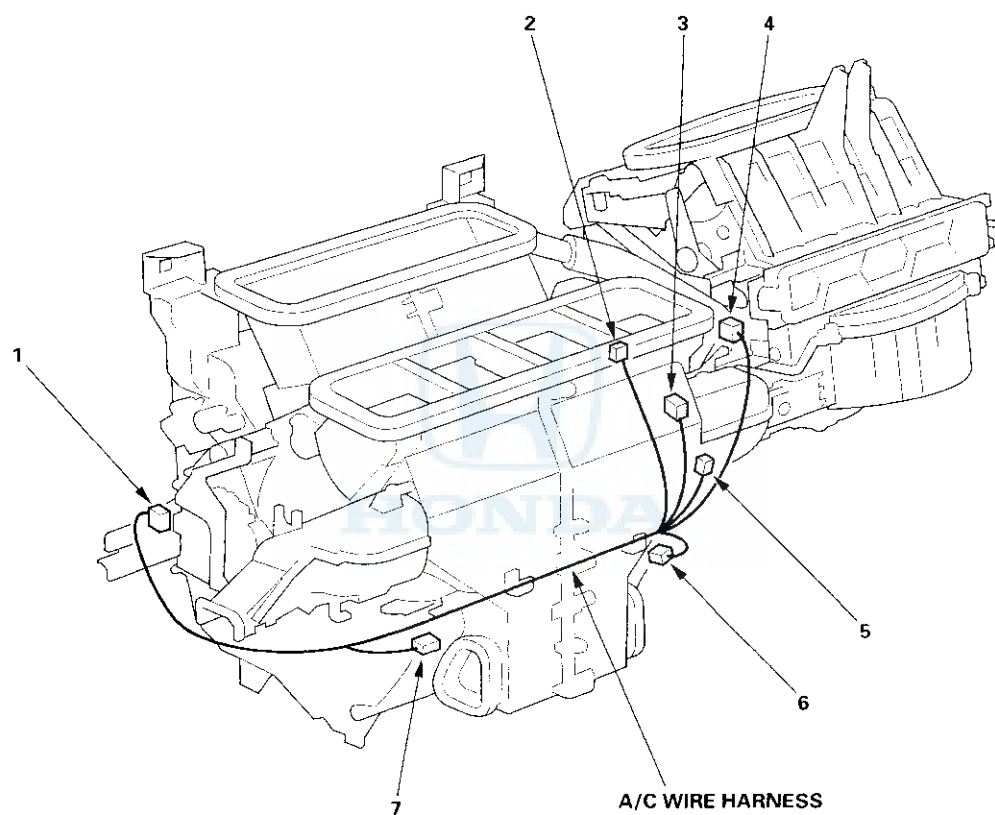


Connectors and Harnesses

Connector to Harness Index (cont'd)

A/C Wire Harness

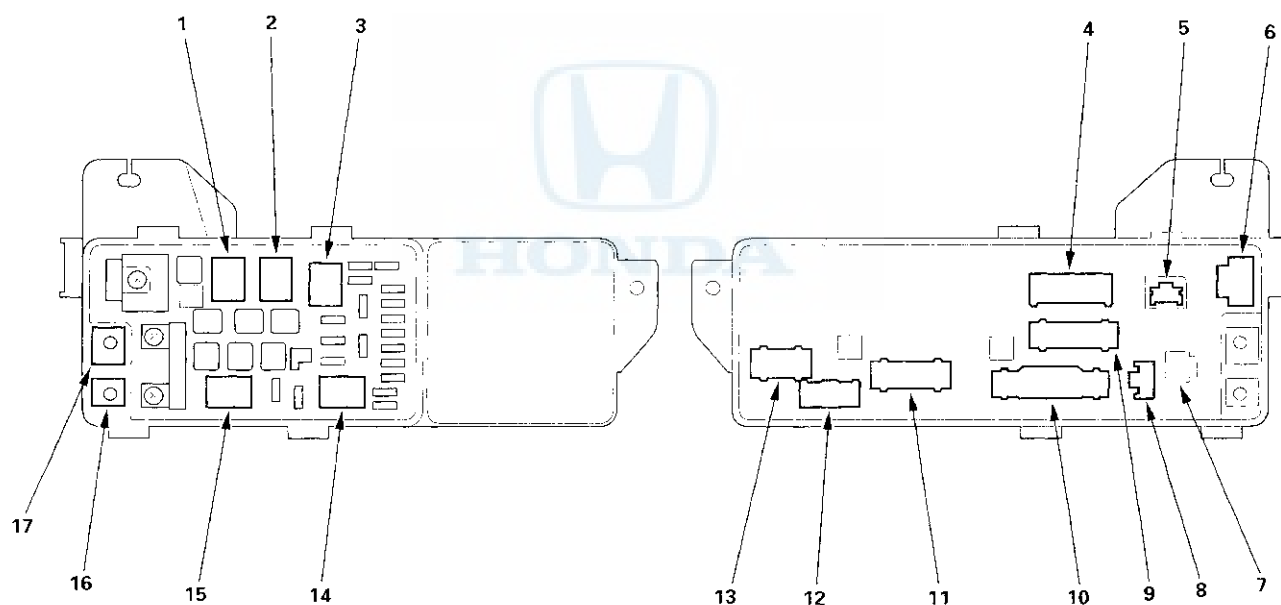
Connector or Terminal	Ref	Cavities	Location	Connects to	Notes
Driver's air mix control motor	1	7	Under middle of dash		
Evaporator temperature sensor	2	2	Under middle of dash		
Front passenger's air mix control motor	5	7	Under middle of dash		
Heater Core Sensor	6	2	Under middle of dash		
Mode control motor	3	7	Under middle of dash		
Recirculation control motor	4	7	Under middle of dash		
C851	7	21	Under middle of dash	Dashboard wire harness (see page 22-34)	



Connector to Fuse/Relay Box Index

Under-hood Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A/C compressor clutch relay	2	4	
A/C condenser fan relay	15	4	
A (ELD unit)	5	3	Engine compartment wire harness (see page 22-26)
B	7	1	Right floor wire harness (see page 22-40)
Blower motor relay	1	4	
C	8	2	Engine compartment wire harness (see page 22-26)
D	4	9	Engine compartment wire harness (see page 22-26)
E	9	16	Engine compartment wire harness (see page 22-26)
F	10	20	Front engine compartment wire harness (see page 22-22)
G	6	2	Engine compartment wire harness (see page 22-26)
H	11	14	Front engine compartment wire harness (see page 22-22)
I	13	10	Engine compartment wire harness (see page 22-26)
J	12	5	Engine compartment wire harness (see page 22-26)
Radiator fan relay	14	4	
Rear window defogger relay	3	4	
T101	16		Starter cable (see page 22-14)
T102	17		Right floor wire harness (see page 22-40)



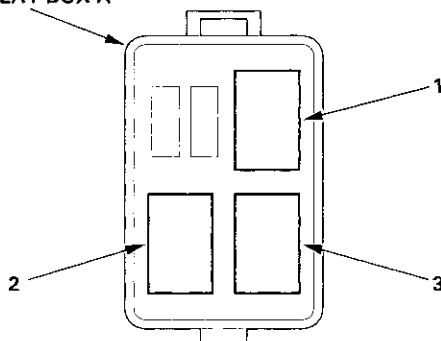
Fuse/Relay Boxes

Connector to Fuse/Relay Box Index (cont'd)

Auxiliary Under-hood Fuse/Relay Box A

Socket	Ref	Terminal	Connects to
Auxiliary electric water pump relay	2	4	Front engine compartment wire harness (see page 22-20)
Daytime running lights relay (Canada)	3	5	Front engine compartment wire harness (see page 22-20)
Fan control relay	1	5	Front engine compartment wire harness (see page 22-20)

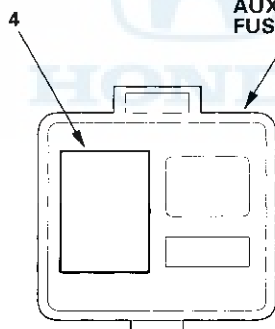
AUXILIARY UNDER-HOOD
FUSE/RELAY BOX A



Auxiliary Under-hood Fuse/Relay Box B

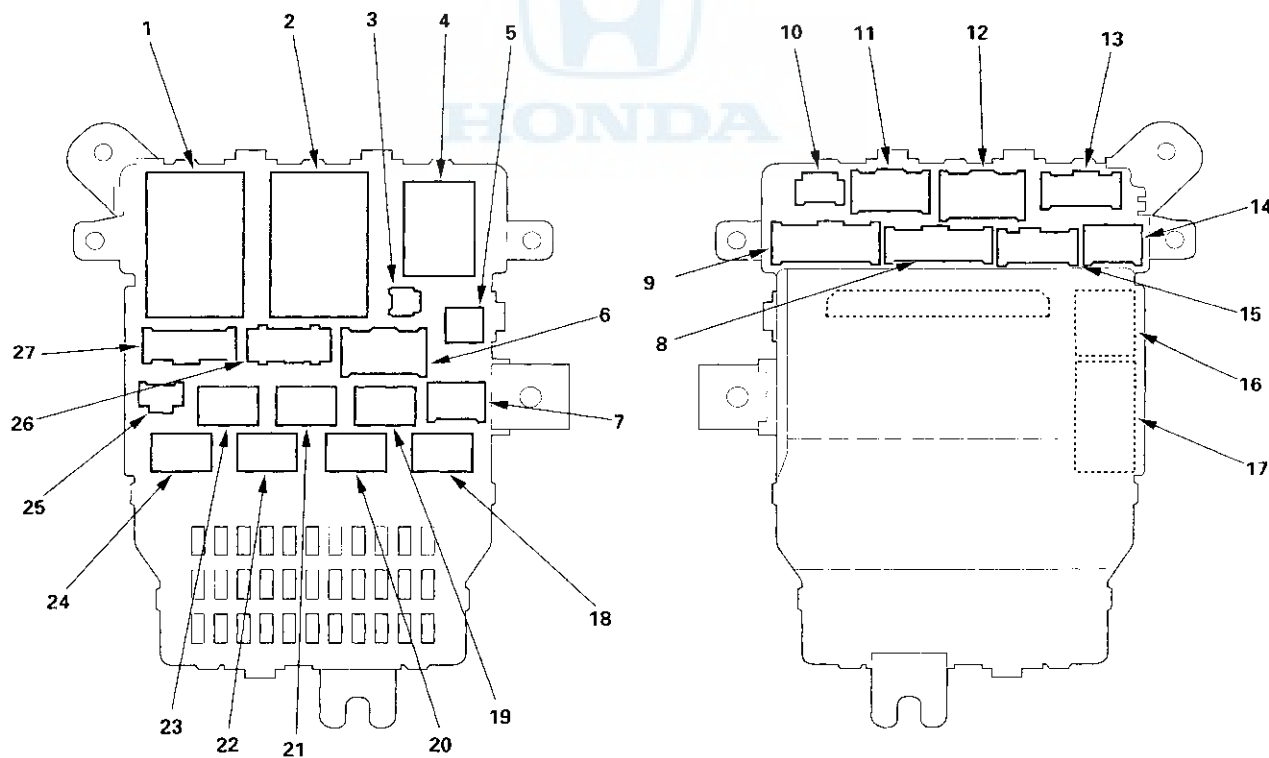
Socket	Ref	Terminal	Connects to
Auxiliary transmission fluid pump (ATFP) control unit relay	4	4	Starter cable (see page 22-14)

AUXILIARY UNDER-HOOD
FUSE/RELAY BOX B



Under-dash Fuse/Relay Box

Socket	Ref	Terminal	Connects to
A	6	6	Dashboard wire harness (see page 22-30)
Accessory power socket relay	19	4	
A/F relay	20	4	
B	12	6	Engine compartment wire harness (see page 22-26)
C	11	12	Engine compartment wire harness (see page 22-26)
D	13	17	Engine compartment wire harness (see page 22-26)
E	8	16	Left floor wire harness (see page 22-38)
F	9	14	Left floor wire harness (see page 22-38)
G	14	6	Not used
H	15	14	Left floor wire harness (see page 22-38)
I	10	5	Roof wire harness (see page 22-48)
Ignition coil relay	23	4	
J	27	21	Driver's door subharness (see page 22-50)
K	26	12	Driver's door subharness (see page 22-50)
M	25	3	MICS (MPCS) service check connector
N	2	45	Dashboard wire harness (see page 22-30)
P	17	30	Dashboard wire harness (see page 22-30)
PGM-FI main relay1	21	4	
PGM-FI main relay 2	24	4	
Power window relay	22	4	
Q	16	14	Dashboard wire harness (see page 22-30)
R	3	2	Dashboard wire harness (see page 22-30)
S	5	2	Dashboard wire harness (see page 22-30)
Starter cut relay	18	4	
T	7	6	Optional connector
Turn signal/hazard relay	4	6	
X	1	39	Dashboard wire harness (see page 22-30)

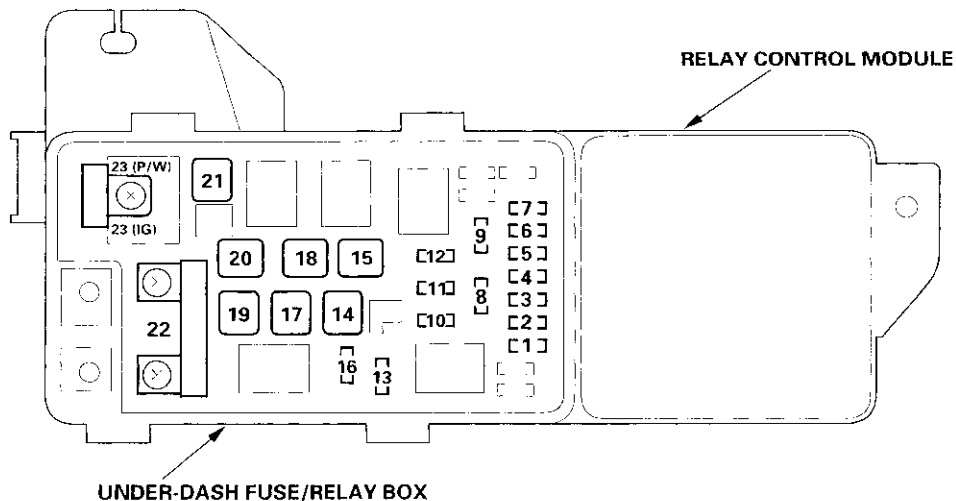


Power Distribution

Fuse to Components Index

Under-hood Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	10 A	RED/YEL	Left headlight (low beam)
2	30 A	Internal connection	Relay control module
3	10 A	WHT/RED	Left headlight (high beam)
4	15 A	RED/BLK	Audio-HVAC Display module light, Front side marker lights, Glove box light, Hazard warning switch light, License plate light, Moonroof switch light, Navigation unit, Relay control module, Seat heater switches light, Taillights, TCS OFF switch light
5	10 A	WHT/GRN	Right headlight (high beam)
6	10 A	RED/GRN	Right headlight (low beam)
7	7.5 A	Internal connection	Relay control module
8	15 A	WHT/GRN	CMP sensor B, CKP sensor, Data link connector (DLC), PCM (2 wires), IAC valve, Injectors, Mass air flow sensor, PGM-FI main relay 1, Throttle actuator control module relay
9	20 A	BLU/YEL	Condenser fan motor (via condenser fan relay)
10			Not used
11	30 A	BLU/BLK	Radiator fan motor (via radiator fan relay)
12	7.5 A	BLU/RED	A/C compressor clutch (via A/C compressor clutch relay)
13	20 A	RED	ABS/TCS modulator-control unit, Brake lights, PCM, High mount brake light, Ignition key light, Multiplex integrated control unit (MICU)
		Internal connection	Horns (via relay module), Relay control module
14	40 A	BLK/YEL	Rear window defogger (via rear window defogger relay)
15	40 A	YEL	No. 5 through No. 9 fuses in the under-dash fuse/relay box
		Internal connection	No. 7 fuse in the under-hood fuse/relay box
16	15 A	WHT/BLK	Turn signal/hazard relay
17	30 A	WHT/RED	ABS/TCS modulator-control unit (MR + B)
18	40 A	WHT	ABS/TCS modulator-control unit (+B FSR)
19	40 A	BLK/RED	No. 1 through No. 4 fuses in the under-dash fuse/relay box, No. 52 fuse in the auxiliary fuse holder A
20	40 A	BLU	No. 12 through No. 17 fuses in the under-dash fuse/relay box
21	40 A	WHT/BLU	Blower motor (via blower motor relay)
22	120 (BAT)		Battery, Power distribution
	70 A (EPS)	WHT	EPS control unit
23	50 A (IG)	WHT	Ignition switch (BAT)
	50 A (P/W)	WHT/BLU	Power window relay, No. 24 through No. 28 fuses in the under-dash fuse/relay box





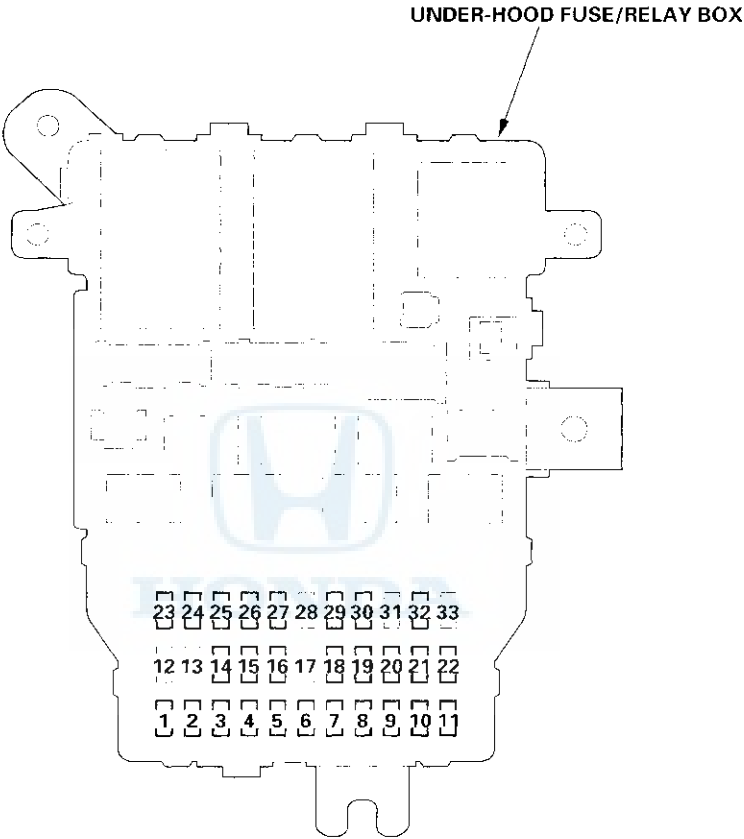
Under-dash Fuse/Relay Box

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
1	15 A	WHT/GRN	Throttle actuator control module
2	15 A	BLK/WHT	Ignition coil (IG) relay
3	10 A	RED	Ignition coils (via Ignition coil relay)
4	15 A	BLU/WHT	Daytime running lights relay (Canada)
5	10 A	PNK	Air/fuel ratio sensor 1, 2, Secondary heated oxygen sensor 1, 2
6	7.5 A	WHT	Audio unit, XM receiver
7	10 A	WHT	Ambient light, Ceiling light, Courtesy lights, Map lights, Trunk light, Vanity mirror lights, Electric water pump
		PNK	Combination switch control unit, Gauge control module, Immobilizer control unit-receiver, Navigation display unit, Navigation unit
		Internal connection	Door multiplex control unit
8	20 A	Internal connection	Multiplex integrated control unit (MICU)
9	20 A	WHT/RED	Multiplex integrated control unit (MICU)
10	7.5 A	WHT	Front accessory power socket
11	30 A	GRN	SRS unit, OPDS unit
12			Windshield wiper motor
13			Not used
14	20 A	WHT/BLU	Not used
15	20 A	RED/BLK	Driver's power seat slide motor and front up-down motors
16	20 A	WHT/RED	Seat heaters and seat heater switches indicator light
17			Driver's power seat recline motor and rear up-down motor
18	15 A	BLK/RED	Not used
19	15 A	BLK/YEL	ABS/TCS modulator control unit ACM unit, ACM relay, A/F sensor, Alternator, ELD, Engine mount solenoid valve, Auxiliary transmission fluid pump (ATFP) control unit, EVAP canister purge valve, Idle stop switch, Secondary heated oxygen sensor, PCM, MCM
20	7.5 A	YEL	PCM, Immobilizer control unit-receiver
21	7.5 A	YEL/GRN	Fuel pump (via fuel pump relay)
22	10 A	WHT/RED	Windshield washer motor
23	7.5 A	YEL	Combination switch control unit, Door multiplex control unit, EPS control unit, Front passenger's power window switch indicator, Gauge control module, Multiplex integrated control unit (MICU), Navigation unit, Shift lock solenoid
24	20 A	YEL/RED	SRS unit
25	20 A	YEL/BLU	Radiator fan control module
26	20 A	GRN/BLK	PCM (via A/F sensor relay)
27	20 A	GRN/WHT	Left rear power window motor
28			Right rear power window motor
29	7.5 A	BRN	Front passenger's power window motor
30	7.5 A	YEL	Driver's power window motor
31			Not used
32	7.5 A	YEL	A/C compressor driver
33			A/C compressor clutch relay, Blower motor relay, Climate control unit, Condenser fan relay, Heater control panel, Radiator fan relay, Recirculation control motor, Seat heater relay
		BLK/YEL	Power mirror defoggers (Canada), Power mirror actuators
			Not used
			Accessory power socket relay, Active noise control unit, Audio unit, Navigation display unit, Navigation unit
			Not used

(cont'd)

Power Distribution

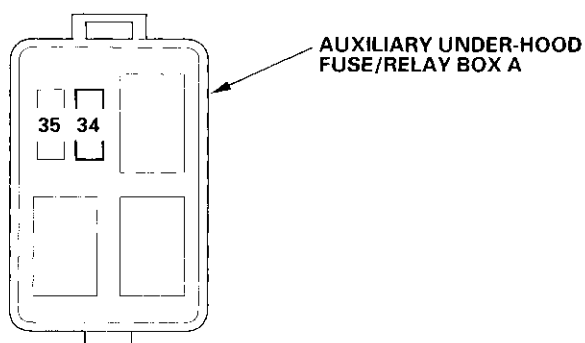
Fuse to Components Index (cont'd)





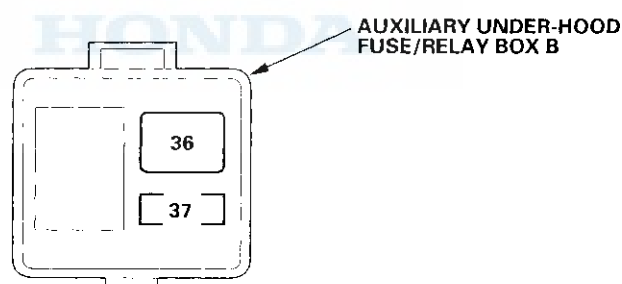
Auxiliary Under-Hood Fuse/Relay Box A

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
34	7.5 A	WHT	MCM, MCM relay 1
35	---	---	Not used



Auxiliary Under-Hood Fuse/Relay Box B

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
36	40 A	RED	No. 34 fuse in the auxiliary under-hood fuse/relay box, No. 53 and No. 54 fuses in the auxiliary fuse holder B
37	30 A	RED/BLU	Auxiliary transmission fluid pump (ATFP) control unit relay



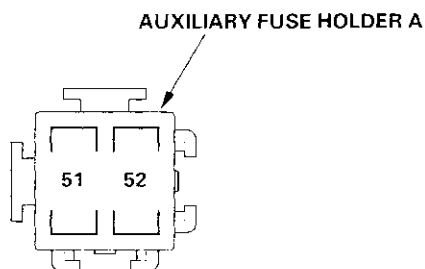
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Power Distribution

Fuse to Components Index (cont'd)

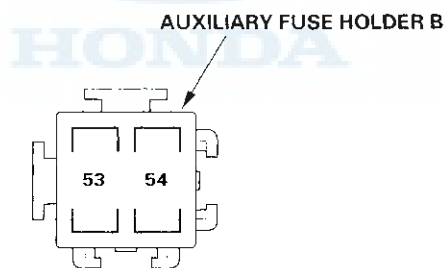
Auxiliary Fuse Holder A

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
51	7.5 A	LT BLU	PCM
52	20 A	WHT/BLK	Rear accessory power socket



Auxiliary Fuse Holder B

Fuse Number	Amps	Wire Color	Component(s) or Circuit(s) Protected
53	10 A	BLU	MCM relay 2
54	15 A	WHT	ACM control relay



Ground Distribution



Ground to Components Index

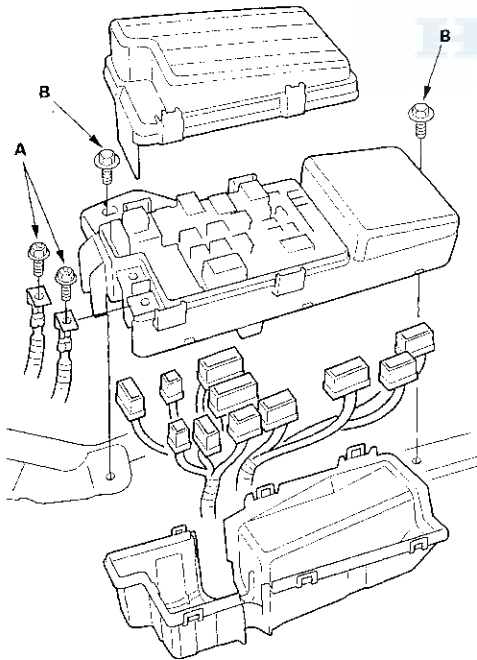
Ground	Component or circuit grounded
G1	Battery negative terminal
G2	Engine mount bracket
G3	Transmission housing
G101 and G102	PCM (PG1 and PG2 are BLK; LG1 and LG2 are BRN/YEL), CKP sensor A, CKP sensor B, CMP sensor, Throttle actuator control module EGR valve, Ignition coils, Immobilizer control unit-receiver, VTEC oil pressure switch, Shift control solenoid A, Shift control solenoid B, Shift control solenoid C, Lock-up control solenoid valve
	Shielding between the PCM and Knock sensor, PCM and air fuel ratio sensors, PCM and secondary heated oxygen sensors, Throttle actuator control module have BRN/YEL wire
G201	Hood switch, Right front turn signal/side marker lights, Right headlights
G202	Brake fluid level switch, Washer fluid level switch (Canada), Engine mount control unit, Water pump
G203	ABS-TCS modulator-control unit
G301	Daytime running lights relay (Canada), Fan control relay, Left headlights, Left front turn signal/side marker lights, Radiator fan motor
G302	Blower motor relay, ELD unit, Relay control module, Windshield wiper motor, ACM unit, ATRP driver
G501	Front accessory power socket relay, Cable reel, Data link connector (DLC), Driver's door lock knob switch, Driver's door key cylinder switch, Gauge control module, Ignition key switch, Key interlock solenoid, Power window master switch, Relay control module, TCS OFF switch, Vanity mirror lights (G501 connects to G601 via under-dash fuse-relay box), Immobilizer control unit-receiver, PCM
G502	Multiplex integrated control unit (MICU)
G503	Climate control unit, Data link connector (DLC), Front passenger's door lock knob switch, Front passenger's switch, Gauge control module, Glove box light, Memory erase signal (MES) connector, Navigation display unit, Audio-HVAC subdisplay unit, Power transistor, Rear accessory power socket relay, Right power mirror defogger (Canada), Shift lock solenoid, Active noise control unit, EPS control unit
	Shielding between the ABS/TCS modulator-control unit, PCM, Gauge control module and Navigation unit have BRN wire
G504	Audio unit
G505	SRS unit
G506	Driver's seat heater switch, Front passenger's seat heater switch, Seat heater relay, EPS control unit, Navigation unit, Front accessory power socket, Rear accessory power socket
G601	Driver's power seat switch, Driver's seat belt switch, Driver's seat heater, Door multiplex control unit, Left power mirror defogger (Canada), Left rear door lock knob switch, Left rear power window switch, Multiplex integrated control unit (MICU), MICU service check connector, Power mirror switch, Turn signal/hazard relay (G601 connects to G501 via under-dash fuse/relay box), Active noise control microphone
G602	Fuel pump
G603	Rear window defogger
G651	A/C compressor driver, MCM, EPS control unit, OPDS unit
G701	Back-up lights, Brake lights, High mount brake light, License plate light, Taillights, Turn signal lights, Trunk latch switch, Trunk key cylinder switch

Under-hood Fuse/Relay Box

Removal and Installation

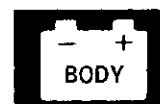
Removal

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's audio presets.
2. Connect the HDS to the data link connector (DLC), and ground the SCS.
3. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least 3 minutes.
4. Remove the under-hood multi-relay box (Canada) from the under-hood fuse/relay box.
5. Remove the screws (A) from the alternator and battery cable terminals.
6. Remove the two mounting bolts (B) from the under-hood fuse/relay box.
7. Remove the under cover from the under-hood fuse/relay box.
8. Disconnect the connectors from the under-hood fuse/relay box.



Installation

1. Connect the connectors to the under-hood fuse/relay box, then install the under-hood fuse/relay box in the reverse order of removal.
2. Install the removed parts in the reverse order of removal.
3. Connect the both positive cable and negative cable to the battery.
4. Do the PCM idle learn procedure (see page 11-340).
5. Reset the power window control unit (see page 22-200).
6. Enter the anti-theft codes for the radio and navigation system, then enter the customer's audio station presets.
7. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.
8. Confirm that all systems work properly.



DTC Troubleshooting

B1055: Relay Control Module lost communication with MICU

B1056: Relay Control Module lost communication with MICU

B1057: Relay Control Module lost communication with MICU (door switch message)

B1058: Relay Control Module lost communication with Door Multiplex Control Unit (door lock switch message)

B1059: Relay Control Module lost communication with Door Multiplex Control Unit (panic message)

B1060: Relay Control Module lost communication with Gauge Control Module (VSP/NE message)

B1061: Relay Control Module lost communication with Gauge Control Module (A/T message)

B1062: Relay Control Module lost communication with Combination Switch Control Unit (headlight switch message)

B1063: Relay Control Module lost communication with Combination Switch Control Unit (wiper switch message)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch OFF then ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1055, B1056, B1057, B1058, B1059, B1060, B1061, B1062 and/or B1063 indicated?

YES—Go to step 4.

NO—Intermittent failure, the B-CAN communication line is OK at this time. ■

4. Check for DTCs other than those listed above.

Are any other DTCs present?

YES—Go to step 5.

NO—Perform Relay Control Module Input Test (see page 22-123).

5. Find the chart that contains at least one retrieved DTC in column A and one retrieved DTC in column B. Perform the input test for the ECU listed in that chart.

If no DTC from column B is found, then continue to Relay Control Module input test. ■

Chart 1

A	B	ECU
B1055	B1157	MICU (see page 22-116)
B1056	B1159	
B1057	B1255	

Chart 2

A	B	ECU
B1058	B1006	Door Multiplex Control Unit (see page 22-120)
B1059	B1010	
	B1160	

Chart 3

A	B	ECU
B1060	B1008 B1206	Gauge Control Module (see page 22-119)
B1061	B1205 B1207	

Chart 4

A	B	ECU
B1062	B1007 B1156	Combination Switch Control Unit (see page 22-122)
B1063	B1109	
	B1155	

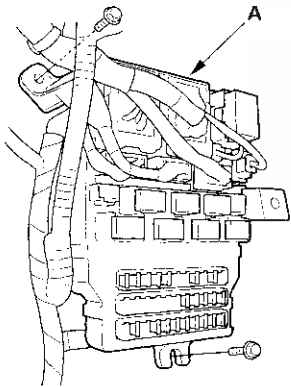
Under-dash Fuse/Relay Box

Removal and Installation

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

Removal

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the customer's audio presets.
2. Connect the HDS to the data link connector (DLC), and ground the SCS.
3. Disconnect the battery negative cable, then disconnect the positive cable, and wait at least 3 minutes.
4. Remove the left front door sill trim and left kick panel (see page 20-45).
5. Disconnect the connectors from the fuse side of the under-dash fuse/relay box (A).



6. Remove the two mounting bolts and pull the fuse/relay box away from the body.
7. Disconnect the connectors and remove the under-dash fuse/relay box.

NOTE: Some SRS harness connectors are spring-loaded lock type (see page 24-18).

8. Carefully remove the relays. Do not use pliers.

Installation

1. Install the removed relays.
2. Connect the connectors to the under-dash fuse/relay box, then install the under-dash fuse/relay box in the reverse order of removal.
3. Install the removed parts in the reverse order of removal.
4. Connect both the positive cable and negative cable to the battery.
5. Reset the power window control unit (see page 22-200).
6. Enter the anti-theft codes for the radio and navigation system, then enter the customer's audio station presets.
7. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.
8. Confirm that all systems work properly.

12 Volt Battery



12 Volt Battery Test

⚠ WARNING

A battery can explode if you do not follow the proper procedure, causing serious injury to anyone nearby. Follow all procedures carefully and keep sparks and open flames away from the battery.

Use either a JCI or Bear ARBST tester, and follow the manufacturer's procedures. If you don't have one of these computerized testers, follow this conventional test procedure:

1. Be sure the temperature of the electrolyte is between 70 °F (21 °C) and 100 °F (38 °C).
2. Inspect the battery case for cracks or leaks.
 - If the case is damaged, replace the battery. ■
 - If the case looks OK, go to step 3.
3. Check the indicator EYE.
 - If the EYE indicates the battery is charged, go to step 4.
 - If the EYE indicates a low charge, go to step 7.
4. Apply a 300 A load for 15 seconds to remove the surface charge.
5. Wait 15 seconds, then apply a test load of 280 A for 15 seconds.
6. Record battery voltage.
 - If voltage is above 9.6 V, the battery is OK. ■
 - If voltage is below 9.6 V, go to step 7.
7. Charge the battery on High (40 A) until the EYE shows the battery is charged, plus an additional 30 minutes. If the battery charge is very low, it may be necessary to bypass the charger's polarity protection circuitry.
 - If the EYE indicates the battery is charged within three hours, the battery is OK. ■
 - If the EYE indicates the battery is not charged within three hours, replace the battery. ■

Relays

Power Relay Test

Use this chart to identify the type of relay, then do the test listed for it.

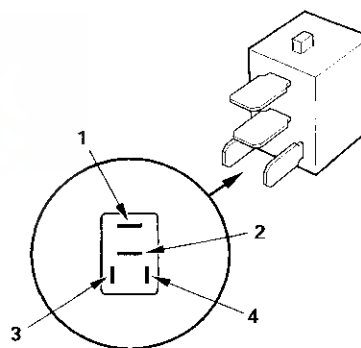
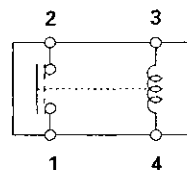
NOTE: For the turn signal/hazard relay input test (see page 22-182).

Relay	Test
ACM control relay	Normally-open type
Auxiliary transmission fluid pump (ATFP) control unit relay	
MCM relay 1, 2	
Rear accessory power socket relay	
Auxiliary electric water pump relay	
A/C compressor clutch relay	
Accessory power socket relay	
Blower motor relay	
A/C condenser fan relay	
Ignition coil relay	
Air fuel ratio sensor relay	
PGM-FI main relay 1, 2	
Power window relay	
Radiator fan relay	
Rear window defogger relay	
Starter cut relay	
Daytime running lights relay (Canada)	Five-terminal type
Seat heater relay	
Fan control relay	

Normally-open type

Check for continuity between the terminals.

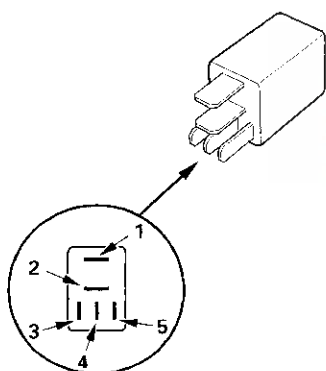
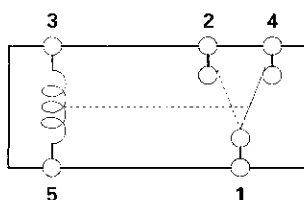
- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 4 terminals.
- There should be no continuity between the No. 1 and No. 2 terminals when power is disconnected.



Five-terminal type B

Check for continuity between the terminals.

- There should be continuity between the No. 1 and No. 2 terminals when power and ground are connected to the No. 3 and No. 5 terminals.
- There should be continuity between the No. 1 and No. 4 terminals when power is disconnected.

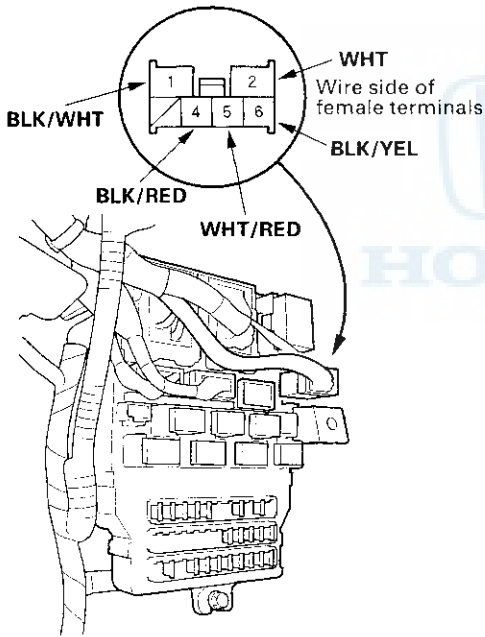


Ignition Switch

Test

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

1. Make sure you have the anti-theft code for the radio and the navigation system, then write down the customer's audio presets.
2. Connect the HDS to the data link connector (DLC), and ground the SCS.
3. Disconnect the battery negative cable.
4. Remove the left front door sill trim and left kick panel (see page 20-45).
5. Disconnect the 6P connector from the under-dash fuse/relay box.

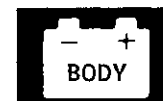


6. Check for continuity between the terminals in each switch position according to the table.

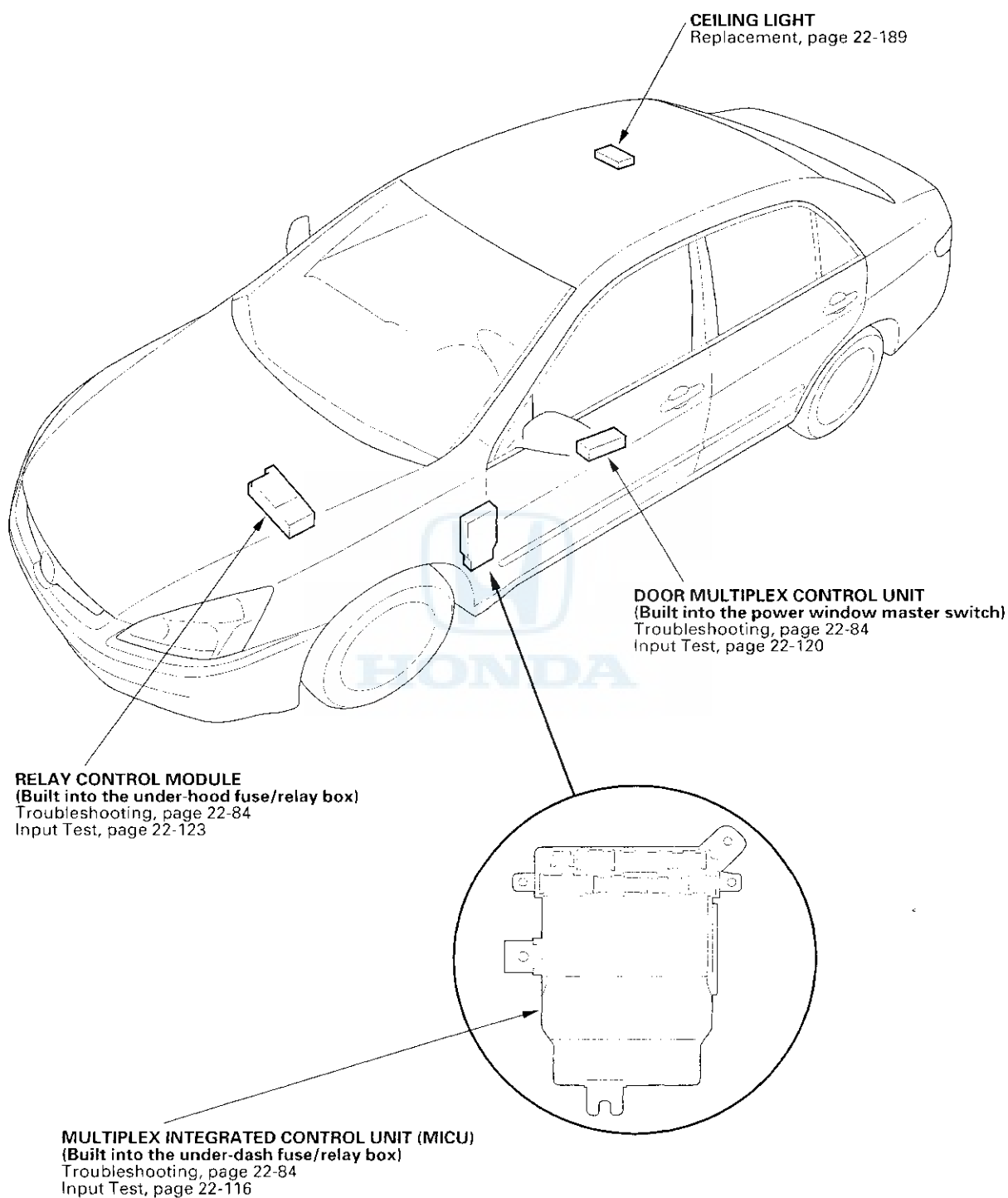
Terminal Position	WHT/ RED (ACC)	WHT (BAT)	BLK/ YEL (IG1)	BLK/ RED (IG2)	BLK/ WHT (ST)
O (LOCK)					
I (ACC)	○	○			
II (ON)	○	○	○	○	
III (START)		○	○	○	○

7. If the continuity checks do not agree with the table, replace the steering lock.
8. After reconnecting the battery, enter the anti-theft code for the radio and the navigation system, then enter the customer's audio presets.
9. If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or neutral) until the BAT displays at least three segments.
10. Do the power window control unit reset procedure (see page 22-200).

Multiplex Integrated Control System (MICS)



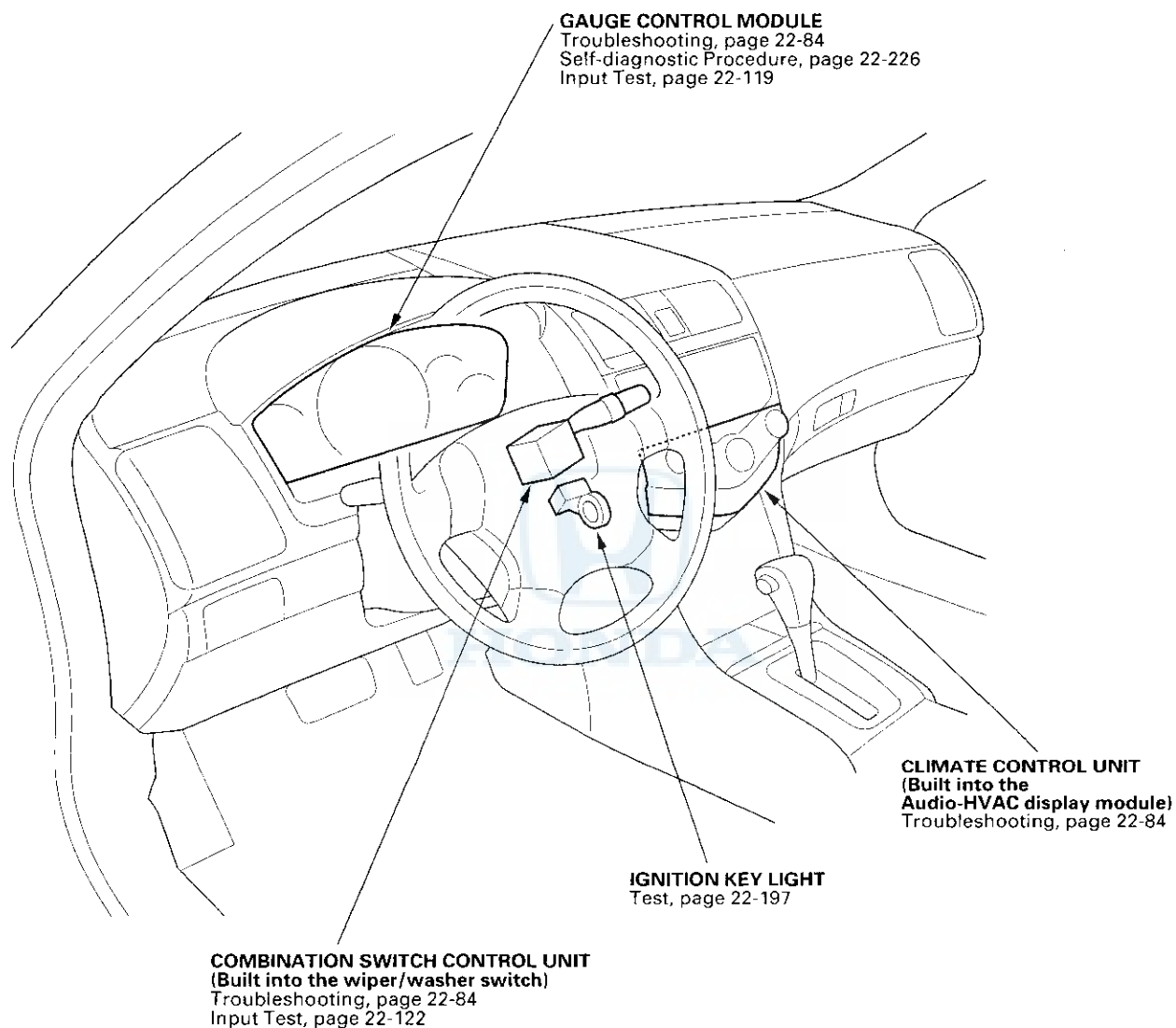
Component Location Index



(cont'd)

Multiplex Integrated Control System (MICS)

Component Location Index (cont'd)



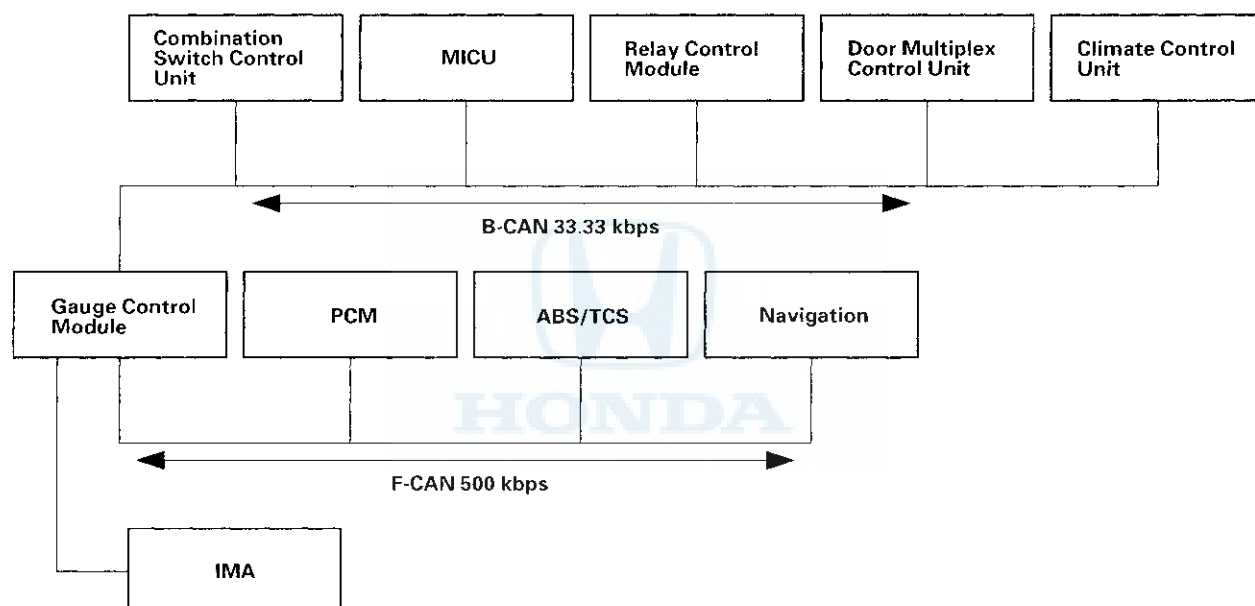


System Description

Body Controller Area Network (B-CAN) and Fast Controller Area Network (F-CAN)

Fast controller Area Network (F-CAN) and Body Controller Area Network (B-CAN) share information between multiple Electronic Control Units (ECUs). B-CAN communication moves at a slower speed for convenience related items, and for other functions. F-CAN information moves at a faster speed for "real time" functions such as fuel and emissions data. To allow both systems to share information, the Gauge Control Module translates information from B-CAN to F-CAN and from F-CAN to B-CAN.

The ECUs on the B-CAN and F-CAN transmit and receive information in the form of structured messages that may be received by several different ECUs on the network at one time. These message are transmitted and received across a communication circuit that consists of a single wire that is shared by all the ECUs on the circuit. Since messages on the F-CAN network are typically of higher importance, a second wire is used for communication circuit integrity monitoring. A backup circuit is also added to the headlight and wiper circuits on the B-CAN network in the event of a network wire or ECU failure that would effect the operation of the system.

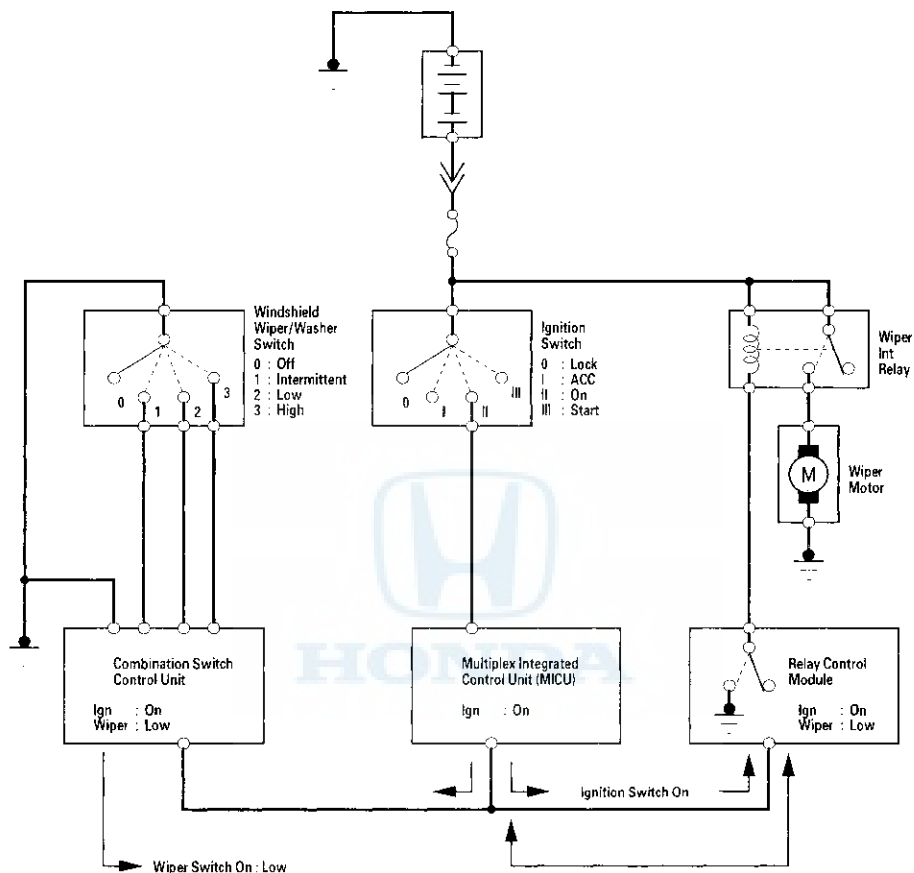


(cont'd)

Multiplex Integrated Control System (MICS)

System Description (cont'd)

Messages are transmitted by an ECU (that monitors an input) over the communication circuit. ECUs that use the message (information related to that input) are the receivers. For example, the Combination Switch Control Unit monitors the wiper switch. When the wiper switch is placed in the low speed position, the Combination Switch Control Unit transmits that message on the communication circuit. The Relay Control Module receives the message and turns on the wipers by providing a ground for the relay.





“Connected” ECUs

Several ECUs are connected to each of the two networks. The Gauge Control Module is part of both networks since it is the “Gateway” between them. Below is a list of ECUs and the network they are connected to.

B-CAN ECUs

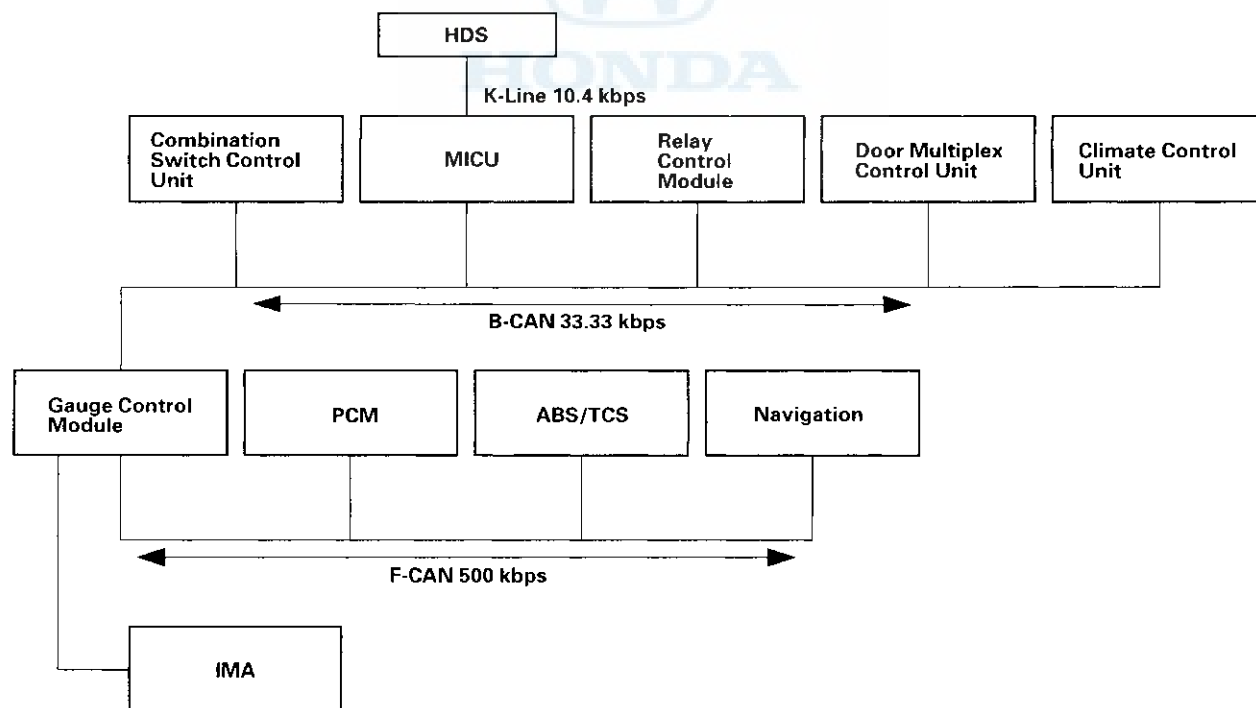
- Gauge Control Module
- Relay Control Module
- Multiplex Integrated Control Unit (MICU)
- Door Multiplex Control Unit
- Combination Switch Control Unit
- Climate Control Unit
- Optional Security
- Optional Unit (B-CAN option)

F-CAN ECUs

- Gauge Control Module
- PCM
- Navigation Control Unit
- ABS/TCS (Traction Control System)

IMA CAN

- MCM
- A/C compressor driver



(cont'd)

Multiplex Integrated Control System (MICS)

System Description (cont'd)

Network “Loss of Communication” Error Checking

The B-CAN and F-CAN systems send messages to each other to check the integrity of the network communication circuit. They do this by sending a specific digital message out after an event. For example, turning the ignition switch to ON. After the switch to ON, all the ECUs on the communication circuit expect to receive a message from other specific units within a specified amount of time. If the message is not received, the ECU will transmit a DTC reporting that the control units did not communicate.

Example of communication circuit test

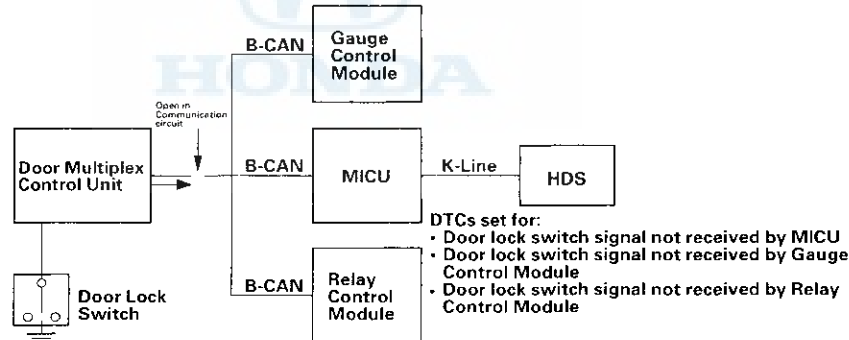
Normal circuit

1. Ignition switch turned ON.
2. The door multiplex control unit transmits a door switch signal.
3. The multiplex integrated control unit (MICU), relay control module and gauge control module receive the door lock switch signal.
4. Communication circuit test is passed.

Since the door lock switch message was received by all the ECUs expecting to receive a signal, the communication circuit between those units is OK. There are multiple signal sent and received by each ECU during this time to insure that the communication circuit is intact.

Failed circuit

5. Ignition switch is turned ON.
6. The door multiplex control unit transmits a door switch signal.
7. The multiplex integrated control unit (MICU), relay control module and gauge control module expect to receive the door lock switch signal, but since there is a break in the communication circuits, it is not received.
8. Each ECU that expects to receive the door lock switch signal from the door multiplex control unit will transmit DTCs for the signal that it did not receive.

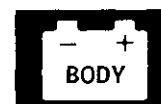


Since there is a break in the communication circuit, the door lock switch signal could not be received by the gauge control module, multiplex integrated control unit (MICU) or the relay control module. Each of these units will set “loss of communication” error codes for the signal(s) they did not receive. There may be multiple communication DTCs if the unit that has become disconnected from the network would normally transmit multiple messages during the communication line test. For example, the door multiplex control unit sends keyless panic signal and door lock switch signal during the communication circuit test.

Diagnostic Trouble Codes

There are three DTC types used by the CAN networks.

Internal error DTCs	The ECUs run internal checks. If one finds that there is an internal ECU problem, it will set an internal error DTC. Confirm that the battery and charging system are OK. If so, this indicates that the ECU needs to be replaced.
Loss of communication DTCs	Loss of communication DTCs (and Bus-off DTCs) are set when there is a problem with the communication between ECUs. This could be in the connections, the wiring, or the ECU (as called out in the DTC Troubleshooting).
Signal error DTCs	The ECUs can run diagnostics on some input circuits to determine if that circuits is functioning properly (no opens or shorts). If a circuit fails the diagnostic test, a DTC will set (NOTE: Not all input circuits are tested for errors).



Troubleshooting the CAN circuit related problems

Using the HDS (Preferred method)

1. Go to B-CAN System Diagnosis Test Mode A to check for "Connected units" and DTCs (see page 22-84).
2. If no DTCs are retrieved, go to B-CAN System Diagnosis Test Mode C or D.

Without the HDS

(Should be used only if HDS is unavailable)

3. Check for communication circuit problems using B-CAN System Diagnosis Test Mode 1 (see page 22-84).
4. Check for DTCs while in Mode 1 (see page 22-89).
5. Sort, and then troubleshoot the DTCs in the order below. Refer to the DTC troubleshooting for DTC descriptions.
 - 1st. Internal error and voltage failure DTCs
 - 2nd. Loss of communication DTCs
 - 3rd. Signal error DTCs
6. If no DTCs are retrieved, use B-CAN System Diagnosis Test Mode 2 to check all inputs related to failure (see page 22-84).

Loss of Communication DTC cross-reference chart

When an ECU is unable to communicate with the other ECUs on the circuit, the other units will set loss of communication DTCs. Use this chart to find the control unit that is not communicating.

7. Find the Transmitting Unit that is in the same row as all of the loss of communication DTCs retrieved.
8. Perform the input test for the transmitting unit.

Transmitting Unit	Message	Receiving Unit/Loss of Communication DTC					
		MICU	Relay Control Module	Door Multiplex Control unit	Gauge Control Module	Combination Switch Control Unit	Climate Control Unit
MICU	Alarm		B1056				
	MICU		B1055	RX	B1157	B1255	
	Door Switch		B1057	RX	B1159		
Relay Control Module	Relay Control Module	B1005			B1158		
Door Multiplex Control unit	Panic	B1010	B1059				
	Door Lock Switch	B1006	B1058		B1160		
Gauge Control Module	VSP/NE		B1060				B1205
	A/T	B1008	B1061				
	ENGTEMP						B1206
	ILLUMI						B1207
Combination Switch Control Unit	Headlight Switch	B1007	B1062		B1155		
	Wiper Switch	B1009	B1063		B1156		
PCM	Engine				B1168		
	A/T				B1169		

RX: Receiving unit does not set a loss of communication DTC.

(cont'd)

Multiplex Integrated Control System (MICS)

System Description (cont'd)

B-CAN System Switch Device Index

Combination Switch Control Unit	
Input signal	Output signal/device
Dimmer switch, Lighting switch, Passing switch, Turn signal switch, Wiper/washer switch, Intermittent dwell time controller.	None

Relay Control Module	
Input signal	Output signal/Device
A/C pressure switch, Climate control switch, Daytime running lights control (Canada), Hood switch, Horn switch, Windshield wiper motor.	Daytime running lights control (Canada), Headlight, Parking light, Horn, Windshield washer motor, Windshield wiper motor.

Door Multiplex Control Unit	
Input signal	Output signal
Driver's door key cylinder switch (lock/unlock), Driver's door lock knob switch (lock/unlock), Driver's door lock switch, Driver's power window switches (up, down, auto up, auto down), Passenger's power window switches (up, down), Driver's power window motor pulser.	Driver's power window motor, Passenger's power window switches, Power window relay control.

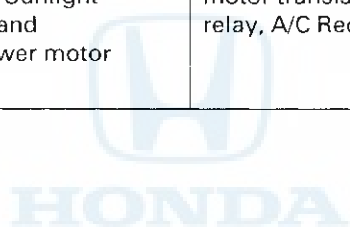
Multiplex Integrated Control Unit	
Input signal	Output signal/Device
Audio-HVAC display module security ground, Brake pedal position switch, Door switches, Ignition key cylinder switch, Park pin switch, Passenger's door lock knob switches (unlock), Passenger's door lock switch, Power window motor, Seat belt switch (unbuckled), Transmission range switch (P, R position), Trunk latch switch.	Door lock actuators, Hazard warning lights, Interior lights, Ignition key light, Key interlock solenoid, Turn signal lights, Trunk lid opener solenoid, Door courtesy lights.



B-CAN System Switch Device Index

Gauge Control Module	
Input signal	Output signal/Device
Dash lights brightness controller, Daytime running lights signal (Canada), Engine oil pressure switch signal, Washer fluid level switch signal (Canada), Parking brake switch, Brake fluid level switch, fuel level sensor, Select/Reset switch, Cruise control combination switch (set, cancel, resume, master).	Dash lights, Fuel gauge, Gauge lights, Indicator, LEDs, Speedometer, Tachometer, ECT gauge, Warning buzzer, Odometer/Outside temperature display.

Climate Control Unit	
Input signal	Output signal/Device
Evaporator temperature sensor, In-car temperature sensor, Outside air temperature sensor, Sunlight sensor Air mix motor position (Driver's and Passenger's), Mode motor position, Blower motor control feedback.	Air mix control motors (Driver's/Passenger's), Blower motor transistor, Mode control motor, Rear defogger relay, A/C Request, Recirculation motor.



Multiplex Integrated Control System (MICS)

Troubleshooting - B-CAN System Diagnosis Test Mode A

NOTE:

- Check for engine DTCs (U-codes) with the HDS. If any U-codes are detected, find and repair the cause of code(s) before continuing with the diagnosis test.
- Perform this diagnosis first if the symptom is related to the B-CAN system.
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Make sure the system is related to B-CAN.

- Gauge control module
- Exterior lights
- Turn signals
- Entry light control
- Interior lights
- Safety indicators
- Rear window defogger
- Horns (security and panic)
- Chimes (key, seatbelt and lights ON)
- Power windows (key-off timer)
- Wiper/washer
- Security
- Keyless entry
- Power door locks
- Climate control
- Key interlock
- Dash light brightness

Is the symptom related to the B-CAN system?

YES—Go to step 2.

NO—Go to the system troubleshooting for the system with the symptom. ■

2. Connect the Honda Diagnostic System (HDS) to the data link connector (DLC) 16P connector.

3. From BODY ELECTRICAL MENU, select connected units UNIT INFORMATION, and then select CONNECTED UNIT.

- MICU
- Door multiplex control unit
- Gauge control module
- Combination switch control unit
- Relay control module
- Climate control unit

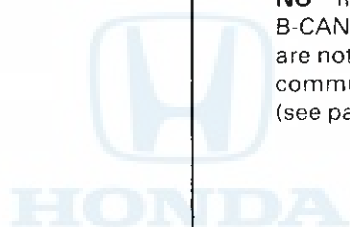
NOTE:

- If the unit is communicating with the scan tool, DETECT will be displayed.
- If the unit is not communicating, "NOT AVAILABLE" will be displayed.

Are all control units communicating with the HDS?

YES—Go to step 4.

NO—If any of them are not communicating, go to B-CAN System Diagnosis Test Mode B. If all units are not communicating, or only the MICU is communicating, go to DTC B1000 troubleshooting (see page 22-108). ■





4. Select the system that has the problem from the BODY ELECTRICAL DTCs MENU, then select DTCs.

Are any DTCs indicated?

YES—Go to step 5.

NO—If the problem is related to one the following items, go to B-CAN System Diagnosis Test Mode C.

- Exterior lights
- Turn signals
- Entry light control
- Interior lights
- Rear window defogger (climate control)
- Horns (security and panic)
- Power windows (key-off timer)
- Wiper/washer
- Power door locks

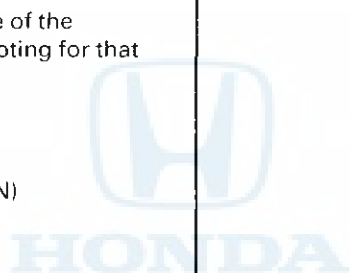
NOTE: If the problem is related to one of the following items, go to the troubleshooting for that individual system.

- Gauge control module
- Safety indicators
- Chimes (key, seat belt and lights ON)
- Security
- Keyless entry
- Climate control
- Key interlock
- Dash light brightness
- Audio System
- Navigation

5. Record all DTCs and sort them by DTC type using the DTC troubleshooting.

6. Troubleshoot the DTC(s) in the following order:

- Battery voltage DTCs.
- Internal error DTCs.
- Loss of communicator DTCs. Begin troubleshooting with the lowest number first (Example: if DTC B1006 and B1058 are retrieved, begin by troubleshooting B1006).
- Signal error DTCs.



Multiplex Integrated Control System (MICS)

Troubleshooting - B-CAN System Diagnosis Test Mode B

NOTE:

- Perform this diagnosis if any of the control units are not communicating (Not Available displayed in the HDS.) as found by the B-CAN system Diagnosis Test Mode A.
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Using the Honda Diagnostic System (HDS), select the system that has the symptom from the BODY ELECTRICAL MENU.
2. Select DTCs, and then check for loss of communication DTCs.

Are loss of communication DTCs indicated?

YES—Go to step 3.

NO—Replace the MICU. ■

3. Perform the input test for the unit not communicating with the HDS.

Unit not communicating
MICU (see page 22-116)
Door multiplex control unit (see page 22-120)
Gauge control module (see page 22-119)
Relay control module (see page 22-123)
Climate control unit (see page 21-26)
Combination switch control unit (see page 22-122)



Troubleshooting - B-CAN System Diagnosis Test Mode C

NOTE:

- Perform this diagnosis if a component that is controlled by the B-CAN system does not stop or does not turn off.
- If the component does not turn ON, go to B-CAN System Diagnosis Test Mode D.
- See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see page 22-82).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Check for DTCs by selecting the TEST MODE MENU from the Honda Diagnostic System (HDS).

Are any DTCs indicated?

YES—Go to B-CAN System Diagnosis Test Mode A. ■

NO—Go to step 2.

2. Turn OFF the switch that controls the malfunctioning component.
3. Select DATA LIST from the TEST MODE MENU, and check the input of the switch that controls the component.

Does the tester indicate the switch is OFF?

YES—Go to step 4.

NO—Go to step 6.

4. In the DATA LIST of, check the output signal of the malfunctioning component.

Is the output signal OFF?

YES—Go to step 5.

NO—Replace the control unit that controls the device that will not turn OFF (see page 22-82). ■

5. Check the relay if applicable, then check for a short in the wire between the relay and the component, relay and control unit or the component and control unit.

Are the relay and the wire harness OK?

YES—Replace the control unit that controls the component that will not turn OFF. ■

NO—Replace the relay or repair the wire harness. ■

6. Check the switch, then check for a short in the wire between the switch and the control unit that monitors the switch.

Is the switch and wire harness OK?

YES—Replace the control unit that monitors the switch. ■

NO—Replace the switch or repair the wire harness. ■

Multiplex Integrated Control System (MICS)

Troubleshooting - B-CAN System Diagnosis Test Mode D

NOTE:

- Perform this diagnosis a component that is controlled by the B-CAN system does not run or does not come on.
- If the component does not turn off or does not stop, go to B-CAN System Diagnosis Test Mode C.
- See the B-CAN system unit input/output index for a list of input and output devices and the control units that monitor the input and controls the output devices (see page 22-82).
- Always cycle the ignition switch within 3 seconds when prompted in the DTC troubleshooting procedures.

1. Check the fuse of the malfunctioning output device.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse and recheck. ■

2. Check for DTCs by selecting the TEST MODE MENU from the Honda Diagnostic System (HDS).

Are any DTCs indicated?

YES—Go to B-CAN System Diagnosis Test Mode A. ■

NO—Go to step 3.

3. Turn ON the switch that controls the malfunctioning component.

4. Select DATA LIST from the TEST MODE MENU, and check output signal for the malfunctioning component.

Is there an output signal?

YES—Go to step 5.

NO—Go to step 9.

5. Check the relay and ground, then check for an open or a short in the circuit for the malfunctioning component.

Are the relay and circuit OK?

YES—Go to step 6.

NO—Replace the relay or repair the wire circuit. ■

6. Perform the function test for the malfunctioning component.

Does the output device pass the function test?

YES—Go to step 7.

NO—Replace the component. ■

7. With the malfunctioning output device connected, connect a voltmeter between the malfunctioning output device and body ground on the wire that the control unit uses to control the output device circuit.

8. Select MISC. TEST from the TEST MODE MENU, and do the forced operation test of the malfunctioning component.

Is there a change in voltage (12 V to 0 V or 0 V to 12 V)?

YES—Replace the component. ■

NO—Replace the control unit that controls the malfunctioning component. ■

9. Select DATA LIST from the TEST MODE MENU, and make sure the switch signal input for the malfunctioning system indicates a change when operated.

Does the switch input indicated ON when the switch is ON?

YES—Replace the control unit that controls the malfunctioning component. ■

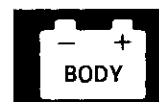
NO—Go to step 10.

10. Check the switch and its ground (if applicable), then check for an open or a short in the wire between the switch and the control unit that monitors it.

Is the switch and the wire harness OK?

YES—Replace the control unit that monitors the switch. ■

NO—Replace the switch or repair the wire harness. ■



Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS)

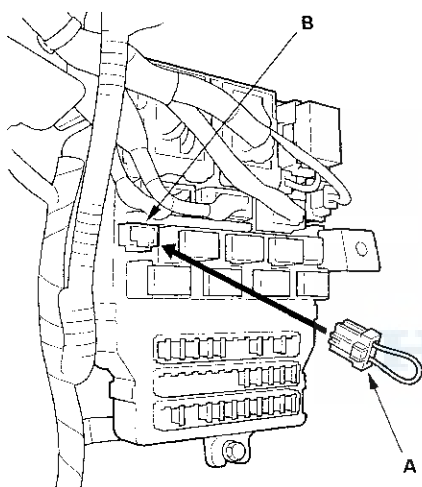
1. Check the No. 7 (10 A) fuse and No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 2.

NO—Find and repair the cause of the blown fuse. ■

2. Remove the left kick panel (see page 20-45).
3. Turn the ignition switch ON (II).
4. Connect the MPCS Service connector (A) to the MCiC socket (B) in the under-dash fuse/relay box.



5. Wait 5 seconds, then watch the ceiling light.
6. If there is a DTC, the ceiling light and ignition switch light will blink, pause, then repeat the DTC as long as the ignition switch ON (II).

Is there a repeating DTC?

YES—Count the blinks, then go to step 7.

NO—Go to step 8.

7. About 1 second after you go into self-diagnosis Mode 1, the ceiling light will indicate the DTC, and repeat it every 3 seconds. If there is more than one DTC, the system will indicate them in ascending order, beginning from the DTC with the lowest numerical value. Troubleshoot the DTCs as indicated below:

- DTC 2, 3, 4 and 5 simultaneously: Check for an open in the BLU wire between multiplex integrated control unit D11 and relay module I7, BRN/RED wire between multiplex integrated control unit J4 and door multiplex control unit No. 16, LT GRN wire between multiplex integrated control unit X27 and combination switch control unit No. 4, BRN/YEL wire between multiplex integrated control unit N28 and gauge control module terminal No. 25. If the wire is OK, substitute a known-good under-dash fuse/relay box (multiplex integrated control unit), under-hood fuse/relay box, power window master switch, wiper/washer switch and gauge one at a time, in that order, and recheck for the DTCs after each substitution.
- DTC 1 only: Go to MICU input test (see page 22-116).
- DTC 2 only (no other DTCs present): Go to the relay module input test. If all inputs are OK, substitute a known-good relay module and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
- DTC 3 only (no other DTCs present): Go to the door multiplex control unit input test. If all inputs are OK, substitute a known-good door multiplex control unit and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
- DTC 4 only (no other DTCs present): Go to the combination switch control unit input test. If all inputs are OK, substitute a known-good wiper/washer switch and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.
- DTC 5 only (no other DTCs present): Go to the gauge control module input test. If all inputs are OK, substitute a known-good gauge control module and then a MICU, one at a time, and then check for DTCs. If a DTC recurs after a substitution, replace that unit.

(cont'd)

Multiplex Integrated Control System (MICS)

Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS) (cont'd)

DTC	Cause
1	The MICU cannot receive signals from the bus communication line.
2	The MICU cannot receive signals from the relay module communication line.
3	The MICU cannot receive signals from the power window communication line.
4	The MICU cannot receive signal from the combination switch communication line.
5	The MICU cannot receive signals from the gauge control module.

8. Check for B-CAN DTCs indicated by the gauge control module while still in Test Mode 1.

Are any DTCs indicated?

YES—Go to step 9.

NO—Go to step 11.

9. Record all DTCs and sort them by type using the DTC Troubleshooting.

10. Troubleshoot the DTCs in the following order:

- Battery voltage DTCs
- Internal error DTCs
- Loss of communication DTCs (begin with the lowest number first; for example, if B1006 and B1059 are retrieved, troubleshoot B1006 first)
- Signal error DTCs

11. Remove the MPCS service connector from the under-dash fuse/relay box socket for 5—10 seconds, then re-insert it.

NOTE: If the MPCS connector is disconnected for too short or too long of a time, or the ignition switch is turned OFF, the system will return to Test Mode 2.

12. In the list of circuits that can be checked in Test Mode 2. Operate the switch that is most closely related to the problem. If the circuit is OK, the ceiling light will blink once. If the circuit is faulty, there will be no indication.

MICU

Item
Driver's door switch (OPEN)
Front passenger's door switch (OPEN)
Left rear door switch (OPEN)
Right rear door switch (OPEN)
Trunk latch switch (OPEN)
Front passenger's door lock knob switch (UNLOCK)
Left rear door lock knob switch (UNLOCK)
Right rear door lock knob switch (UNLOCK)
Audio-HVAC display module security ground (disconnected)
Driver's seat belt switch (unbuckled)
Brake pedal position switch (ON; brake pedal pressed)
Passenger's door lock switch (LOCK/UNLOCK)

- * The front passenger's and right rear door lock knob switches must be in the locked position when beginning the test.

RELAY CONTROL MODULE

Item
Windshield wiper switch (AUTO STOP/PARK)
Hood switch (open)
A/C pressure switch/thermal protector (A/C ON)

COMBINATION SWITCH CONTROL UNIT

Item
Turn signal switch (LEFT)
Turn signal switch (RIGHT)
Combination light switch (ON; each position)
Dimmer switch (ON)
Passing switch (ON)
Windshield wiper switch (ON)
Intermittent wiper dwell timer
Windshield washer switch (ON)



POWER WINDOW MASTER SWITCH (DOOR MULTIPLEX CONTROL UNIT)

Item
Power window master switch (Driver's Window UP)
Power window master switch (Driver's Window DOWN)
Power window master switch (Driver's Window AUTO UP)
Power window master switch (Driver's Window AUTO DOWN)
Power window master switch (Front Passenger's Window UP)
Power window master switch (Front Passenger's Window DOWN)
Power window master switch (Left Rear Window UP)
Power window master switch (Left Rear Window DOWN)
Power window master switch (Right Rear Window UP)
Power window master switch (Right Rear Window DOWN)
Driver's door key cylinder switch* (LOCK)
Driver's door key cylinder switch* (UNLOCK)
Driver's door lock switch (LOCK)
Driver's door lock switch (UNLOCK)
Driver's door lock knob switch (LOCK)
Driver's door lock knob switch (UNLOCK)

* A second key is necessary to check the key cylinder inputs.
Be sure to rotate the key cylinder switch two times to each position (lock and lock, unlock and unlock) to ensure the door lock knob switch is in the appropriate position.

GAUGE CONTROL MODULE

Item
Parking brake switch (ON; parking brake applied)
Cruise control SET/RESUME/CANCEL switch (ON; switch pressed)
Transmission range switch (P, R, N, D)
Washer fluid level switch (Canada)
Brake fluid level switch (fluid removed)

Does the ceiling light indicate proper switch operation?

YES—Go to function and input test for the system related to the failure. ■

NO—Repair the open, short, or replace the faulty switch. ■

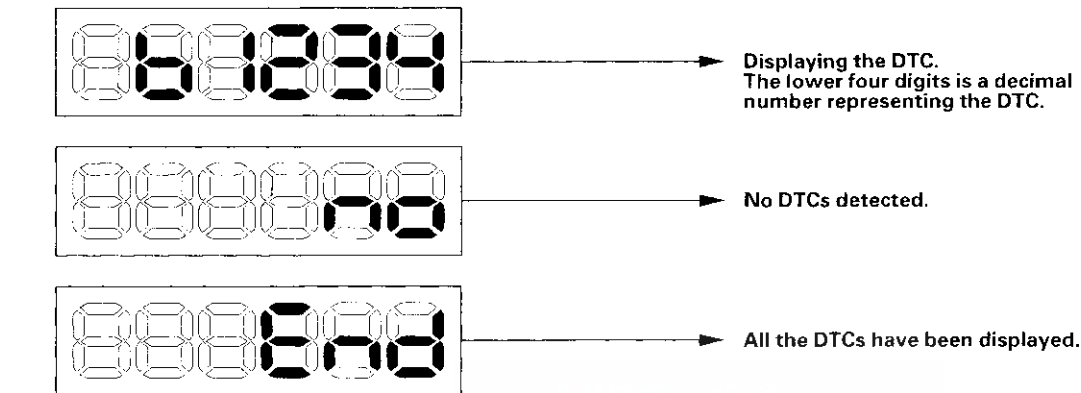
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Multiplex Integrated Control System (MICS)

Troubleshooting - B-CAN System Diagnosis Test Mode 1 and Test Mode 2 (without the HDS) (cont'd)

How to display DTC on the gauge control module

1. While in Test Mode 1, the DTCs which have been detected and stored individually by various B-CAN (Body-controller Area Network) units, will be shown one by one on the ODO display when the communication between the Multiplex Integrated Control Unit (MICU) and the gauge control module is normal. To scroll through the DTCs, press the RESET knob on the gauge control module.



MICU	10
Relay Control Module	11
Door Multiplex Control Unit	30
Gauge Control Module	50
Climate Control Module	51
Combination Switch Control Unit	70

How to clear the DTC

1. While in Test Mode 1, press and hold down the RESET knob for more than 10 seconds.
2. The unit that has stored the code can be identified by the number shown on the trip display.



DTC Troubleshooting Index

DTC	Description	ECU	DTC type	Page
B1000	Communication circuit error (BUS Off)	MICU	Loss of Communication	(see page 22-108)
B1001	MICU Internal Error	MICU	Internal Error	(see page 22-109)
B1002	MICU Internal Error	MICU	Internal Error	(see page 22-109)
B1005	MICU lost communication with Relay Control Module	MICU	Loss of Communication	(see page 22-110)
B1006	MICU lost communication with Door Multiplex Control Unit (door lock switch message)	MICU	Loss of Communication	(see page 22-110)
B1007	MICU lost communication with Combination Switch Control Unit (headlight switch message)	MICU	Loss of Communication	(see page 22-111)
B1008	MICU lost communication with Gauge Control Module (A/T message)	MICU	Loss of Communication	(see page 22-111)
B1009	MICU lost communication with Combination Switch Control Module (wiper switch message)	MICU	Loss of Communication	(see page 22-112)
B1010	MICU lost communication with Door Multiplex Control Unit (panic message)	MICU	Loss of Communication	(see page 22-112)
B1026	Passenger's door lock switch malfunction	MICU	Signal Error	(see page 22-140)
B1027	Trunk key cylinder switch malfunction	MICU	Signal Error	(see page 22-141)
B1050	Communication circuit error (BUS Off)	Relay Control Module	Loss of Communication	(see page 22-108)
B1055	Relay Control Module lost communication with MICU	Relay Control Module	Loss of Communication	(see page 22-69)
B1056	Relay Control Module lost communication with MICU (alarm message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1057	Relay Control Module lost communication with MICU (door switch message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1058	Relay Control Module lost communication with Door Multiplex Control Unit (door lock switch message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1059	Relay Control Module lost communication with Door Multiplex Control Unit (panic message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1060	Relay Control Module lost communication with Gauge Control Module (VSP/NE message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1061	Relay Control Module lost communication with Gauge Control Module (A/T message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1062	Relay Control Module lost communication with Combination Switch Control Module (headlight switch message)	Relay Control Module	Loss of Communication	(see page 22-69)
B1063	Relay Control Module lost communication with Combination Switch Control Module (wiper switch message)	Relay Control Module	Loss of Communication	(see page 22-69)

(cont'd)

Multiplex Integrated Control System (MICS)

DTC Troubleshooting Index (cont'd)

DTC	Description	ECU	DTC type	Page
B1075	Headlight switch malfunction	Relay Control Module	Signal Error	(see page 22-164)
B1076	Windshield wiper signal error	Relay Control Module	Signal Error	(see page 22-214)
B1077	Wiper switch (As) malfunction	Relay Control Module	Signal Error	(see page 22-215)
B1078	Daytime running lights malfunction	Relay Control Module	Signal Error	(see page 22-165)
B1080	Power supply circuit (IG1 line) input error for Relay Control Module and MICU	Relay Control Module	Signal Error	(see page 22-114)
B1100	Communication circuit error (BUS Off)	Door Multiplex Control Unit	Loss of Communication	(see page 22-108)
B1102	Door Multiplex Control Unit Internal Error	Door Multiplex Control Unit	Internal Error	(see page 22-113)
B1125	Driver's power window motor A pulse malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-210)
B1126	Driver's power window motor B pulse malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-210)
B1127	Driver's door lock key cylinder switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-142)
B1128	Driver's door lock switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-144)
B1129	Driver's door knob switch malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-145)
B1140	Driver's power window position detect circuit malfunction	Door Multiplex Control Unit	Signal Error	(see page 22-210)
B1150	Communication circuit error (BUS Off)	Gauge Control Module	Loss of Communication	(see page 22-108)
B1152	Gauge Control Module Internal Error	Gauge Control Module	Internal Error	(see page 22-238)
B1155	Gauge Control Module lost communication with Combination Switch Control Module (headlight switch message)	Gauge Control Module	Loss of Communication	(see page 22-238)
B1156	Gauge Control Module lost communication with Combination Switch Control Module (wiper switch message)	Gauge Control Module	Loss of Communication	(see page 22-239)



DTC	Description	ECU	DTC type	Page
B1157	Gauge Control Module lost communication with MICU	Gauge Control Module	Loss of Communication	(see page 22-240)
B1158	Gauge Control Module lost communication with Relay Control Module	Gauge Control Module	Loss of Communication	(see page 22-240)
B1159	Gauge Control Module lost communication with MICU (door switch message)	Gauge Control Module	Loss of Communication	(see page 22-241)
B1160	Gauge Control Module lost communication with Door Multiplex Control Unit (door lock switch message)	Gauge Control Module	Loss of Communication	(see page 22-241)
B1168	Gauge Control Module lost communication with PCM (engine messages)	Gauge Control Module	Loss of Communication	(see page 22-113)
B1169	Gauge Control Module lost communication with PCM (A/T messages)	Gauge Control Module	Loss of Communication	(see page 22-113)
B1175	Fuel gauge sending unit signal malfunction	Gauge Control Module	Signal Error	(see page 22-242)
B1177	Abnormal battery voltage (7.5 V)	Gauge Control Module	Signal Error	(see page 22-243)
B1178	F-CAN communication circuit error	Gauge Control Module	Loss of Communication	(see page 22-113)
B1200	Communication circuit error (BUS Off)	Climate Control Unit	Loss of Communication	(see page 22-108)
B1202	Climate Control Unit Internal Error	Climate Control Unit	Internal Error	(see page 21-30)
B1205	Climate Control Unit lost communication with Gauge Control Module (VSP/NE message)	Climate Control Unit	Loss of Communication	(see page 21-30)
B1206	Climate Control Unit lost communication with Gauge Control Module (ENGTEMP message)	Climate Control Unit	Loss of Communication	(see page 21-31)
B1207	Climate Control Unit lost communication with Gauge Control Module (ILLUMI message)	Climate Control Unit	Loss of Communication	(see page 21-31)
B1225	Open in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-32)
B1226	Short in the in-car temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-33)
B1227	Open in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-34)

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Multiplex Integrated Control System (MICS)

DTC Troubleshooting Index (cont'd)

DTC	Description	ECU	DTC type	Page
B1228	Short in the outside air temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-35)
B1229	Open in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-36)
B1230	Short in the sunlight sensor circuit	Climate Control Unit	Signal Error	(see page 21-37)
B1231	Open in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-38)
B1232	Short in the evaporator temperature sensor circuit	Climate Control Unit	Signal Error	(see page 21-39)
B1233	Open in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-40)
B1234	Short in the driver's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-41)
B1235	Problem in the driver's air mix control linkage, door, or motor	Climate Control Unit	Signal Error	(see page 21-43)
B1236	Open in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-43)
B1237	Short in the passenger's air mix control motor circuit	Climate Control Unit	Signal Error	(see page 21-44)
B1238	Problem in the passenger's air mix control linkage, door, or motor	Climate Control Unit	Signal Error	(see page 21-46)
B1239	Open or short in the mode control motor circuit	Climate Control Unit	Signal Error	(see page 21-46)
B1240	Problem in the mode control linkage, doors, or motor	Climate Control Unit	Signal Error	(see page 21-48)
B1241	Problem in the blower motor circuit	Climate Control Unit	Signal Error	(see page 21-49)
B1250	Communication circuit error (BUS Off)	Combination Switch Control Unit	Loss of Communication	(see page 22-108)
B1251	Combination Switch Control Unit internal error	Combination Switch Control Unit	Internal Error	(see page 22-115)
B1255	Combination Switch Control Unit lost communication with MICU	Combination Switch Control Unit	Loss of Communication	(see page 22-115)



DTC	Description	ECU	DTC type	Page
B1275	Headlight switch OFF position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-167)
B1276	Headlight switch SMALL position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-167)
B1278	Headlight switch ON position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-167)
B1279	Dimmer switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-168)
B1280	Turn signal switch circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-168)
B1281	Windshield wiper switch MIST position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-218)
B1282	Windshield wiper switch INT (AUTO) position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-218)
B1283	Windshield wiper switch LOW position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-218)
B1284	Windshield wiper switch HIGH position circuit malfunction	Combination Switch Control Unit	Signal Error	(see page 22-218)
B2989	A problem in the A/C compressor motor	Audio-HVAC display panel	Signal Error	(see page 21-52)
B2990	A problem in the A/C compressor driver	Audio-HVAC display panel	Signal Error	(see page 21-53)
B2992	An open in the thermal protector circuit	Audio-HVAC display panel	Signal Error	(see page 21-54)
B2993	A short in the thermal protector circuit	Audio-HVAC display panel	Signal Error	(see page 21-55)
B2995	A problem in the auxiliary water pump circuit	Audio-HVAC display panel	Signal Error	(see page 21-56)
B2996	An open in the heater core temperature sensor circuit	Audio-HVAC display panel	Signal Error	(see page 21-59)
B2997	A short in the heater core temperature sensor circuit	Audio-HVAC display panel	Signal Error	(see page 21-60)
B2998	A problem in the A/C compressor driver	Audio-HVAC display panel	Signal Error	(see page 21-61)
B2999	A problem in the A/C compressor delivery valve	Audio-HVAC display panel	Signal Error	(see page 21-61)

Multiplex Integrated Control System (MICS)

Description

HDS Inputs and Commands

Input

System Menu	Data List	Data List Indication
Wiper	Windshield Wiper Switch (LOW)	Wiper switch in LOW position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (HIGH)	Wiper switch in HI position: ON Wiper switch in other position: OFF
	Windshield Wiper Switch (MIST)	Wiper switch in MIST position: ON Wiper switch in other position: OFF
	Windshield Washer Switch	Washer switch on: ON Washer switch off: OFF
	Intermittent Wiper Dwell Timer	Switch at short setting: 0.0 Switch at long setting: about 250
	Brake Pedal Position Switch	Brake pedal pushed: ON Brake pedal released: OFF
	Windshield Wiper Park Switch (AUTO STOP/PARK)	Wipers in park position: ON Wipers in other position: OFF
	Windshield Wiper Switch (BACK-UP)	Wiper switch in HI and LOW position: ON Wiper switch in other position: OFF
	Windshield Wiper Motor HI Command	Wiper high speed command on: ON Wiper high speed command off: OFF
	Windshield Wiper Motor Lo Command	Wiper low speed command on: ON Wiper high low command off: OFF
	Windshield Washer Motor Command	Washer command on: ON Washer command off: OFF
Power window	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	P/W Main Switch	Passenger's window activated: ON Passenger's window deactivated: OFF
	P/W Master Switch (Driver's window AUTO)	Auto position: ON Neutral position: OFF
	P/W Master Switch (Driver's window UP)	Up position: ON Neutral position: OFF
	P/W Master Switch (Driver's window DOWN)	Down position: ON Neutral position: OFF
	P/W Master SW. (Front Passenger's Wndw UP)	Up position: ON Neutral position: OFF
	P/W Master SW. (Front Passenger's Wndw DOWN)	Down position: ON Neutral position: OFF
	P/W Master Switch (Left Rear window UP)	UP position: ON Neutral position: OFF
	P/W Master Switch (Left Rear window DOWN)	Down position: ON Neutral position: OFF
	P/W Master Switch (Right Rear Wndw UP)	UP position: ON Neutral position: OFF
	P/W Master SW. (Right Rear Wndw DOWN)	Down position: ON Neutral position: OFF
	Driver's P/W Motor Pulse A	Window in motion: DETECT Window stopped: NONE
	Driver's P/W Motor Pulse B	Window in motion: DETECT Window stopped: NONE
	Driver's P/W Motor Command	OFF/UP/DOWN
	Front Passenger's P/W Motor Command	OFF/UP/DOWN
	Left Rear P/W Motor Command	OFF/UP/DOWN
	Right Rear P/W Motor Command	OFF/UP/DOWN
	P/W Relay Command	On command passenger's window is operating: ON Off command: OFF



Input

System Menu	Data List	Data List Indication
Lighting	Headlight Switch (OFF)	In off position: ON In other positions: OFF
	Headlight Switch (Parking)	In park light position: ON In other positions: OFF
	Headlight Switch (HEADLIGHT)	In headlight position: ON In other position: OFF
	Headlight Switch (DIMMER)	In hi-beam position: ON In low-beam position: OFF
	Headlight Switch (PASSING)	Passing switch on: ON Passing switch off: OFF
	Turn Signal Switch (LEFT)	In left position: ON Neutral position: OFF
	Turn Signal Switch (RIGHT)	In right position: ON Neutral position: OFF
	Fog Light Switch	Light on command: ON Light off command: OFF
	Driver's Door Switch	Door open: ON Door closed: OFF
	DRL Signal (Canada)	
	Ignition Key Cylinder Light Command	Light on command: ON Light off command: OFF
	Interior Light Command	Light on command: ON Light off command: OFF
	Left Turn Signal Command	Light on command: ON Light off command: OFF
	Right Turn Signal Command	Light on command: ON Light off command: OFF
	Headlight Switch (BACK-UP)	In headlight position: ON In headlight position: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF
	Fog Light Command	Light on command: ON Light off command: OFF
	DRL Relay command (Canada)	Relay on command: ON Relay off command: OFF
	DRL Command (Canada)	DRL on command: ON DRL off command: OFF

(cont'd)

Multiplex Integrated Control System (MICS)

Description (cont'd)

Input

System Menu	Data List	Data List Indication
Gauge	Cruise Control Main Switch Input	Cruise main switch on: ON Cruise main switch off: OFF
	Cruise Control Set Switch	Set SW on: ON Set SW off: OFF
	Cruise Control Resume Switch	Resume on: ON Resume off: OFF
	Engine Oil Pressure Switch	Engine off (low pressure): ON Engine running: OFF
	VSA/TCS OFF Switch	Switch pushed off: OFF Switch pushed on: ON
	Gauge Select/Reset Switch	Reset button pushed: ON Reset button released: OFF
	Parking Brake Switch	Park brake lever pulled: ON Park brake lever released: OFF
	Brake Fluid Level Switch	Fluid level low: ON Fluid level normal: OFF
	Fuel Sending Unit Input 1	Fuel tank empty: 4 V Fuel tank half full: 2.5 V Fuel tank full: 1 V
	VSA/TCS Active Indicator	VSA/TCS Active on: ON VSA/TCS off: OFF
	VSA/TCS Indicator (Warning)	DTC stored: ON No DTC stored: OFF
	ABS Indicator	Indicator command on: ON Indicator command off: OFF
	EBD (Brake Light) Indicator	Indicator command on: ON Indicator command off: OFF
	Cruise Master Switch ON Indicator	Switch pushed on: ON Switch pushed off: OFF
	MIL Indicator	Indicator command on: ON Indicator command off: OFF
	Low Oil Pressure Indicator	Indicator command on: ON Indicator command off: OFF
	Charge System Indicator	Indicator command on: ON Indicator command off: OFF
	Cruise Main Switch ON Indicator	Indicator command on: ON Indicator command off: OFF
	Maintenance Required Indicator	Indicator command on: ON Indicator command off: OFF
	High Beam Indicator	Indicator command on: ON Indicator command off: OFF
	Parking Light ON Indicator	Indicator command on: ON Indicator command off: OFF
	Low Fuel Warning Indicator	Indicator command on: ON Indicator command off: OFF
	Security Indicator	Indicator command on: ON Indicator command off: OFF
	Fuel gauge Needle Command	Fuel tank empty: 5 ° Fuel tank half full: 50 ° Fuel tank half full: 100 °
	Seat Belt Indicator	Belt buckled: OFF Belt unbuckled: ON
	ECO Indicator	ECO Mode: ON Out of ECO mode: OFF
	IMA Auto Stop Indicator	Auto stop: ON Not in Auto stop: OFF



Input

System Menu	Data List	Data List Indication
Gauge	IMA Indicator	Indicator on: ON Indicator off: OFF
	IMA Assist/Charge Indicator	Neutral Discharging Neutral Neutral Charging
	Brake Pedal Position Switch	Brake pedal pushed: ON Brake pedal released: OFF
	Ignition Key Cylinder Switch	Key in ignition: ON Key out of ignition: OFF
	Driver's Seat Belt Buckle Switch	Unbuckled: ON Buckled: OFF
	Washer Fluid Level Switch (Canada)	Fluid level low: ON Fluid level normal: OFF
	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Trunk Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Trunk Lid Release Command	Release command: ON Other: OFF



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Multiplex Integrated Control System (MICS)

Description (cont'd)

Input

System Menu	Data List	Data List Indication
Door lock	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Front Passenger's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Passenger's Door Lock Knob Sw. (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob up: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Key turned to lock: ON Neutral position: OFF
	Driver's Door Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: OFF Knob down: ON
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
Climate control	A/C Pressure Switch/Thermal Protector	A/C on: ON
	Rear Defroster Command	Defroster on command: ON Defroster off command: OFF



Input

System Menu	Data List	Data List Indication
Keyless	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Front Passenger's Door Lock Sw. (LOCK)	Switch pushed: ON Switch released: OFF
	Front Passenger's Door Lock Sw. (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Passenger's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Trunk Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Trunk Lid/Tailgate Release Command	Release command: ON Other: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Key turned to lock: ON Neutral position: OFF
	Driver's Door Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: OFF Knob down: ON
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF

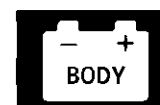
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Multiplex Integrated Control System (MICS)

Description (cont'd)

Input

System Menu	Data List	Data List Indication
Security	Ignition Key Cylinder Switch	Switch on: ON Switch off: OFF
	Driver's Door Switch	Door open: ON Door closed: OFF
	Front Passenger's Door Switch	Door open: ON Door closed: OFF
	Left Rear Door Switch	Door open: ON Door closed: OFF
	Right Rear Door Switch	Door open: ON Door closed: OFF
	Trunk Lid/Tailgate Switch	Trunk open: ON Trunk closed: OFF
	Front Passenger's Door Lock Sw. (LOCK)	Switch pushed: ON Switch released: OFF
	Front Passenger's Door Lock Sw. (UNLOCK)	Switch pushed: ON Switch released: OFF
	Front Passenger's Lock Knob Sw. (UNLOCK)	Knob up: ON Knob down: OFF
	Left Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Right Rear Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Trunk Key Cylinder Switch (UNLOCK)	Key turned to unlock: ON Neutral position: OFF
	Door LOCK Command	Lock command: ON Other: OFF
	Door UNLOCK Command	Unlock command: ON Other: OFF
	Driver's Door UNLOCK Command	Unlock command: ON Other: OFF
	Trunk Lid/Tailgate Release Command	Release command: ON Other: OFF
	Driver's Door Key Cylinder Switch (LOCK)	Switch: ON
	Driver's Door Key Cylinder Switch (UNLOCK)	Switch: OFF
	Driver's Door Lock Switch (LOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Switch (UNLOCK)	Switch pushed: ON Switch released: OFF
	Driver's Door Lock Knob Switch (LOCK)	Knob up: OFF Knob down: ON
	Driver's Door Lock Knob Switch (UNLOCK)	Knob up: ON Knob down: OFF
	Hood Switch	Hood open: ON Hood closed: OFF
	Ignition Switch (IG1)	Ignition ON (II): ON Other positions: OFF
	Headlight Command	Light on command: ON Light off command: OFF
	Headlight High Beam Command	Light on command: ON Light off command: OFF
	Parking Light Command	Light on command: ON Light off command: OFF
	Horn Command	Horn on command: ON Horn off command: OFF

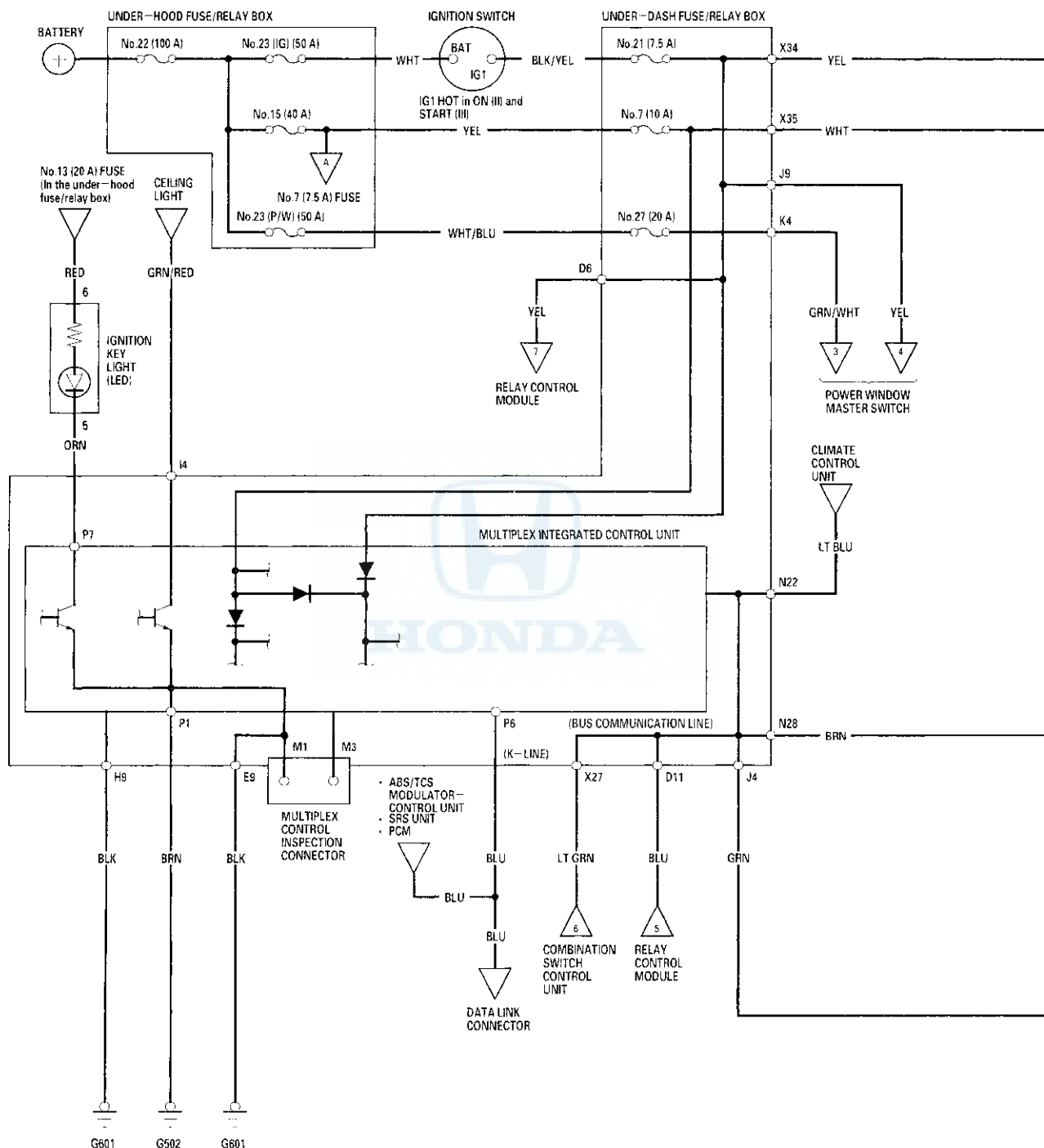


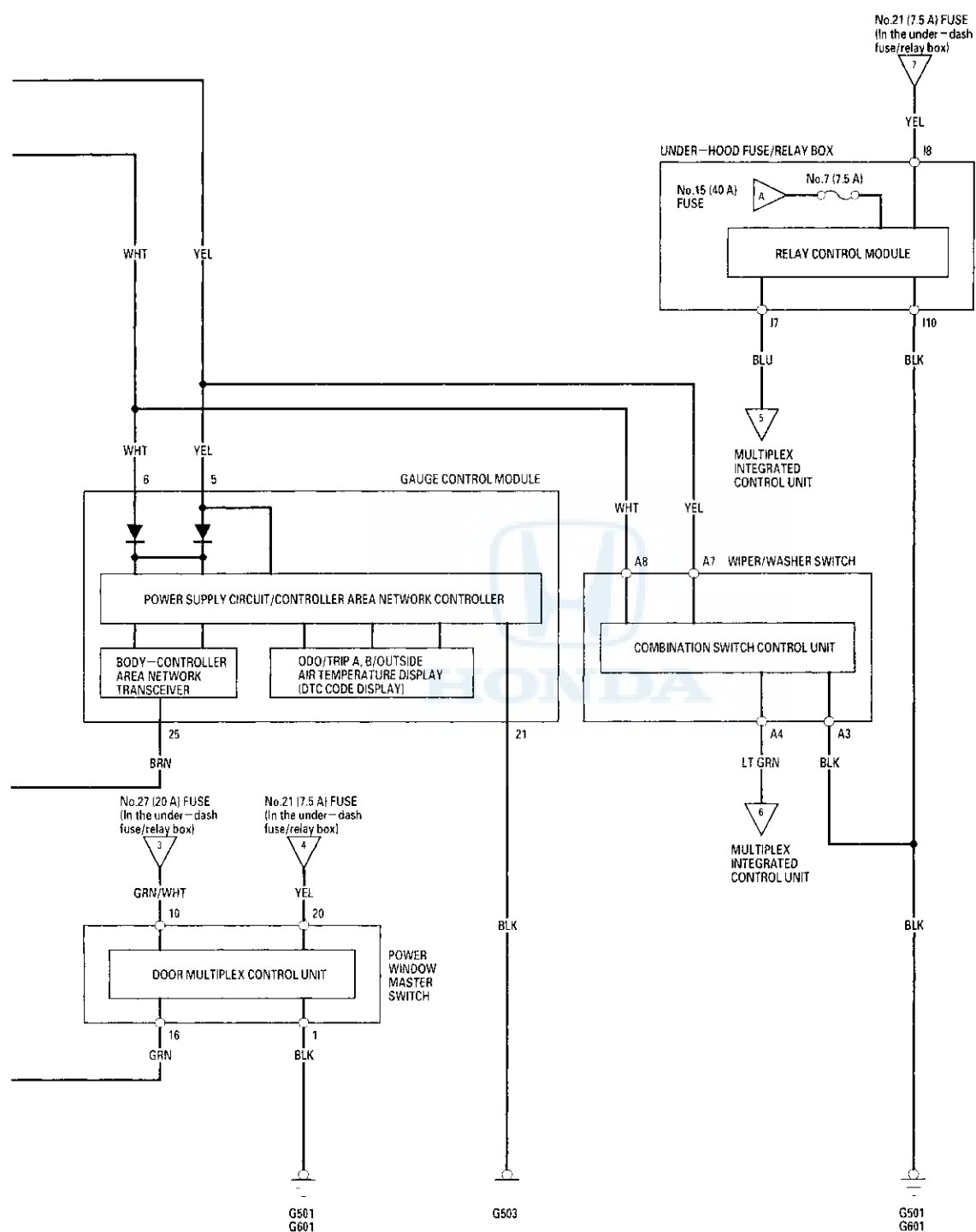
Output

System	Description	Data List
Gauge	Speedometer displays value inputted	Speedometer
	Tachometer displays value inputted	Tachometer
	Fuel gauge displays value inputted	Fuel Level Gauge
	Temperature gauge displays value inputted	Engine Temperature Gauge
	Turns ABS indicator on/off	ABS Indicator
	Turns BRAKE indicator on/off	EBD Indicator
	Turns MIL on/off	MIL Status
	Turns washer level indicator on/off	Windshield Washer Fluid Level Indicator (Canada)
	Turns DRL indicator on/off	Daytime Running Lights Indicator (Canada)
	Turns Low oil pressure indicator on/off	Engine Oil Pressure Indicator
	Turns charging system indicator on/off	Charging System Indicator
	Turns cruise main switch indicator on/off	Cruise Control Main Switch Indicator
	Turns maintenance required indicator on/off	Maintenance Required Indicator
	Turns high beam indicator on/off	High Beam Indicator
	Turns light on indicator on/off	Lights On Indicator
	Turns low fuel indicator on/off	Low Fuel Indicator
	Turns security indicator on/off	Security Indicator
	Displays inputted value	Trip Meter
	Turns A/T P position indicator on/off	A/T Gear Position Indicator (P)
	Turns A/T R position indicator on/off	A/T Gear Position Indicator (R)
	Turns A/T N position indicator on/off	A/T Gear Position Indicator (N)
	Turns A/T D position indicator on/off	A/T Gear Position Indicator (D)
	Turns A/T D3 position indicator on/off	A/T Gear Position Indicator (D3)
	Turns A/T 2 position indicator on/off	A/T Gear Position Indicator (2)
	Turns A/T 1 position indicator on/off	A/T Gear Position Indicator (1)
	Turns TCS indicator on/off	TCS Indicator
	Turns TCS activation indicator on/off	TCS Activation Indicator
	Controls gauge illumination brightness to inputted value	Illumination Brightness Control
	Turns key chime on/off	Key Chime
	Turns headlight chime on/off	Headlight Chime
	Turns seatbelt chime on/off	Seatbelt Reminder Chime
Lighting	Turns ignition key cylinder light on/off	Ignition Key Cylinder Light Command
	Turns interior light(s) on/off	Interior Light Command
	Turns left turn signal light on/off	Left Turn Signal Command
	Turns right turn signal light on/off	Right Turn Signal Command
	Turns hazard lights on/off	Hazard Signal Command
	Turns DRL relay on/off	Daytime Running Lights Relay Command (Canada)
	Turns headlights on/off	Headlight Command
	Turns high beams on/off	Headlight High Beam Command
	Turns parking lights on/off	Parking Lights Command
	Controls DRL functions on command	Daytime Running Lights Signal (Canada)
Door lock	Controls lock and unlock functions on command	Door Lock Command
Keyless	Turns trunk lid/tailgate release command on/off	Trunk Lid/Tailgate Release Command
Climate control	Turns rear defroster on/off	Rear Defroster
Power window	Runs driver's window up	Driver's Window Up
	Runs driver's window down	Driver's Window Down
	Runs passenger's window up	Front Passenger's Window Up
	Runs passenger's window down	Front Passenger's Window Down
	Runs left rear window up	Left Rear Window Up
	Runs left rear window down	Left Rear Window Down
	Runs right rear window up	Right Rear Window Up
	Runs right rear window down	Right Rear Window Down
	Turns power window relay on/off	Power Window Relay Command
	Turns wiper low speed on/off	Windshield Wiper Motor Low Command
Wiper	Turns wiper high speed on/off	Windshield Wiper Motor High Command
	Turns washer on/off	Windshield Washer Command
	Turns wiper intermittent function on/off	Intermittent Wiper Dwell Timer
Security	Turns horns on/off	Horn Command
Climate control	Initiates climate control self test function	Climate Control Self Test (INSPECTION MENU)

Multiplex Integrated Control System (MICS)

Circuit Diagram





Multiplex Integrated Control System (MICS)

DTC Troubleshooting

DTC B1000: Communication Bus Line Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1000 indicated?

YES—Go to step 4.

NO—Intermittent failure. The communication bus line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs using the HDS.

Are DTC B1005, B1006, B1007, B1008, B1009 and B1010 indicated?

YES—Go to step 5.

NO—Replace the MICU. ■

5. Disconnect each control unit one at a time. Clear the DTC, then recheck for DTCs after each unit is disconnected.

- Gauge control module
- Relay control module
- Driver's multiplex control unit
- Climate control unit
- Combination switch control unit

Is DTC B1000 indicated with each unit disconnected?

YES—Check for a short to power or ground in the communication circuit by disconnecting the harness at each control unit and testing for continuity to ground or short to power. Repair or replace the harness as necessary. ■

NO—Substitute a known-good control unit with the one that was disconnected, and did not set DTC B1000. ■

DTC B1050, B1100, B1150, B1200, B1250: Communication Bus Line Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Are DTC(s) B1050, B1100, B1150, B1200 or B1250 indicated?

YES—Go to step 4.

NO—Intermittent failure, the system is OK at this time. ■

B1050	Relay Control Module
B1100	Door Multiplex Control Unit
B1150	Gauge Control Module
B1200	Audio-HVAC Display Module
B1250	Combination Switch Control Unit

4. Check for DTCs using the HDS.

Is DTC(s) B1000 indicated?

YES—Troubleshoot DTC B1000. ■

NO—If DTC B1050 is indicated, replace the relay control module. If DTC B1100 is indicated, replace the door multiplex control unit. If DTC B1150 is indicated, replace the gauge control module (see page 22-235). If DTC B1200 is indicated, replace the climate control unit. If DTC B1250 is indicated, replace the combination switch control unit. ■

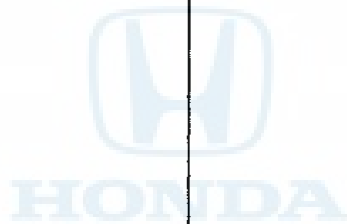
DTC B1001, B1002: Multiplex Integrated Control Unit (MICU) Internal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the door lock (LOCK/UNLOCK).
4. Check for DTCs using the HDS.

Is DTC B1001 or B1002 indicated?

YES—Faulty MICU; replace the under-dash fuse/relay box. ■

NO—Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■



Multiplex Integrated Control System (MICS)

DTC Troubleshooting (cont'd)

DTC B1005: MICU Lost Communication with Relay Control Module

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1005 indicated?

YES—Go to step 4.

NO—Intermittent failure, the relay module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs in the gauge control module using the HDS.

Is DTC B1158 also indicated?

YES—Go to Relay Control Module Input Test (see page 22-123). ■

NO—Check for an open in the communication circuit between the MICU and the relay control module. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open. ■

DTC B1006: MICU Lost Communication with Door Multiplex Control Unit (Door Lock Switch Message)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1006 indicated?

YES—Go to step 4.

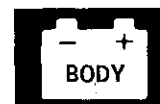
NO—Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs in the gauge control module and relay module using the HDS.

Are DTCs B1160 and B1058 also indicated?

YES—Go to Door Multiplex Control Unit Input Test (see page 22-120). ■

NO—Check for an open in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open. ■



DTC B1007: MICU Lost Communication with the Combination Switch Control Unit (Headlight Switch Message)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1007 indicated?

YES—Go to step 4.

NO—Intermittent failure, the MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs of the gauge control module and relay control module using the HDS.

Are DTCs B1155 and B1062 also indicated?

YES—Go to the Combination Switch Control Unit Input Test (see page 22-122). ■

NO—Check for an open in the communication circuit between the MICU and the combination switch control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open. ■

DTC B1008: MICU Lost Communication (A/T Message) with the Gauge Control Module

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1008 indicated?

YES—Go to step 4.

NO—Intermittent failure, the gauge control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs in the relay control module using the HDS.

Is DTC B1161 also indicated?

YES—Go to the Gauge Control Module Input Test (see page 22-119). ■

NO—Check for an open in the communication circuit between the MICU and the gauge control module. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open. ■

Multiplex Integrated Control System (MICS)

DTC Troubleshooting (cont'd)

DTC B1009: MICU Lost Communication with the Combination Switch Control Unit (Wiper/Washer Switch Message)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1009 indicated?

YES—Go to step 4.

NO—Intermittent failure, the combination switch control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs of the gauge control module and relay control module using the HDS.

Are DTCs B1156 and B1063 also indicated?

YES—Go to the Combination Switch Control Unit Input Test (see page 22-122). ■

NO—Check for an open in the communication circuit between the MICU and the combination switch control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open. ■

DTC B1010: MICU Lost Communication (Panic Message) with the Door Multiplex Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1010 indicated?

YES—Go to step 4.

NO—Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs of the relay control module using the HDS.

Is DTC B1059 also indicated?

YES—Go to the Door Multiplex Control Unit Input Test (see page 22-120). ■

NO—Check for an open in the communication circuit between the MICU and the door multiplex control unit. If the circuit is OK, replace the MICU. If the circuit is bad, repair the open. ■



DTC B1102: Door Multiplex Control Unit Internal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the power window (UP/DOWN).
4. Check for DTCs using the HDS.

Is DTC B1102 indicated?

YES—Faulty door multiplex control unit; replace the power window master switch. ■

NO—Intermittent failure, the door multiplex control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

DTC B1178: F-CAN Communication Line Error

DTC B1168: Gauge Control Module Lost Communication with PCM (Engine Messages)

DTC B1169: Gauge Control Module Lost Communication with the PCM (A/T Messages)

1. Clear the DTCs using the HDS.
2. Turn the ignition switch OFF then back to the ON (II).
3. Start and run the engine for at least 5 seconds then turn the engine off.
4. Check for DTCs using the HDS.

Is DTC B1178, B1168 and/or B1169 indicated?

YES—Go to step 5.

NO—Intermittent failure, the F-CAN communication line is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

5. Check for DTCs in the PCM, ABS/TCS or Navigation.

Are any DTCs indicated?

YES—Troubleshoot the PCM, ABS/TCS or Navigation DTCs. ■

NO—Go to step 6.

(cont'd)

Multiplex Integrated Control System (MICS)

DTC Troubleshooting (cont'd)

6. Perform the Gauge Control Module Input Test (see page 22-119).

Are all inputs OK?

YES—Go to step 7.

NO—Repair the faulty input then recheck for DTCs. ■

7. Substitute a known-good gauge control module.
8. Clear the DTCs using the HDS.
9. Turn the ignition switch OFF then back to the ON (II).
10. Start and run the engine for at least 5 seconds then turn the engine off.
11. Check for DTCs using the HDS.

Is DTC B1178, B1168 and/or B1169 indicated?

YES—Substitute a known-good PCM and retest. If the system/indication goes away, replace the original PCM. ■

NO—The original gauge control module is faulty; replace the gauge control module (see page 22-235). ■

DTC B1080: Power Supply Circuit (IG1 line) Input Error for Relay Control Module and MICU

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Turn the ignition switch ON (II) and wait for 2 seconds or more.

Is DTC B1080 indicated again?

YES—Go to step 4.

NO—Intermittent failure, the relay control module is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check the MICU IG1 power supply No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to MICU Input Test (see page 22-116). ■

NO—Replace the fuse and recheck for DTCs. ■



DTC B1251: Combination Switch Control Unit Internal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1251 indicated?

YES—Faulty combination switch control unit; replace the wiper/washer switch. ■

NO—Intermittent failure, the CPU in the combination switch control unit is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

DTC B1255: Combination Switch Control Unit Lost Communication With MICU

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1255 indicated?

YES—Go to step 4.

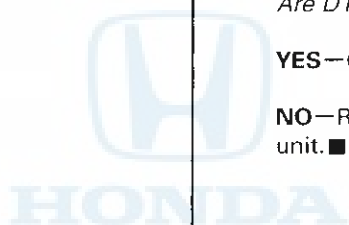
NO—Intermittent failure, MICU is OK at this time. Check for loose or poor connections. If the connections are good, check the battery condition (see page 22-71) and the charging system. ■

4. Check for DTCs in the combination switch control using the HDS.

Are DTCs B1055 and B1157 also indicated?

YES—Go to MICU input test (see page 22-116). ■

NO—Replace the combination switch control unit. ■

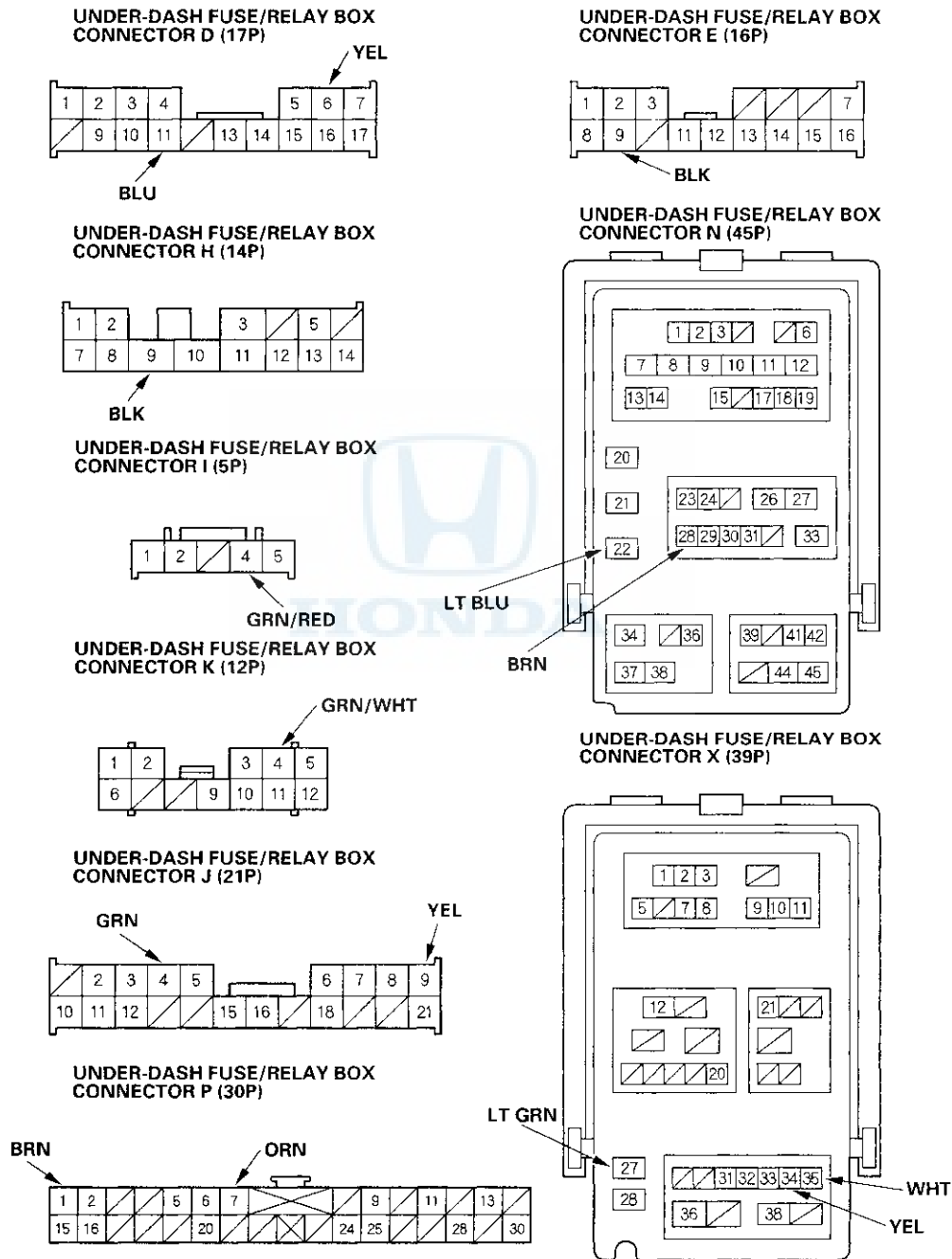


Multiplex Integrated Control System (MICS)

MICU Input Test

1. Remove the left side kick panel (see page 20-45).
2. Disconnect the under-dash fuse/relay box connectors D, E, H, I, J, K, N, P and X.

NOTE: All connectors are wire side of female terminals.





3. Inspect the connector and socket terminals to be sure they are all making good contact.

- If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
- If the terminals look OK, go to step 4.

4. With the connectors still disconnected from the under-hood fuse/relay box, make these input tests at the connector(s).

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove ok, go to step 5.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
H9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G601) • An open in the wire
P1	BRN	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G502) • An open in the wire
E9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G601) • An open in the wire
N22	LT BLU	Under all conditions	Check for continuity between terminal N22 and the climate control unit B (16P) connector terminal No. 14: There should be continuity.	An open in the wire
		Climate control unit B (16P) connector disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
J4	GRN	Under all conditions	Check for continuity between terminal J4 and power window master switch 23P connector terminal No. 16: There should be continuity.	An open in the wire
		Power window master switch 23P connector disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
D11	BLU	Under all conditions	Check for continuity between terminal D11 and relay control module I (10P) connector terminal No. 7: There should be continuity.	An open in the wire
		Relay control module I (10P) connector disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
X27	LT GRN	Under all conditions	Check for continuity between terminal X27 and wiper/washer switch 8P connector terminal No. 4: There should be continuity.	An open in the wire
		Wiper/washer switch 8P connector disconnected	Check for continuity to ground: There should be no continuity.	Short to ground
N28	BRN	Under all conditions	Check for continuity between terminal N28 and gauge assembly (30P) connector terminal No. 25: There should be continuity.	An open in the wire
		Gauge control module 30P connector disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

{cont'd}

Multiplex Integrated Control System (MICS)

MICU Input Test (cont'd)

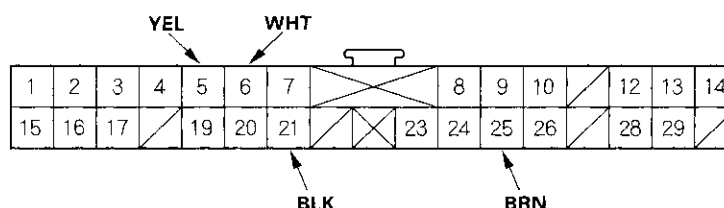
5. Reconnect the connectors to the under-dash fuse/relay box, and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the multiplex integrated control unit must be faulty, replace the under-dash fuse/relay box assembly.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P7	ORN	Under all conditions	Attach to ground: The ignition key light should come on.	<ul style="list-style-type: none">• Blown No. 13 (20 A) fuse in the under-hood fuse/relay box• Blown LED• An open in the wire
I4	GRN/RED	Ceiling light switch in the middle position, all doors closed	Attach to ground: The ceiling light should come on.	<ul style="list-style-type: none">• Blown No. 6 (7.5 A) fuse in the under-dash fuse/relay box• Faulty ceiling light• An open in the wire
D6 · J9 · X34	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box• An open in the wire
K4	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 27 (20 A) fuse in the under-dash fuse/relay box• An open in the wire
X35	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 7 (10 A) fuse in the under-dash fuse/relay box• An open in the wire

Gauge Control Module Input Test

1. Remove the gauge control module (see page 22-235).
2. Disconnect the 30P connector from the gauge control module.
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

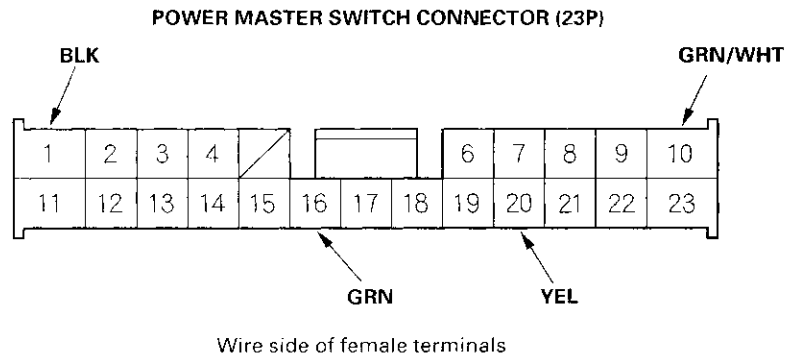
4. With the connector still disconnected, make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, replace the gauge control module.

Cavity	Wire	Test Condition	Test: Desired result	Possible cause if result is not obtained
5	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
6	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
21	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G503) • An open in the wire
25	BRN	Under all conditions	Check for continuity between the No. 25 terminal and under-dash fuse/relay box N (45P) connector No. 28 terminal: There should be continuity.	An open in the wire
		Under-dash fuse/relay box connector N (45P) disconnected	Check continuity to ground: There should be no continuity.	Short to ground on the wire

Multiplex Integrated Control System (MICS)

Door Multiplex Control Unit Input Test

1. Remove the driver's door switch panel (see page 20-7).
2. Disconnect the 23P connector from the power window master switch. (see page 22-209).



3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.

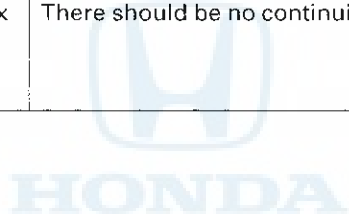




4. With the door multiplex control unit still disconnected, make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the door multiplex control unit must be faulty, replace the power window master switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none">• Poor ground (G501, G601)• An open in the wire
10	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 27 (20 A) fuse in the under-dash fuse/relay box• An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none">• Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box• An open in the wire
16	GRN	Under all conditions	Check for continuity between terminal No. 16 and the under-dash fuse/relay box connector J (21P) connector terminal No. 4: There should be continuity.	An open in the wire
		Under-dash fuse/relay box connector J (21P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

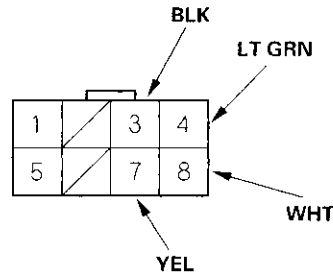


Multiplex Integrated Control System (MICS)

Combination Switch Control Unit Input Test

1. Remove the steering column covers (see page 17-9).
2. Disconnect the 8P connector from the wiper/washer switch (see page 22-219).

WIRE/WASHER SWITCH CONNECTOR (8P)



Wire side of female terminals

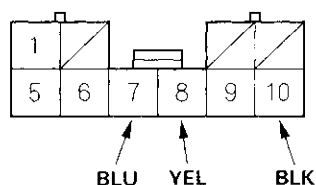
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.
4. With the control unit still disconnected, make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the combination switch control unit must be faulty, replace the wiper/washer switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • An open in the wire
8	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (10 A) fuse in the under-dash fuse/relay box • An open in the wire
7	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
4	LT GRN	Under all conditions	Check for continuity between terminal 4 and the under-dash fuse/relay box connector X (39P) connector terminal No. 27: There should be continuity.	An open in the wire
		Under-dash fuse/relay box connector X (39P) connector disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

Relay Control Module Input Test

1. Remove the under-hood fuse/relay box under cover.
2. Disconnect the 10P connector from the under-hood fuse/relay box.

**UNDER-HOOD FUSE/RELAY BOX
CONNECTOR I (10P)**



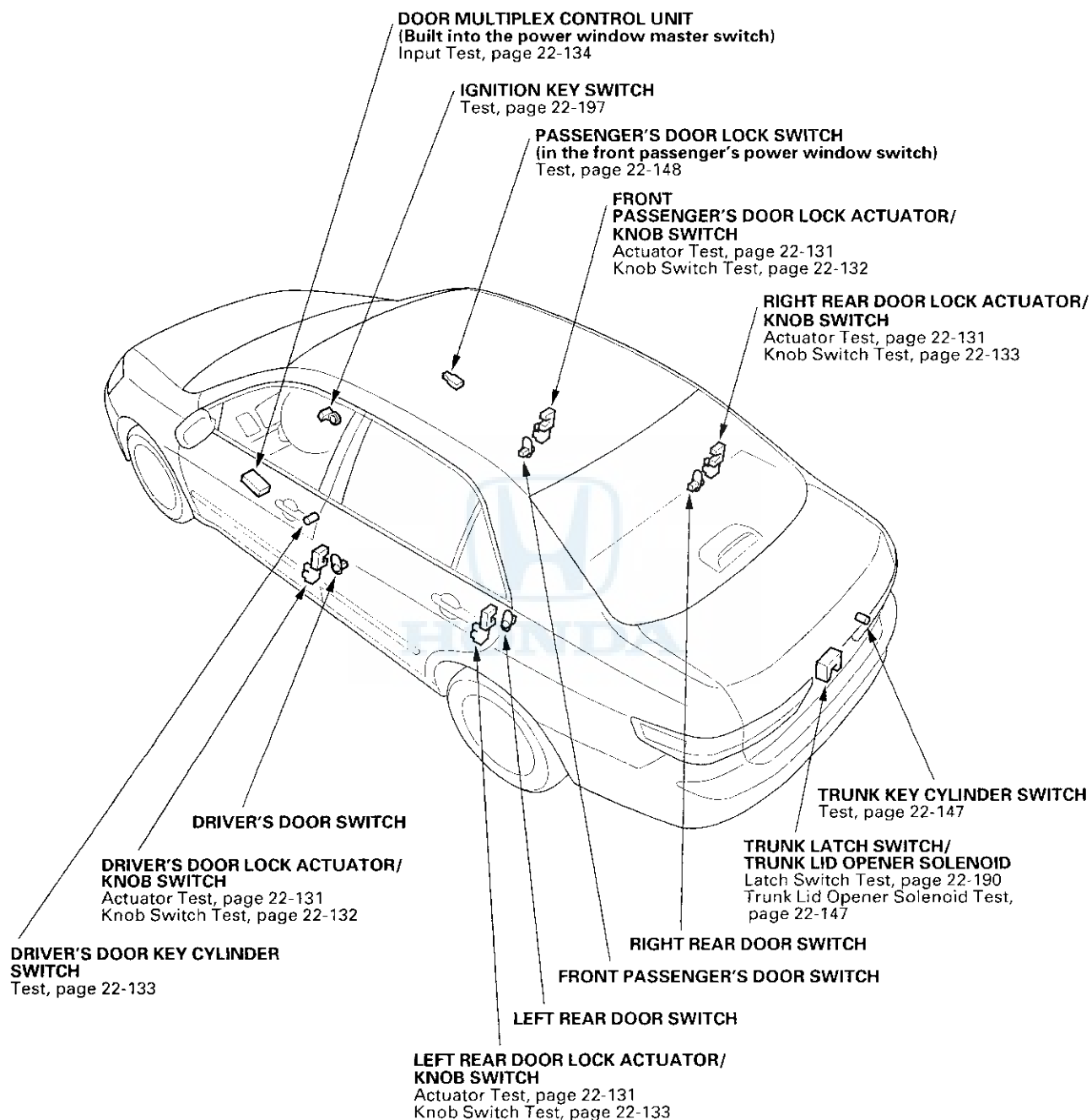
Wire side of female terminals

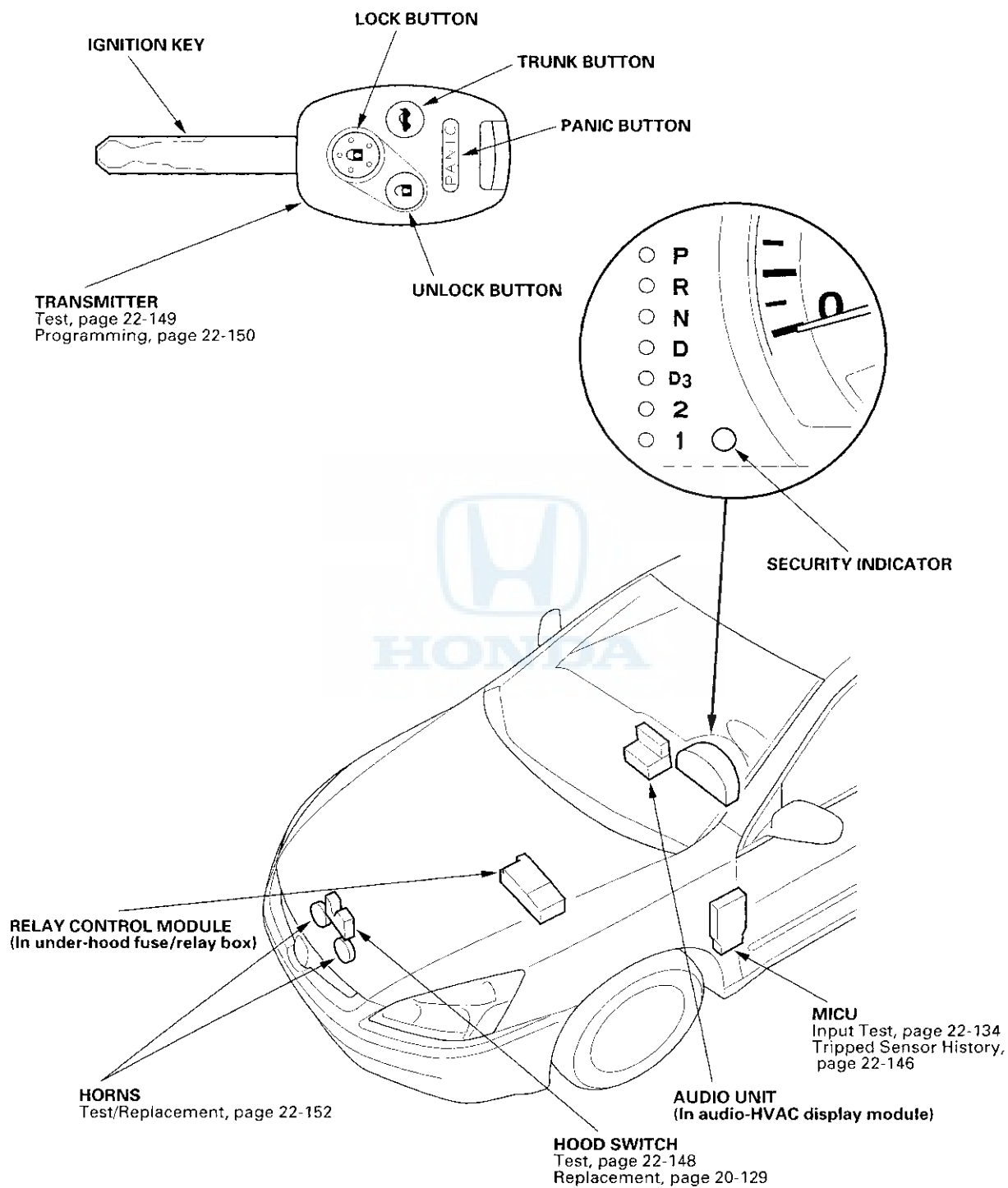
3. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 4.
4. With the connector still disconnected, make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the relay module must be faulty, replace the under-hood fuse/relay box.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
10	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • An open in the wire
8	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • An open in the wire
7	BLU	Under all conditions	Check for continuity between terminal 7 and the under-dash fuse/relay box connector D (17P) connector terminal No. 11: There should be continuity.	An open in the wire
		Under-dash fuse/relay box connector D (17P) disconnected	Check for continuity to ground: There should be no continuity.	Short to ground

Keyless/Power Door Locks/Security System

Component Location Index





Keyless/Power Door Locks/Security System

System Description

Security Alarm System

The security alarm system is armed automatically after the doors, hood, and trunk are closed and locked. For the system to arm, the ignition switch must be off, the key must be removed, and the MICU must receive signals that the doors, hood, trunk are closed and locked. The alarm can be disarmed at any time by unlocking the driver's door with the key or pressing the UNLOCK button on the remote transmitter.

When everything is closed and locked, the only inputs that are grounded, and have 0 V, are the driver's door lock knob switch (LOCK position), and the integrated audio-HVAC display module. In other words, all of the other switches are open, and have about 5 V with system awake and 1 V in sleep mode, including the key cylinder switches. The security indicator in the gauge control module begins to flash immediately after the vehicle is completely closed and locked, and 15 seconds later, the security system arms and the security indicator flashes on for a shorter amount of time than before. If the security indicator does not flash, the system is not arming. A beep sounds and parking lights flash to confirm the security alarm system is armed if the LOCK button is pressed a second time within 5 seconds.

If one of the switches is misadjusted or shorted internally, or there is a short in the circuit, the security system will not arm. As long as the control unit continues to receive a ground signal (0 V), it senses that the vehicle is not closed and locked, and the system will not arm. A switch that is slightly misadjusted can cause the alarm to sound for no apparent reason. In this case, a significant change in outside air temperature, the vibration of a passing truck, or someone bumping into the vehicle could cause the alarm to sound. There is no glass breakage or motion detector feature.

If anything is opened or improperly unlocked after the system is armed, the control unit receives a ground signal from that switch, and the 1—5 V reference drops to 0 V. If the integrated audio-HVAC display module is disconnected, the input loses its ground, and the input voltage goes to 1—5 V. The system sounds the alarm when any of these occur:

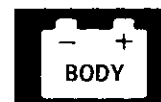
- A door or the trunk is forced open
- A door is unlocked without using the key or the remote transmitter
- The hood is opened
- The audio-HVAC display module is disconnected
- The remote panic is operated

When the system sounds the alarm, the horns sound and the exterior lights flash for 2 minutes. The alarm can be stopped at any time by unlocking the driver's door with the key or by pressing any button on the remote transmitter.

Panic Mode

The panic mode sounds the alarm in order to attract attention. When the PANIC button on the remote transmitter is pressed and held for 2 seconds, the alarm sounds and the exterior lights flash for about 20 seconds.

The panic mode can be cancelled at anytime by pressing any button on the remote transmitter or by turning the ignition switch ON (II). The panic mode will not function if the ignition switch is ON (II).



Keyless Entry System

The keyless entry system is integrated with the MICS. The multiplex integrated control unit (MICU) receives LOCK, UNLOCK and PANIC signals from the door multiplex control unit (keyless receiver).

The keyless entry system allows you to lock and unlock the vehicle with the remote transmitter. When you press the LOCK button, all doors lock. When you press the UNLOCK button once, only the driver's door unlocks. The other doors will unlock when you press the button a second time. The doors will not lock with the remote transmitter if a door is not fully closed, or if the key is in the ignition switch.

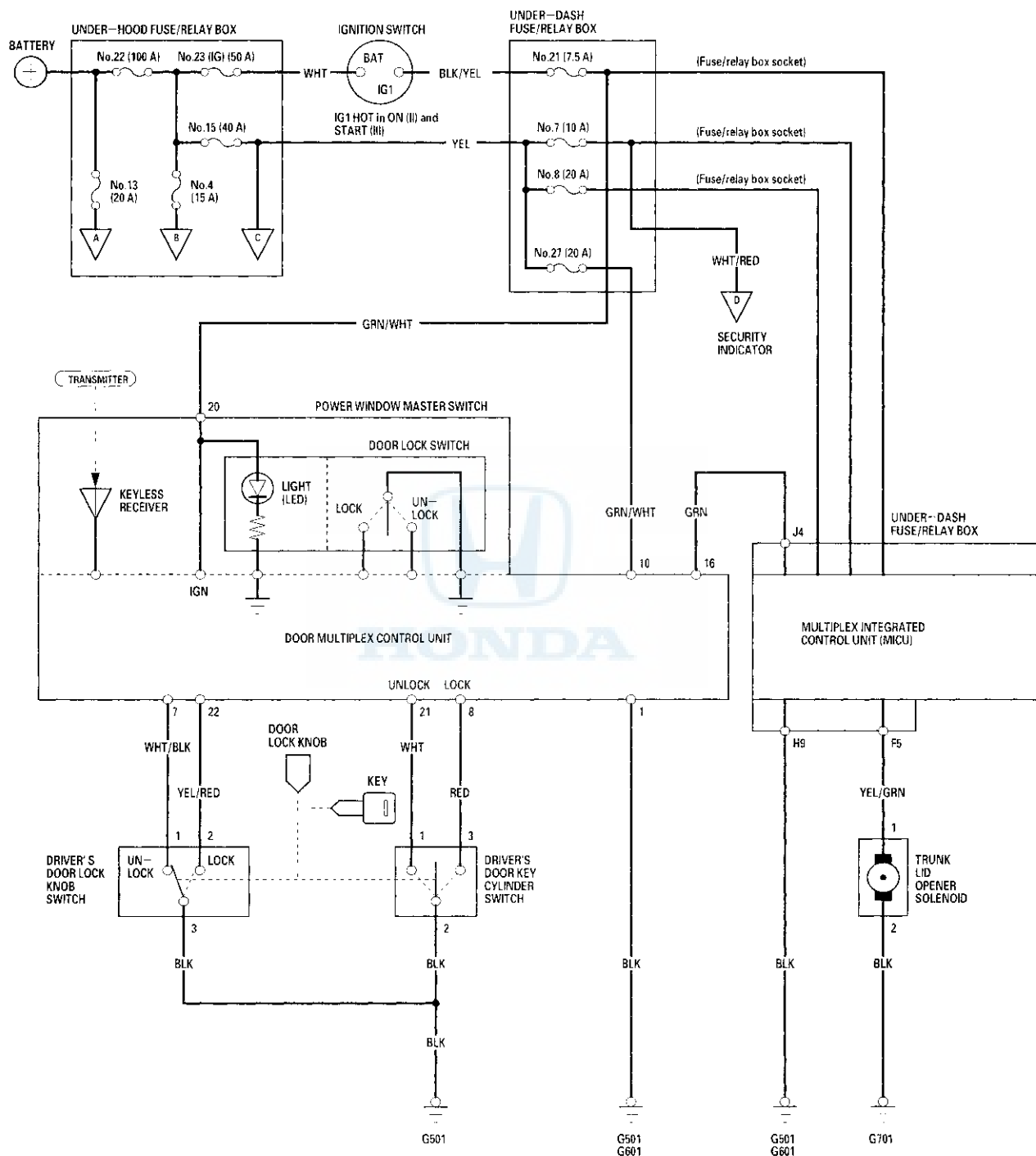
If the UNLOCK button is pressed, released, then pressed and held, the windows will begin to open. The windows stop if the button is released. See power windows for more information and troubleshooting.

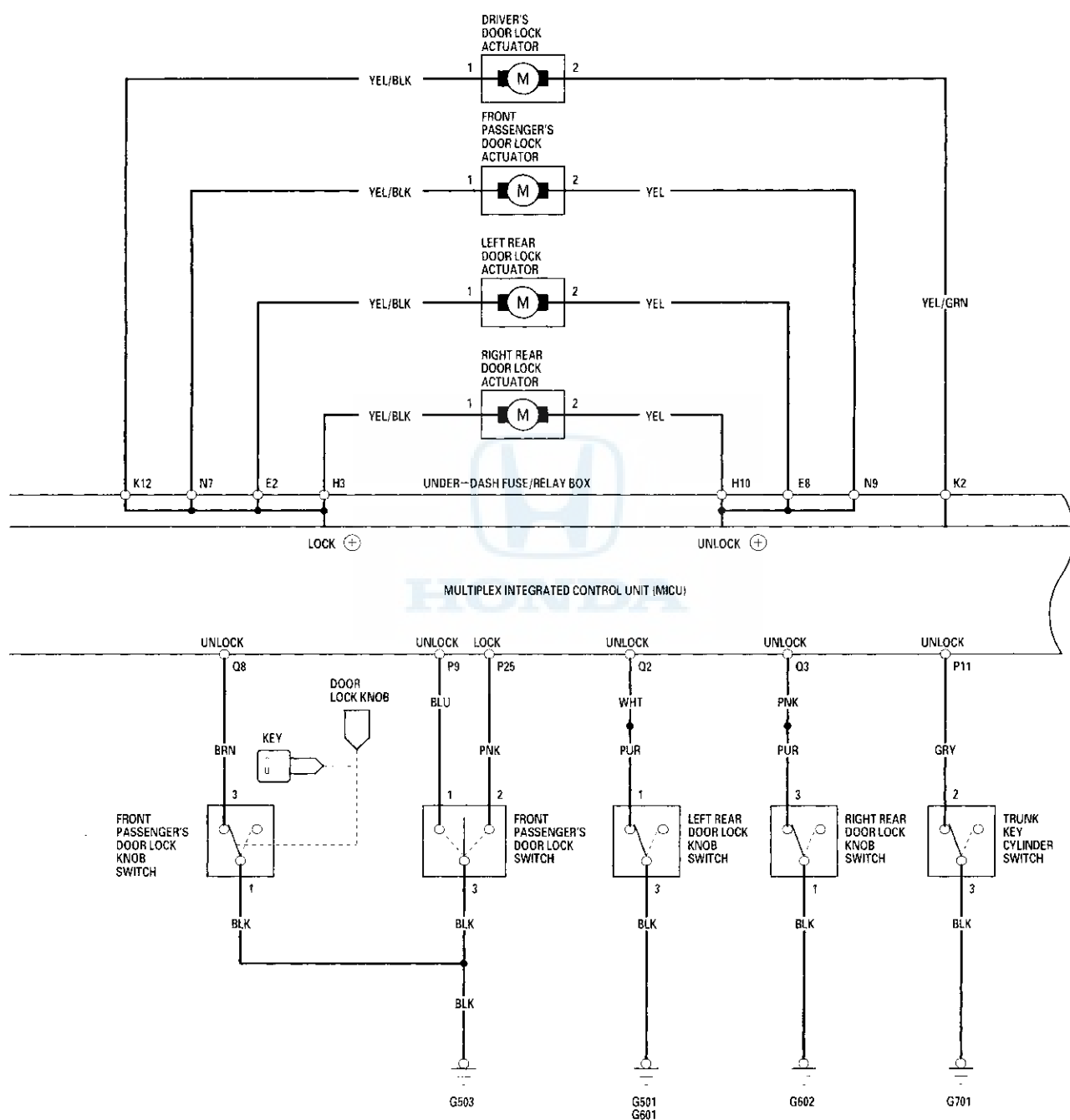
When the switch for the ceiling light is in the center position, it will come on when the UNLOCK button is pressed. If a door is not opened, the light will go off in about 30 seconds, and the doors will relock. If the doors are locked with the remote transmitter within 30 seconds, the light will go off immediately.



Keyless/Power Door Locks/Security System

Circuit Diagram

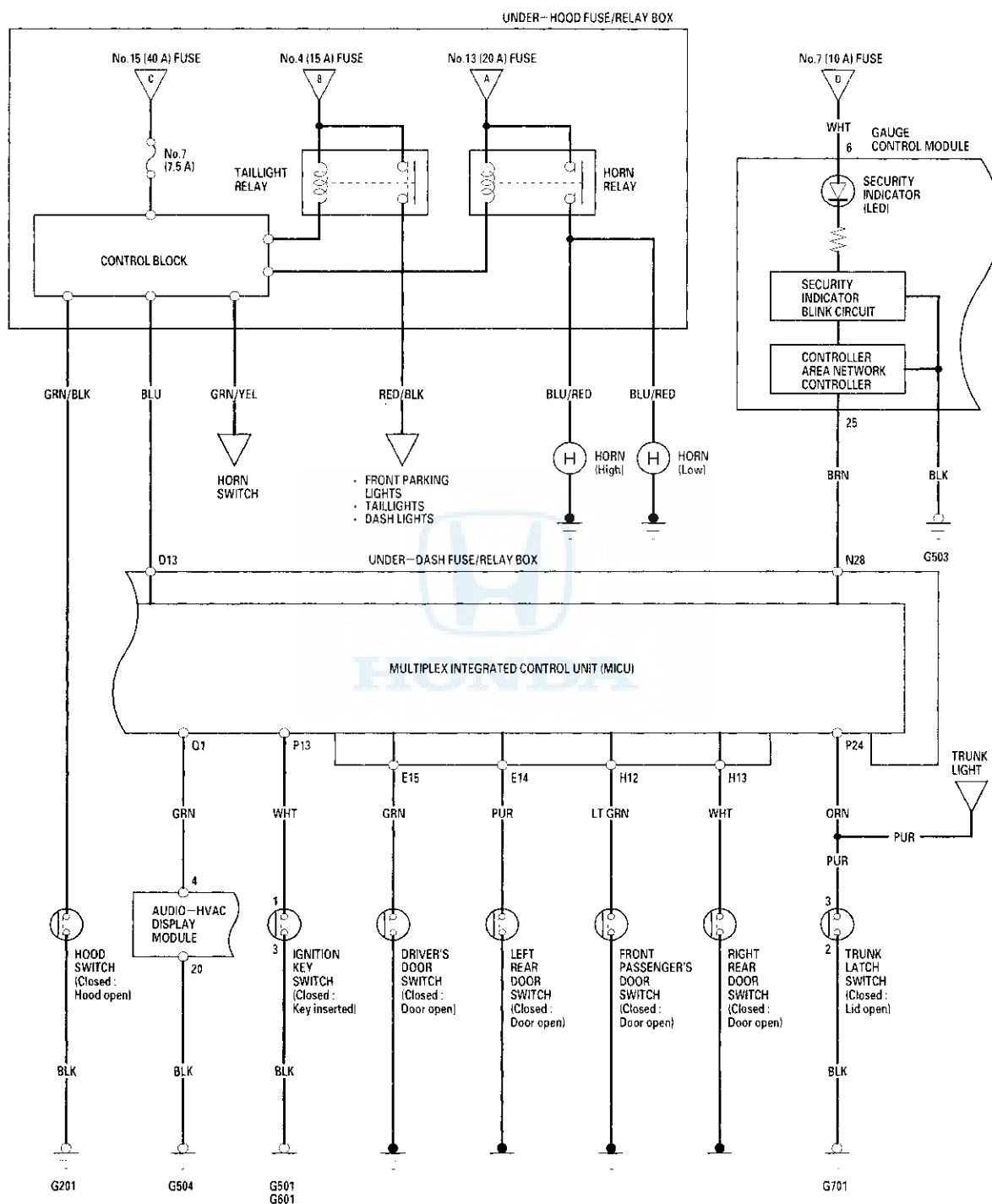




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Keyless/Power Door Locks/Security System

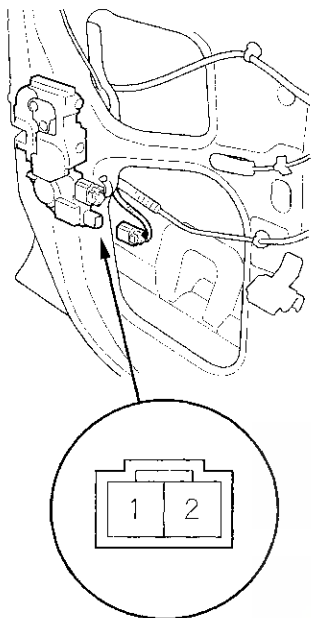
Circuit Diagram (cont'd)



Door Lock Actuator Test

Driver's door

1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 2P connector from the actuator.



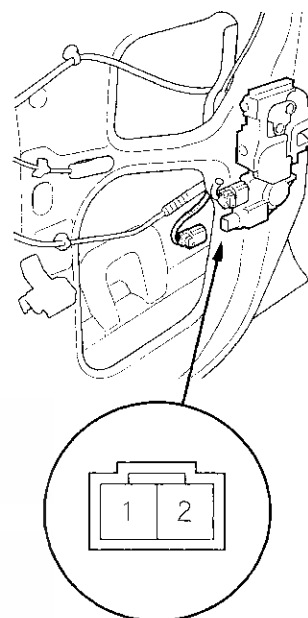
3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal Position	1	2
LOCK	+	-
UNLOCK	-	+

4. If the actuator does not operate as specified, replace it.

Passenger's door

1. Remove the passenger's door panel (see page 20-7).
2. Disconnect the 2P connector from the actuator.



3. Check actuator operation by connecting power and ground according to the table. To prevent damage to the actuator, apply battery voltage only momentarily.

Terminal Position	1	2
LOCK	+	-
UNLOCK	-	+

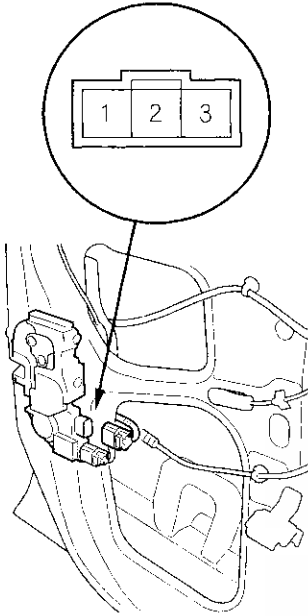
4. If the actuator does not operate as specified, replace it.

Keyless/Power Door Locks/Security System

Door Lock Knob Switch Test

Driver's Door

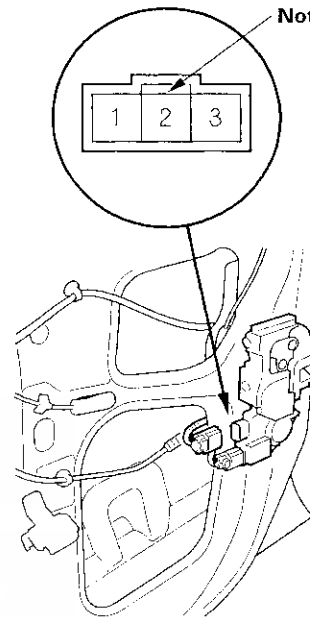
1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals.
 - There should be continuity between the No. 2 and No. 3 terminals when the door lock knob switch is in the LOCK position and no continuity when the switch is in the UNLOCK position.
 - There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch is in the UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Front Passenger's Door

1. Remove the front passenger's door panel (see page 20-7).
2. Disconnect the 3P connector from the actuator.



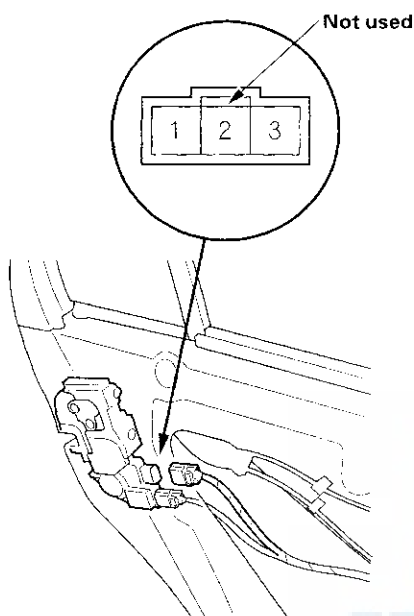
3. Check for continuity between the terminals.

There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch is in the UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

Door Key Cylinder Switch Test

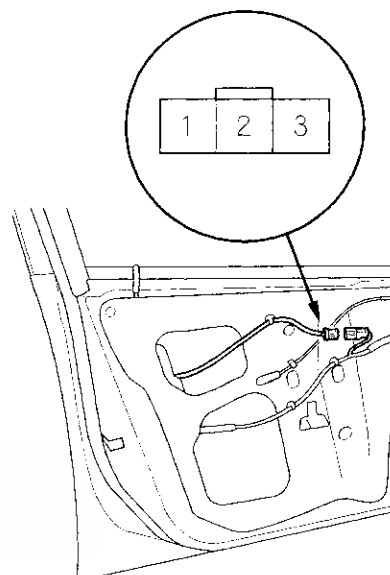
Rear Door

1. Remove the left or right rear door panel (see page 20-15).
2. Disconnect the 3P connector from the actuator.



3. Check for continuity between the terminals.
There should be continuity between the No. 1 and No. 3 terminals when the door lock knob switch is UNLOCK position and no continuity when the switch is in the LOCK position.
4. If the continuity is not as specified, replace the door lock actuator.

1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 3P connector from the key cylinder switch.



3. Check for continuity between the terminals.
 - There should be continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in LOCK position.
 - There should be no continuity between the No. 2 and No. 3 terminals when the door key cylinder switch is in the neutral or UNLOCK position.
 - There should be continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in UNLOCK position.
 - There should be no continuity between the No. 1 and No. 2 terminals when the door key cylinder switch is in the neutral or LOCK position.
4. If the continuity is not as specified, replace the door key cylinder assembly (see page 20-9).

Keyless/Power Door Locks/Security System

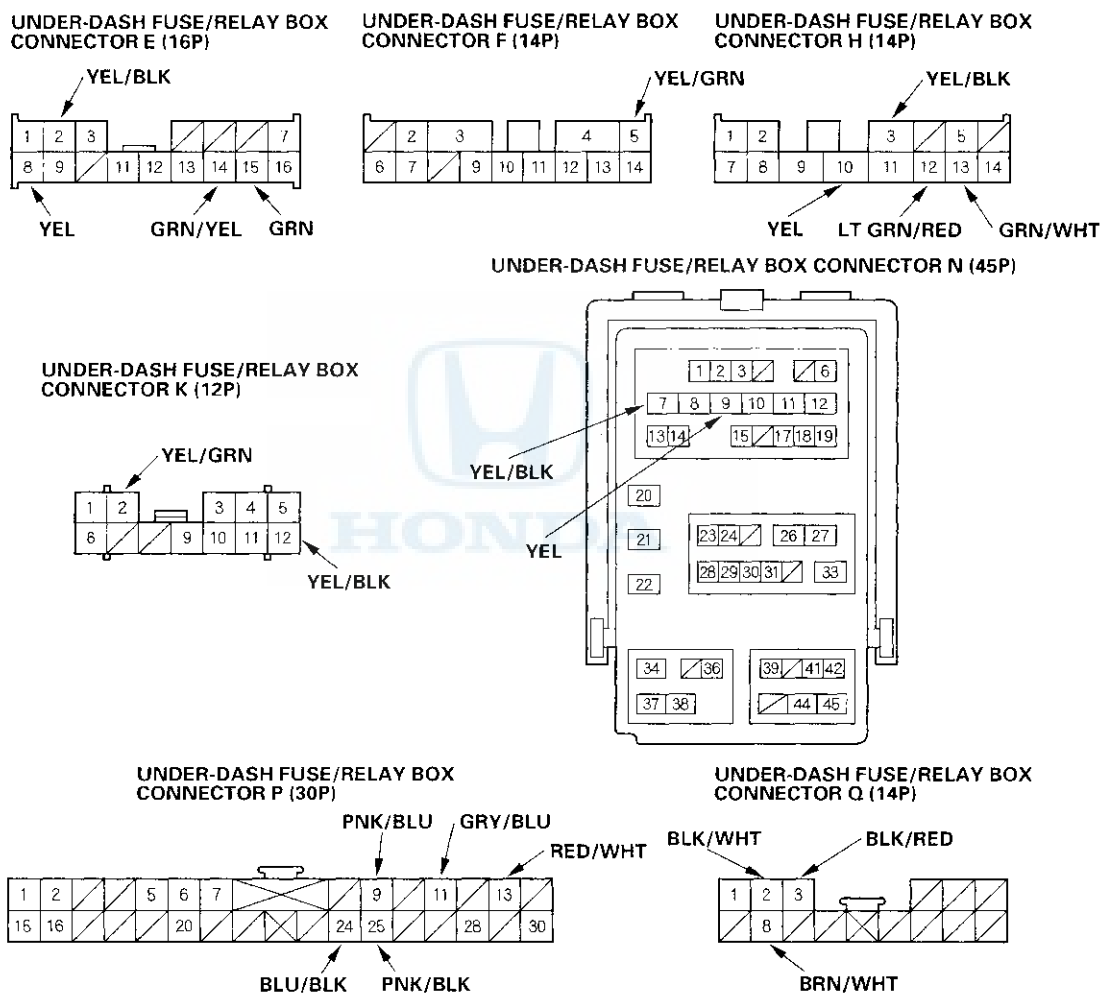
Control Unit Input Test

1. Before testing the keyless entry/security control functions, troubleshoot the multiplex integrated control system. (see page 22-84).

Multiplex Integrated Control Unit

2. Remove the left kick panel (see page 20-45).
3. Disconnect the under-dash fuse/relay box connectors.

NOTE: All connectors are wire side of female terminals.



4. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 5.



5. With the connectors still disconnected, make these input tests at the connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
H9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • An open in the wire
F5	YEL/GRN	Connect the F5 terminal to the battery positive terminal momentarily.	Check trunk opener operation: Trunk lid should open.	<ul style="list-style-type: none"> • Poor ground (G701) • Faulty trunk opener solenoid • An open in the wire
K2	YEL/GRN	Connect the battery positive terminal to K12 (K2) terminal, and K2 (K12) terminal to H9 terminal.	Check actuator operation: The driver's door lock actuator should lock (unlock).	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • An open in the wire
K12	YEL/BLK			
N7	YEL/BLK	Connect the battery positive terminal to N7 (N9) terminal, and N9 (N7) terminal to H9 terminal.	Check actuator operation: The front passenger's door lock actuator should lock (unlock).	<ul style="list-style-type: none"> • Faulty front passenger's door lock actuator • An open in the wire
N9	YEL			
E2	YEL/BLK	Connect the battery positive terminal to E2 (E8) terminal, and E8 (E2) terminal to H9 terminal.	Check actuator operation: The left rear door lock actuator should lock (unlock).	<ul style="list-style-type: none"> • Faulty left rear door lock actuator • An open in the wire
E8	YEL			
H3	YEL/BLK	Connect the battery positive terminal to H3 (H10) terminal, and H10 (H3) terminal to H9 terminal.	Check actuator operation: The right rear door lock actuator should lock (unlock).	<ul style="list-style-type: none"> • Faulty right rear door lock actuator • An open in the wire
H10	YEL			

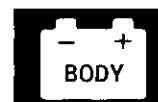
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Keyless/Power Door Locks/Security System

Control Unit Input Test (cont'd)

6. Reconnect all connectors to the under-dash fuse/relay box.
7. Turn ignition switch to ON (II) to keep the system awake and make these input tests at the appropriate connectors on the under-dash fuse/relay box.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 8.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
Q8	BRN/WHT	Front passenger's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G503) • Faulty front passenger's door lock knob switch • An open in the wire
		Front passenger's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door lock knob switch • Short to ground
P9	PNK/BLU	Front passenger's door lock switch unlocked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G503) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door lock switch • Short to ground
P25	PNK/BLK	Front passenger's door lock switch locked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G503) • Faulty front passenger's door lock switch • An open in the wire
		Front passenger's door lock switch in neutral	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door lock switch • Short to ground
Q2	BLK/WHT	Left rear door lock knob switch unlocked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • Faulty left rear door lock knob switch • An open in the wire
		Left rear door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty left rear door lock knob switch • Short to ground
Q3	BLK/RED	Right rear door lock knob switch unlocked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G602) • Faulty right rear door lock knob switch • An open in the wire
		Right rear door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty right rear door lock knob switch • Short to ground
P11	GRY/BLU	Trunk key cylinder switch unlocked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G701) • Faulty trunk key cylinder switch • An open in the wire
		Trunk key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty trunk key cylinder switch • Short to ground



Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
Q1	RED/BLU	Under all conditions	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G504) • Faulty connections at the audio unit • Faulty audio unit • An open in the wire
P13	RED/WHT	Ignition key inserted into the ignition switch.	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • Faulty ignition key switch • An open in the wire
		Ignition key removed from the ignition switch.	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty ignition key switch • Short to ground
E15	GRN	Driver's door open	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • Short to ground
H12	LT GRN/RED	Front passenger's door open	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • Short to ground
E14	GRN/YEL	Left rear door open	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty left rear door switch • Short to ground
H13	GRN/WHT	Right rear door open	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty right rear door switch • Short to ground
P24	BLU/BLK	Trunk lid open	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G701) • Faulty trunk latch switch • An open in the wire
		Trunk lid closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty trunk latch switch • Short to ground

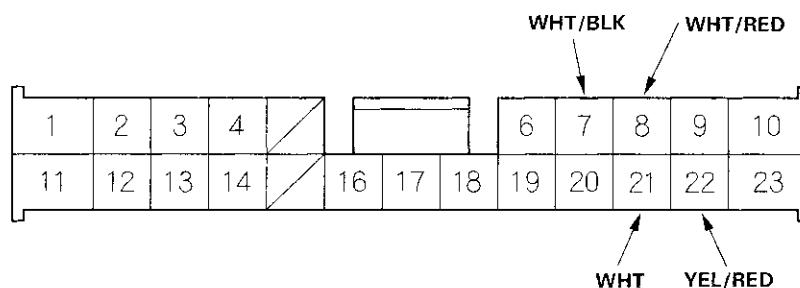
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Keyless/Power Door Locks/Security System

Control Unit Input Test (cont'd)

Door Multiplex Control Unit

8. Remove the driver's power window switch panel (see page 20-7).
9. Disconnect the 23P connector from the power window master switch.



Wire side of female terminals

10. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 11.





11. Reconnect the connector to the door multiplex control unit, and make these input tests at the connectors.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 12.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
7	WHT/BLK	Driver's door lock knob switch unlocked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch locked	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door lock knob switch • Short to ground
22	YEL/RED	Driver's door lock knob switch locked	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Poor ground (G501) • Faulty driver's door lock knob switch • An open in the wire
		Driver's door lock knob switch unlocked	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door lock knob switch • Short to ground
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire • Short to ground
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 5 V or more.	
8	WHT/RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none"> • Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire • Short to ground
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be 5 V or more.	
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	

12. If all the input tests prove OK, and no DTCs were found during MICU troubleshooting (B-CAN system diagnosis test mode A), go to the B-CAN system input and output index. If multiple failures are found on more than one control unit, replace the under-dash fuse/relay box (includes the MICU). If input failures are related to a particular control unit, replace that control unit.

Keyless/Power Door Locks/Security System

DTC Troubleshooting

DTC B1026: Passenger's Door Lock Switch Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the passenger's door lock switch in the LOCK and UNLOCK positions for 2 seconds.
4. Check for DTCs using the HDS.

Is DTC B1026 indicated?

YES—Go to step 5.

NO—Intermittent failure. The passenger's door lock system is OK at this time. Check pinfits and connections. ■

5. With the door lock in UNLOCK position, select SECURITY from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the Front Psnger's Door Lock Sw. (LOCK) and Front Psnger's Door Lock Sw. (UNLOCK) in the DATA LIST.

Are both information indicators OFF?

YES—Go to step 7.

NO—Go to step 9.

7. Make sure the ON/OFF information of the Front Psnger's Door Lock Sw. (LOCK) and Front Psnger's Door Lock Sw. (UNLOCK) are changed when the passenger's door lock switch is in the LOCK and UNLOCK positions.

Does the information show the correct ON and OFF indications when the door lock switch in the LOCK and UNLOCK positions?

YES—Faulty MICU; replace it. ■

NO—Go to step 8.

8. Check for a short between the door lock switch LOCK and UNLOCK wires.

Are the wire harnesses OK?

YES—Faulty passenger's door lock switch; replace it. ■

NO—A short in the wire, repair and recheck. ■

9. Remove the passenger's inner handle (see page 20-7).
10. Disconnect the 3P connector from the passenger's door lock switch.
11. Check the ON/OFF information of the Front Psnger's Door Lock Sw. (LOCK) and Front Psnger's Door Lock Sw. (UNLOCK) in the DATA LIST.

Are both information indicators OFF?

YES—Faulty passenger's door lock switch; replace it. ■

NO—Go to step 12.

12. Check for a short in the wire between the MICU and passenger's door lock switch at the security alarm/keyless door lock system control unit input test (see page 22-134).

Are the wire harnesses OK?

YES—Faulty MICU; replace it. ■

NO—A short in the wire, repair and recheck. ■



DTC B1027: Trunk Key Cylinder Switch Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the trunk key cylinder switch for 2 seconds.
4. Check the DTCs using the HDS.

Is DTC B1027 indicated?

YES—Go to step 5.

NO—Intermittent failure. The trunk key cylinder system is OK at this time. ■

5. With the trunk key cylinder switch in the off (neutral) position, select the TEST MODE MENU from the HDS and enter the DATA LIST.
6. Check the ON/OFF information of the Trunk Key Cylinder Switch (UNLOCK) in the DATA LIST.

Is the information indicator OFF?

YES—Go to step 7.

NO—Go to step 9.

7. Make sure the ON/OFF information of the Trunk Key Cylinder Switch (UNLOCK) are changed when the trunk key cylinder switch is turned to UNLOCK position with the key.

Does the information show ON when the trunk key cylinder switch is turned to UNLOCK position, and show OFF when the trunk key cylinder switch is returned to the off (neutral) position?

YES—Faulty MICU; replace it. ■

NO—Go to step 8.

8. Check for an open in the wire between the MICU and trunk key cylinder switch.

Are the wire harnesses OK?

YES—Faulty trunk key cylinder switch; replace it. ■

NO—An open in the wire, repair and recheck. ■

9. Disconnect the 3P connector from the trunk key cylinder switch.

10. Check the ON/OFF information of the Trunk Key Cylinder Switch (UNLOCK) in the DATA LIST.

Is the information indicator OFF?

YES—Faulty trunk key cylinder switch; replace it. ■

NO—Go to step 11.

11. Check for a short in the wire between the MICU and trunk key cylinder switch.

Are the wire harnesses OK?

YES—Faulty MICU; replace it. ■

NO—A short in the wire, repair and recheck. ■

Keyless/Power Door Locks/Security System

DTC Troubleshooting (cont'd)

DTC B1127: Driver's Door Key Cylinder Switch Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the driver's door key cylinder in the LOCK and UNLOCK positions for 2 seconds.
4. Check for DTCs using the HDS.

Is DTC B1127 indicated?

YES—Go to step 5.

NO—Intermittent failure. The driver's door key cylinder system is OK at this time. Check pinfits and connections. ■

5. With no driver's door key cylinder operation, select SECURITY from the HDS, and enter the DATA LIST.
6. Check the ON/OFF information of the Driver's Door Key Cylinder Switch (LOCK) and Driver's Door Key Cylinder Switch (UNLOCK) in the DATA LIST.

Are both information indicators OFF?

YES—Go to step 7.

NO—Go to step 10.

7. Turn the driver's door key cylinder to the LOCK and UNLOCK positions with the ignition key and check the ON/OFF information of the Driver's Door Key Cylinder Switch (LOCK) and Driver's Door Key Cylinder Switch (UNLOCK) in the DATA LIST.

Is the Driver's Door Key Cylinder Switch (LOCK) (Driver's Door Key Cylinder Switch (UNLOCK)) information indicator ON when the key cylinder is in the LOCK (UNLOCK) position, and OFF when the key is returned to the neutral position?

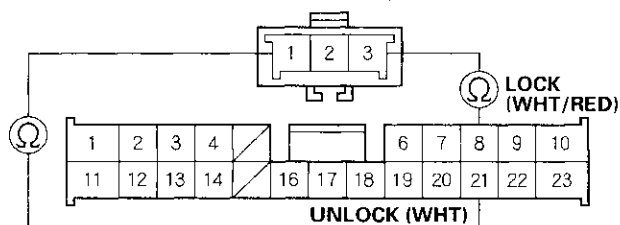
YES—Faulty door multiplex control unit; replace the power window master switch. ■

NO—Go to step 8.

8. Disconnect the driver's door key cylinder switch 3P connector.
9. Check for continuity between the No. 3 (LOCK) and No. 1 (UNLOCK) terminals of the driver's door key cylinder switch 3P connector and the No. 8 (LOCK) and No. 21 (UNLOCK) terminals of the power window master switch 23P connector.

DRIVER'S DOOR KEY CYLINDER SWITCH 3P CONNECTOR

Terminal side of male terminals



POWER WINDOW MASTER SWITCH 23P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Faulty driver's door key cylinder switch. ■

NO—Repair an open in the WHT/RED (LOCK) or WHT (UNLOCK) wire. ■

10. Disconnect the driver's door key cylinder switch 3P connector.
11. Check the ON/OFF information of the Driver's Door Key Cylinder Switch (LOCK) and Driver's Door Key Cylinder Switch (UNLOCK) in the DATA LIST.

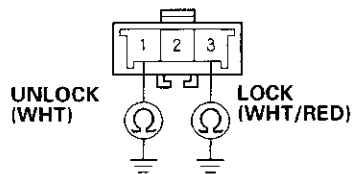
Are both information indicators OFF?

YES—Faulty driver's door key cylinder switch. ■

NO—Go to step 12.

12. Check for continuity between the No. 3 (LOCK) and No. 1 (UNLOCK) terminals of the driver's door key cylinder switch 3P connector and body ground.

**DRIVER'S DOOR KEY CYLINDER SWITCH
3P CONNECTOR**



Terminal side of male terminals

Is there continuity?

YES—Repair a short in the WHT/RED (LOCK) or WHT (UNLOCK) wire. ■

NO—Faulty door multiplex control unit; replace the power window master switch. ■



Keyless/Power Door Locks/Security System

DTC Troubleshooting (cont'd)

DTC B1128: Driver's Door Lock Switch Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the driver's door lock switch in the LOCK and UNLOCK positions for 2 seconds.
4. Check for DTCs using the HDS.

Is DTC B1128 indicated?

YES—Go to step 5.

NO—Intermittent failure. The driver's door lock switch system is OK at this time. Check pinfits and connections. ■

5. With no driver's door lock switch operation, select SECURITY from the HDS, and enter the DATA LIST.
6. Check the ON/OFF information of the Driver's Door Lock Switch (LOCK) and Driver's Door Lock Switch (UNLOCK) in the DATA LIST.

Are both information indicators OFF?

YES—Go to step 7.

NO—Check the door lock switch. If the driver's door lock switch is OK, faulty door multiplex control unit; replace the power window master switch. ■

7. Push the driver's door lock switch in LOCK and UNLOCK positions, and check the ON/OFF information of the Driver's Door Lock Switch (LOCK) and Driver's Door Lock Switch (UNLOCK) in the DATA LIST.

Is the Driver's Door Lock Switch (LOCK) (Driver's Door Lock Switch (UNLOCK)) information indicator ON when the door lock switch is pushed in each switch position, and OFF when the door lock switch is released?

YES—Substitute a known-good power window master switch. If the code is still present, replace the MICU. ■

NO—Faulty door multiplex control unit; replace the power window master switch. ■



DTC B1129: Driver's Door Lock Knob Switch Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the driver's door lock knob switch in the LOCK and UNLOCK positions for 2 seconds.
4. Check for DTCs using the HDS.

Is DTC B1129 indicated?

YES—Go to step 5.

NO—Intermittent failure. The driver's door lock knob switch system is OK at this time. Check pinfits and connections. ■

5. Select SECURITY from the HDS, and enter the DATA LIST.

Check the ON/OFF information of the Driver's Door Lock knob Switch (LOCK) and Driver's Door Lock knob Switch (UNLOCK) in the DATA LIST.

Is the Driver's Door Lock knob Switch (LOCK) information indicator ON and Driver's Door Lock knob Switch (UNLOCK) information indicator OFF with the door lock knob switch in LOCK position, and is the Driver's Door Lock knob Switch (LOCK) information indicator OFF and Driver's Door Lock knob Switch (UNLOCK) information indicator ON with the door lock knob switch in UNLOCK position?

YES—Substitute a known-good power window master switch. If the code is still present, replace the MICU. ■

NO—Go to step 6.

6. Disconnect the driver's door lock knob switch 3P connector.
7. Check the ON/OFF information of the Driver's Door Lock knob Switch (LOCK) and Driver's Door Lock knob Switch (UNLOCK) in the DATA LIST.

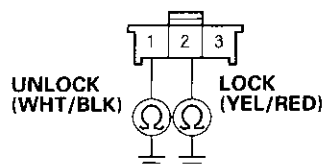
Are both information indicators OFF?

YES—Faulty driver's door lock knob switch. ■

NO—Go to step 8.

8. Check for continuity between the No. 2 (LOCK) and No. 1 (UNLOCK) terminals of the driver's door lock knob switch 3P connector and body ground.

DRIVER'S DOOR LOCK KNOB SWITCH 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the YEL/RED (LOCK) or WHT/BLK (UNLOCK) wire. ■

NO—Go to driver's door lock knob switch test (see page 22-132). If the driver's door lock knob switch is OK, the door multiplex control unit is faulty; replace the power window master switch. ■

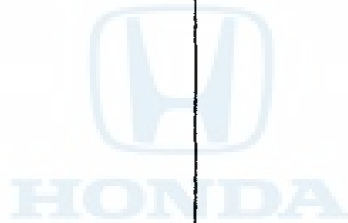
Keyless/Power Door Locks/Security System

Tripped Sensor History

The security system stores information on the last tripped sensor if the security system has been violated. The information can be retrieved using the HDS.

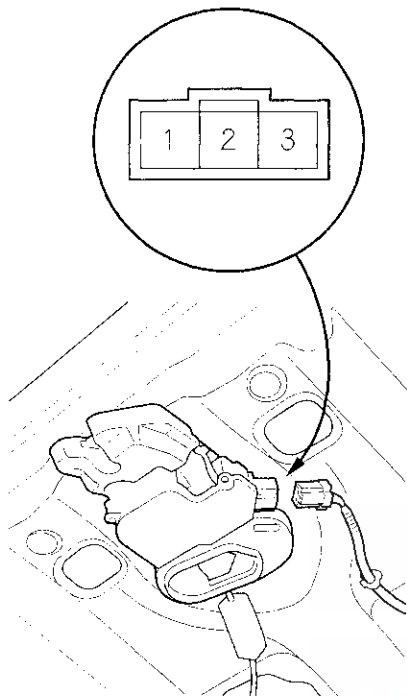
To retrieve the last tripped sensor data:

1. Select HISTORY DATA from the security system test mode menu.
2. Select CURRENT DATA.
3. Confirm that the VIN matches the Vehicle then press the enter button.
4. Scroll through the data list.
 - Sensors that were violated will indicate DETECT.
 - Sensors that were not violated will indicate NONE.
5. Inspect the DETECT circuit for:
 - Misadjusted or damaged switch.
 - Loose or corroded connections.
 - Intermittent short to ground.



Trunk Lid Opener Solenoid Test

1. Disconnect the 3P connector from the trunk latch switch/trunk lid opener solenoid.



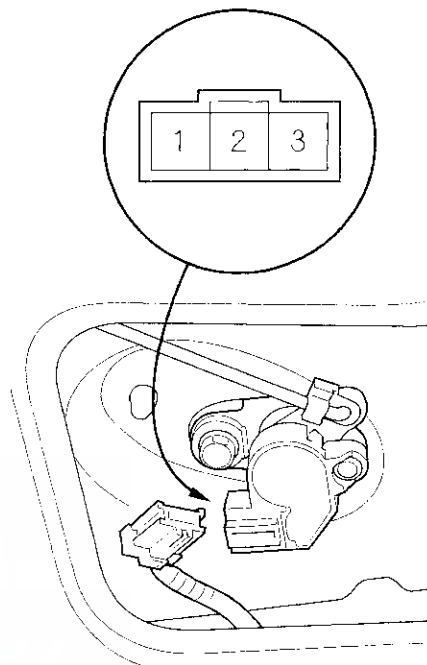
2. Check trunk lid opener solenoid operation by connecting power and ground according to the table. To prevent damage to the trunk lid opener solenoid, apply battery voltage only momentarily.

Terminal	1	2
Position		
UNLOCK	⊕	⊖

3. If the trunk lid opener solenoid does not work as specified, replace it.

Trunk Key Cylinder Switch Test

1. Remove the trunk lid trim (see page 20-55).
2. Disconnect the 3P connector from the key cylinder switch.



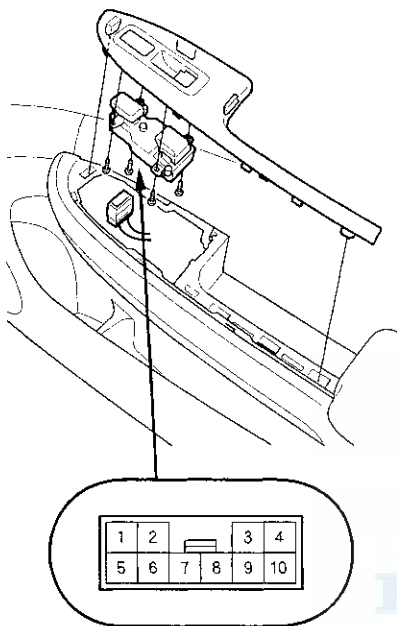
3. Check for continuity between the terminals. There should be continuity between the No. 2 and No. 3 terminals when the trunk key cylinder switch is in UNLOCK position. There should be no continuity between the No. 2 and No. 3 terminals when the trunk key cylinder switch is in the released (neutral) position.
4. If the continuity is not as specified, replace the trunk key cylinder switch.

Keyless/Power Door Locks/Security System

Door Lock Switch Test

Passenger's Door Lock Switch

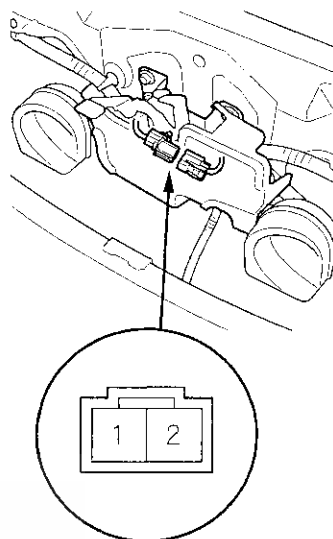
1. Remove the front passenger's switch panel (see page 20-7).
2. Disconnect the 10P connector from the front passenger's power window switch.



3. Check for continuity between the terminals.
 - There should be continuity between the No. 2 and No. 9 terminals when the door lock switch is in LOCK position. There should be no continuity between the No. 2 and No. 9 terminals when the door lock switch is in the neutral position.
 - There should be continuity between the No. 1 and No. 9 terminals when the door lock switch is in UNLOCK position. There should be no continuity between the No. 1 and No. 9 terminals when the door lock switch is in the neutral position.
4. If the continuity is not as specified, replace the door lock switch.

Hood Switch Test

1. Open the hood.
2. Disconnect the 2P connector from the hood switch.



3. Check for continuity between the terminals. There should be continuity between the No. 1 and No. 2 terminals when the hood is opened (lever released). There should be no continuity between the No. 1 and No. 2 terminals when the hood is closed (lever pushed down).
4. If the continuity is not as specified, replace the hood switch.



Transmitter Test

NOTE:

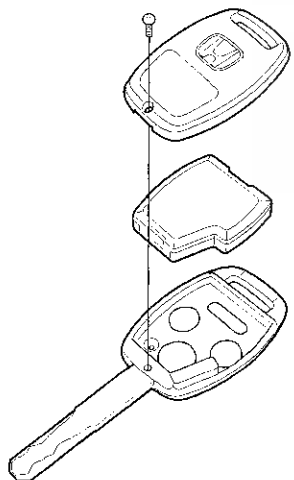
- If the doors unlock or lock with the transmitter, but the LED on the transmitter does not come on, the LED is faulty; replace the transmitter.
- If any door is open, you cannot lock the doors with the transmitter.
- If you unlocked the doors with the transmitter, but do not open any of the doors within 30 seconds, the doors relock automatically.
- The doors do not lock or unlock with the transmitter if the ignition key is inserted in the ignition switch.

1. Press the lock or unlock button five or six times to reset the transmitter.

- If the locks work, the transmitter is OK. ■
- If the locks don't work, go to step 2.

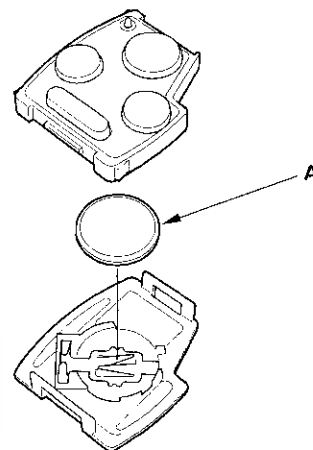
2. Open the transmitter and check for water damage.

- If you find any water damage, replace the transmitter. ■
- If there is no water damage, go to step 3.



3. Replace the transmitter battery (A) with a new one, and try to lock and unlock the doors with the transmitter by pressing the lock or unlock button five or six times.

- If the doors lock and unlock, the transmitter is OK. ■
- If the doors don't lock and unlock, go to step 4.



4. Reprogram and register the transmitter, then try to lock and unlock the doors.

- If the doors lock and unlock, the transmitter is OK. ■
- If the doors don't lock and unlock, try and program to another vehicle. If still not operating, replace the transmitter. ■

Keyless/Power Door Locks/Security System

Transmitter Programming

Storing transmitter codes:

The codes of up to three transmitters can be stored into the keyless receiver unit memory. (If a fourth code is stored, the code which was input first will be erased.)

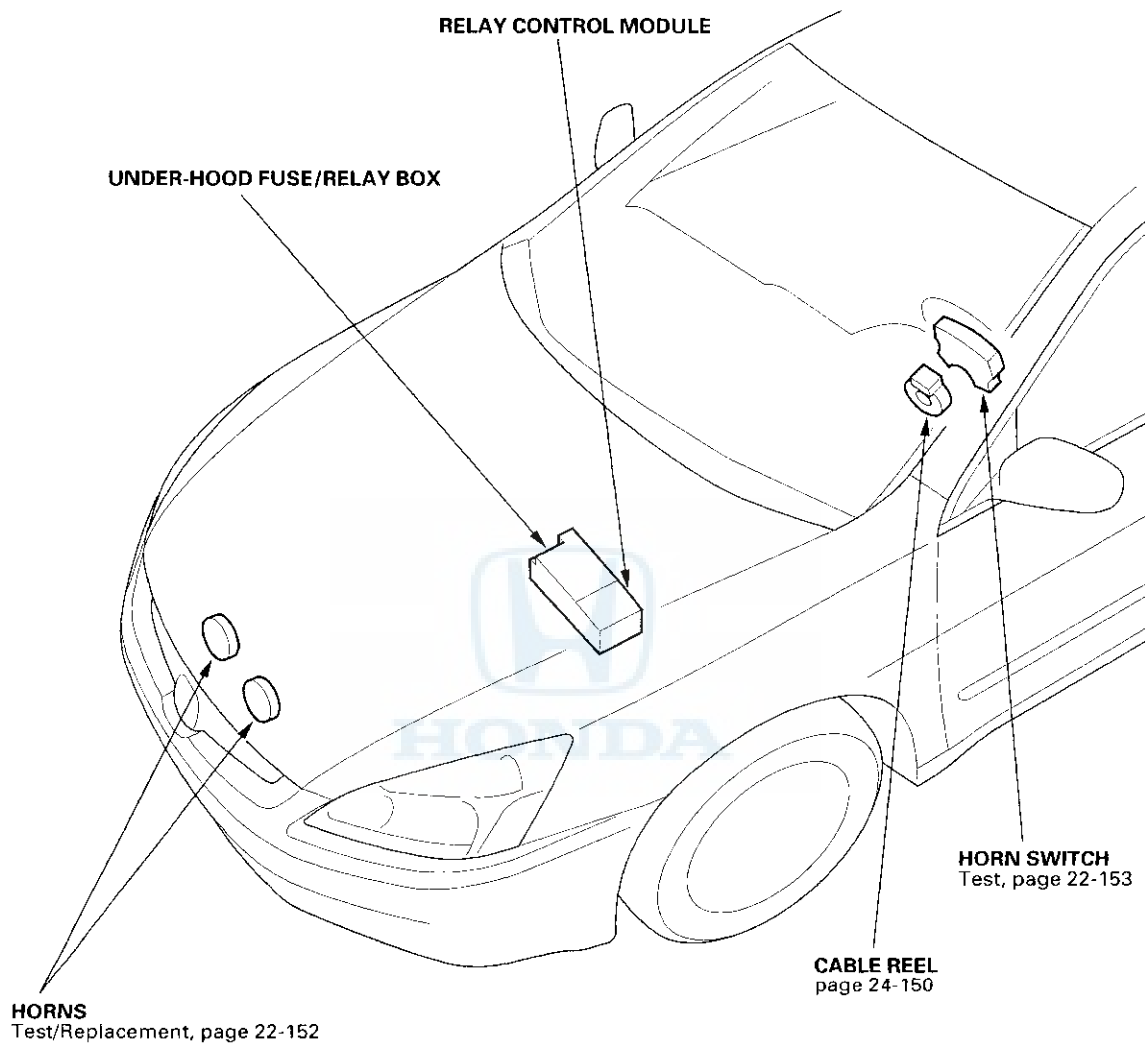
NOTE: It is important to maintain the time limits between the steps. Make sure the doors, the hood and the tailgate are closed.

1. Turn the ignition switch ON (II).
2. Within 1 to 4 sec, press the transmitter lock or unlock button with the transmitter aimed at the keyless receiver in the power window master switch.
3. Within 1 to 4 sec, turn the ignition switch OFF.
4. Within 1 to 4 sec, turn the ignition switch ON (II).
5. Within 1 to 4 sec, press the transmitter lock or unlock button with the transmitter aimed at the keyless receiver in the power window master switch.
6. Within 1 to 4 sec, turn the ignition switch OFF.
7. Within 1 to 4 sec, turn the ignition switch ON (II).
8. Within 1 to 4 sec, press the transmitter lock or unlock button with the transmitter aimed at the keyless receiver in the power window master switch.
9. Within 1 to 4 sec, turn the ignition switch OFF.
10. Within 4 sec, turn the ignition switch ON (II).
11. Within 1 to 4 sec, press the transmitter lock or unlock button with the transmitter aimed at the keyless receiver in the power window master switch.
12. Confirm you can hear the sound of the door lock actuators within 1 to 4 sec, then push the transmitter lock or unlock button again, or the code will not be stored.
13. Within 10 sec, aim the transmitters (up to two additional ones) whose codes you want to store at the keyless receiver, and press the transmitter lock or unlock buttons.
Confirm that you can hear the sound of the door lock actuators after each transmitter code is stored.
14. Turn the ignition switch OFF, and pull out the key.
15. Confirm proper operation with the transmitters.

Horns

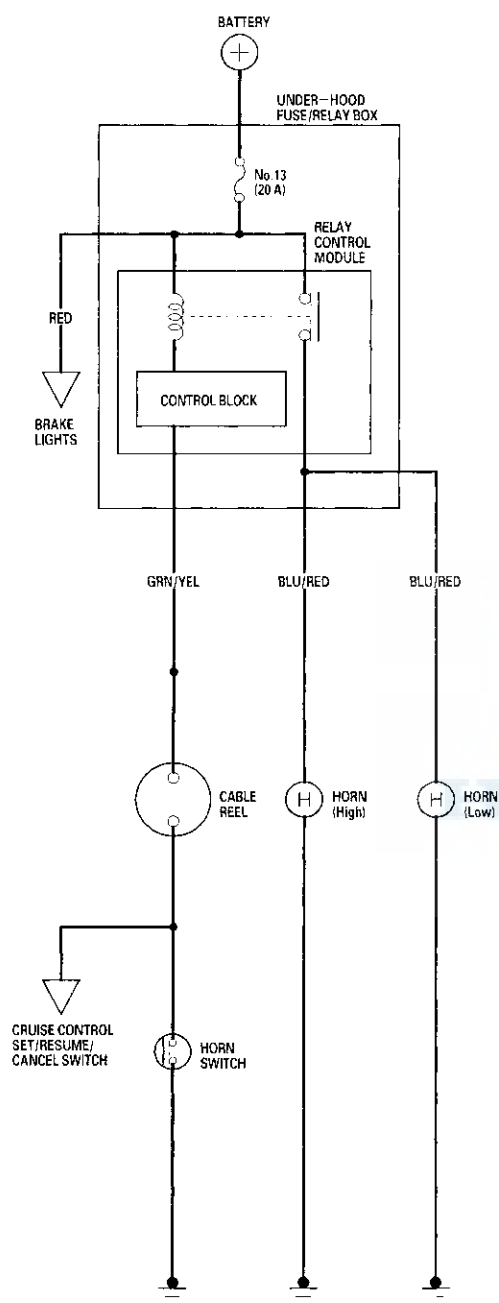


Component Location Index



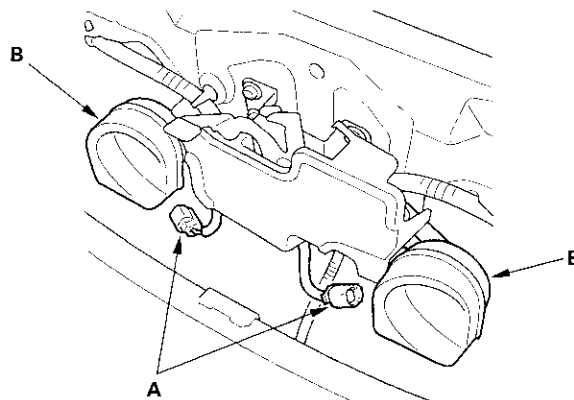
Horns

Circuit Diagram

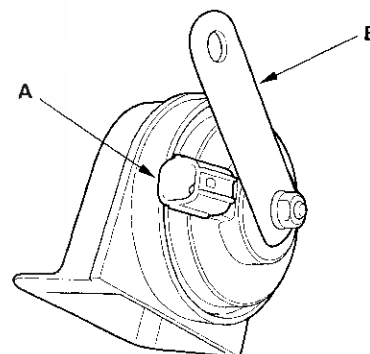


Horn Test/Replacement

1. Remove the front bulkhead cover (see page 20-111).
2. Disconnect the 1P connector (A) from each horn (B).



3. Test the horn by connecting battery power to the terminal (A) and grounding the bracket (B). The horn should sound.

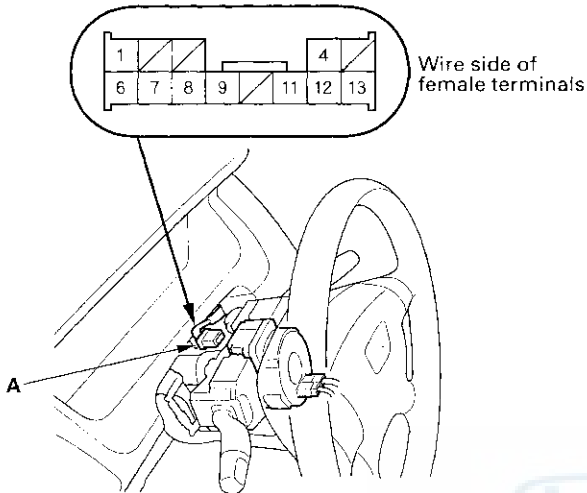


4. If it fails to sound, replace it.



Horn Switch Test

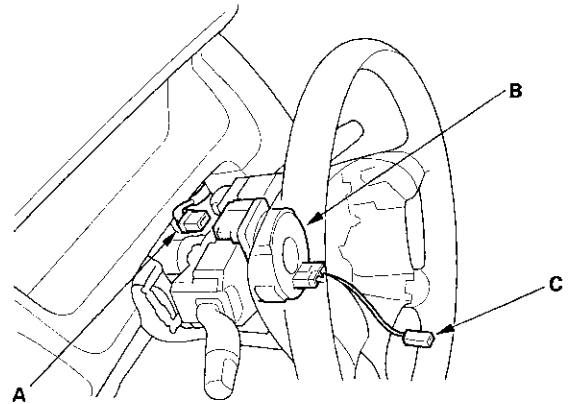
1. Remove the steering column covers (see page 17-9).
2. Disconnect the cable reel 13P connector (A) from the dashboard wire harness.



3. Using a jumper wire, connect the No. 1 terminal of the dashboard wire harness 13P connector to body ground.

- If the horns sound, go to step 4.
- If the horns don't sound, check these items:
 - No. 13 (20 A) fuse in the under-hood fuse/relay box.
 - Relay control module in the under-hood fuse/relay box.
 - Horns (see page 22-152).
 - An open in the wire.

4. Reconnect the cable reel 13P connector (A) to the dashboard wire harness.



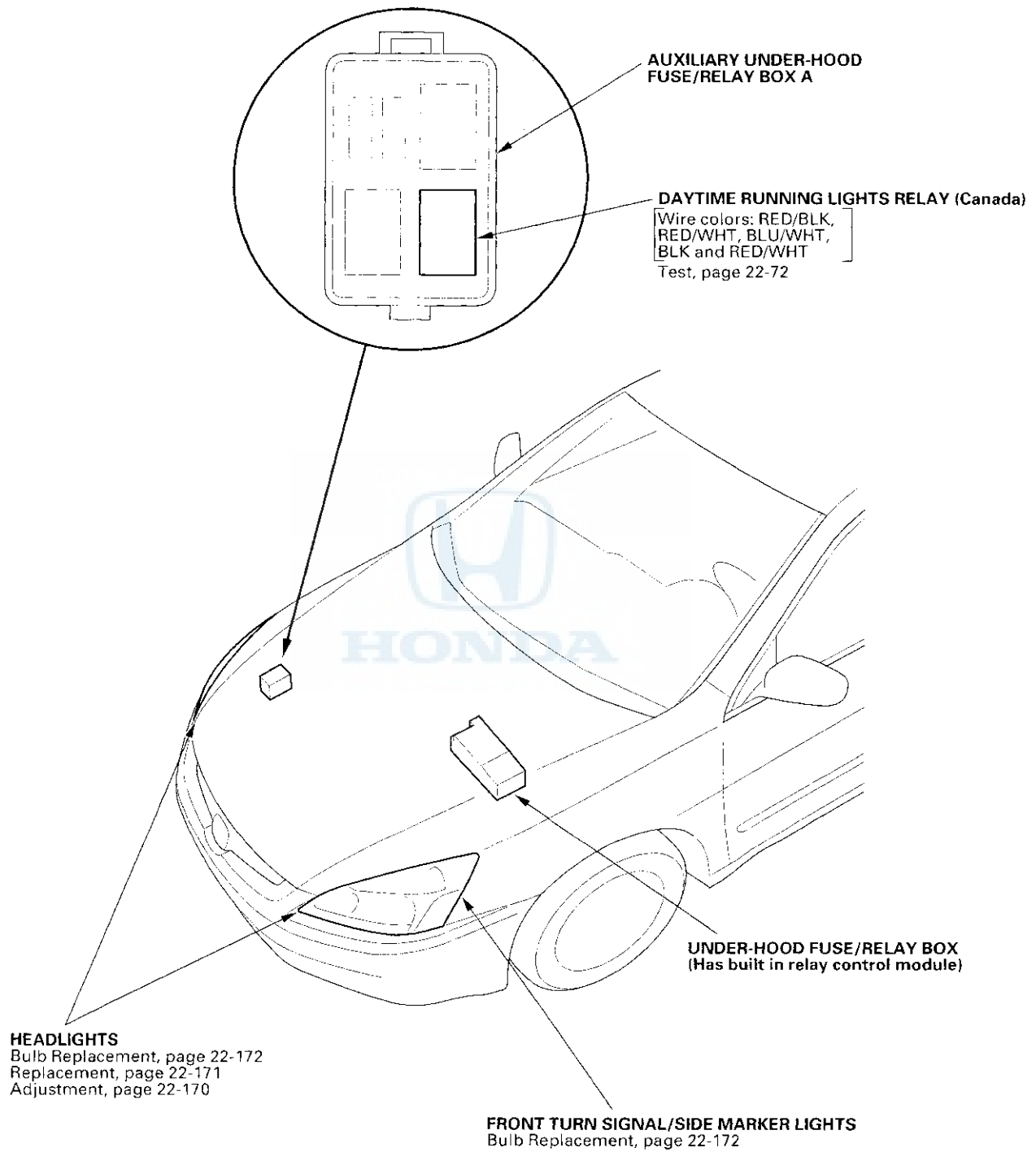
5. Remove the driver's airbag assembly (see page 24-139), and disconnect the horn switch 1P positive terminal from the cable reel (B).
6. Using a jumper wire, connect the cable reel side 1P connector (C) to body ground, and turn the wheel side to side.

- If the horns sound, replace the driver's airbag assembly.
- If the horns don't sound or sounds intermittently, replace the cable reel.





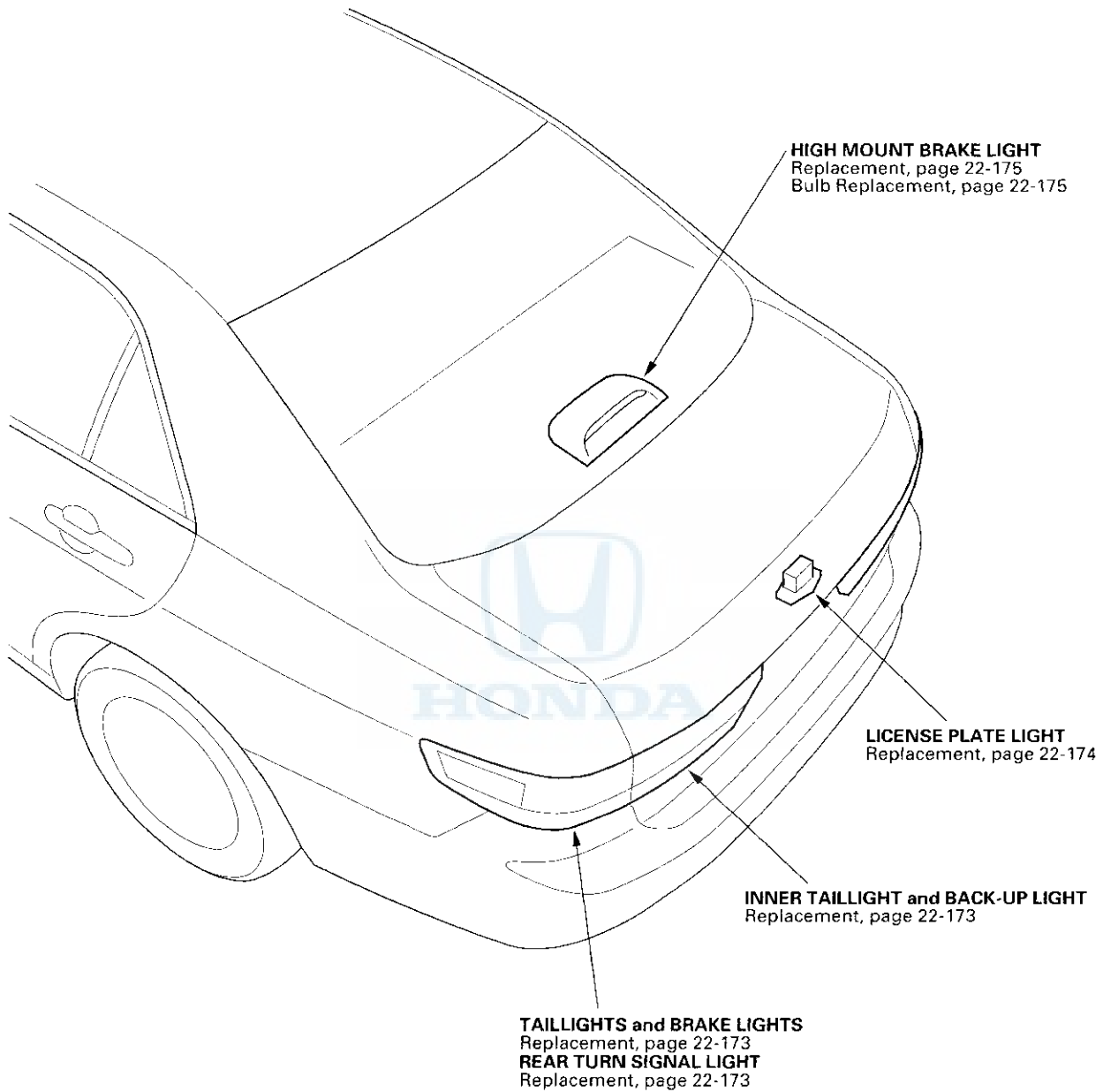
Component Location Index

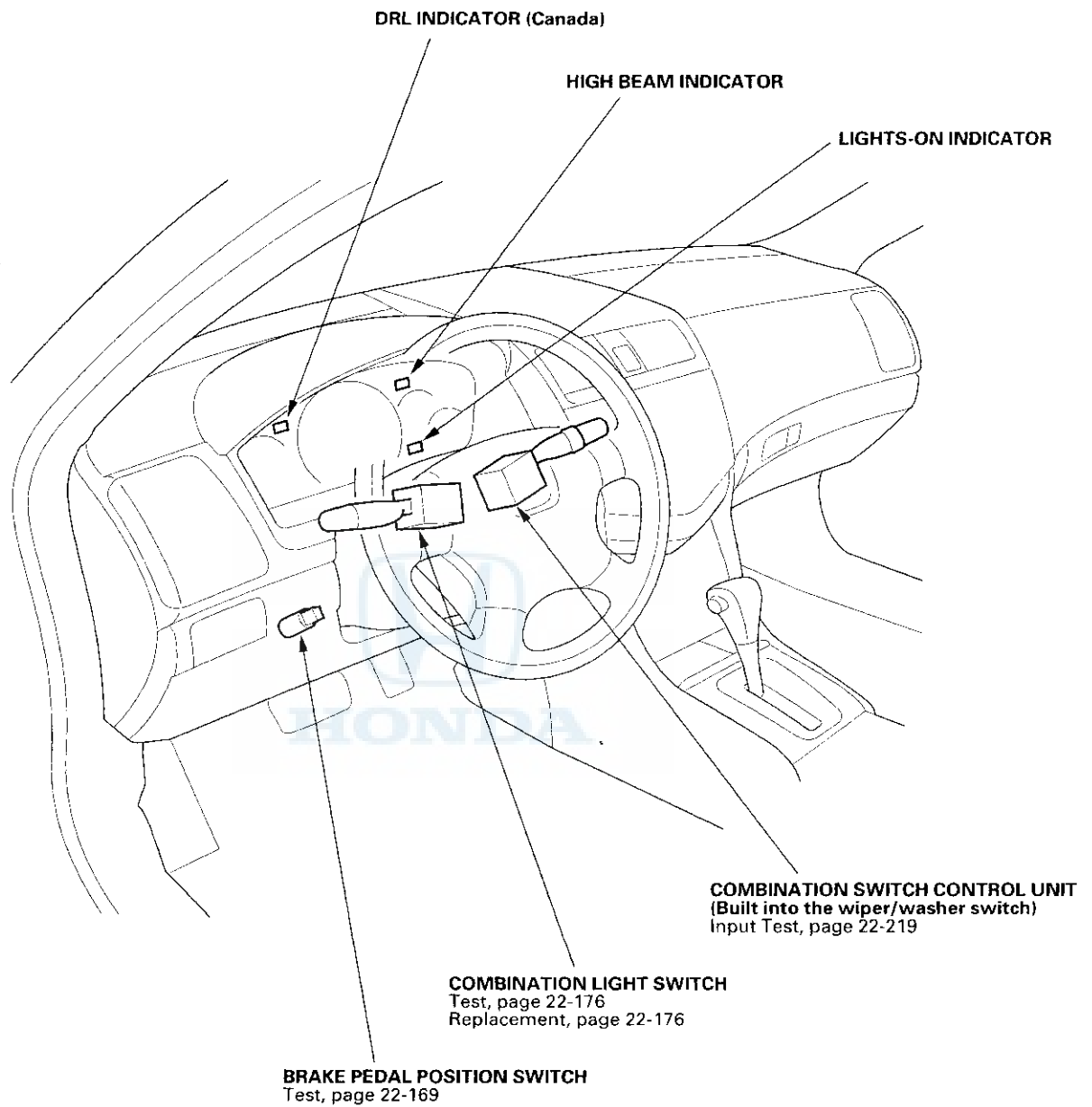


(cont'd)

Exterior Lights

Component Location Index (cont'd)

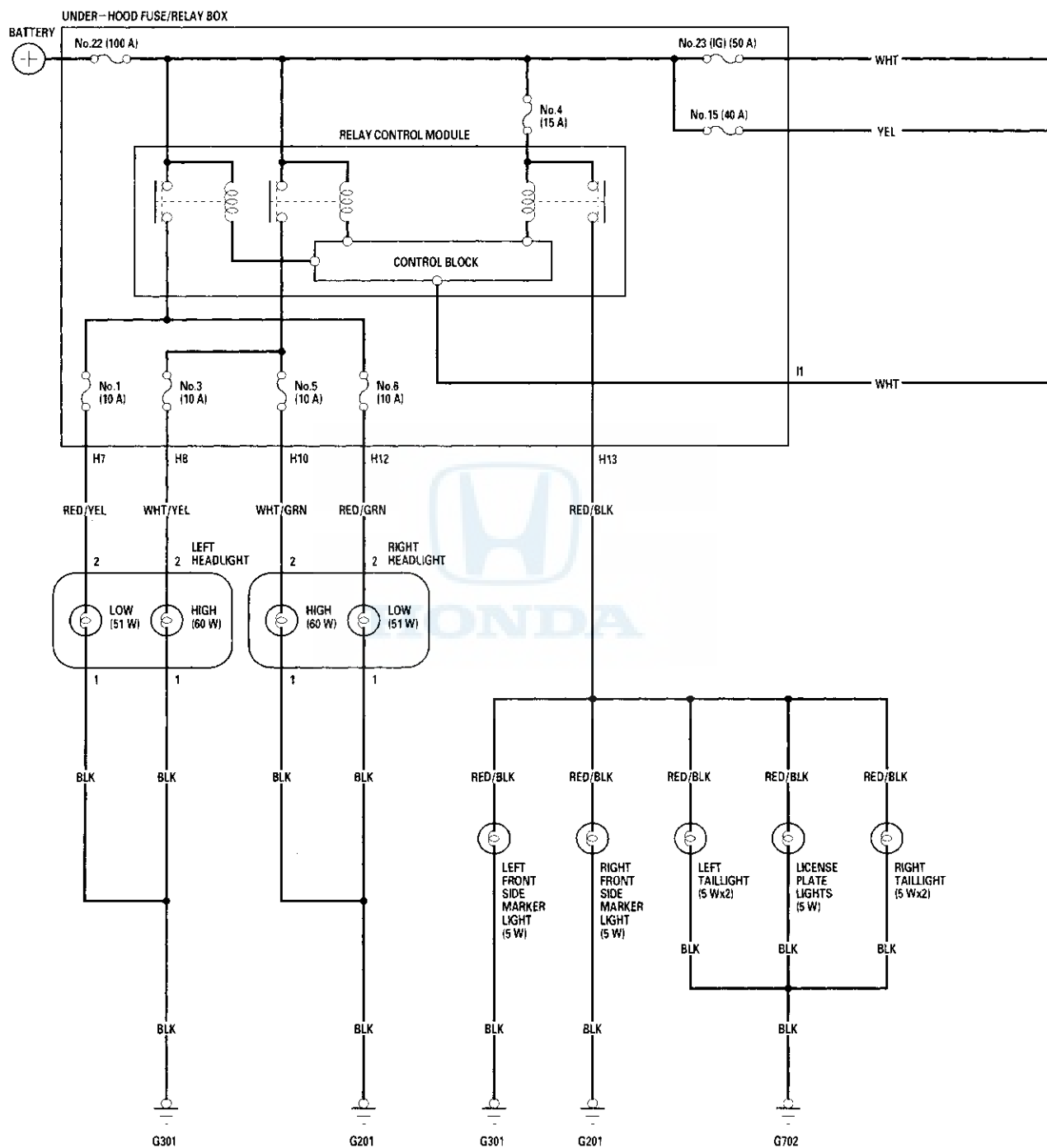


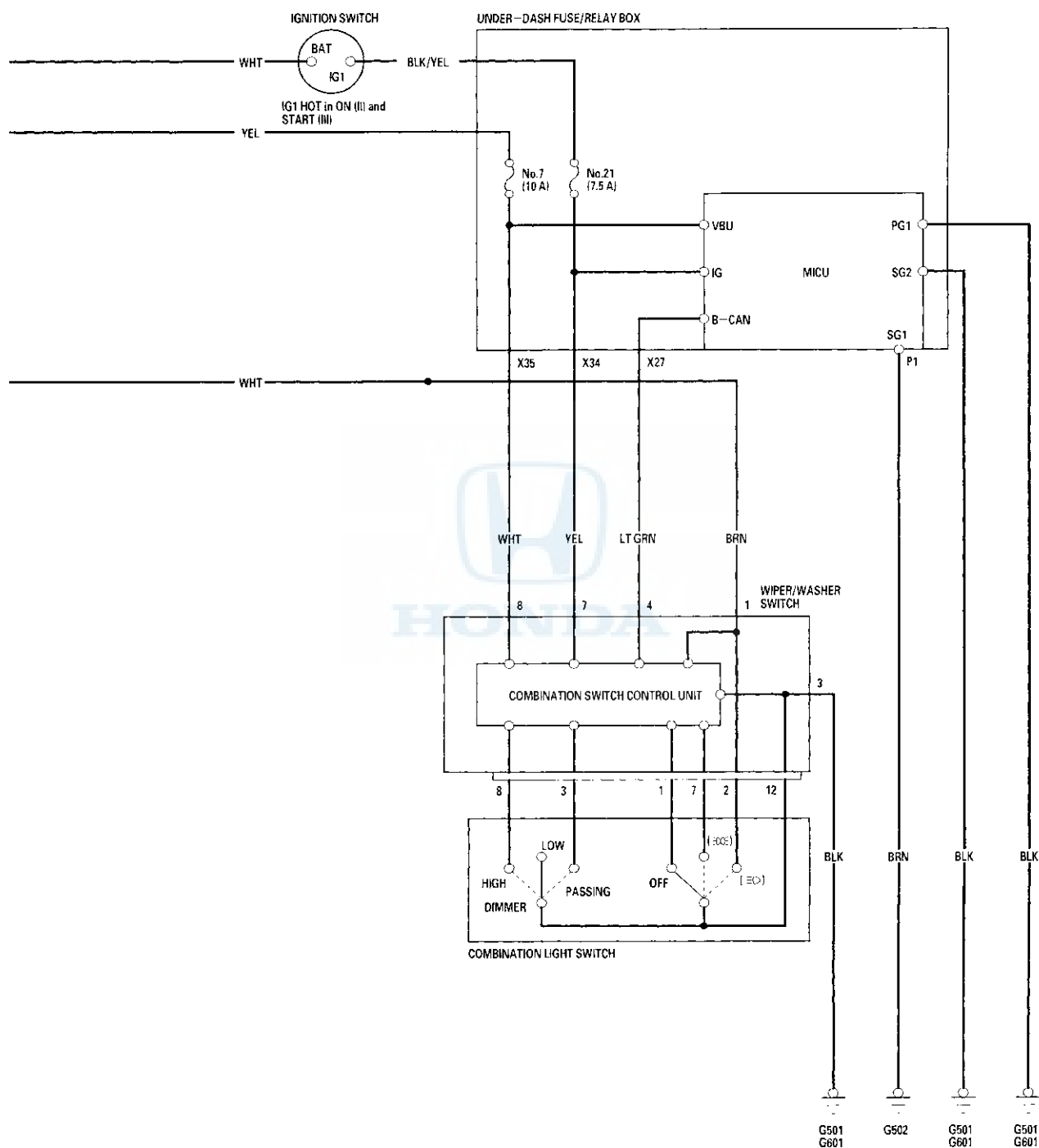


Exterior Lights

Circuit Diagram

USA:

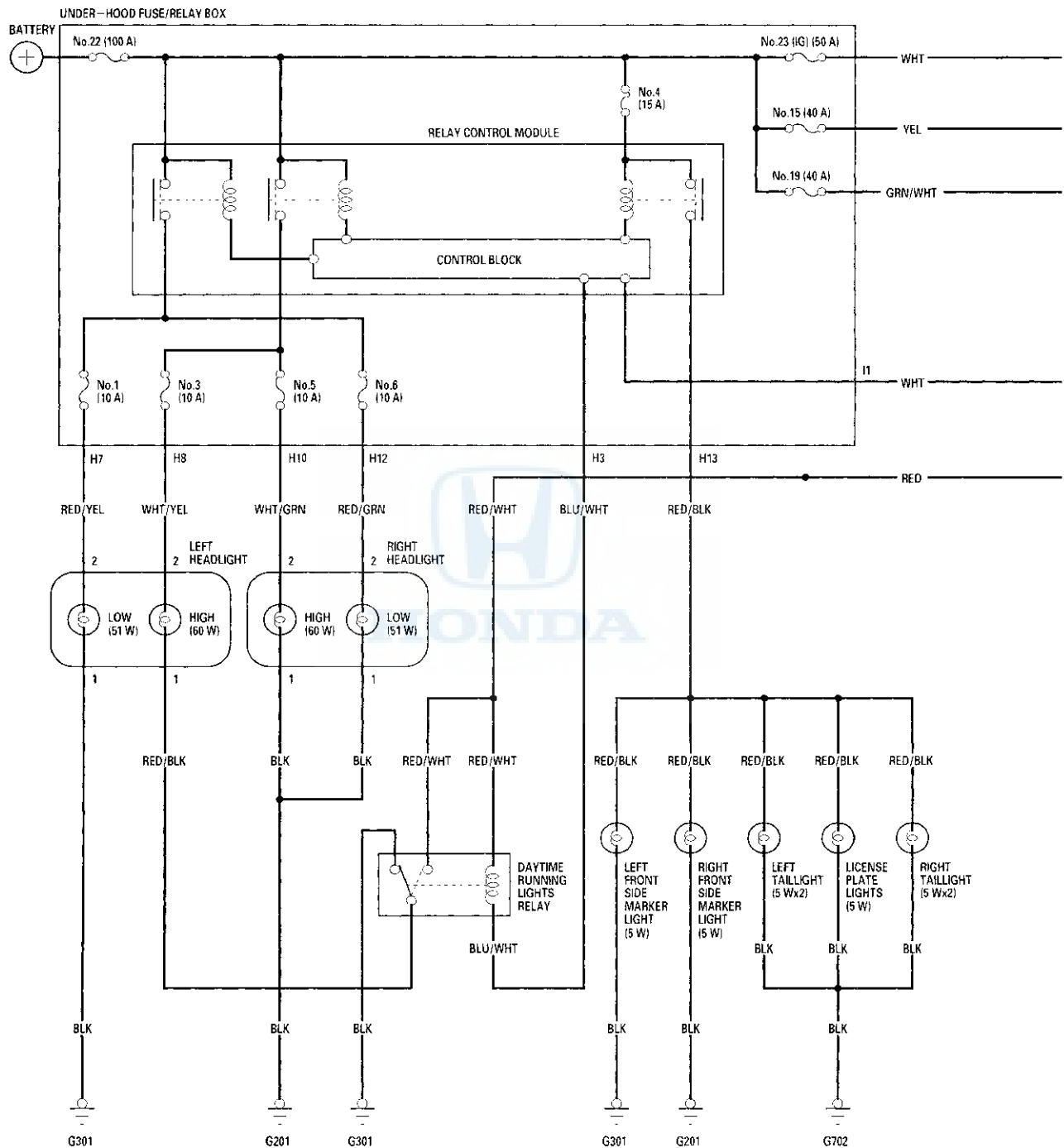


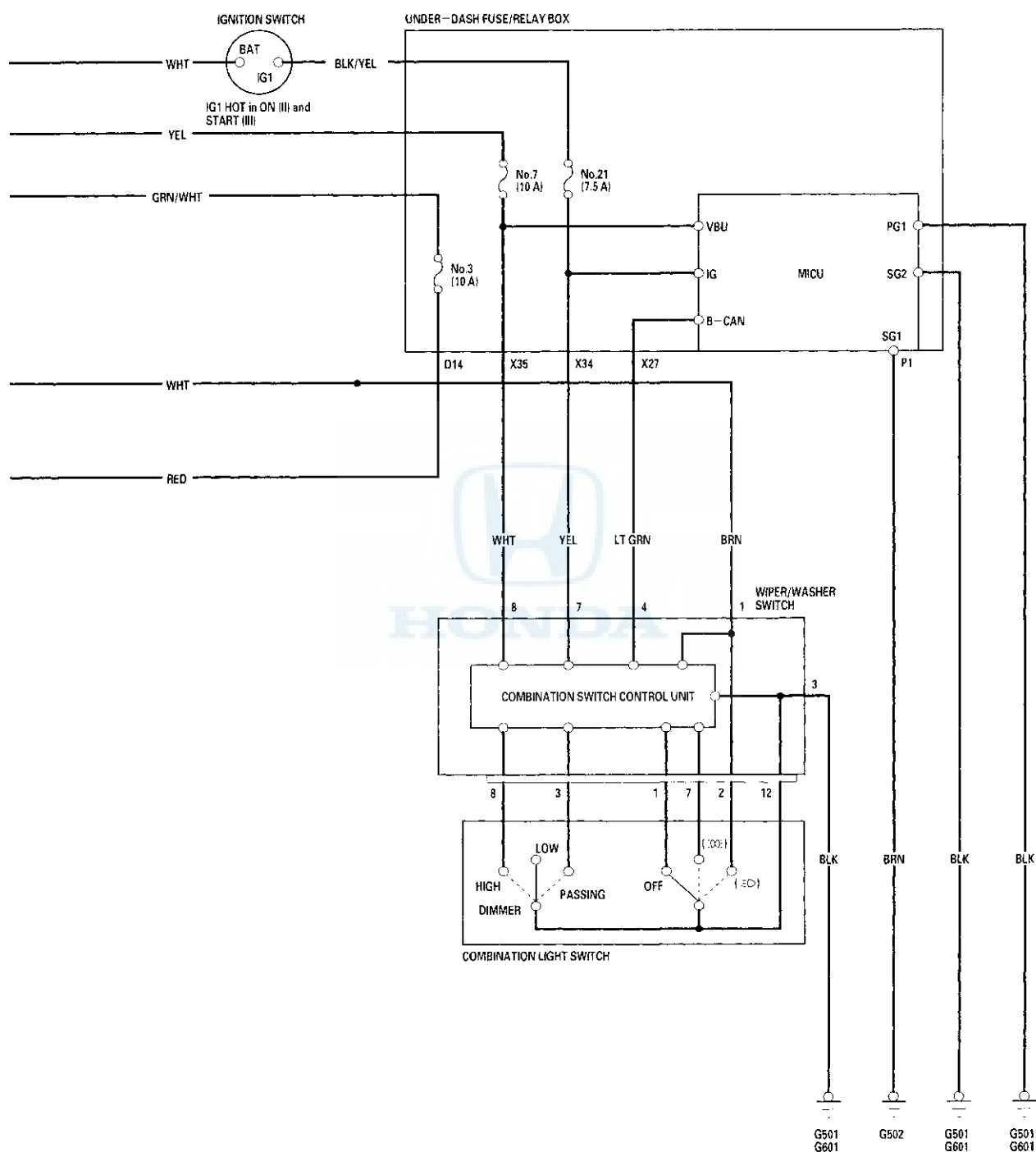


Exterior Lights

Circuit Diagram (cont'd)

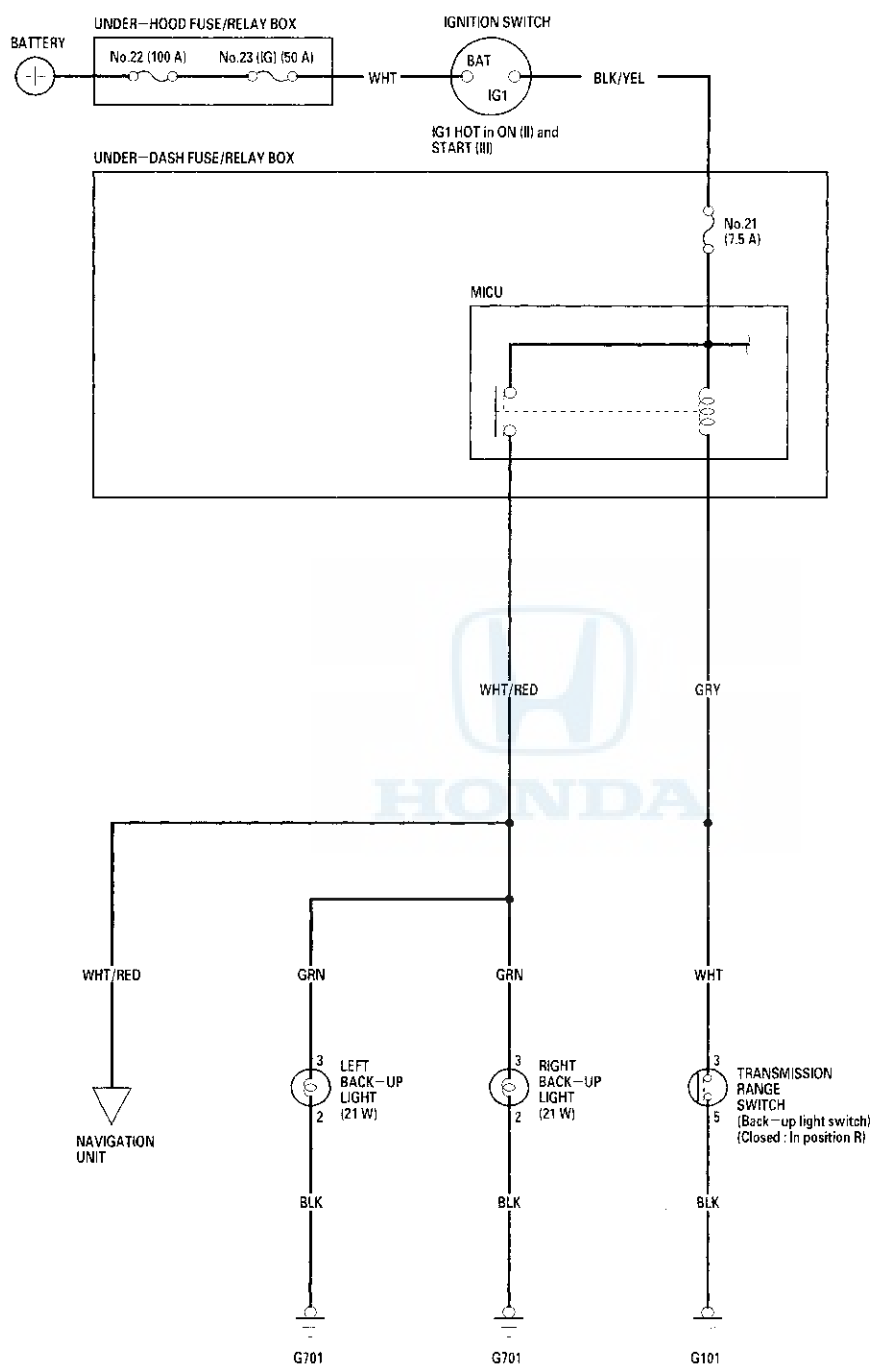
Canada:

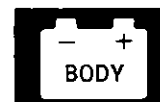




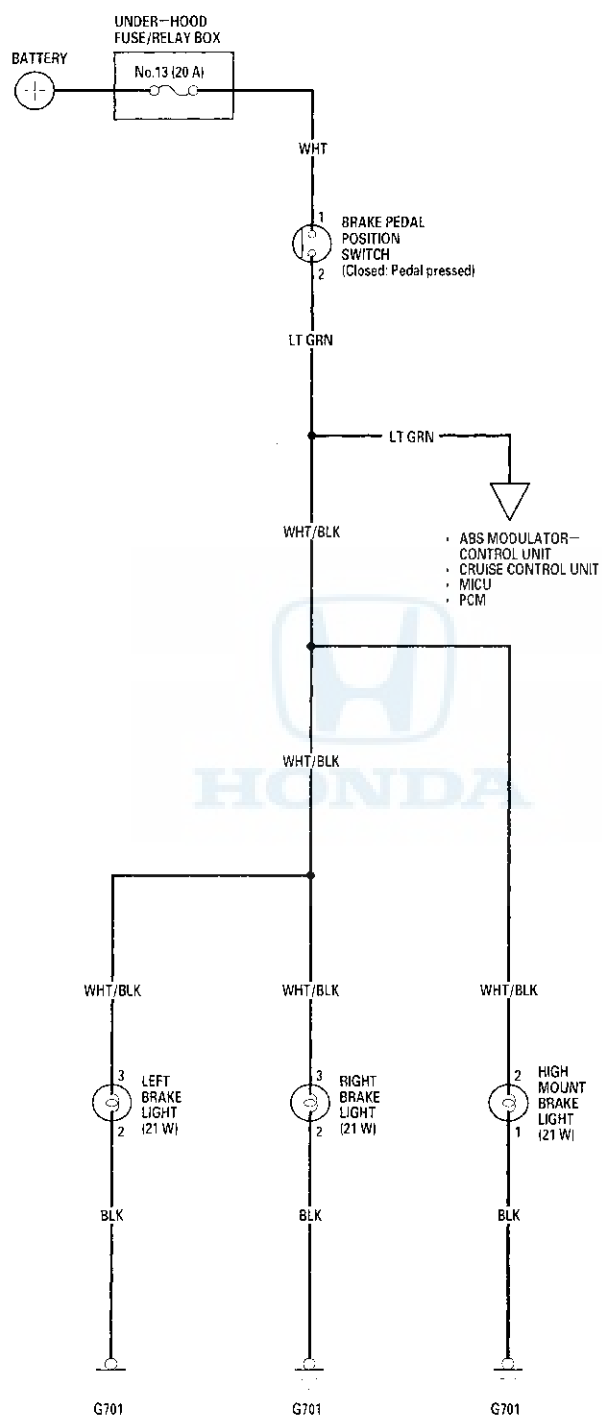
Exterior Lights

Circuit Diagram - Back-up Lights





Circuit Diagram - Brake Lights



Exterior Lights

DTC Troubleshooting

DTC B1075: Headlight Signal Error

1. Clear the DTCs using the HDS.
2. Turn the headlights switch from the OFF position to the ON position.
3. Check for DTCs using the HDS.

Is DTC B1075 indicated?

YES—Go to step 4.

NO—Intermittent failure, the headlight circuit is OK at this time. Check pinfits and connections. ■

4. With the headlight switch OFF, select LIGHTING SYSTEM from the HDS, and enter the DATA LIST.
5. Check the ON/OFF information of the Headlight Switch (BACK-UP) in the DATA LIST.

Is the information indicator OFF?

YES—Go to step 6.

NO—Go to step 10.

6. Turn the headlight switch ON.
7. Check the ON/OFF information of the Headlight Switch (BACK-UP) in the DATA LIST.

Is the information indicator ON?

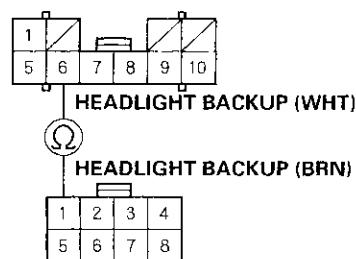
YES—Troubleshoot DTC B1278. ■

NO—Go to step 8.

8. Disconnect the relay control module 10P connector (under-hood fuse/relay box connector I) and the wiper/washer switch 8P connector.

9. Check for continuity between the No. 6 terminal of the relay control module 10P connector and the No. 1 terminal of the wiper/washer switch (combination switch control unit) 8P connector.

**RELAY CONTROL MODULE 10P CONNECTOR
(UNDER-HOOD FUSE/RELAY BOX CONNECTOR I)**
Wire side of female terminals



WIPER/WASHER SWITCH 8P CONNECTOR
Wire side of female terminals

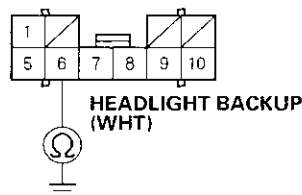
Is there continuity?

YES—Faulty combination switch control unit; replace the wiper/washer switch. ■

NO—Repair an open in the WHT wire. ■

10. Disconnect the relay control module 10P connector.
11. Check for continuity between the No. 6 terminal of the relay control module 10P connector I and body ground.

**RELAY CONTROL MODULE 10P CONNECTOR
(UNDER-HOOD FUSE/RELAY BOX CONNECTOR I)**

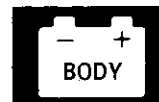


Wire side of female terminals

Is there continuity?

YES—Repair a short in the WHT wire. ■

NO—Faulty combination switch control unit; replace the wiper/washer switch. ■



DTC B1078: Daytime Running Lights Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Operate the parking brake lever.
4. Check for DTCs using the HDS.

Is DTC B1078 indicated?

YES—Go to step 5.

NO—Intermittent failure, the daytime running lights system is OK at this time. Check pinfits and connections. ■

5. Turn the headlight switch ON, then push the combination light switch forward for high beams.

Do both headlights come on?

YES—Go to step 6.

NO—Go to step 9.

6. Turn the headlight switch OFF.
7. Select LIGHTING SYSTEM from the HDS, and enter the DATA LIST.
8. Check the ON/OFF information of the DRL Relay Command (Canada) in the DATA LIST.

Is the information indicator ON?

YES—Replace the daytime running lights relay. ■

NO—Go to the relay control module input test (see page 22-123). ■

9. Check the No. 3 (10 A) or No. 5 (10 A) fuses in the under-hood fuse/relay box.

Are both fuses OK?

YES—Go to step 10.

NO—Replace the blown fuse and recheck the system. ■

10. Check headlight bulbs.

Are both bulbs OK?

YES—Go to step 11.

NO—Replace the blown bulb and recheck the system. ■

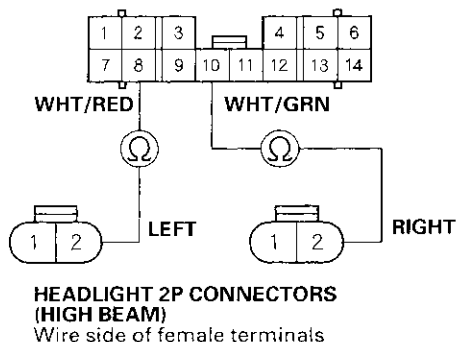
(cont'd)

Exterior Lights

DTC Troubleshooting (cont'd)

11. Check for continuity between the No. 2 terminal of the headlight (high beam) 2P connectors and the No. 8 (left headlight) or No. 10 (right headlight) terminals of the under-hood fuse/relay box 14P connector H.

UNDER-HOOD FUSE/RELAY BOX 14P CONNECTOR H
Wire side of female terminals



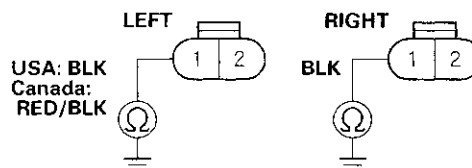
Is there continuity?

YES—Go to step 12.

NO—Repair an open in the WHT/YEL (left headlight) or WHT/GRN (right headlight) wire. ■

12. Check for continuity between the No. 1 terminal of the headlight (high beam) 2P connectors and body ground.

HEADLIGHT 2P CONNECTORS (HIGH BEAM)



Wire side of female terminals

Is there continuity?

YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

NO—Check the daytime running lights relay (left headlight). If OK, repair an open in the BLK wire or poor ground (G201, G301). ■



DTC B1275: Headlight Switch OFF Position Circuit Malfunction

DTC B1276: Headlight Switch Parking (SMALL) Position Circuit Malfunction

DTC B1278: Headlight Switch ON Position Circuit Malfunction

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1275, B1276 or B1278 indicated?

YES—Go to step 4.

NO—Intermittent failure, the headlight system is OK at this time. Check pinfits and connections. ■

4. Reset the DTCs using the HDS.
5. Turn the ignition switch ON (II) and wait for 2 seconds.
6. Turn the parking (small) light switch ON and wait for 2 seconds.
7. Turn the headlight light switch (LOW) ON and wait for 2 seconds.
8. Change the dimmer switch position from low beam to high beam and wait for 2 seconds.

9. Check the DTCs using the HDS.

Is DTC B1275, B1276, B1278 indicated?

YES—Go to step 10.

NO—Intermittent failure, the combination switch and the control unit are OK at this time. Check pinfits and connections. ■

10. Disconnect the combination light switch 12P connector from the wiper/washer switch.
11. Perform the combination light switch test (see page 22-176).

Is the combination light switch check OK?

YES—Faulty combination switch control unit, replace the wiper/washer switch. ■

NO—Replace the combination light switch. ■

Exterior Lights

DTC Troubleshooting (cont'd)

DTC B1279: Headlight Switch DIMMER Position Circuit Malfunction

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1279 indicated?

YES—Go to step 4.

NO—Intermittent failure. The turn signal switch circuit is OK at this time. Check pinfits and connections. ■

4. Reset the DTCs by CLEAR MENU (DTC CLEAR) of the HDS.
5. Turn the ignition switch ON (II), then turn the headlight switch ON.
6. Change the combination light switch from low beam to high beam and wait for 2 seconds.
7. Pull and hold the combination light switch lever and keep the passing switch position for more than 2 seconds.
8. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1279 indicated?

YES—Go to step 9.

NO—Intermittent failure, the combination switch and the combination switch control unit are OK at this time. Check pinfits and connections. ■

9. Disconnect the combination light switch 12P connector from the wiper/washer switch.
10. Perform the combination light switch test (see page 22-176).

Is the combination light switch OK?

YES—Faulty combination switch control unit, replace the wiper/washer switch. ■

NO—Replace the combination light switch. ■

DTC B1280: Turn Signal Switch Circuit Malfunction

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs using the HDS.

Is DTC B1280 indicated?

YES—Go to step 4.

NO—Intermittent failure. The turn signal switch circuit is OK at this time. Check pinfits and connections. ■

4. Reset the DTCs by CLEAR MENU (DTC CLEAR) of the HDS.
5. Turn the ignition switch ON (II).
6. Turn the turn signal switch to the left position and wait for 2 seconds.
7. Turn the turn signal switch to the right position and wait for 2 seconds.
8. Check for DTCs using the HDS.

Is DTC B1280 indicated?

YES—Go to step 9.

NO—Intermittent failure, the turn signal light switch and the combination switch control unit are OK at this time. Check pinfits and connections. ■

9. Disconnect the combination light switch 12P connector from the wiper/washer switch.
10. Check for short in the turn signal light switch terminals in each switch position (see page 22-176).

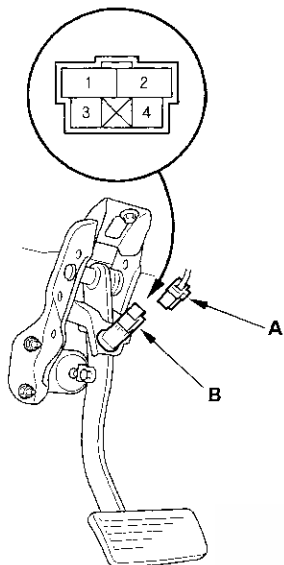
Is there a short?

YES—Faulty, turn signal light switch, replace the combination light switch. ■

NO—Faulty combination switch control unit, replace the wiper/washer switch. ■

Brake Pedal Position Switch Test

1. Disconnect the 4P connector (A) from the brake pedal position switch (B).



2. Check for continuity between the No. 1 and No. 2 terminals.
 - There should be continuity when the brake pedal is pressed.
 - There should be no continuity when the brake pedal is released.
3. If necessary, adjust or replace the switch, or adjust the pedal height (see page 19-5).

Exterior Lights

Headlight Adjustment

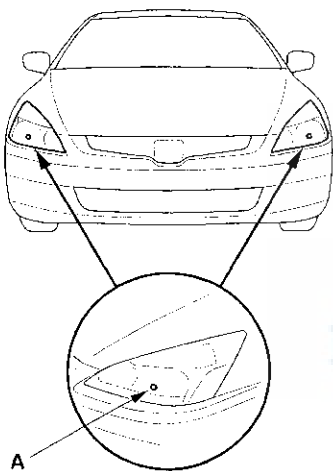
CAUTION

Headlights become very hot during use; do not touch them or any attaching hardware immediately after they have been turned off.

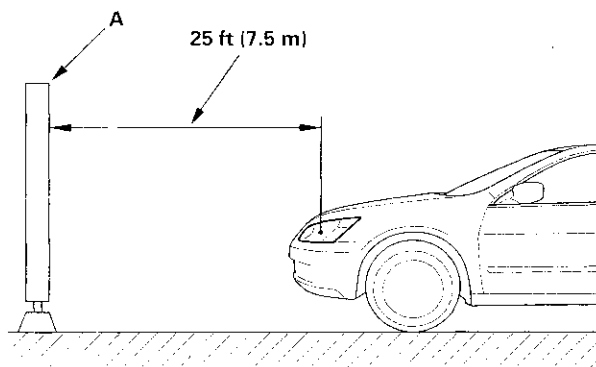
Before adjusting the headlights:

- Park the vehicle on a level surface.
- Make sure the tire pressures are correct.
- The driver or someone who weighs the same should sit in the driver's seat.

1. Clean the outer lens so that you can see the center (A) of the headlights.



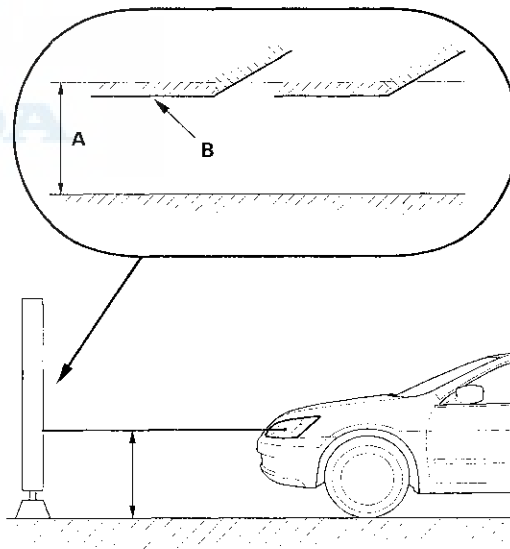
2. Park the vehicle in front of a wall or a screen (A).



3. Turn the low beams on.
4. Determine if the headlights are aimed properly.

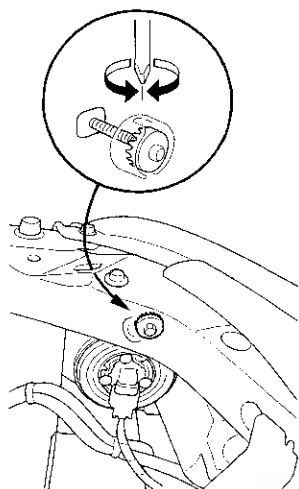
Vertical adjustment:

Measure the height of the headlights (A). The lights should reflect 2.1 in. (52 mm) below headlight height (B).

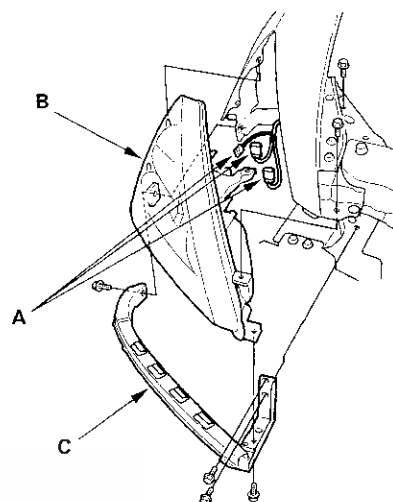


Headlight Replacement

5. If necessary, open the hood and adjust the headlights to local requirements by turning the vertical adjuster.



1. Remove the front bumper (see page 20-101).
2. Remove the connectors (A) from the headlight assembly (B).



3. Remove the five mounting bolts and the harness clip, then remove the headlight.
4. Remove the bolt and the corner upper beam (C) from the headlight.
5. Install the headlight in the reverse order of removal.
6. After replacement, adjust the headlight to local requirement.

Exterior Lights

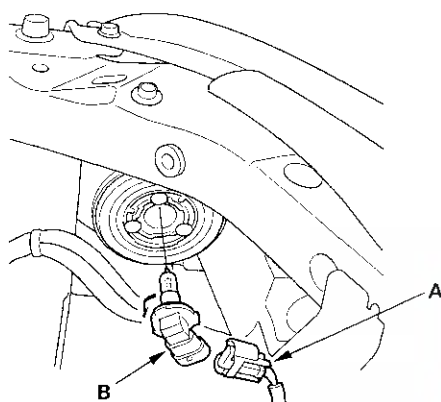
Bulb Replacement

Headlight

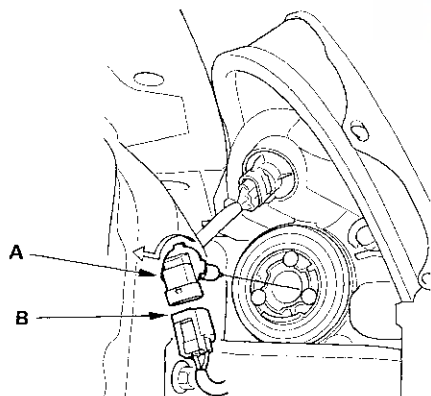
1. For low beam headlight bulb, remove the inner fender (see page 20-121).
2. Disconnect the 2P connectors (A) from the headlight.

Headlight (high beam): 60 W
Headlight (low beam): 51 W

High beam:



Low beam:

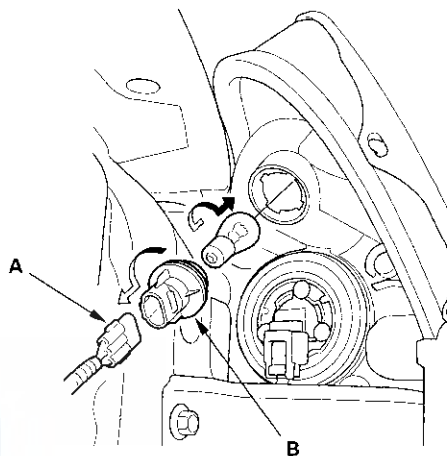


3. Turn the bulb socket (B) 45 ° counterclockwise to remove the bulb.
4. Install a new bulb in the reverse order of removal.

Front Turn Signal/Side Marker Lights

1. Remove the inner fender (see page 20-121).
2. Disconnect the 3P connector (A) from the front turn signal/side marker light.

Front Turn Signal/Side Marker Lights: 21/5 W



3. Turn the bulb socket (B) 45 ° counterclockwise to remove the bulb.
4. Install a new bulb in the reverse order of removal.

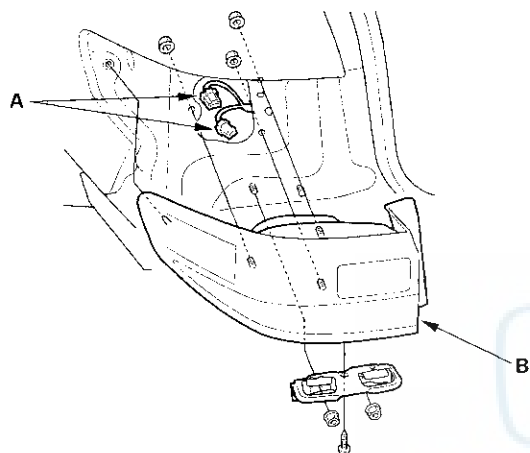


Taillight Replacement

Taillight

1. Remove the rear bumper (see page 20-103).
2. Open the trunk lid and remove the trunk side trim panel (see page 20-53).
3. Disconnect the connectors (A) from the taillight (B).

Brake/Taillight: 21/5 W
Turn signal Light: 21 W

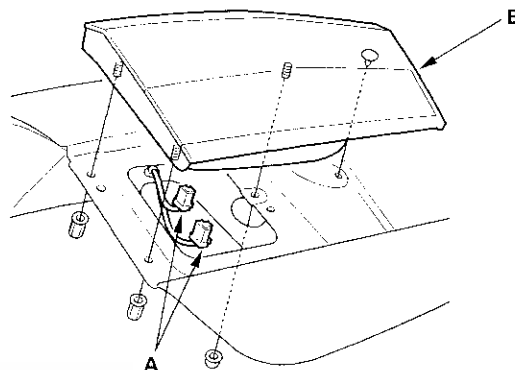


4. Remove the mounting nuts and screws, then remove the taillight.
5. Turn the bulb socket 45 ° counterclockwise to remove the bulb.
6. Inspect the gasket; replace it. If it is distorted or stays compressed.
7. Install the taillight and tighten the nuts to 5 N·m (0.5 kgf·m, 4 lbf·ft).
8. After installing the taillight, run water over it to make sure it does not leak.

Inner Taillight

1. Open the trunk lid and disconnect the connectors (A) from the trunk lid.

Taillight: 5 W
Back-up Light: 21 W



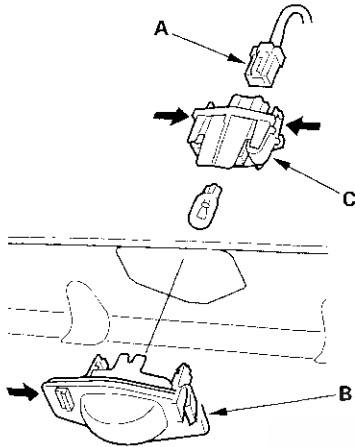
2. Remove the three nuts and the inner taillight (B).
3. Turn the bulb socket 45 ° counterclockwise to remove the bulb.
4. Inspect the gasket; replace it. If it is distorted or stays compressed.
5. Install the taillight and tighten the nuts to 5 N·m (0.5 kgf·m, 4 lbf·ft).
6. After installing the taillight, run water over it to make sure it does not leak.

Exterior Lights

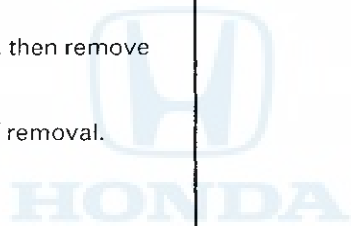
License Plate Light Replacement

1. Pull the license plate light assembly out, and disconnect the 2P connector (A) from the light.

License Plate Light: 5 W



2. Separate the lens (B) and housing (C), then remove the bulb.
3. Install the light in the reverse order of removal.



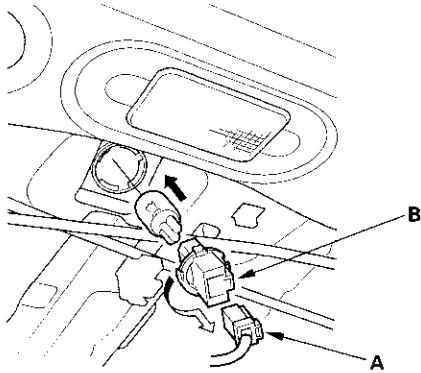


High Mount Brake Light Replacement

Bulb Replacement

1. Open the trunk lid and disconnect the 2P connector (A) from the bulb socket (B).

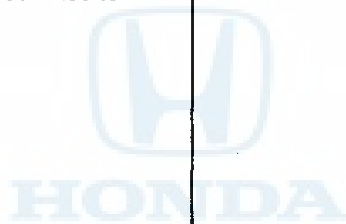
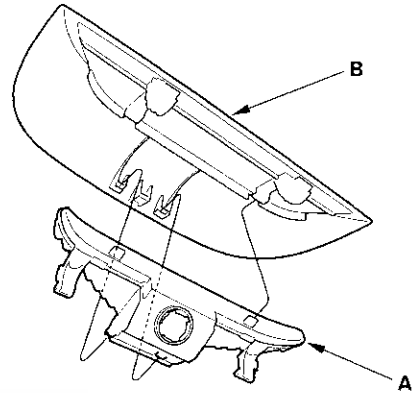
High Mount Brake Light: 21 W



2. Turn the bulb socket (B) 45 ° counterclockwise to remove the bulb.

Housing Replacement

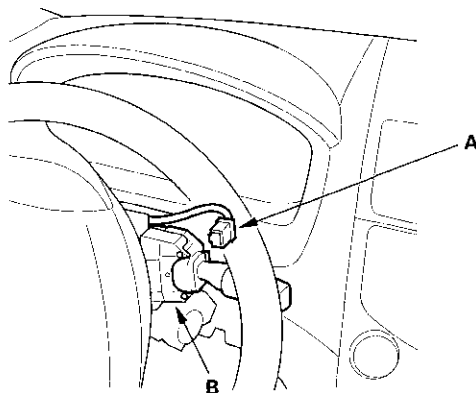
1. Remove the rear shelf (see page 20-51).
2. Remove the high mount brake light housing (A) from the cover (B).



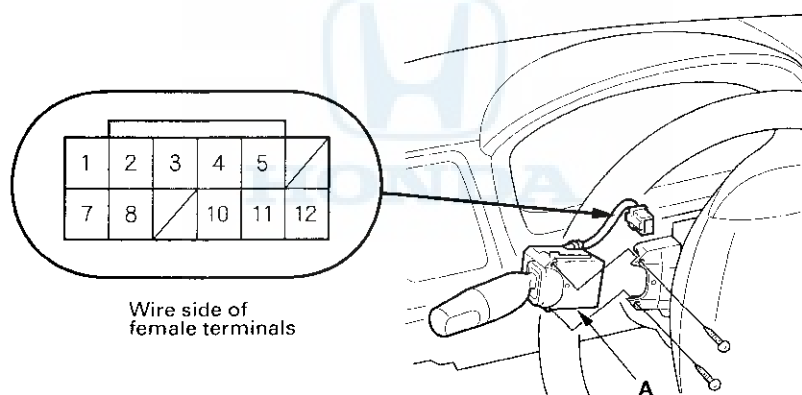
Exterior Lights

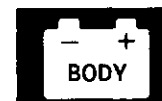
Combination Light Switch Test/Replacement

1. Remove the dashboard lower cover (see page 20-67).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 12P connector (A) from the wiper/washer switch (B).



4. Remove the two screws, then slide out the combination light switch (A).





5. Inspect the connector terminals to be sure they are all making good contact.

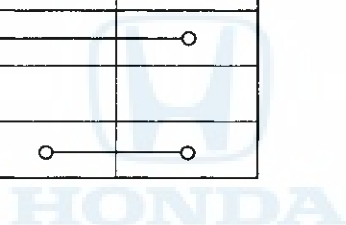
- If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
- If the terminals look OK, check for continuity between the terminals in each switch position according to the tables.
- If the continuity is not as specified, replace the switch.

Light switch:

Terminal		1	2	3	8	7	12
Position							
Headlight switch	OFF	○					○
	000					○	○
	LOW		○			○	○
			○			○	○
	HIGH				○		○
Passing switch	OFF						
	ON			○			○

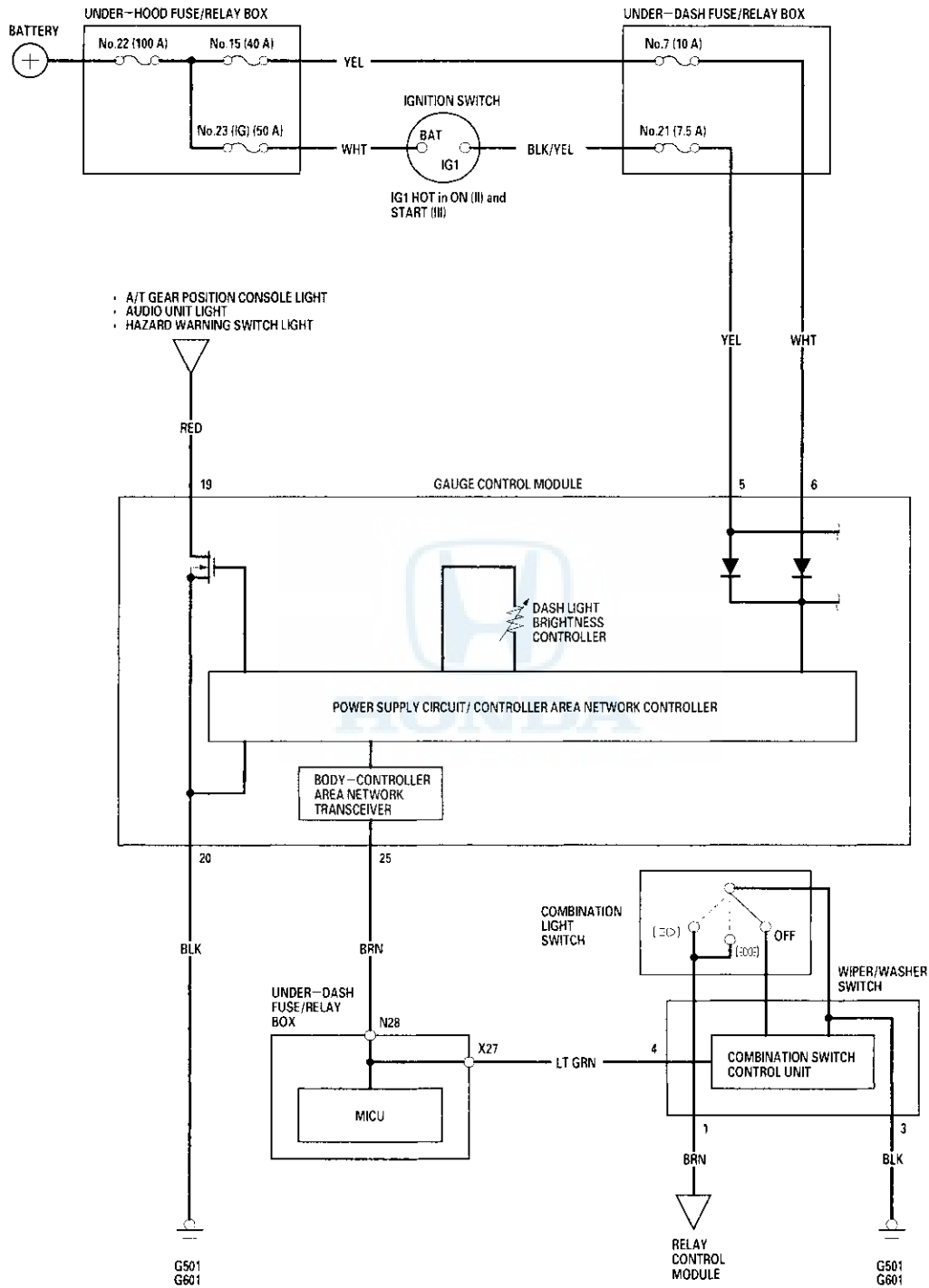
Turn signal switch:

Terminal		4	10	12
Position				
LEFT	○			○
NEUTRAL				
RIGHT			○	○



Dash Lights Brightness Controller

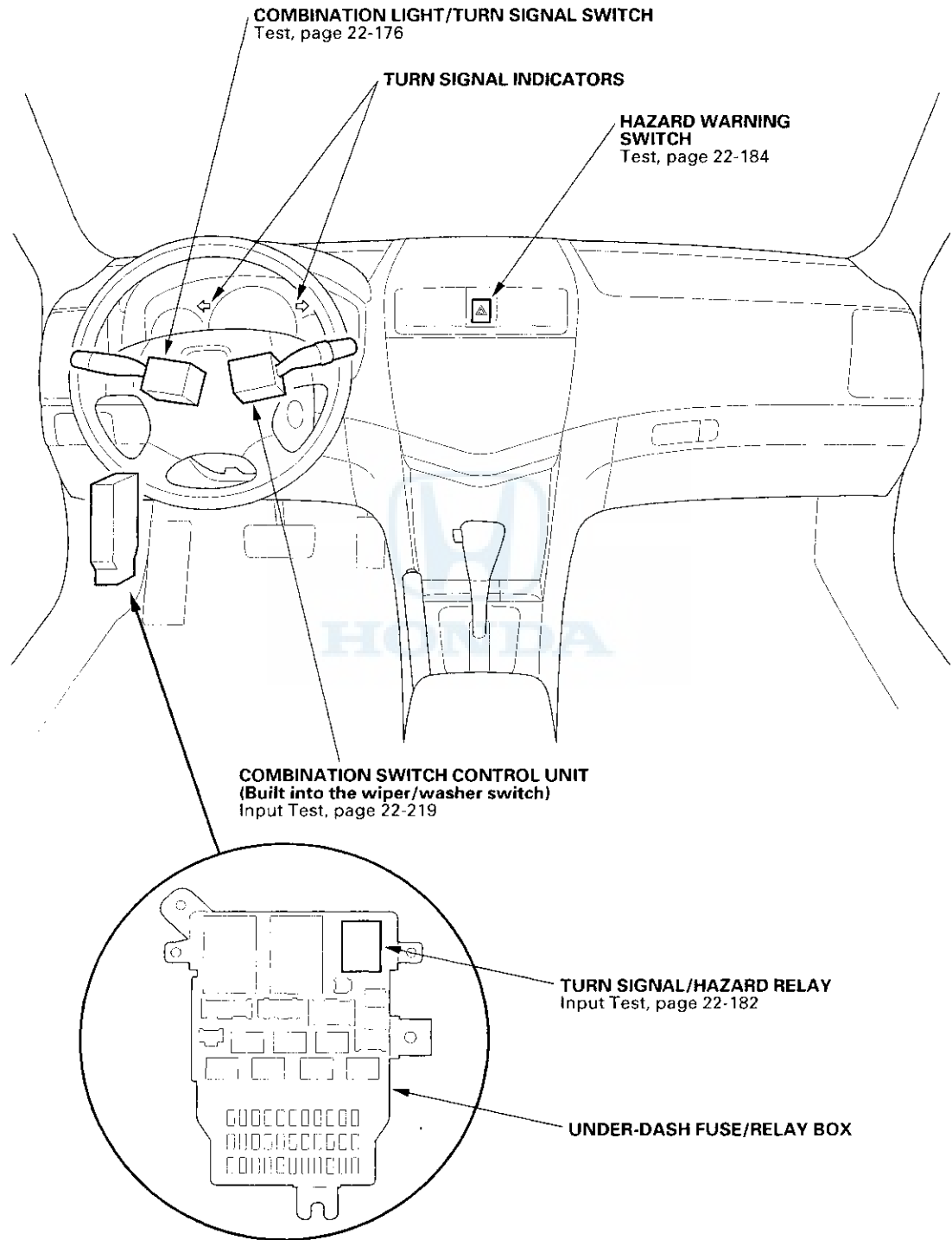
Circuit Diagram





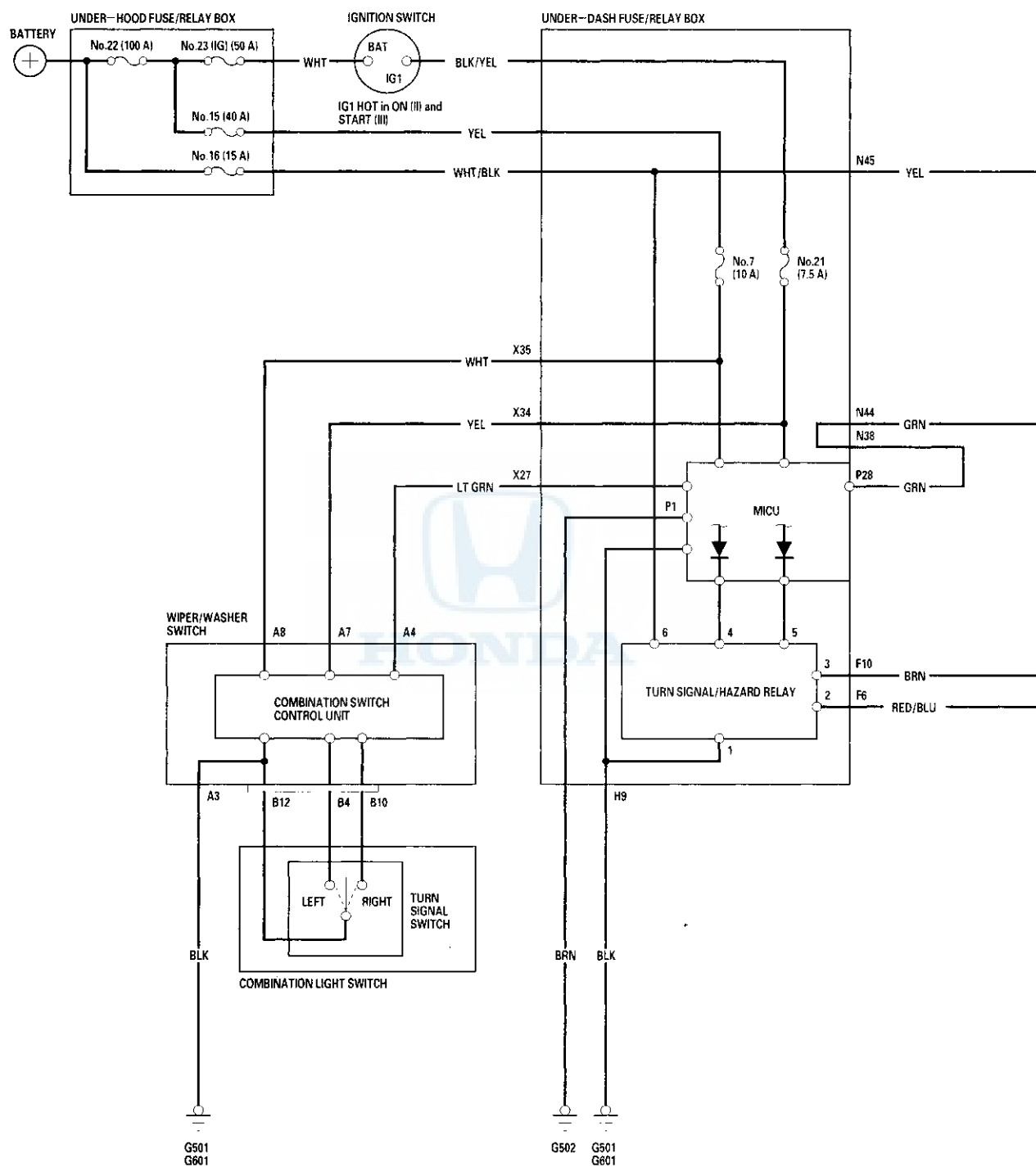
Turn Signal/Hazard Flasher

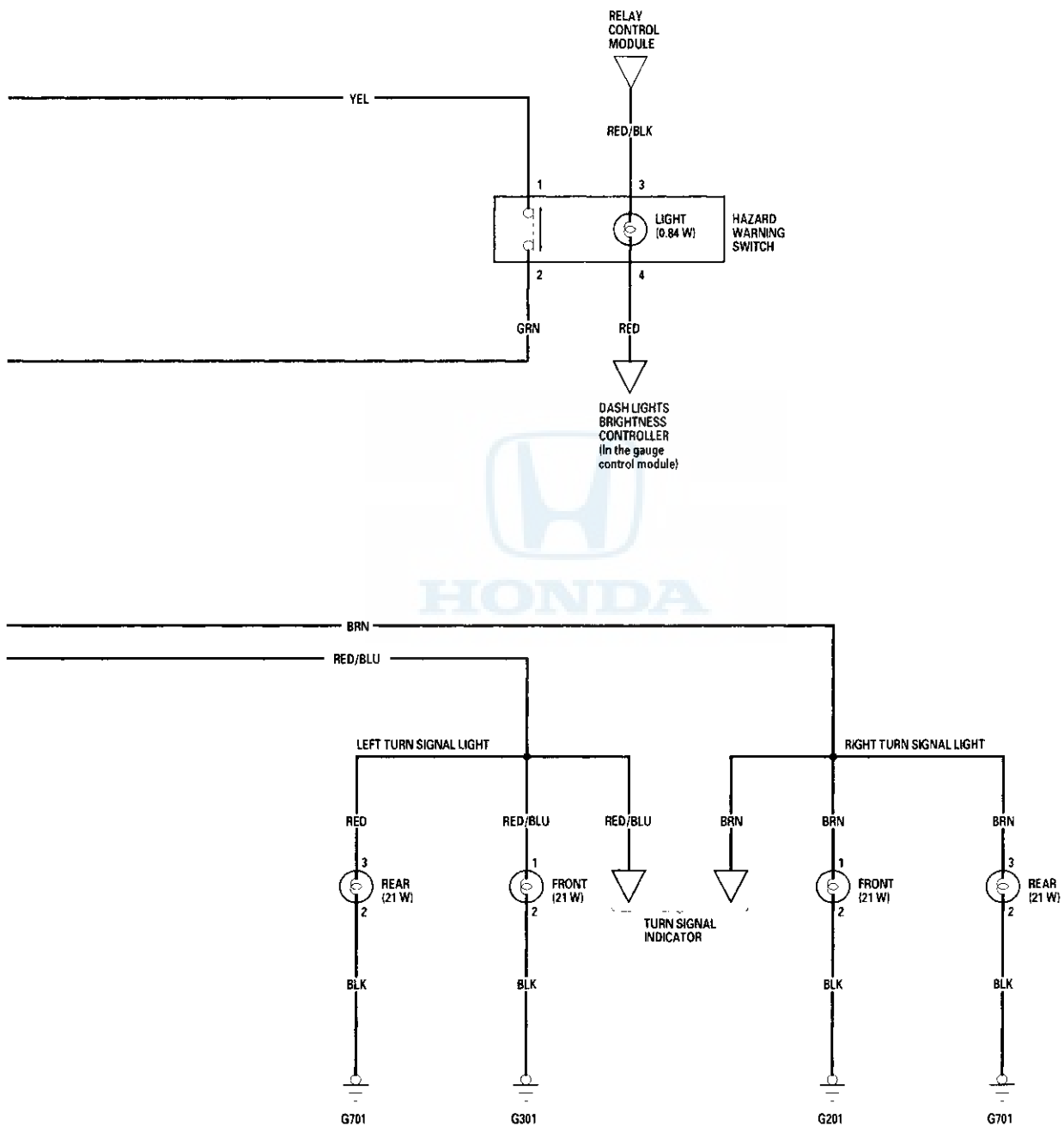
Component Location Index



Turn Signal/Hazard Flasher

Circuit Diagram

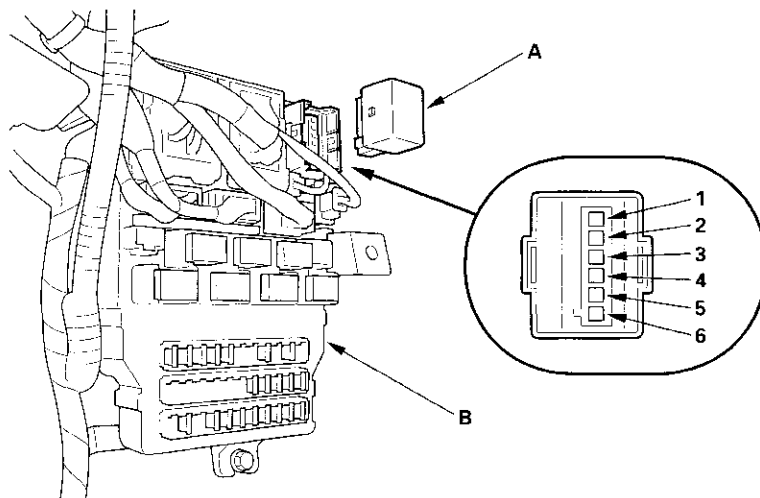




Turn Signal/Hazard Flasher

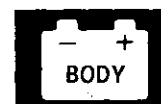
Turn Signal/Hazard Relay Input Test

1. Remove the turn signal/hazard relay (A) from the under-dash fuse/relay box (B).



2. Inspect the relay and fuse/relay box socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 3.





3. Make these input tests at the fuse/relay box.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, the turn signal/hazard relay must be faulty; replace it.

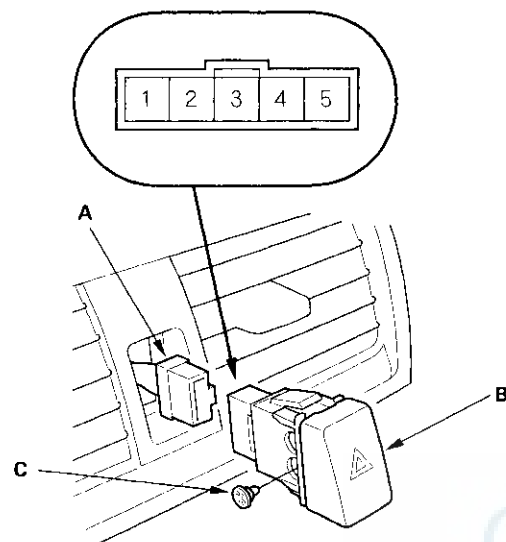
Cavity	Test condition	Test: Desired result	Possible cause if result is not obtained
6	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 16 (15 A) fuse in the under-hood fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
1	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • Faulty under-dash fuse/relay box • An open in the wire
2	Connect the No. 6 terminal to the No. 2 terminal with a jumper wire.	Check the turn signal lights operation: The left turn signal lights should come on.	<ul style="list-style-type: none"> • Blown bulb • Poor ground (G301, G701) • An open in the wire
3	Connect the No. 6 terminal to the No. 3 terminal with a jumper wire.	Check the turn signal lights operation: The right turn signal lights should come on.	<ul style="list-style-type: none"> • Blown bulb • Poor ground (G201, G701 or G702) • An open in the wire
4	Ignition switch ON (II) and turn signal switch in Left position.	Check for voltage to ground: There should be about 10 V.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • Faulty turn signal switch • Faulty under-dash fuse/relay box
5	Ignition switch ON (II) and turn signal switch in Right position.	Check for voltage to ground: There should be about 10 V.	<ul style="list-style-type: none"> • An open in the wire • Faulty combination switch control unit* • Faulty MICU*
4	Hazard warning switch ON	Check for voltage to ground: There should be about 10 V.	<ul style="list-style-type: none"> • Poor ground (G501, G601) • Blown No. 16 (15 A) fuse in the under-hood fuse/relay box • Faulty under-dash fuse/relay box • Faulty hazard warning switch • An open in the wire • Faulty MICU*
5		Check for voltage to ground: There should be about 10 V.	

* : Go to the multiplex integrated control system test mode A troubleshooting (see page 22-84).

Turn Signal/Hazard Flasher

Hazard Warning Switch Test

- 1. Remove the upper panel (see page 20-68).
- 2. Disconnect the 5P connector (A) from the hazard warning switch (B).



- 3. Push out the hazard warning switch from behind the upper panel.
- 4. Check for continuity between the terminals in each switch position according to the table.

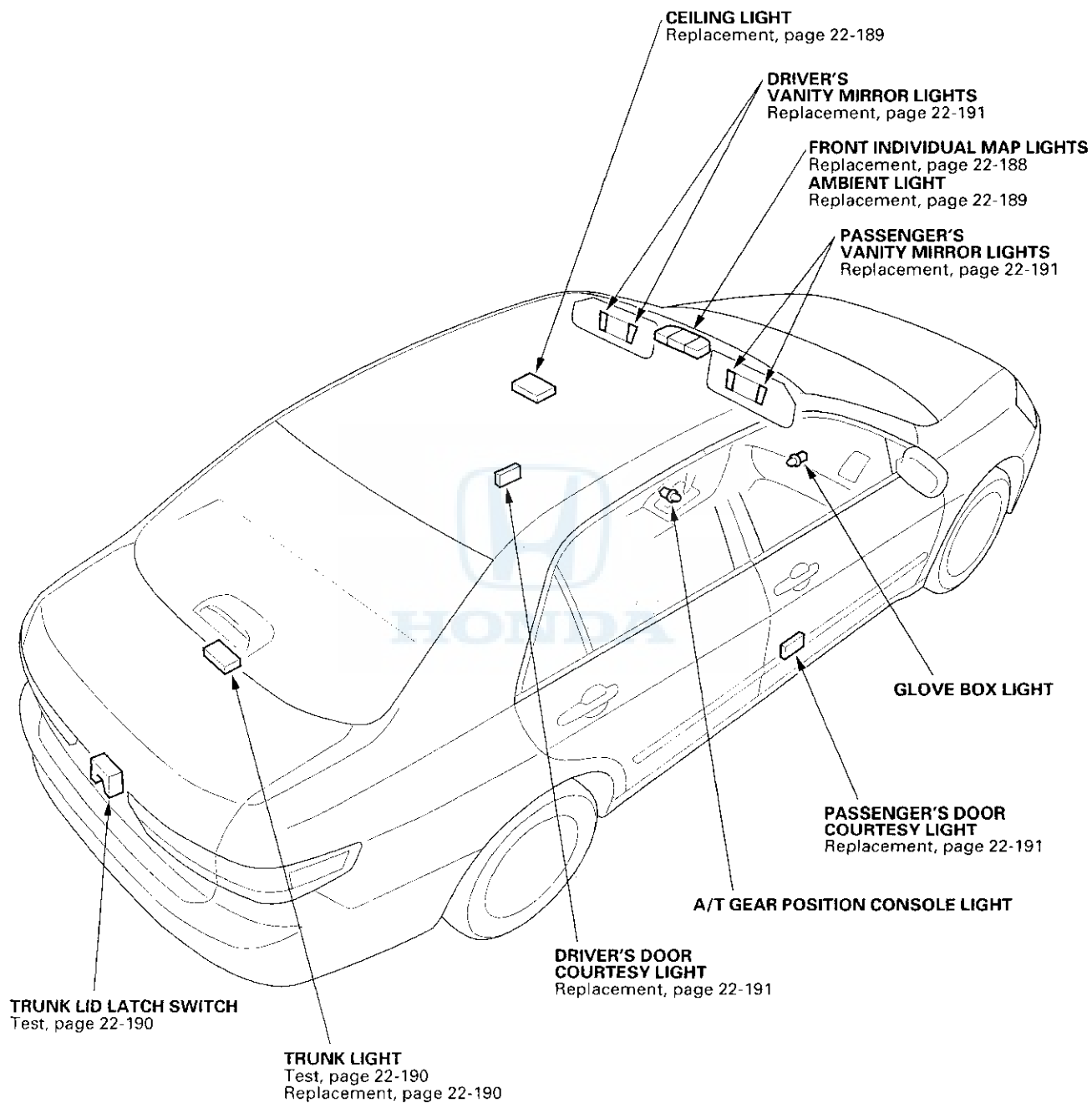
Terminal	1	2	3	4
Position				
OFF			○ — (X) — ○	
ON	○ — ○		○ — (X) — ○	

- 5. If the continuity is not as specified, replace the bulb (C) or the hazard warning switch.

Interior Lights

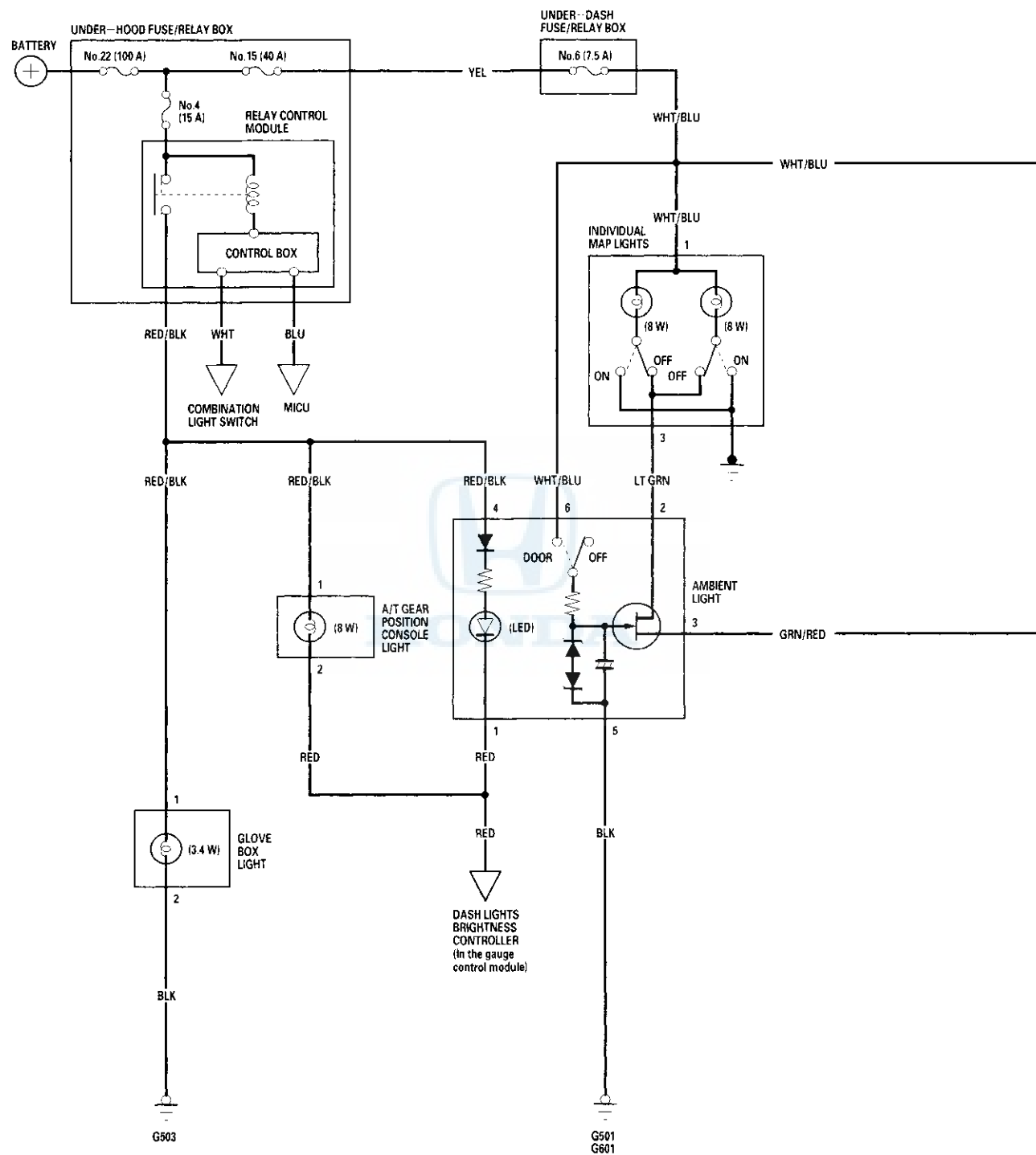


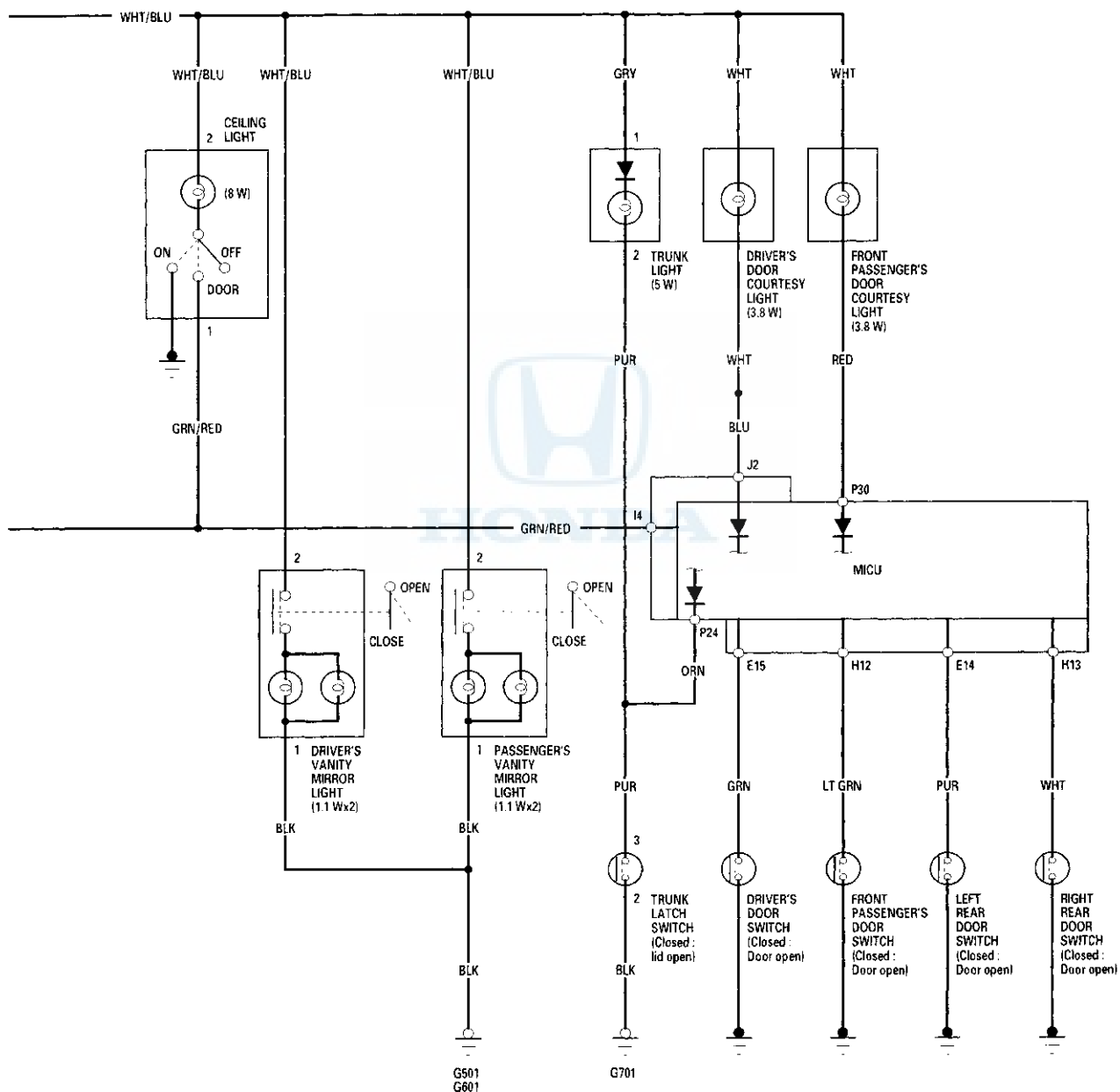
Component Location Index



Interior Lights

Circuit Diagram



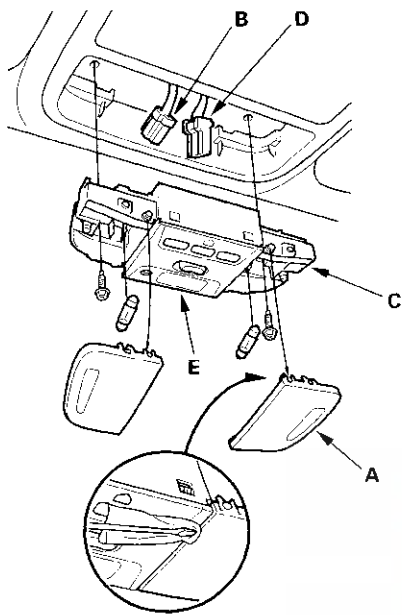


Interior Lights

Front Individual Map Light Replacement

1. Carefully pry off the lens (A) with a small screwdriver.

Front Map Light: 8 W x 2



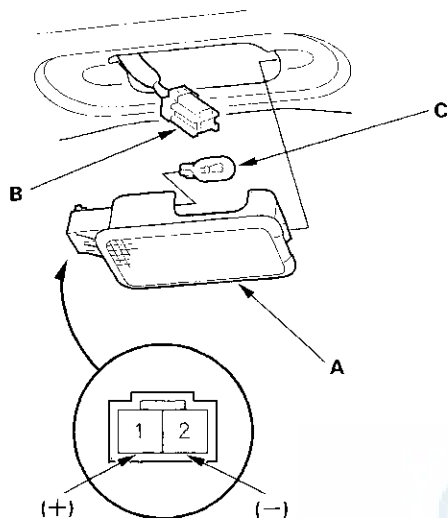
2. Remove the two mounting screws.
3. Disconnect the 3P connector (B) from the housing (C).
4. Disconnect the 8P connector (D) from the ambient light (E).
5. Install the light in the reverse order of removal.

Interior Lights

Trunk Light Test/Replacement

1. Open the trunk lid.
2. Carefully pry out the trunk light (A).

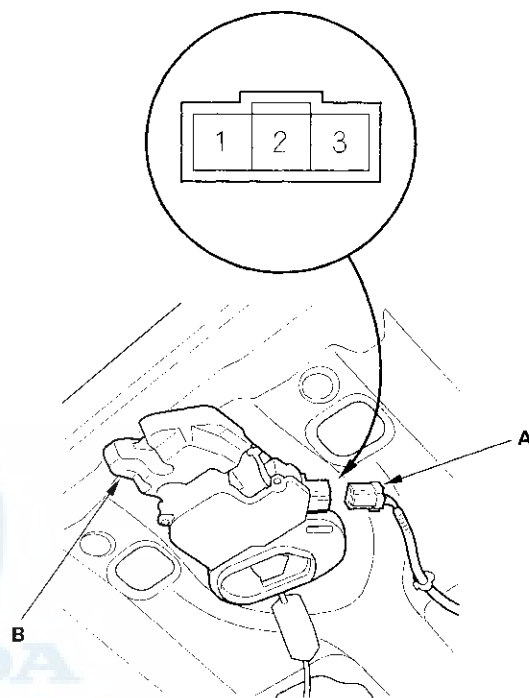
Trunk Light: 5 W



3. Disconnect the 2P connector (B) from the light.
4. Check for continuity between the No. 1 (+) and No. 2 (-) terminals. There should be continuity. If there is no continuity, check the bulb (C). If the bulb(s) is OK, replace the trunk light.

Trunk Lid Latch Switch Test

1. Open the trunk lid.
2. Disconnect the 3P connector (A) from the trunk lid latch (B).

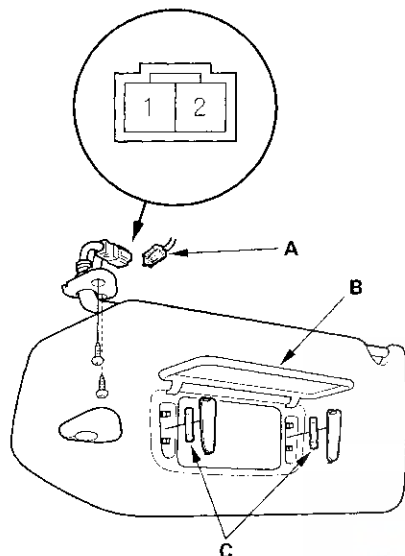


3. Check for continuity between the No. 2 and No. 3 terminals.
 - There should be continuity with the trunk lid latch unlatched (trunk open).
 - There should be no continuity with the trunk lid latch latched (trunk closed).
4. If the continuity is not as specified, replace the trunk lid latch switch.

Vanity Mirror Light Test

1. Open the sunvisor.
2. Remove the sunvisor (see step 2 on page 20-56).
3. Disconnect the 2P connector (A) from the vanity mirror light.

Vanity mirror light: 1.1 W

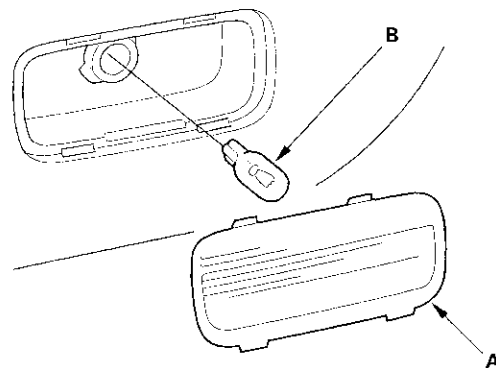


4. Check for continuity between the No. 1 and No. 2 terminals.
 - With the vanity mirror cover (B) opened, there should be continuity.
 - With the vanity mirror cover closed, there should be no continuity.
5. If the continuity is not as specified, replace the bulb (C) or the sunvisor.

Courtesy Light Replacement

1. Carefully pry off the lens (A) with a small screwdriver.

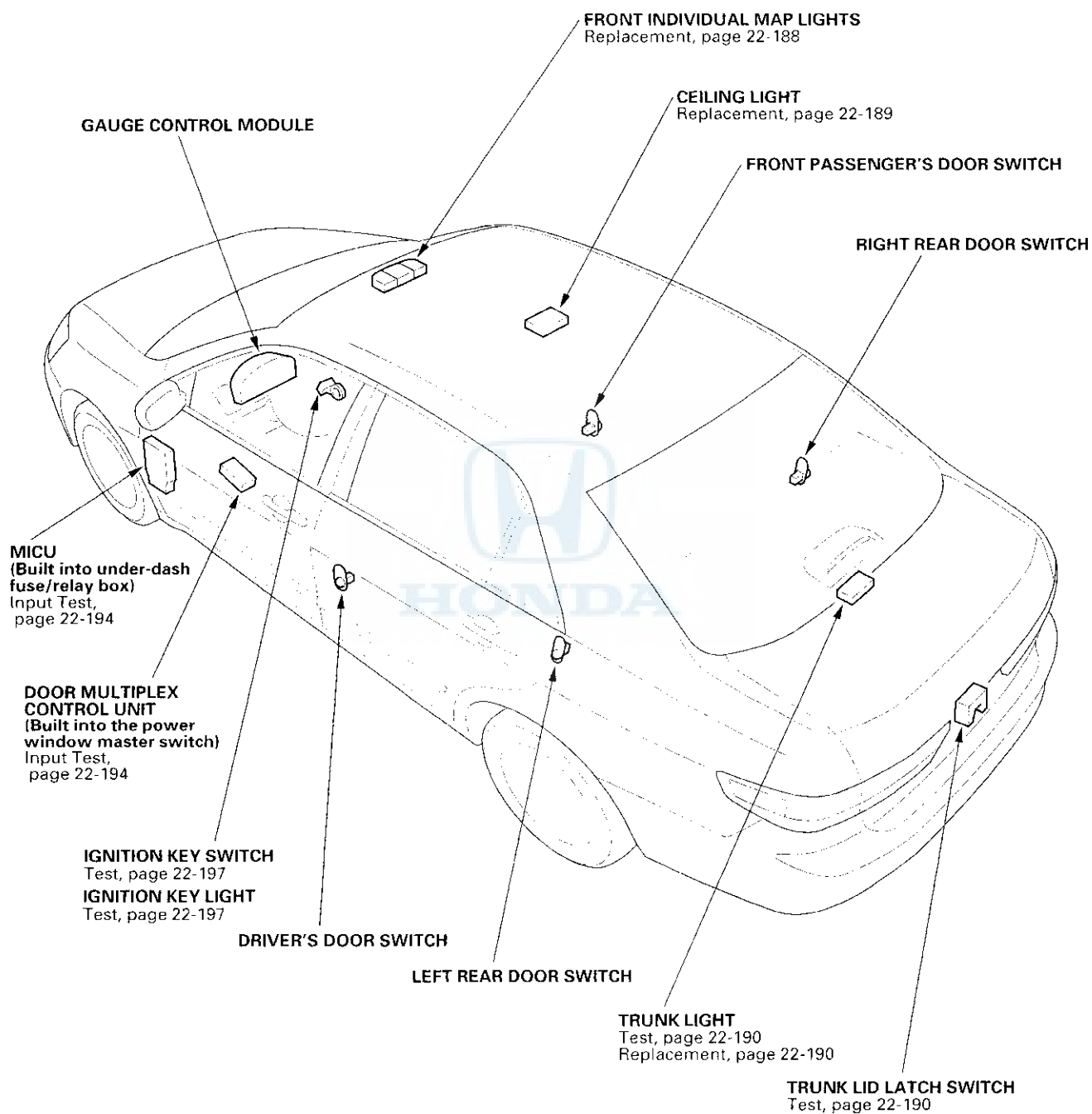
Courtesy light: 3.8 W



2. Remove the bulb (B) from the socket.

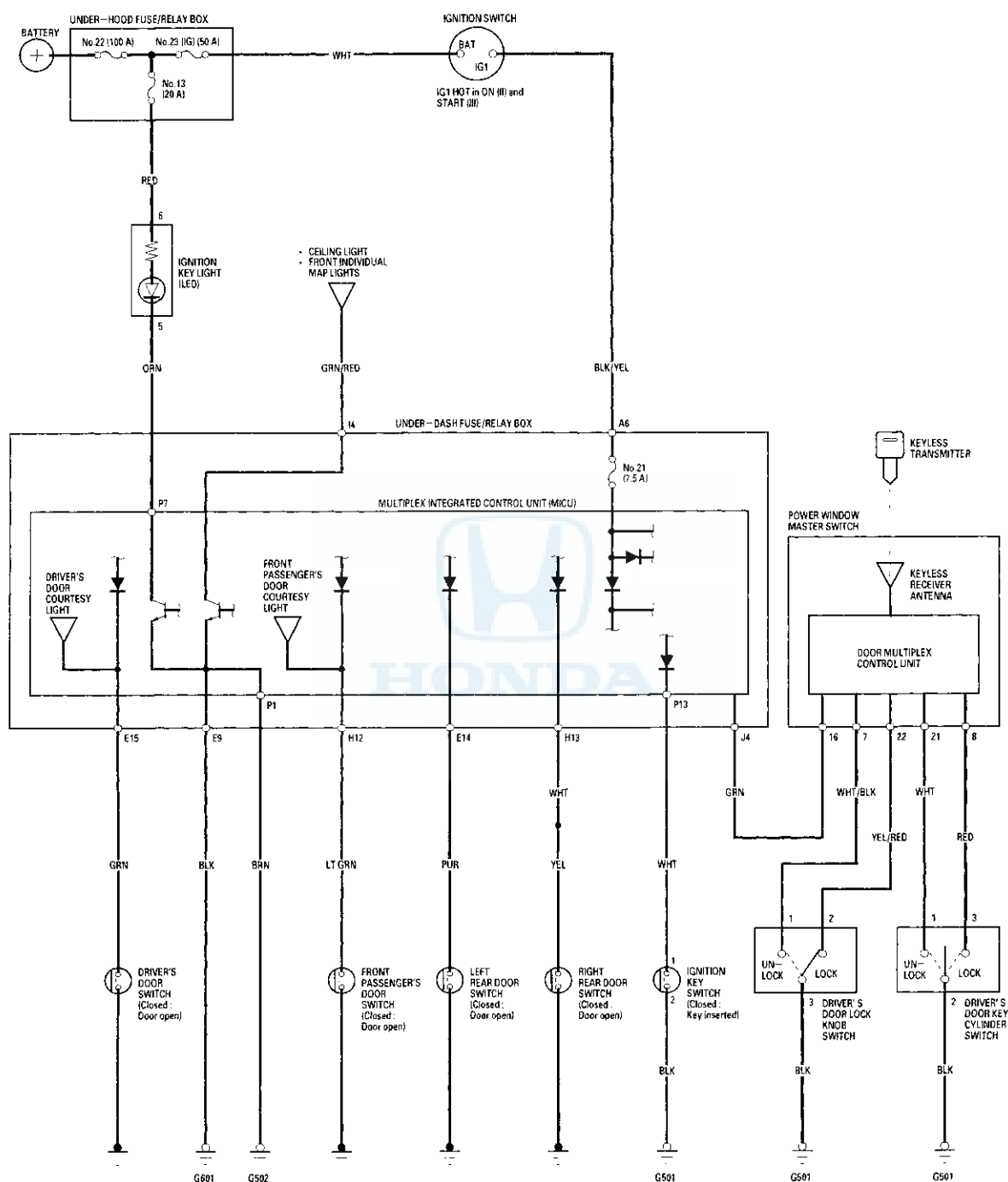
Entry Lights Control System

Component Location Index





Circuit Diagram



Entry Lights Control System

Control Unit Input Test

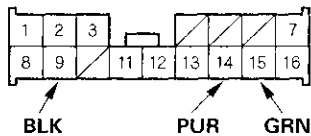
1. Before testing the entry light control functions, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see page 22-84).

Multiplex Integrated Control Unit

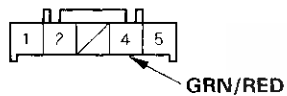
2. Remove the left kick panel (see page 20-45).
3. Disconnect the under-dash fuse/relay box connectors.

NOTE: All connectors are wire side of female terminals.

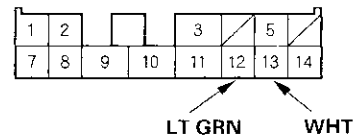
**UNDER-DASH FUSE/RELAY BOX
CONNECTOR E (16P)**



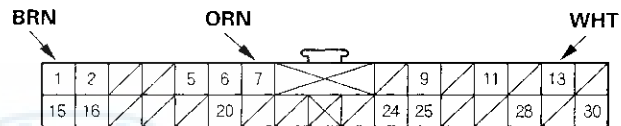
**UNDER-DASH FUSE/RELAY BOX
CONNECTOR I (5P)**



**UNDER-DASH FUSE/RELAY BOX
CONNECTOR H (14P)**



**UNDER-DASH FUSE/RELAY BOX
CONNECTOR P (30P)**



4. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 5.



5. With the connectors still disconnected, make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
P1	BRN	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G502) • An open in the wire
E9	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G601) • An open in the wire
P7	ORN	Under all conditions	Attach to ground: Ignition key light should come on.	<ul style="list-style-type: none"> • Blown No. 13 (20 A) fuse in the under-hood fuse/relay box • Faulty ignition keylight (LED) • An open in the wire
I4	GRN/RED	Ceiling light switch in middle position	Attach to ground: Ceiling light(s) should come on.	<ul style="list-style-type: none"> • Blown No. 6 (7.5 A) fuse in the under-dash fuse/relay box • Blown bulb • Faulty ceiling light • An open in the wire

6. Reconnect the connectors to the under-dash fuse/relay box.

7. Turn the ignition switch to ON (II) to keep the system awake and make these input tests at the appropriate connectors on the under-dash fuse/relay box.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 8.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E15	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty driver's door switch • Short to ground
H12	LT GRN	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • Short to ground
E14	PUR	Left rear door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty left rear door switch • Short to ground
H13	WHT	Right rear door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty right rear door switch • Short to ground
P13	WHT	Ignition key inserted into the ignition switch	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G501) • Faulty ignition key switch • An open in the wire
		Ignition key removed from the ignition switch	Check for voltage to ground: There should be 5 V or more.	<ul style="list-style-type: none"> • Faulty ignition key switch • Short to ground

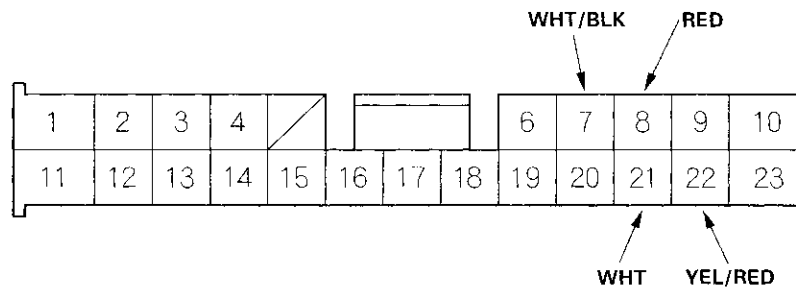
(cont'd)

Entry Lights Control System

Control Unit Input Test (cont'd)

Door Multiplex Control Unit

8. Remove the driver's door panel (see page 20-7).
9. Disconnect the 23P connector from the door multiplex control unit.
10. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 11.



Wire side of female terminals

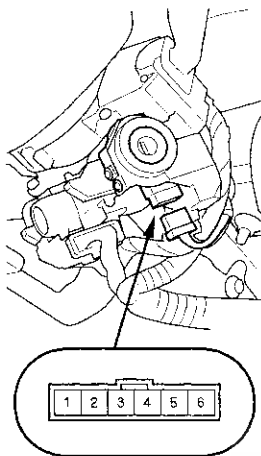
11. Reconnect the connector to the door multiplex control unit, and make these input tests at the appropriate connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
22	YEL/RED	Driver's door lock knob locked	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • Poor ground (G501)
		Driver's door lock knob unlocked	Check for voltage to ground: There should be 5 V or more.	
7	WHT/BLK	Driver's door lock knob unlocked	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door lock actuator • Poor ground (G501) • An open in the wire
		Driver's door lock knob locked	Check for voltage to ground: There should be 5 V or more.	
8	RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire • Short to ground
		Driver's door key cylinder switch in the neutral position	Check for voltage to ground: There should be 5 V or more.	
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 5 V or more.	
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door key cylinder switch • Poor ground (G501) • An open in the wire • Short to ground
		Driver's door key cylinder switch in the neutral position	Check for voltage to ground: There should be 5 V or more.	
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 5 V or more.	



Ignition Key Switch Test

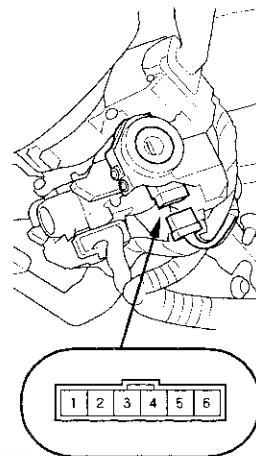
1. Remove the steering column upper and lower covers (see page 17-9).
2. Disconnect the 6P connector.



3. Check for continuity between the No. 1 and No. 2 terminals.
 - There should be continuity with the key in the ignition switch.
 - There should be no continuity with the key removed.
4. If the continuity is not as specified, replace the ignition switch.

Ignition Key Light Test

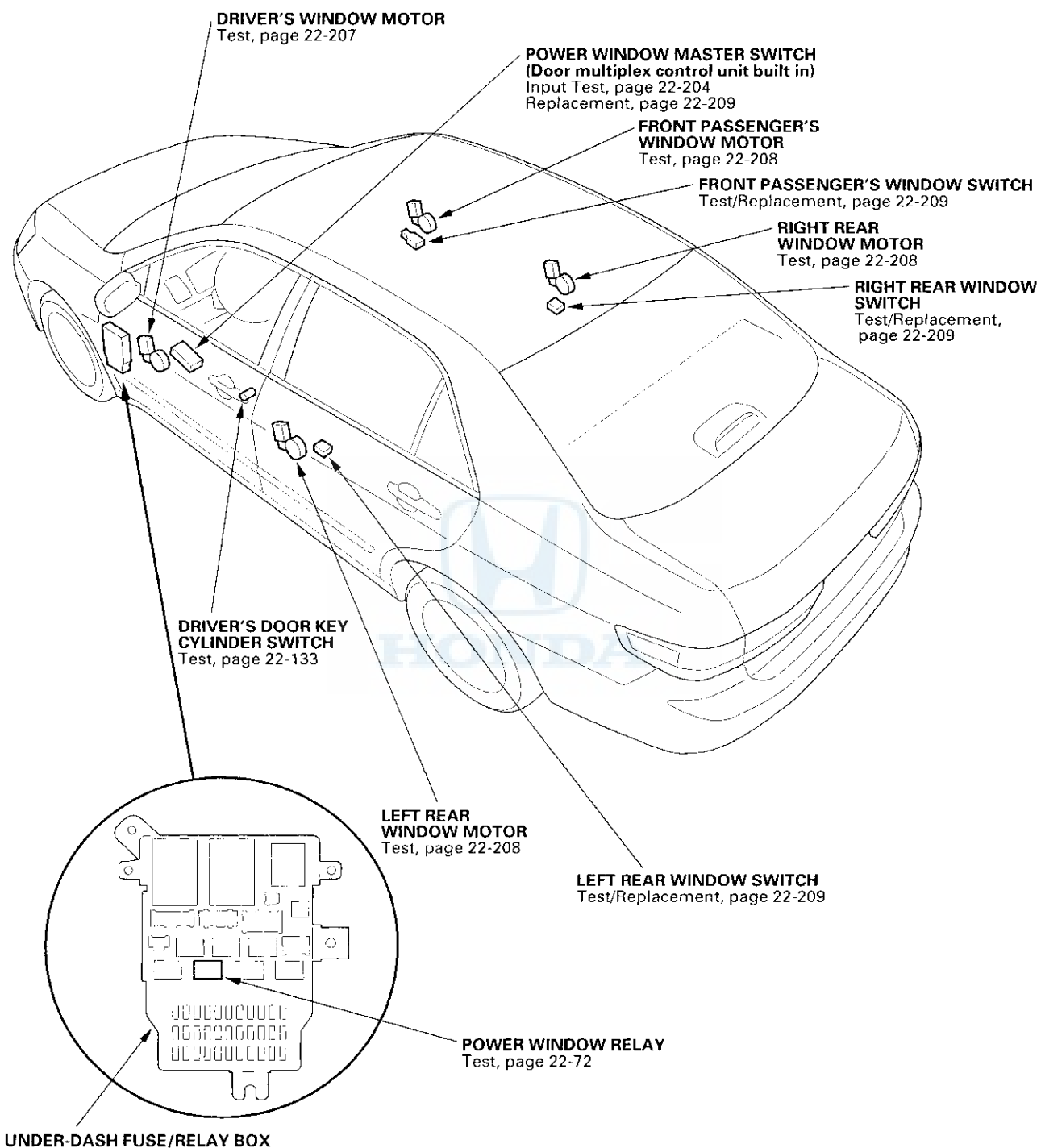
1. Remove the steering column upper and lower covers (see page 17-9).
2. Disconnect the 6P connector.



3. The LED should come on when power is connected to the No. 6 terminal and ground is connected to No. 5 terminal.
4. If the LED does not come on, replace the ignition switch.

Power Windows

Component Location Index



System Description

Key Cylinder Operation

With the key inserted in the driver's door key cylinder, turn the key a second time and hold within 10 seconds to operate the windows (clockwise to open, counterclockwise to close). The windows stop moving when the key is released.

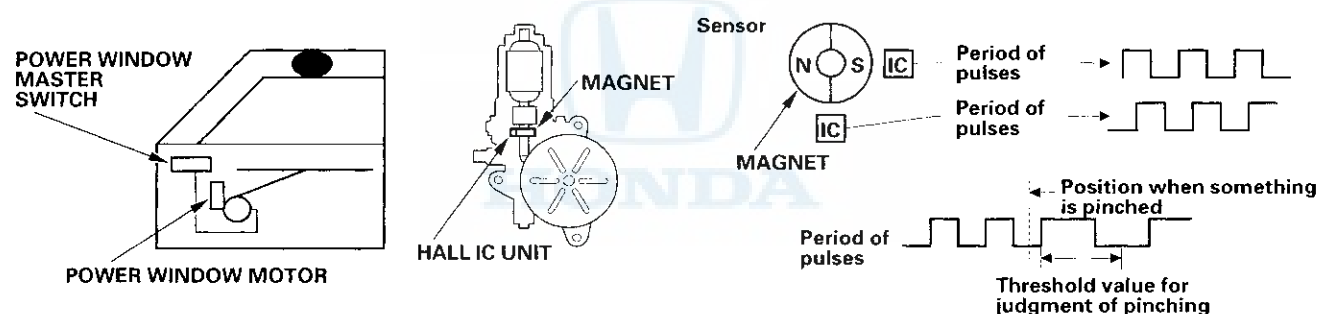
NOTE: Anti-trap will not work when door key cylinder switch is used to close the windows.

Keyless Operation

By pressing the UNLOCK button of the keyless transmitter a second time and holding, the windows open. The windows stop moving when the UNLOCK button is released. The windows do not close with the LOCK button.

Anti-trap Power Window Operation

The system is composed of the power window master switch, the power window master switch and the driver's window motor. The power window motor incorporates a pulser which generates pulses during the motor's operation and sends the pulses to the power window control unit. As soon as the power window master switch detects no pulses from the pulser, the control unit makes the power window motor stop and reverse. This is to prevent pinching your hand or fingers during auto-up operation.



Power Windows

Resetting the Power Window Control Unit

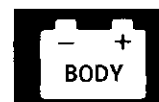
Resetting the power window is required when any of the following have been removed or repaired

- Power window regulator
- Power window motor
- Window run channel
- Door glass
- Battery disconnected

Using the HDS

1. Connect the Honda Diagnostic System (HDS) to the vehicle's DLC.
2. Turn the ignition switch ON (II), then enter the vehicle's VIN and mileage at the prompts.
3. Select Body Electrical from the System Selection menu.
4. From the Body Electrical System Select menu, select Power Windows.
5. From the Mode menu, select Adjustments.
6. From the Adjustment menu, select Window P Reset.
7. Follow the prompts on the screen.
8. Confirm that the power window master switch is reset by using the driver's window AUTO UP and DOWN function.



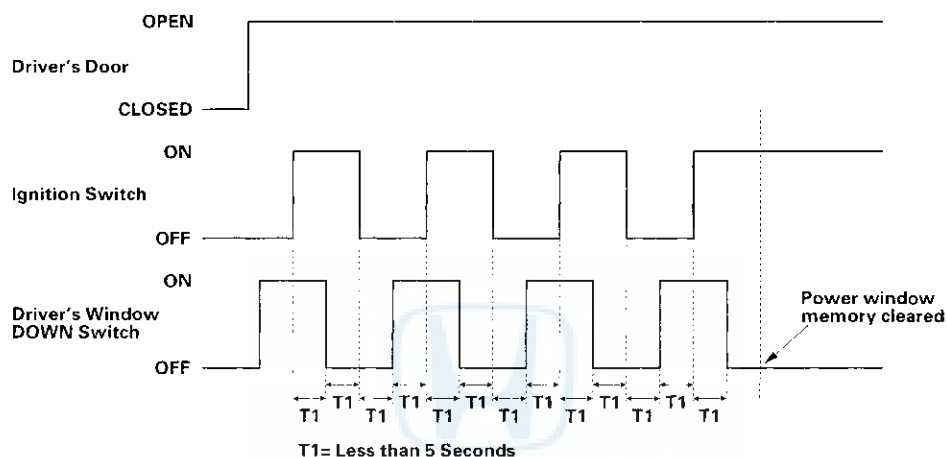


Resetting the power window

Without the HDS

1. Turn the ignition switch ON (II).
2. Move the driver's window all the way down by using the driver's window DOWN switch.
3. Open the driver's door.

NOTE: steps 4—7 must be done within 5 seconds of each other.

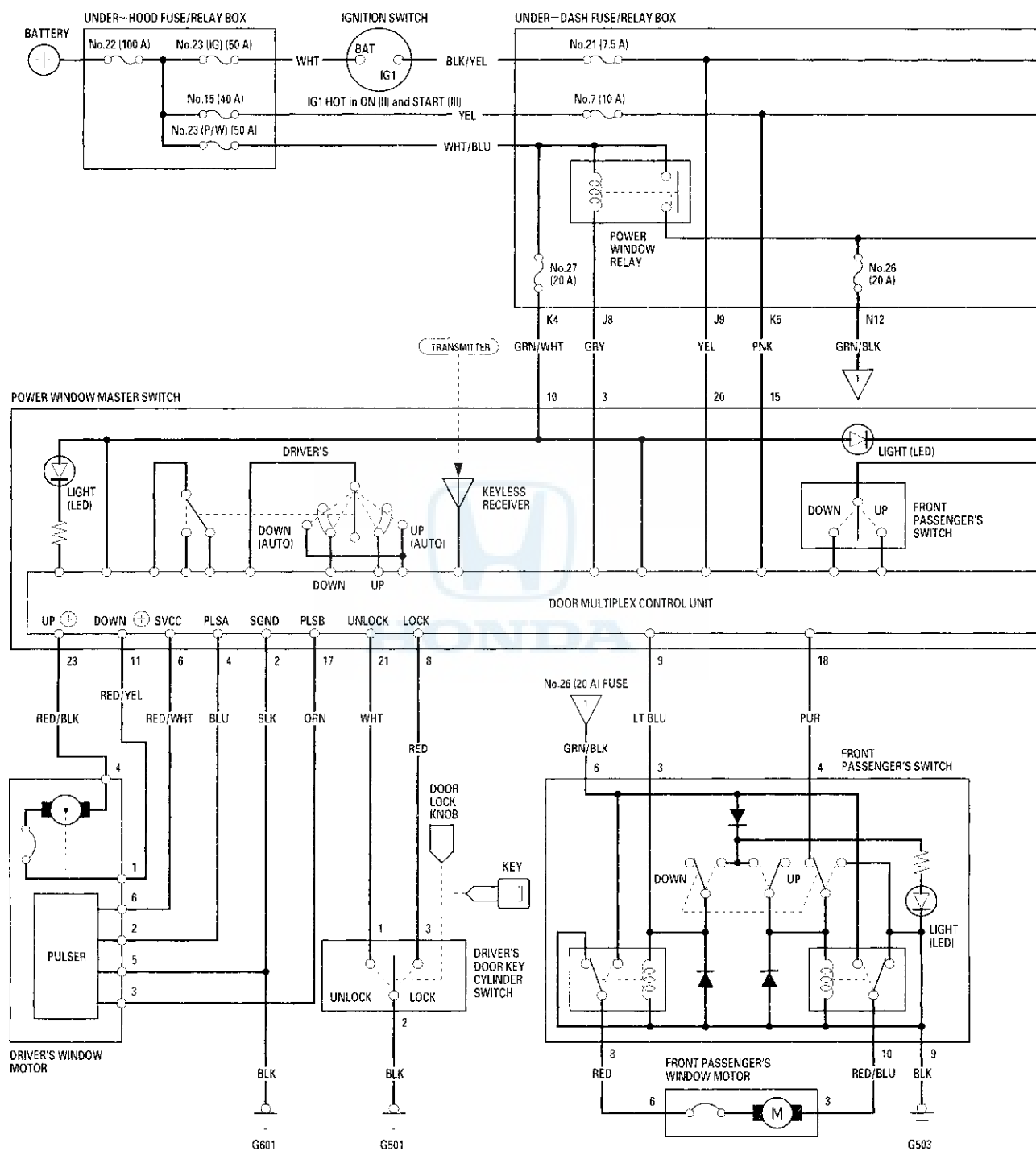


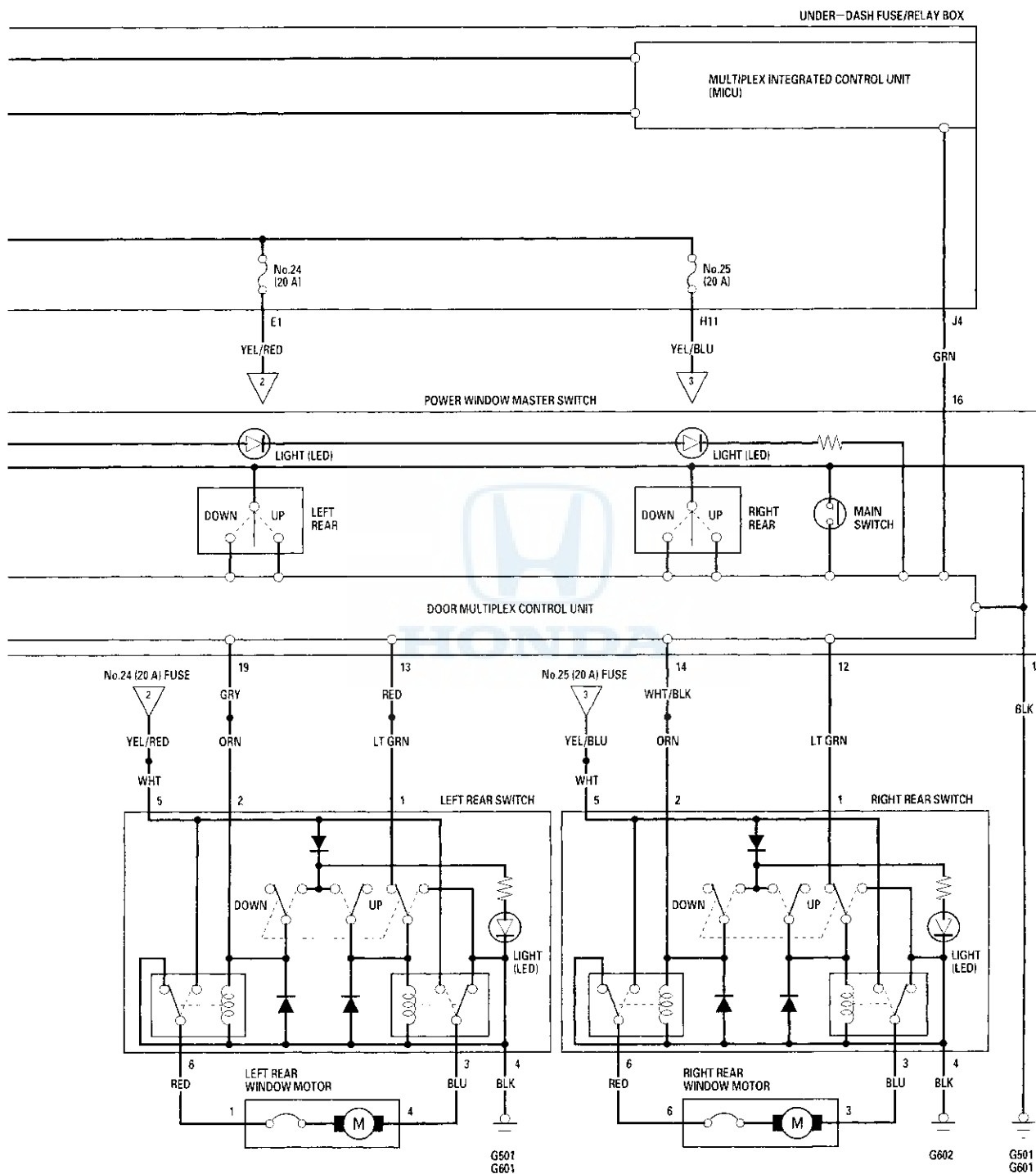
4. Turn the ignition switch OFF.
5. Push and hold the driver's window DOWN switch.
6. Turn the ignition switch ON (II).
7. Release the driver's window DOWN switch.
8. Repeat steps 4—7 three more times.
9. Wait 1 second.
10. Confirm that AUTO UP and AUTO DOWN do not work. If AUTO UP and DOWN work, go back to step 1.
11. Move the driver's window all the way down by holding the driver's window DOWN switch to the AUTO DOWN position.
12. Pull up and hold the driver's window UP switch to the AUTO UP position until the window reaches the fully closed position, then continue to hold the switch for 1 second.
13. Confirm that the power window master switch is reset by using the driver's window AUTO UP and DOWN function.

If the window still does not work in AUTO, repeat the procedure several times, paying close attention to the 5 second time limit between steps. If it still does not work, go to B-CAN System Diagnosis Test Mode A (see page 22-84).

Power Windows

Circuit Diagram

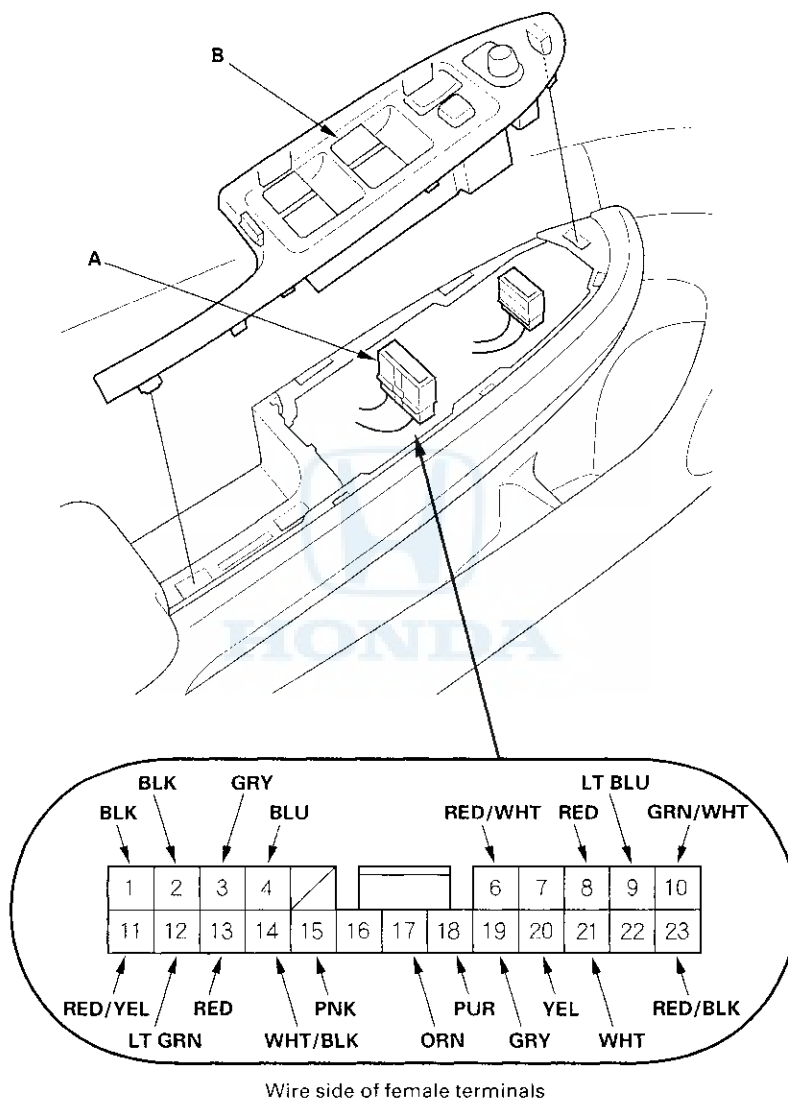




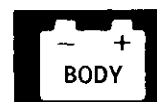
Power Windows

Master Switch Input Test

1. Before testing the power windows, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see page 22-84).
2. Remove the driver's door switch trim (see page 20-7).
3. Disconnect the 23P connector (A) from the power window switch (B).



4. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 5.



5. With the power window master switch still disconnected, make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	GRY	Under all conditions	Connect terminal No. 3 to ground. Check for voltage at under-dash fuse/relay box No. 26 (20 A) fuse: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 23 (P/W) (50 A) fuse in the under-hood fuse/relay box • Faulty power window relay • Faulty under-dash fuse/relay box • An open in the wire
10	GRN/WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 23 (P/W) (50 A) fuse in the under-hood fuse/relay box • Blown No. 27 (20 A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
20	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
15	PNK	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> • Blown No. 7 (10 A) fuse in the under-dash fuse/relay box • Faulty under-dash fuse/relay box • An open in the wire
1	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> • Poor ground (G601) • An open in the wire
11	RED/YEL	Connect the No. 10 and No. 11 terminals with a jumper wire, and No. 23 terminal to body ground.	Check the driver's window motor operation: The window should go down.	<ul style="list-style-type: none"> • Blown No. 27 (20 A) fuse in the under-dash fuse/relay box • Faulty driver's power window motor • An open in the wire
23	RED/BLK	Connect the No. 10 and No. 23 terminals with a jumper wire, and No. 11 terminal to body ground.	Check for driver's window motor operation: The window should go up.	
9	LT BLU	Connect the No. 10 and No. 9 terminals with a jumper wire, and the No. 3 terminal to body ground.	Check the front passenger's window motor operation: The window should go down.	
18	PUR	Connect the No. 10 and No. 18 terminals with a jumper wire, and the No. 3 terminal to body ground.	Check the front passenger's window motor operation: The window should go up.	<ul style="list-style-type: none"> • Poor ground (G503) • Blown No. 26 (20 A) fuse in the under-dash fuse/relay box • Faulty front passenger's power window switch • Faulty front passenger's power window motor • An open in the wire
13	RED	Connect the No. 10 and No. 13 terminals with a jumper wire, and the No. 3 terminal to body ground.	Check the left rear window motor operation: The window should go up.	<ul style="list-style-type: none"> • Poor ground (G601) • Blown No. 24 (20 A) fuse in the under-dash fuse/relay box • Faulty left rear power window switch • Faulty left rear power window motor • An open in the wire
19	GRY	Connect the No. 10 and No. 19 terminals with a jumper wire, and the No. 3 terminal to body ground.	Check the left rear window motor operation: The window should go down.	
12	LT GRN	Connect the No. 10 and No. 12 terminals with a jumper wire, and the No. 3 terminal to body ground.	Check the right rear window motor operation: The window should go up.	<ul style="list-style-type: none"> • Poor ground (G602) • Blown No. 25 (20 A) fuse in the under-dash fuse/relay box • Faulty right rear power window switch • Faulty right rear power window motor • An open in the wire
14	WHT/BLK	Connect the No. 10 and No. 14 terminals with a jumper wire, and the No. 3 terminal to body ground.	Check the right rear window motor operation: The window should go down.	

(cont'd)

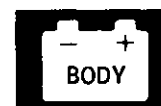
Power Windows

Master Switch Input Test (cont'd)

6. Reconnect the 23P connector to the switch.
7. Turn the ignition switch to ON (II) to keep the system awake and perform the following input tests.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, the control unit must be faulty; replace the power window master switch.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
6	RED/WHT	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> Faulty power window master switch Short to ground in the wire
2	BLK	Under all conditions	Check for voltage to ground: There should be 1 V or less.	<ul style="list-style-type: none"> Faulty power window master switch Poor ground (G601)
4	BLU	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 4 and No. 2 terminals: There should be 0 V—about 5 V—0 V—about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	<ul style="list-style-type: none"> Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box Blown No. 27 (20 A) fuse in the under-dash fuse/relay box Faulty power window master switch Short to ground in the wire Faulty driver's window motor
17	ORN	Ignition switch ON (II), and the driver's window switch AUTO DOWN	Check for voltage between the No. 17 and No. 2 terminals: There should be 0 V—about 5 V—0 V—about 5 V repeatedly (a digital voltmeter reads about 2.5 V while the window moves).	
21	WHT	Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be 1 V or less.	<ul style="list-style-type: none"> Faulty driver's door key cylinder switch Poor ground (G501) An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> Short to ground Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be about 5 V.	
8	RED	Driver's door key cylinder switch in LOCK	Check for voltage to ground: There should be 1 V or less.	<ul style="list-style-type: none"> Faulty driver's door key cylinder switch Poor ground (G501) An open in the wire
		Driver's door key cylinder switch in neutral	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> Short to ground Faulty driver's door key cylinder switch
		Driver's door key cylinder switch in UNLOCK	Check for voltage to ground: There should be about 5 V.	

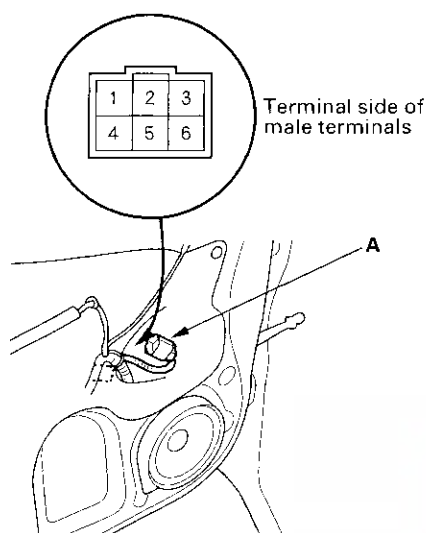
NOTE: Reference voltage is about 5 V when system is awake. The voltage drops to 0.8 V when the system goes into sleep mode.



Driver's Window Motor Test

Motor Test

1. Remove the driver's door panel (see page 20-7).
2. Disconnect the 6P connector (A) from the window motor.



3. Test the motor in each direction by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

Terminal	1	4
Direction		
UP	⊖	⊕
DOWN	⊕	⊖

4. If the motor does not run or fails to run smoothly, replace it.

Pulser Test

5. Reconnect the 6P connector to the window motor.
6. Check for voltage between the terminals.

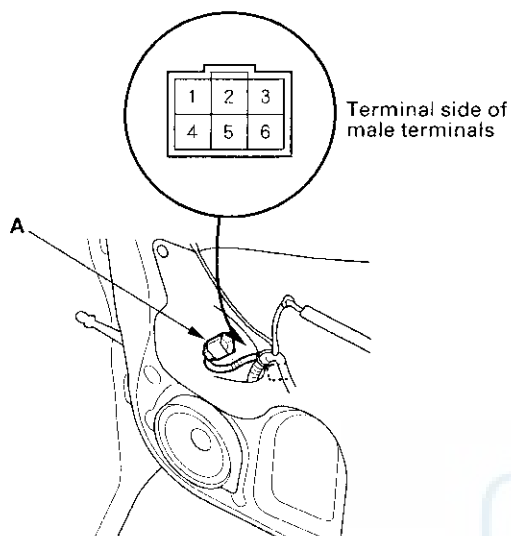
- There should be battery voltage between the No. 6 (+) and No. 5 (−) terminals when the ignition switch is ON (II).
- Connect an analog voltmeter between the No. 2 (+) and No. 5 (−) terminals, and run the window motor down or up. The voltmeter needle should move back and forth alternately (a digital voltmeter should show the average voltage between 0–5 V).
- Connect an analog voltmeter between the No. 3 (+) and No. 5 (−) terminals, and run the window motor at down or up. The voltmeter needle should move back and forth alternately.

If the voltage is not as specified, replace the driver's window motor.

Power Windows

Passenger's Window Motor Test

1. Remove the passenger's door panel (see page 20-7).
2. Disconnect the 6P connector (A) from the window motor.



3. Test the motor by connecting battery power and ground according to the table. When the motor stops running, disconnect one lead immediately.

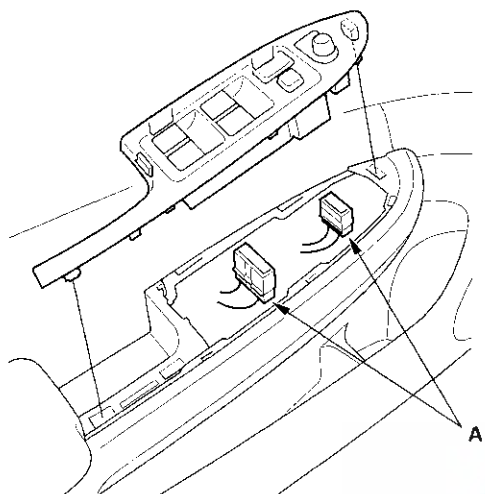
Terminal	3 (4)	6 (1)
Direction		
UP	⊕	⊖
DOWN	⊖	⊕

(): Left rear window motor

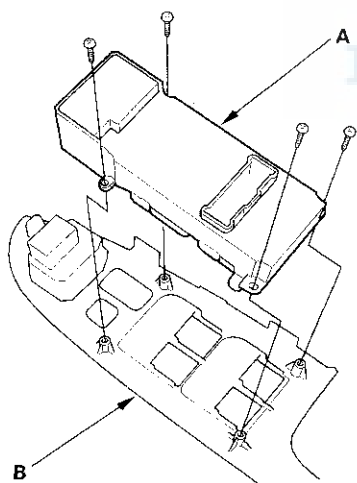
4. If the motor does not run or fails to run smoothly, replace it.

Master Switch Replacement

1. Carefully pry off the driver's door switch trim (see page 20-7).
2. Disconnect the power mirror and power window switch connectors (A).



3. Remove the four mounting screws, then remove the master switch (A) from the panel (B).

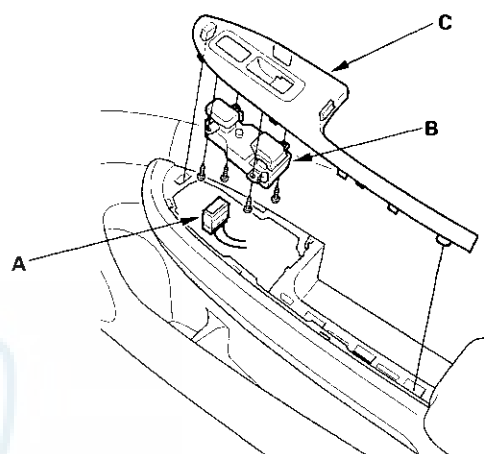


4. Reinstall the switch in reverse order of removal.
5. Reset the power window control unit (see page 22-200).
6. Reprogram the keyless remotes (see page 22-150).

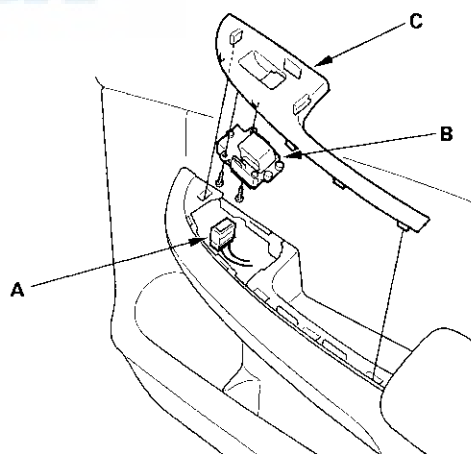
Passenger's Window Switch Test/Replacement

1. Carefully pry off the door switch trim (see page 20-7).
2. Disconnect the power window switch connector (A), then remove the three mounting screws and the power window switch (B) from the switch trim (C).

Front Passenger's:



Rear:



3. Swap the window switch with another known-good switch and test.
If the original window switch is faulty, replace it.

Power Windows

DTC Troubleshooting

DTC B1125: Driver's Power Window Motor A Pulse Error

DTC B1126: Driver's Power Window Motor B Pulse Error

1. Open and close the driver's power window by using the driver's switch manually.
2. While the power window moving, select POWER WINDOWS from the HDS and enter the DATA LIST.
3. Check the EXIST/NONE information of the P/W PLSA (B1125) or P/W PLSB (B1126) in the DATA LIST.

Do the information indicators display EXIST?

YES—Replace the power window master switch. ■

NO—Go to step 4.

4. Refer to the power window master switch input test, check for continuity between the driver's power window motor 6P connector and the power window master switch 23P connector (see page 22-204).

Are all the wire harnesses OK?

YES—Substitute a known-good power window master switch, and recheck. If DTC is gone, the original master switch is faulty; replace it. If the DTC is still indicated, replace the driver's power window motor. ■

NO—Repair a short or an open in the wire. ■

DTC B1140: Driver's Power Window Position Detect Circuit Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Open and close the driver's power window by using the driver's switch manually.
4. Check for DTCs using the HDS.

Is DTC B1125 or B1126 indicated?

YES—Troubleshoot the DTC B1125 or B1126 (see page 22-210). ■

NO—Go to step 5.

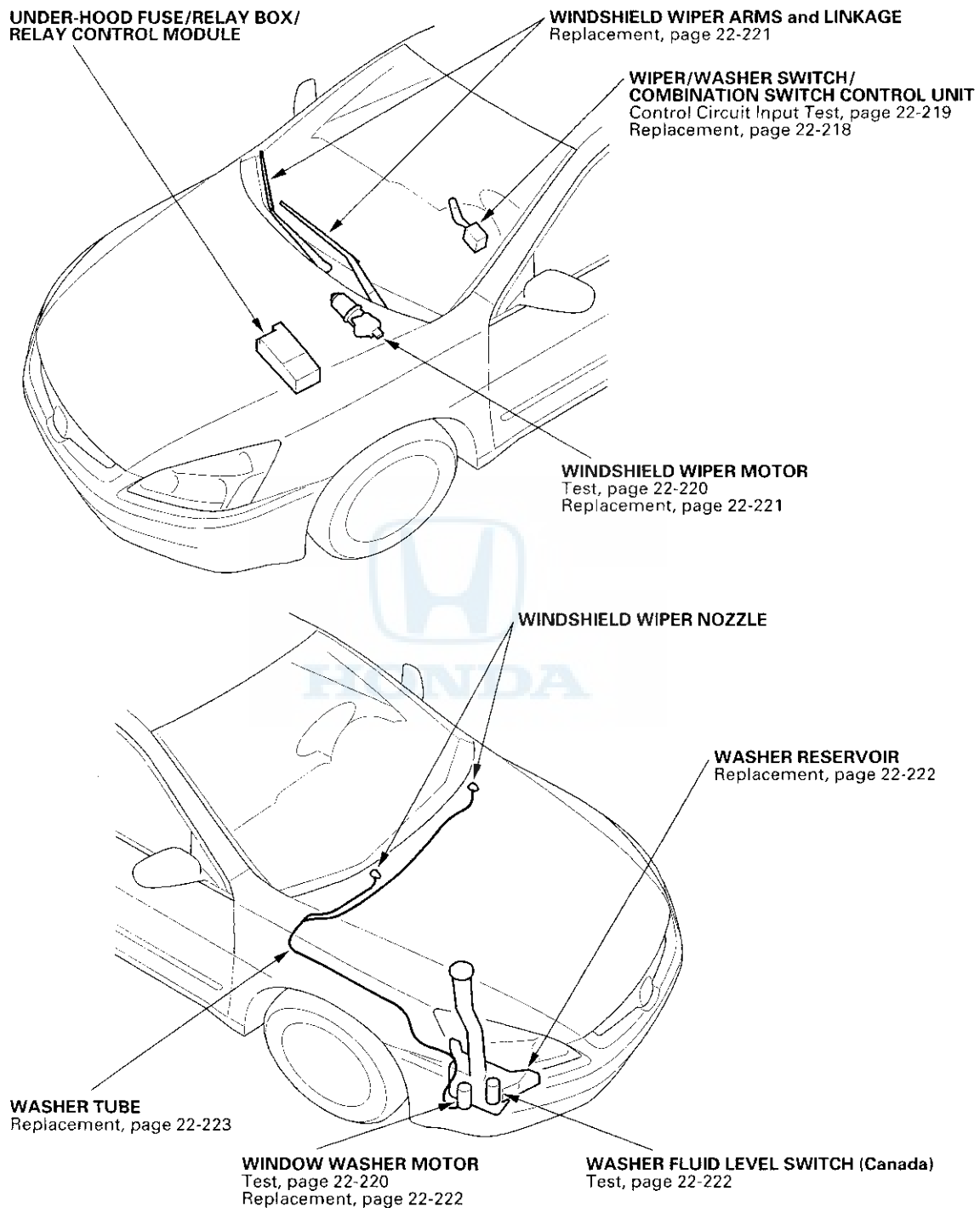
5. Reset the power window control unit (see page 22-200).
6. Check for DTCs again using the HDS.

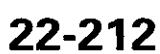
Is DTC B1140 indicated?

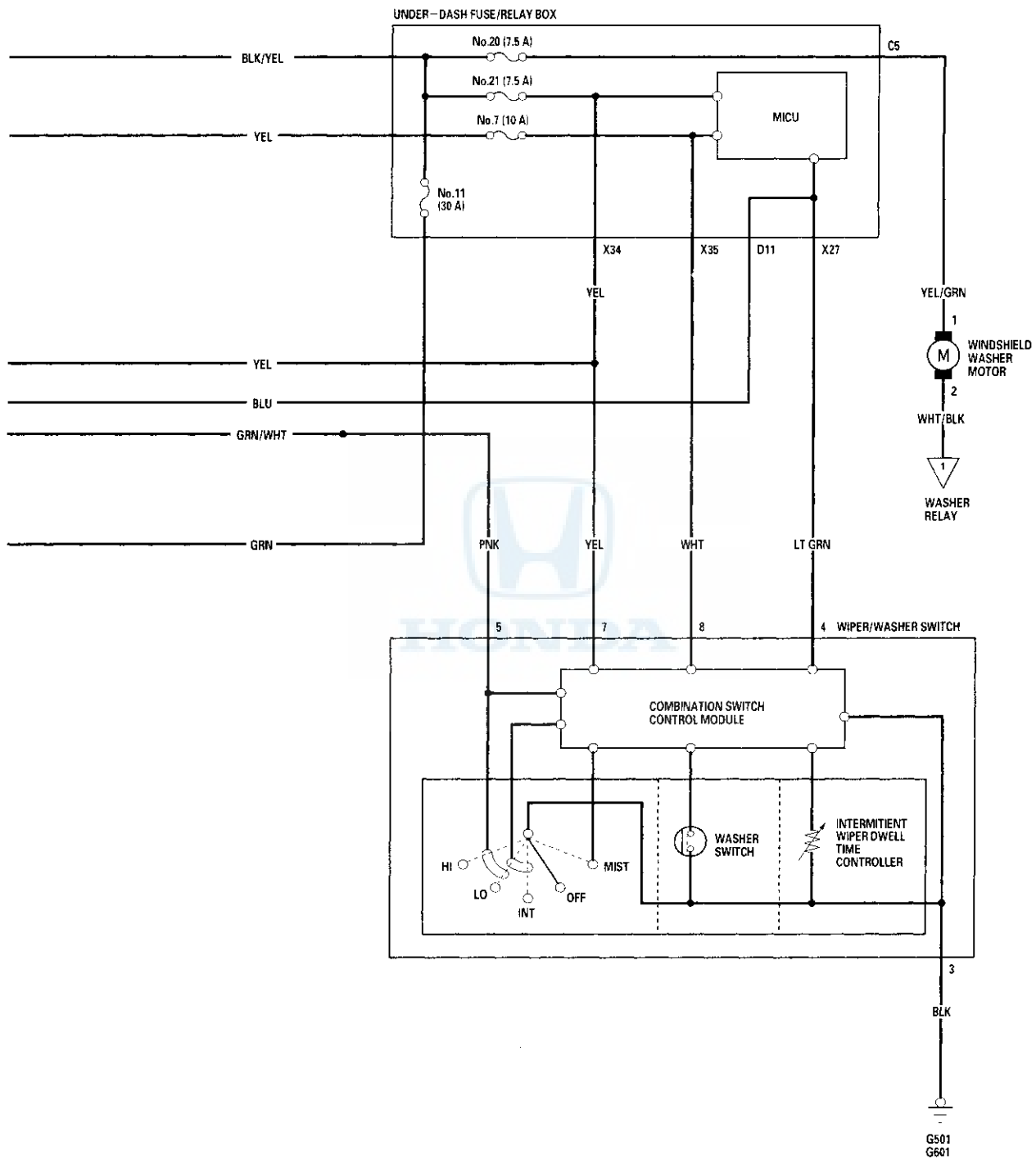
YES—Faulty door multiplex control unit; replace the power window master switch. ■

NO—The system is recovered at this time. ■

Component Location Index







Wipers/Washers

DTC Troubleshooting

DTC B1076: Windshield Wiper Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Turn the wiper switch to INT, LOW, then HIGH for at least 2 seconds each.

4. Check for DTCs using the HDS.

Is DTC B1076 indicated?

YES—Go to step 5.

NO—Intermittent failure. The windshield wiper system is OK at this time. Check pinfits and connections. ■

5. With the wiper/washer switch OFF, select WINDSHIELD WIPERS from the HDS, and enter the DATA LIST.

6. Check the ON/OFF information of the Windshield Wiper Switch (BACK-UP) in the DATA LIST.

Is the information indicator OFF?

YES—Go to step 7.

NO—Go to step 11.

7. Turn the wiper switch ON (low or high).

8. Check the ON/OFF information of the Windshield Wiper Switch (BACK-UP) in the DATA LIST.

Is the information indicator ON?

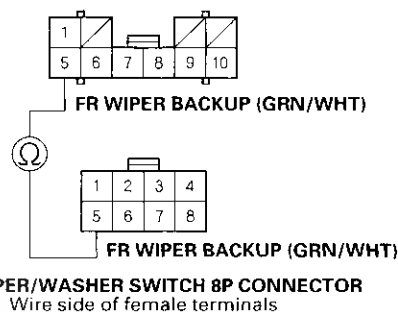
YES—Faulty relay control module; replace the under-hood fuse/relay box. ■

NO—Go to step 9.

9. Disconnect the relay control module 10P connector and the wiper/washer switch 8P connector.

10. Check for continuity between the No. 5 terminal of the relay control module 10P connector and the No. 5 terminal of the wiper/washer switch (combination switch control unit) 8P connector.

**RELAY CONTROL MODULE 10P CONNECTOR
(UNDER-HOOD FUSE/RELAY BOX)**
Wire side of female terminals



Is there continuity?

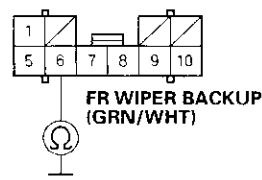
YES—Faulty combination switch control unit; replace the wiper/washer switch. ■

NO—Repair an open in the GRN/WHT wire. ■

11. Disconnect the relay control module 10P connector and the wiper/washer switch 8P connector.

12. Check for continuity between the No. 5 terminal of the relay control module 10P connector and body ground.

**RELAY CONTROL MODULE 10P CONNECTOR
(UNDER-HOOD FUSE/RELAY BOX)**



Wire side of female terminals

Is there continuity?

YES—Repair a short in the GRN/WHT wire. ■

NO—Faulty relay control module; replace the under-hood fuse/relay box. ■



DTC B1077: Windshield Wiper (As) Signal Error

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Turn the wiper switch to INT, LOW, then HIGH for at least 2 seconds each.
4. Check for DTCs using the HDS.

Is DTC B1077 indicated?

YES—Go to step 5.

NO—Intermittent failure. The windshield wiper system is OK at this time. Check pinfits and connections. ■

5. Turn the ignition switch ON (III).
6. Select WINDSHIELD WIPERS from the HDS and enter the DATA LIST.
7. Turn the windshield wiper switch ON.
8. Check the ON/OFF information of the Windshield Wiper Switch (INTERMITTENT), Windshield Wiper Switch (LOW), and Windshield Wiper Switch (HIGH) in the DATA LIST at each wiper switch position.

Is the information indicator ON at each switch position?

YES—Go to step 9.

NO—Go to step 17.
9. Select FUNCTIONAL TEST from the TEST MODE MENU, and operate the windshield wiper motor with FR WIPER (LOW) and FR WIPER (HIGH).

Does the windshield wiper motor run?

YES—Go to step 10.

NO—Go to step 18.

10. Turn the windshield wiper switch OFF, and stop the wiper arms at the park position. (If the wiper arms do not stop at the park position, turn the ignition switch OFF and stop them at the park position correctly.)

11. Turn the ignition switch ON (II).

Do the wipers begin to run as soon as the ignition switch is cycled ON?

YES—Go to step 16.

NO—Go to step 12.

12. Check the ON/OFF information of the Windshield Wiper Motor PARK Switch in the DATA LIST.

Is the information indicator OFF?

YES—Go to step 13.

NO—Faulty relay control module; replace the under-hood fuse/relay box. ■

13. Turn the ignition switch ON (III), and turn the windshield wiper switch ON at low speed.

14. Check the ON/OFF information of the Windshield Wiper Motor PARK Switch in the DATA LIST.

Does the DATA LIST information indicate ON and OFF alternately as the wipers pass the PARK position?

YES—Intermittent failure, the windshield wiper system is OK at this time. Check pinfits and connections. ■

NO—Go to step 15.

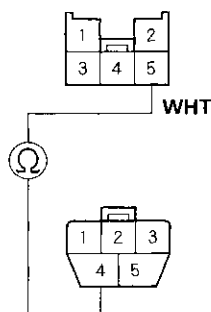
(cont'd)

Wipers/Washers

DTC Troubleshooting (cont'd)

15. Check for continuity between the No. 4 terminal of the windshield wiper motor 5P connector and No. 5 terminal of the under-hood fuse/relay box 5P connector J.

UNDER-HOOD FUSE/RELAY BOX 5P CONNECTOR J
Wire side of female terminals



WINDOW SHIELD WIPE MOTOR 5P CONNECTOR
Wire side of female terminals

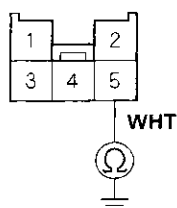
Is there continuity?

YES—Faulty windshield wiper motor; replace it. ■

NO—Repair an open in the WHT wire. ■

16. Check for continuity between the No. 5 terminal of the under-hood fuse/relay box 5P connector J and body ground.

UNDER-HOOD FUSE/RELAY BOX 5P CONNECTOR J



Wire side of female terminals

Is there continuity?

YES—Repair a short in the WHT wire. ■

NO—Faulty windshield wiper motor; replace it. ■

17. Check the No. 7 (10 A), No. 11 (30 A) and No. 21 (7.5 A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES—Faulty relay module; Replace the under-hood fuse/relay box. ■

NO—Replace the blown fuse and recheck the system. ■

18. Turn the ignition switch OFF, and check the No. 11 (30 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

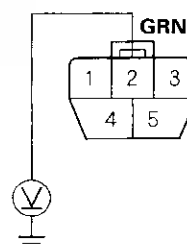
YES—Go to step 19.

NO—Replace the blown fuse and recheck the system. ■

19. Turn the ignition switch ON (II).

20. Check for voltage between the No. 2 terminal of the windshield wiper motor 5P connector and body ground.

WINDSHIELD WIPER MOTOR 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 21.

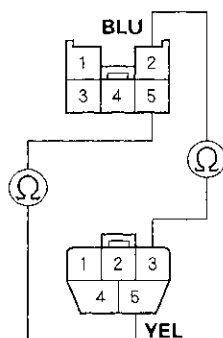
NO—Repair an open in the GRN wire. ■



21. Check for continuity between the No. 3 and No. 5 terminals of the windshield wiper motor 5P connector and the No. 2 and No. 4 terminal of the under-hood fuse/relay box 5P connector J.

UNDER-HOOD FUSE/RELAY BOX 5P CONNECTOR J

Wire side of female terminals



WINDOW SHIELD WIPE MOTOR 5P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Repair an open in the BLU or YEL wire. ■

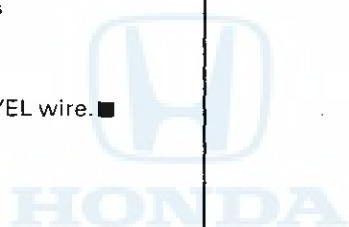
NO—Go to step 22.

22. Perform the wiper motor test (see page 22-220).

Does the wiper motor operate correctly?

YES—Faulty relay module; Replace the under-hood fuse/relay box. ■

NO—Replace the windshield wiper motor. ■



Wipers/Washers

DTC Troubleshooting (cont'd)

DTC B1281: Windshield Wiper Switch MIST Position Circuit Malfunction

DTC B1282: Windshield Wiper Switch INT (AUTO) Position Circuit Malfunction

DTC B1283: Windshield Wiper Switch LOW Position Circuit Malfunction

DTC B1284: Windshield Wiper Switch HIGH Position Circuit Malfunction

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON (II).
3. Turn the windshield wiper switch in MIST and wait for 2 seconds.
4. Turn the windshield wiper switch OFF and wait for 2 seconds.
5. Turn the windshield wiper switch in INT (AUTO) and wait for 2 seconds.
6. Turn the windshield wiper switch in LOW and wait for 2 seconds.
7. Turn the windshield wiper switch in HIGH and wait for 2 seconds.
8. Check for DTCs using the HDS.

Is DTC B1281, B1282, B1283, or B1284 indicated?

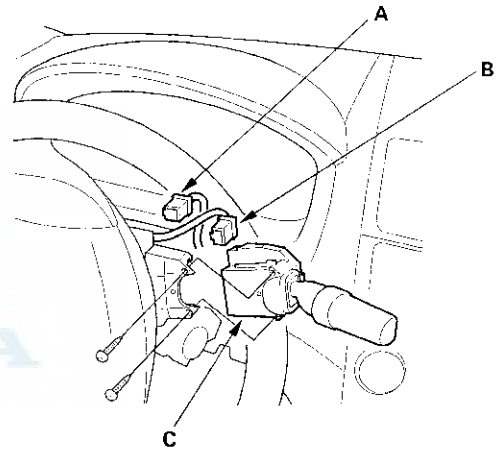
YES—Replace the windshield wiper/washer switch. ■

NO—Intermittent failure, the windshield wiper/washer switch and the combination switch control unit are OK at this time. Check pinfits and connections. ■

Wiper/Washer Switch Test/Replacement

NOTE: The wiper/washer switch is built into the combination switch control unit. For the wiper/washer test, refer to the wiper/washer switch input test (see page 22-219).

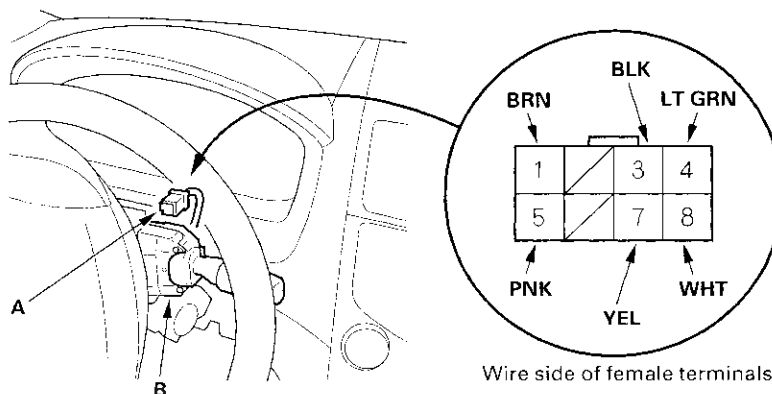
1. Remove the dashboard lower cover (see page 20-67).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the combination light switch 12P connector (A) and dashboard wire harness 8P connector (B) from the wiper/washer switch (C).



4. Remove the two screws, then slide out the wiper/washer switch.

Wiper/Washer Switch Input Test

- Before troubleshooting the wiper/washer system, troubleshoot the B-CAN System Diagnosis Test Mode A (see page 22-84).
- Remove the dashboard lower cover (see page 20-67).
- Remove the steering column covers (see page 17-9).
- Disconnect the 8P connector (A) from the wiper/washer switch (B).



- Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 6.
- With the connector still disconnected, make these input tests at the connector.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, replace the wiper/washer switch (combination switch control unit).

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
3	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none"> Poor ground (G501, G601) An open in the wire
8	WHT	Under all conditions	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> Blown No. 15 (40 A) fuse in the under-dash fuse/relay box Blown No. 7 (10 A) fuse in the under-dash fuse/relay box An open in the wire
7	YEL	Ignition switch ON (II)	Check for voltage to ground: There should be battery voltage.	<ul style="list-style-type: none"> Blown No. 21 (7.5 A) fuse in the under-dash fuse/relay box An open in the wire
5	PNK	Under all conditions	Check for continuity between the No. 5 terminal and under-hood fuse/relay box 10P connector No. 5 terminal: There should be continuity.	An open in the wire
4	LT GRN	Under all conditions	Check for continuity between the No. 4 terminal and under-dash fuse/relay box X connector No. 27 terminal: There should be continuity.	An open in the wire
1	BRN	Under all conditions	Check for continuity between the No. 1 terminal and under-hood fuse/relay box 10P connector No.6 terminal: There should be continuity.	An open in the wire

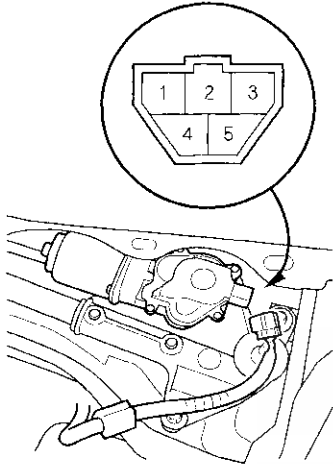
Wipers/Washers

Wiper Motor Test

1. Open the hood, and remove the wiper arms.

NOTE: Carefully remove the wiper arms, so that they do not touch the hood.

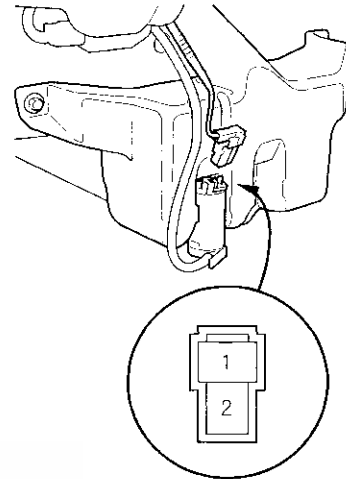
2. Remove the hood seal and cowl cover.
3. Disconnect the connector from the wiper motor.



4. Test the motor by connecting battery power to the No. 2 terminal and ground the No. 3 terminal of the wiper motor 5P connector. The motor should run at low speed. If the motor does not run or fails to run smoothly, replace the motor.
5. Test the motor by connecting battery power to the No. 2 terminal and ground the No. 5 terminal of the wiper motor 5P connector. The motor should run at high speed. If the motor does not run or fails to run smoothly, replace the motor.
6. Connect an analog voltmeter between the No. 4 (+) and No. 1 (—) terminals, and run the motor at low or high speed. The voltmeter should indicate 12 V and 4 V or less alternately. If it does not, replace the wiper motor.

Washer Motor Test

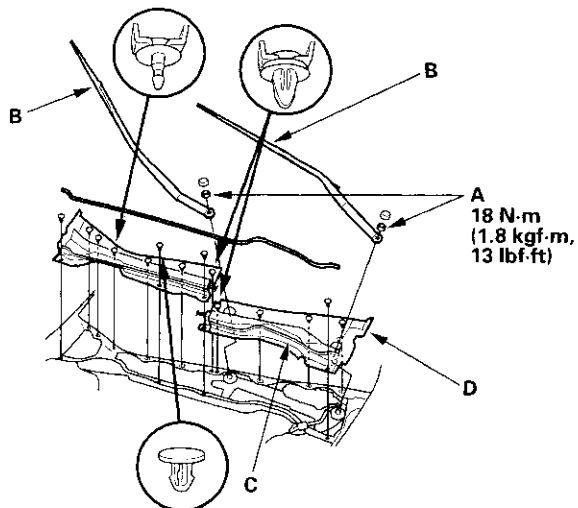
1. Remove the right inner fender (see page 20-121).
2. Disconnect the 2P connector from the washer motor.



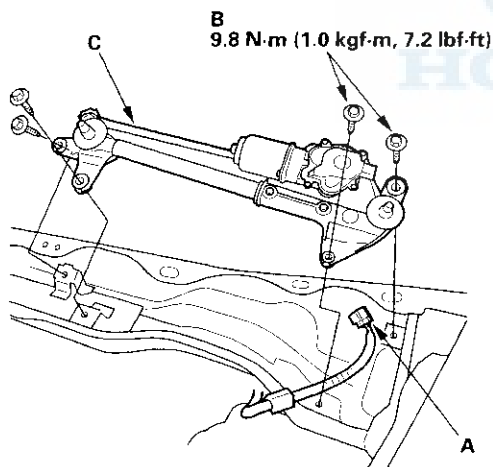
3. Test the motor by connecting battery power to the No. 1 terminal and ground the No. 2 terminal of the washer motor. The motor should run.
 - If the motor does not run or fails to run smoothly, replace it.
 - If the motor runs smoothly, but little or no washer fluid is pumped, check for a disconnected or blocked washer hose, or a clogged washer motor outlet.

Wiper Motor Replacement

1. Open the hood. Remove the caps, nuts (A), and the windshield wiper arms (B).

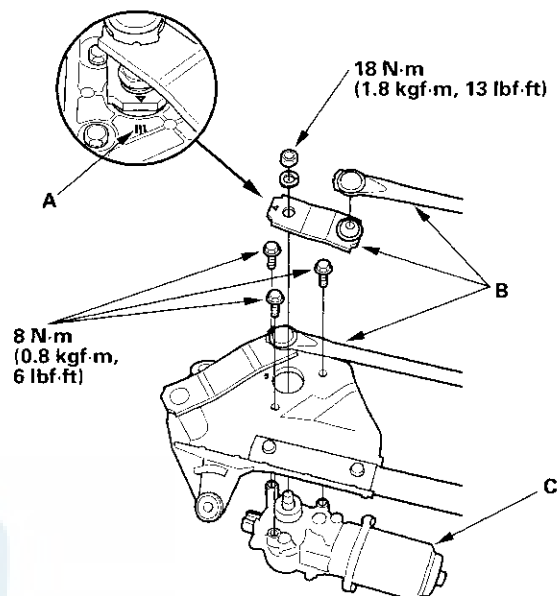


2. Remove the hood seals (C) and cowl covers (D).
3. Disconnect the 5P connector (A) from the wiper motor.



4. Remove the four bolts (B) and wiper linkage assembly (C).

5. Scribe a line (A) across the link and windshield wiper linkage to show the original adjustment. Separate the windshield wiper linkage (B) from the wiper motor (C).



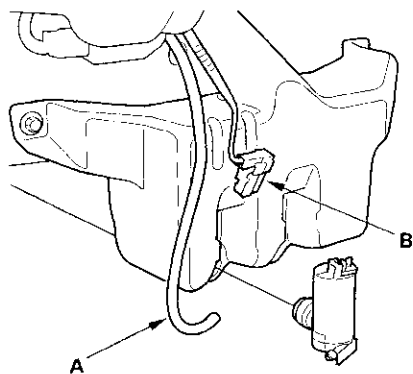
6. Install in the reverse order to removal, and note these items:

- Apply multipurpose grease to the moving parts.
- Before reinstalling the wiper arms, turn the wiper switch ON, then OFF to return the wiper shafts to the park position.
- If necessary, replace any damaged clips.
- Check the wiper motor operation.

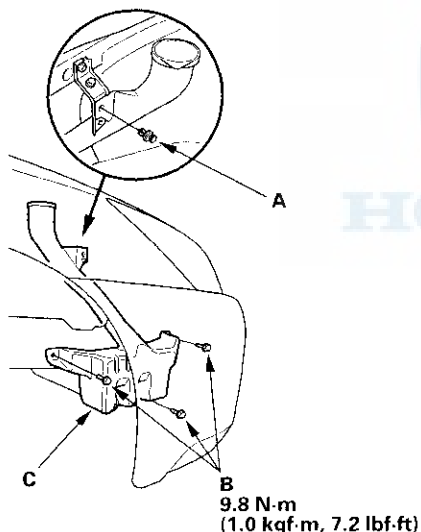
Wipers/Washers

Washer Reservoir Replacement

1. Remove the right inner fender (see page 20-121).
2. Disconnect the washer tube (A) and washer motor 2P connector (B).



3. Remove the clip (A) and three bolts (B), then remove the washer reservoir (C).

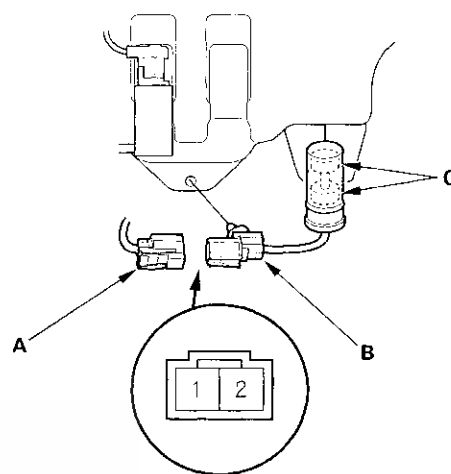


4. Install the reservoir in the reverse order of removal.

Washer Fluid Level Switch Test

Canada

1. Remove the right inner fender (see page 20-121).
2. Disconnect the 2P connector (A) from the washer fluid level switch (B).



3. Remove the washer fluid level switch from the reservoir.

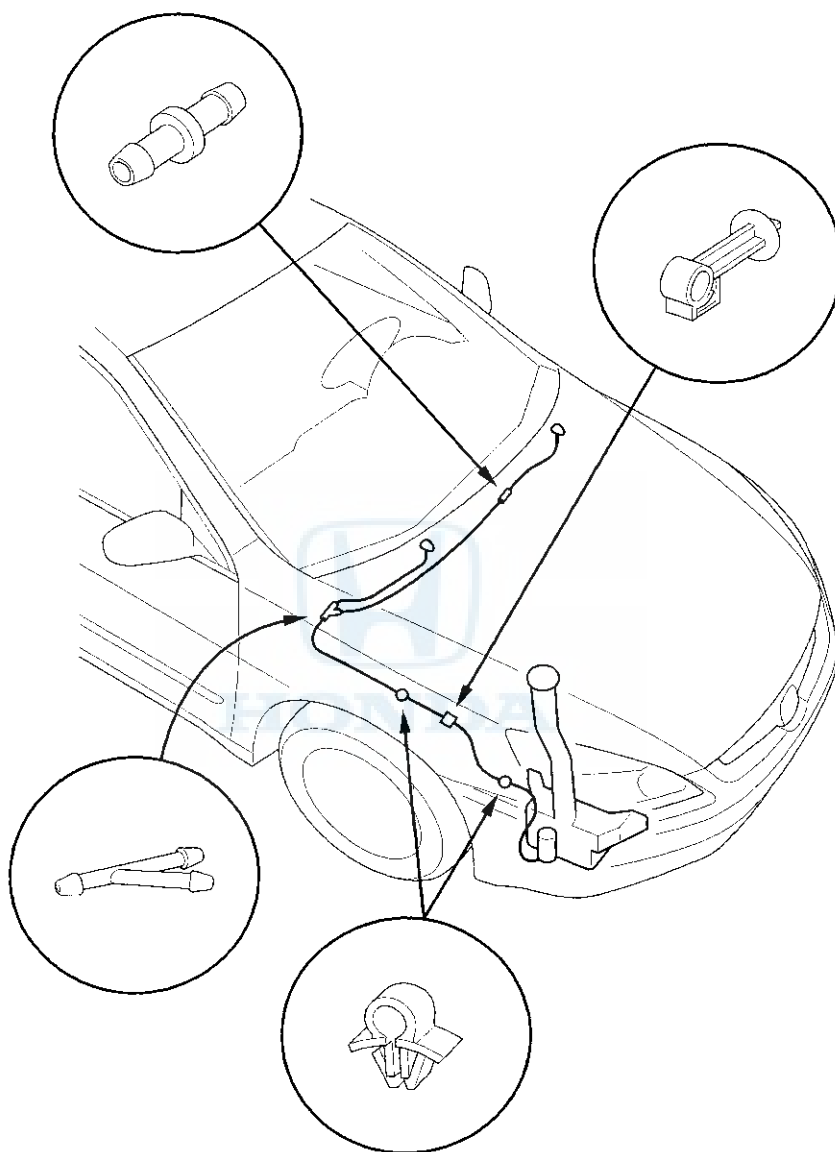
NOTE: Fluid may flow out of the opening.

4. Check for continuity between the No. 1 and No. 2 terminals in each float position (C).

- There should be continuity when the float is down.
- There should be no continuity when the float is up.

Washer Tube Replacement

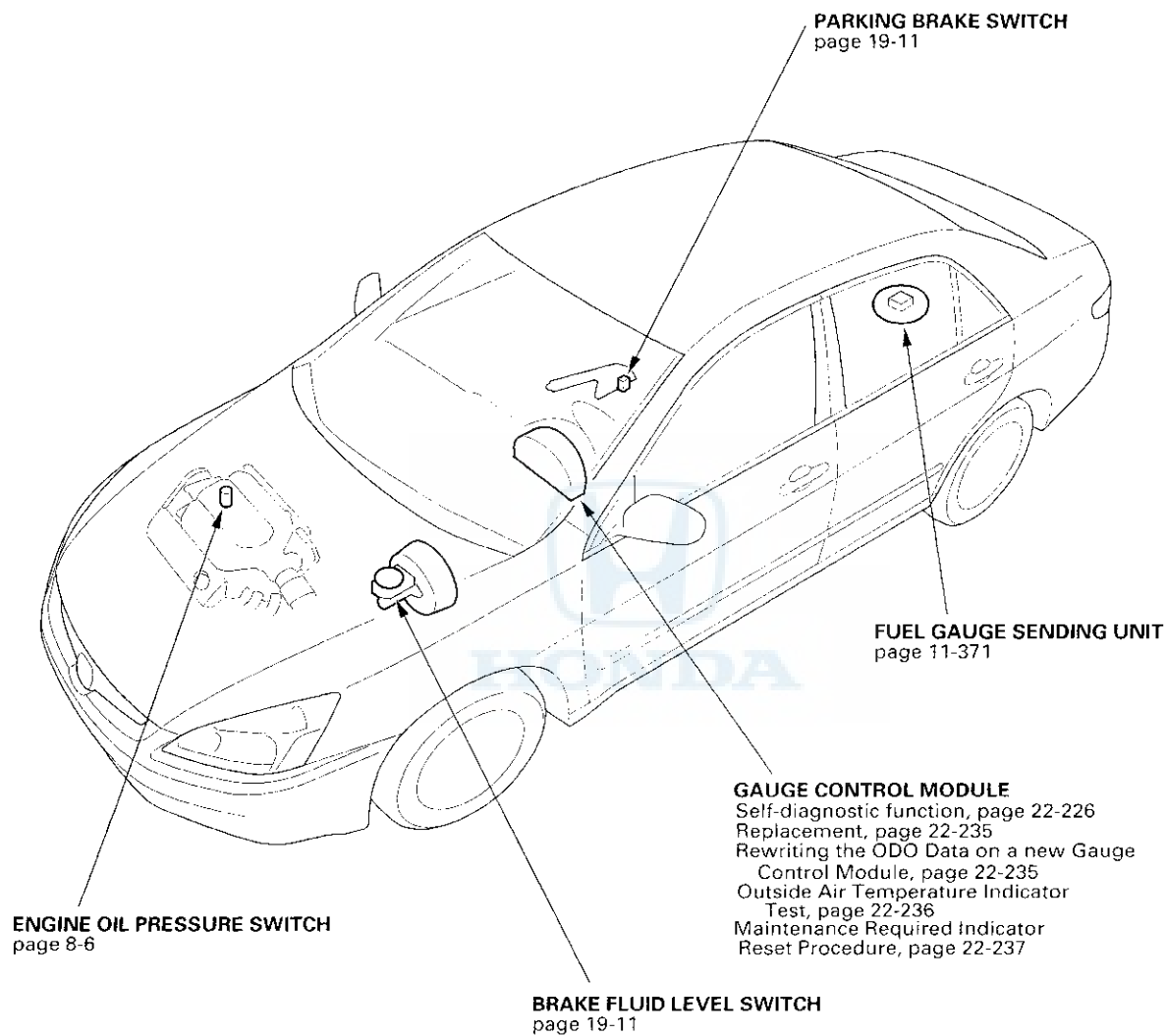
1. Remove the right inner fender (see page 20-121).
2. Remove the windshield washer nozzles and clips, then remove the tube.

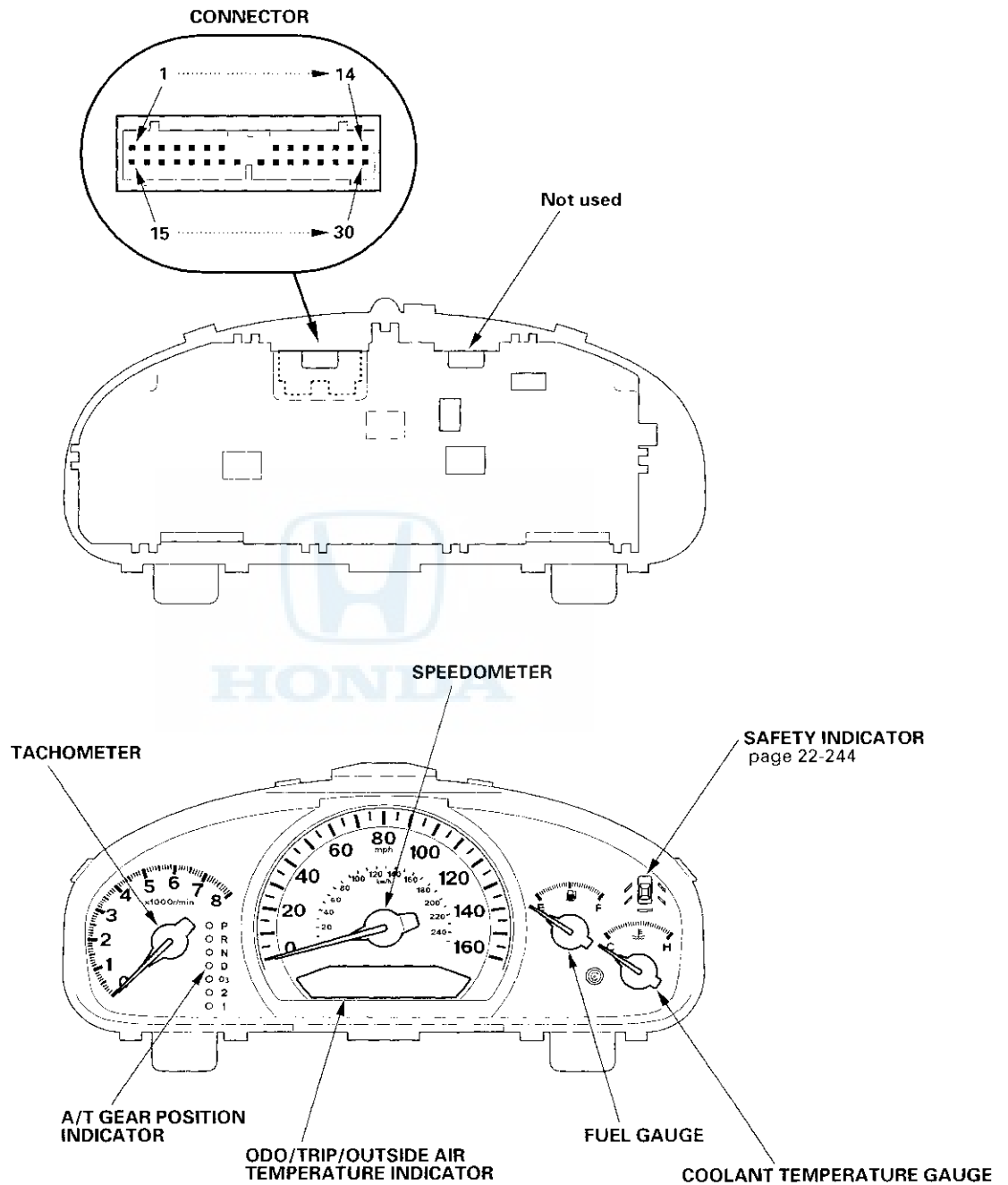


3. Install in the reverse order of removal. Take care not to pinch the washer tube. Check the windshield washer operation.

Gauges

Component Location Index





Gauges

Self-diagnostic Function

Before troubleshooting the gauge system, refer to multiplex integrated control system B-CAN System Diagnosis Test Mode A (see page 22-84).

The gauge control module has a self-diagnostic function.

- The beeper drive circuit check
- The indicator drive circuit check
- The switch input test
- The LCD segments check
- The gauges drive circuit check (Speedometer, Tachometer, Fuel gauge, Coolant temperature gauge)
- The communication line check (of the body-controller area network (B-CAN) communication line and the frame-controller area network (F-CAN) communication line between the gauges).

NOTE: Indicators are also controlled via the communication line.

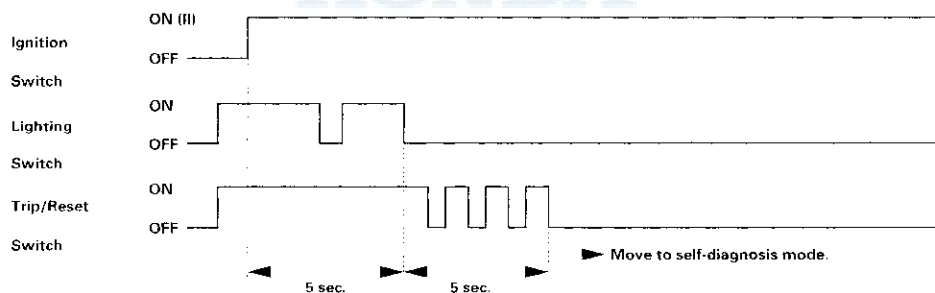
Entering the self-diagnostic function

Before running the self-diagnostic function, check the No. 7 (10 A) fuse and the No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

1. Push and hold the trip/reset button.
2. Turn the headlights ON.
3. Turn the ignition switch ON (II).
4. Within 5 sec., turn the headlights OFF, then ON and OFF again.
5. Within 5 sec., release the trip/reset button, and then push and release the button three times repeatedly.

NOTE:

- While in the self-diagnostic mode, the dash lights brightness controller operates normally.
- While in the self-diagnostic mode, the trip/reset button is used to start the Beeper Drive Circuit Test and the Gauge Drive Circuit Check.
- If the vehicle speed exceeds 1.2 mph (2 km/h) or the ignition switch is turned OFF, the self-diagnostic mode ends.



The Beeper Drive Circuit Check

When entering the self-diagnostic mode, the beeper sounds five times.

The Indicator Drive Circuit Check

When entering the self-diagnostic mode, the following indicator lights blink:

Seat belt indicator, charging system indicator, low fuel indicator, maintenance required indicator, security indicator, high beam indicator, lights on indicator, malfunction indicator lamp (MIL), A/T gear position indicator, ABS indicator, cruise main indicator safety indicators (doors and trunk) and IMA system indicator.

Switch Input Check

After the intermittent beeper sounds at the initial stage of the self-diagnostic function, a beeper sounds continuously while any of the following switch inputs are switched from OFF to ON:

Cruise control main cruise set, cruise cancel, cruise resume, TCS OFF, and parking brake switches.



The LCD Segment Check

When entering the self-diagnostic mode, the odometer/trip segments and outside air temperature segment blink five times.

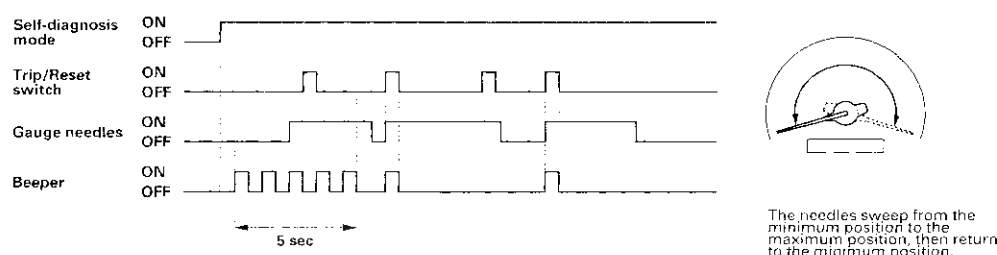
The Gauge Drive Circuit Check

When entering the self-diagnostic mode, the speedometer, the tachometer, the fuel gauge, and the coolant temperature gauge needles sweep from the minimum position to maximum position, then return to the minimum position.

NOTE:

After the beeper stops sounding and the gauge needles return to the minimum position, pushing the trip/reset button starts the Beeper Drive Circuit Check (one beep) and the Gauge Drive Circuit Check again.

The check cannot be started again until the gauge needles return to the minimum position.



If a needle fails to sweep or the beeper does not sound, replace the gauge control module.

The Communication Line Check

While in the self-diagnostic mode, the Communication Line Check starts after the odometer/trip LCD Segments Check. If all segments come on, the communication line is OK.

- If the word "Error 1" is indicated, there is a malfunction in the communication line between the gauge control module and the frame-controller area network (F-CAN). Check for DTCs in the ECM/PCM. If no DTCs are found, go to B-CAN System Diagnosis Test Mode A (see page 22-84).
- If the word "Error 2" is indicated, there is a malfunction in the communication line between the gauge control module and the body-controller area network (B-CAN). Go to B-CAN System Diagnosis Test Mode A (see page 22-84).
- If the word "Error 3" is indicated, there is a malfunction in the communication line between the gauge control module and the body-controller area network (B-CAN) and the frame-controller area network (F-CAN). Check for DTCs in the PCM. If no DTCs are found, go to B-CAN System Diagnosis Test Mode A (see page 22-84).

Normal:



Faulty (example Error 1):



If any communication line errors are found, go to B-CAN System Diagnosis Test Mode A (see page 22-84).

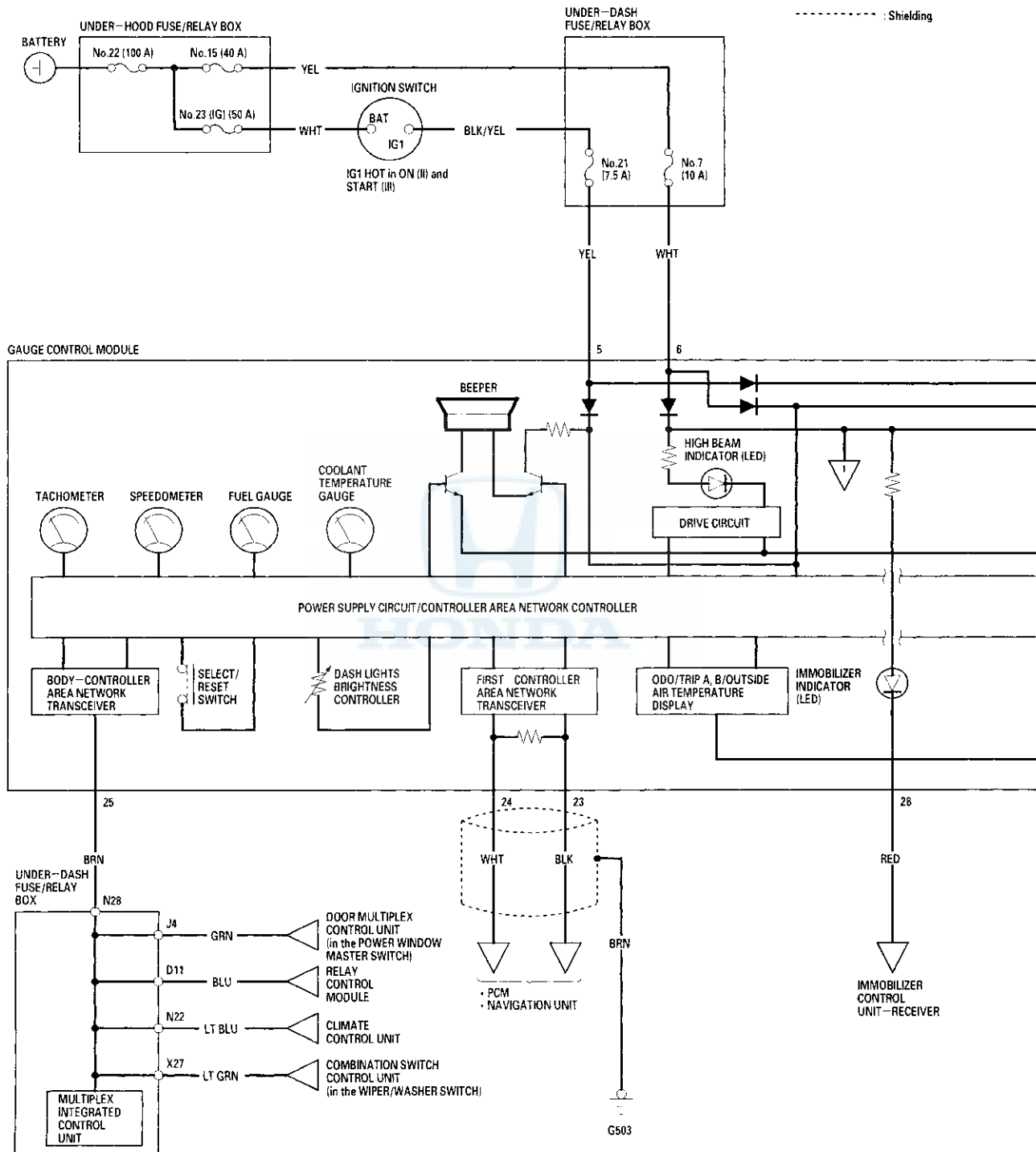
Ending the self-diagnostic function

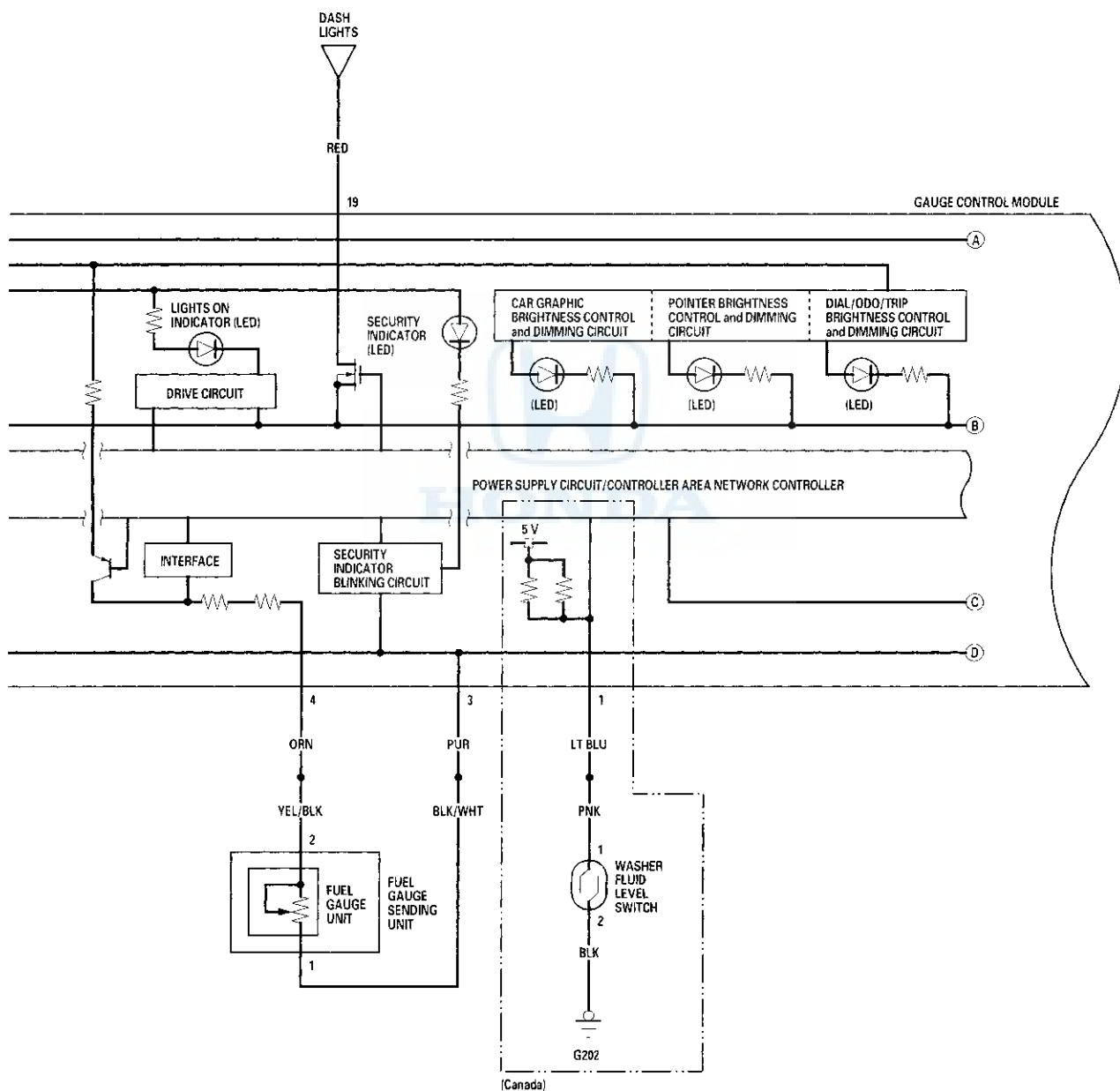
Turn the ignition switch OFF.

NOTE: If the vehicle speed exceeds 1.2 mph (2 km/h), the self-diagnostic function ends.

Gauges

Circuit Diagram

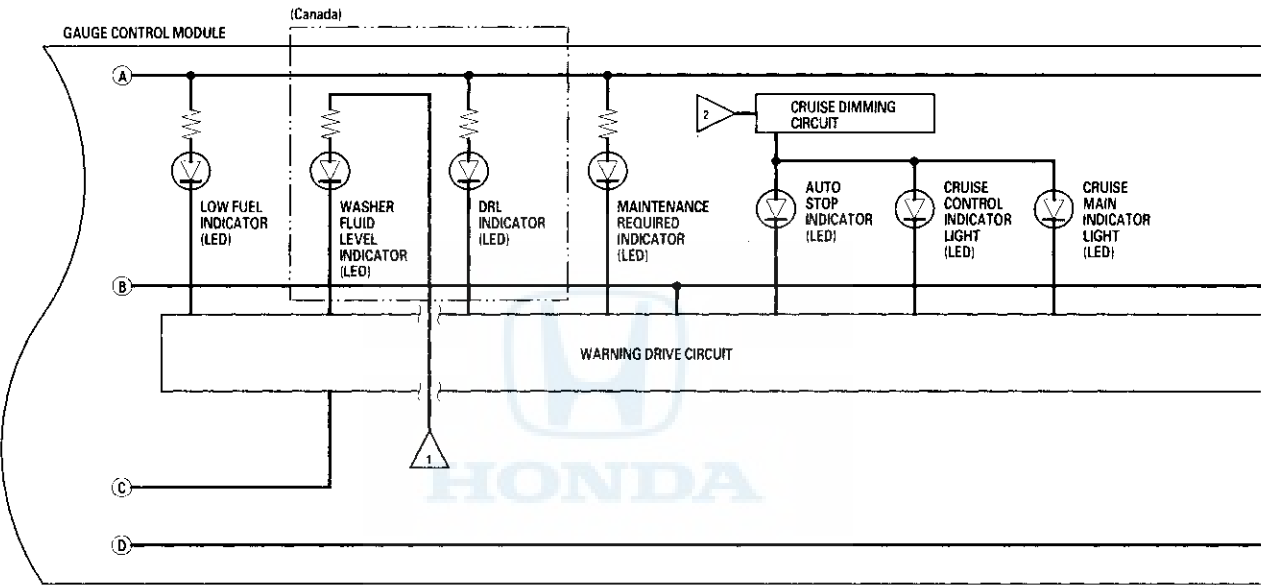


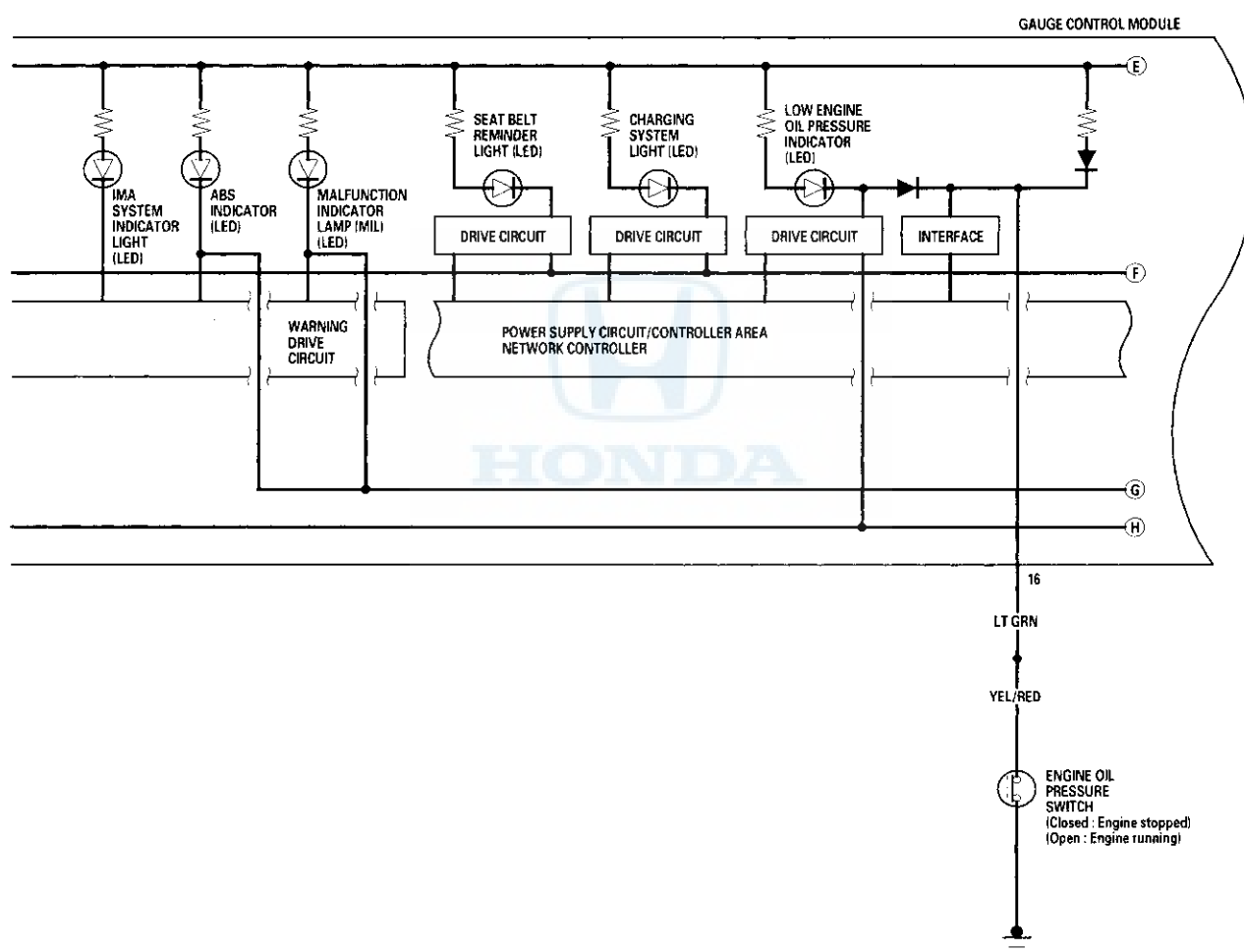


(cont'd)

Gauges

Circuit Diagram (cont'd)

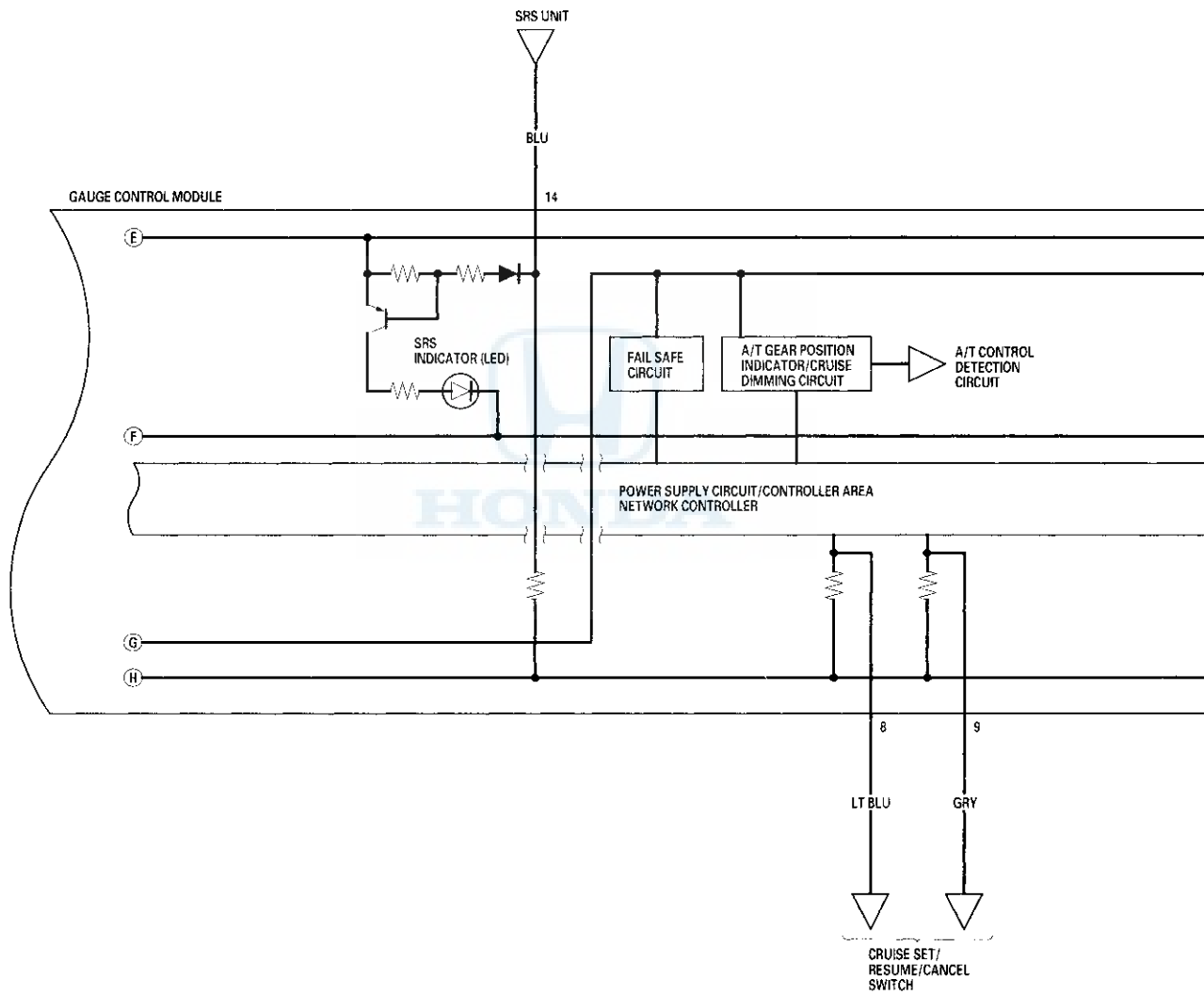


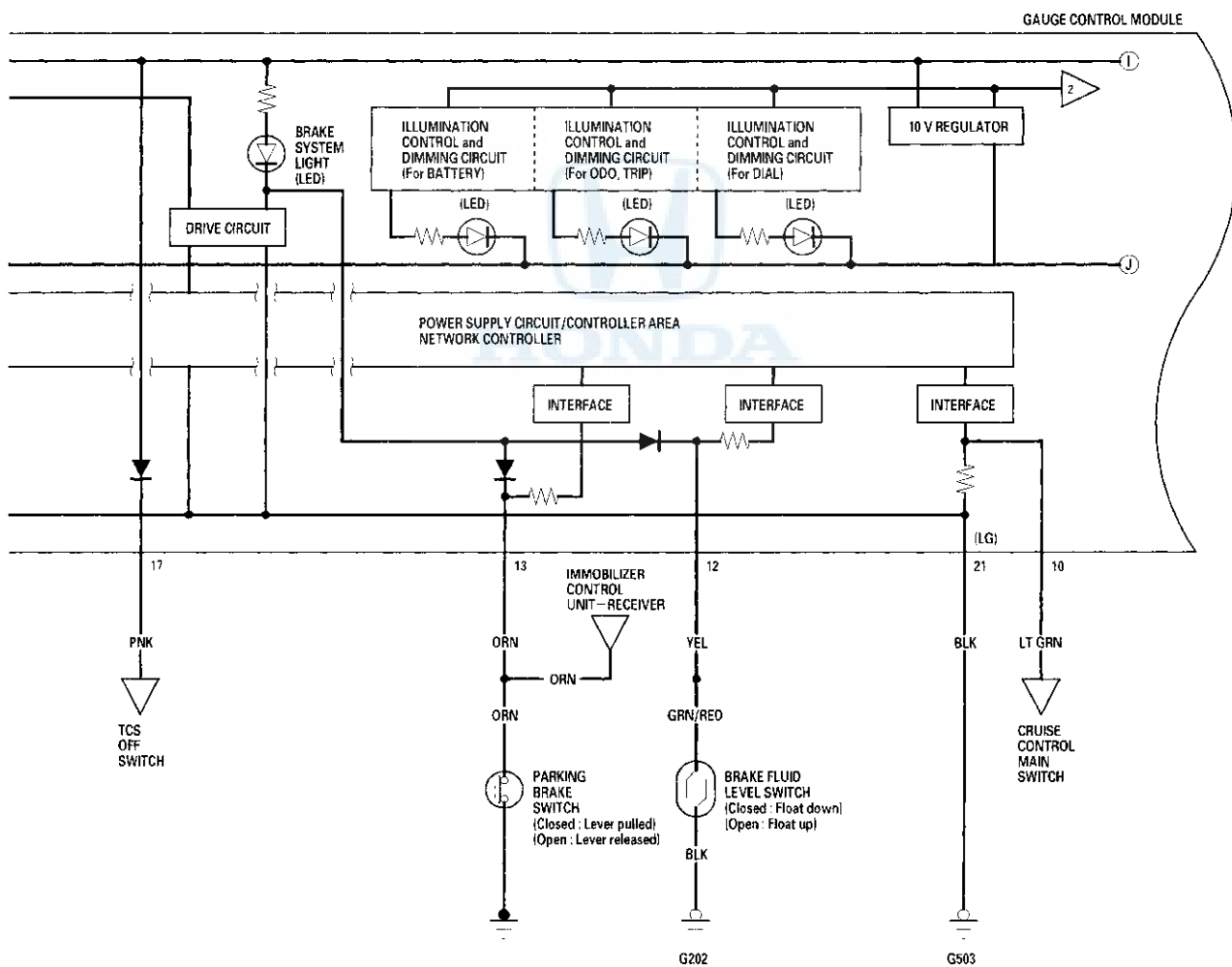


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Gauges

Circuit Diagram (cont'd)

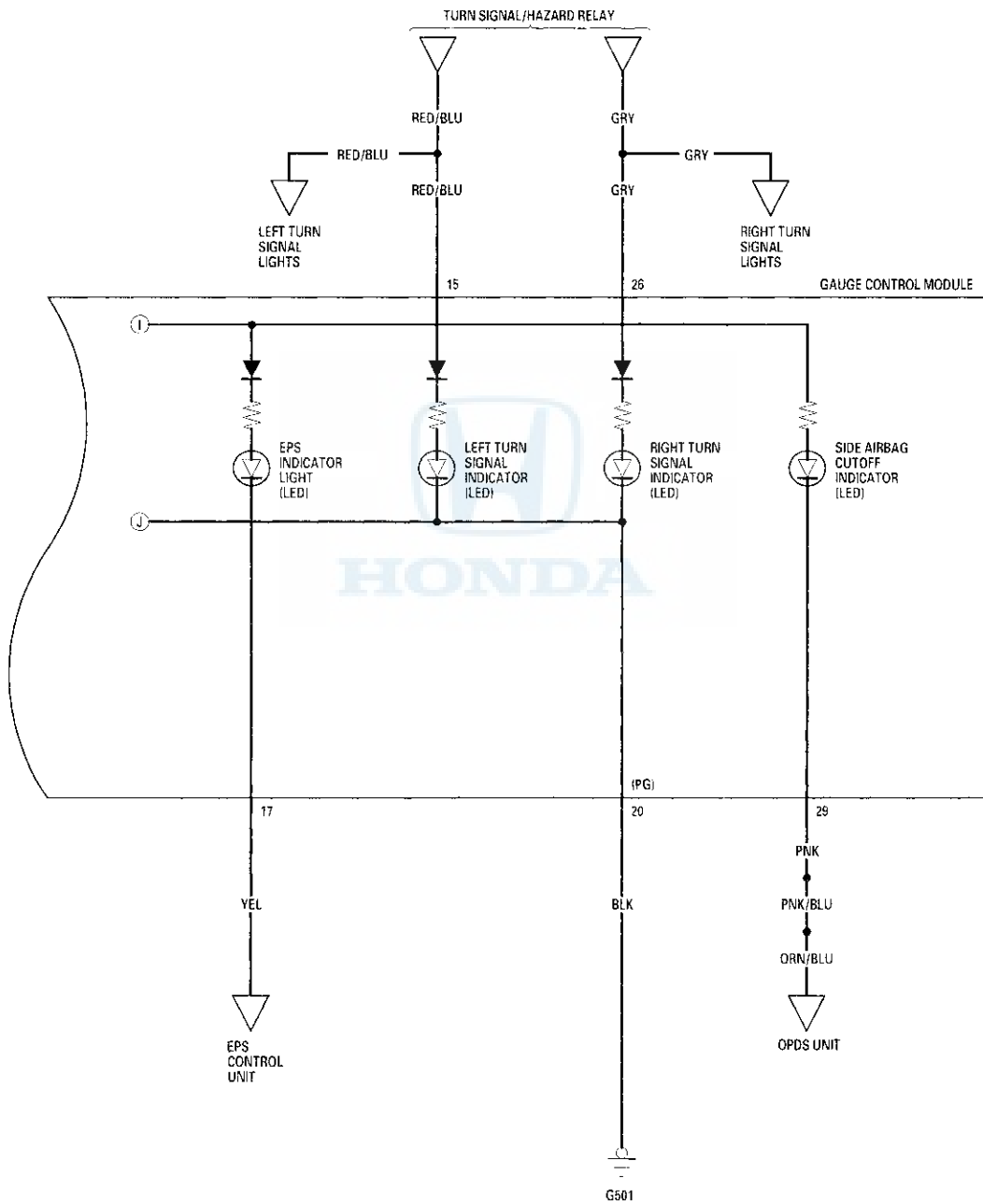




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Gauges

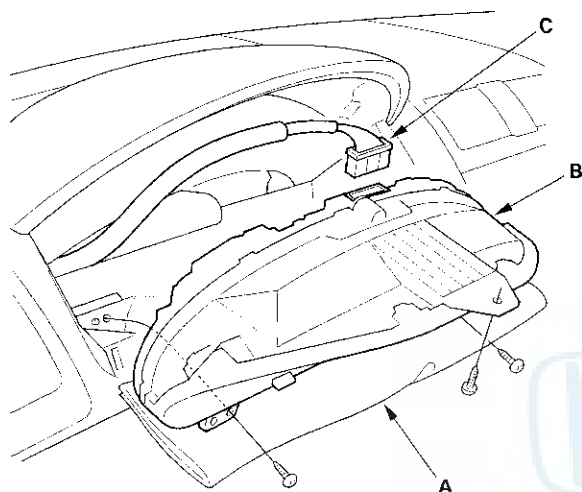
Circuit Diagram (cont'd)





Gauge Control Module Replacement

1. Remove the instrument panel (see page 20-66), then remove the upper column cover (see page 17-9).
2. Place a clean shop towel (A) under the gauge control module to prevent scratching the steering column or dash panel.



3. Remove the screws from the gauge control module (B).
4. Disconnect the 30P connector (C), and remove the gauge control module.
5. Install the gauge control module in the reverse order of removal.

Rewriting the ODO Data on a New Gauge Control Module

NOTE:

- If the HDS retrieves the ODO data from the gauge control module, the ODO value on the ODO/TRIP display will appear as "— — —", making the ODO function unusable, and the HDS will be unable to retrieve additional ODO values.
- Rewriting is not possible on a gauge control module that does not communicate.
- Obtain a new gauge control module before starting the rewriting process.

1. Before replacing the gauge control module, connect the HDS to the data link connector.
2. Select GAUGES AND INDICATORS from the HDS menu display.
3. Select "ODO REWRITE" from the ADJUSTMENTS menu display, and follow the instructions on the menu display to retrieve the ODO value.
4. Replace the gauge control module.
5. Follow the instructions on the menu display to write the new ODO value to the new gauge control module.

Gauges

Outside Air Temperature Indicator Test

NOTE: To test the outside air temperature sensor (see page 21-76).

The outside air temperature sensor for the indicator is mounted behind the front bumper. Because of this, the temperature reading can be affected by heat reflection from the road, engine heat, and even exhaust from the surrounding traffic. To prevent bogus readings, the display uses a specific logic as shown.

The outside air is warmer than when the ignition switch was turned OFF (ACC or LOCK) position:

- If the ignition switch was turned OFF for less than 2 hours, the displayed temperature when you turn the ignition switch to ON (II) stays at the ignition switch-off temperature until the vehicle has gone faster than 18 mph (11 km/h) for 30 seconds, then rises 1 degree every minute until the outside air temperature is reached.
- If the ignition switch was turned OFF for 2 hours or more, the displayed temperature when you turn the ignition switch to ON (II), the display immediately updates to the measured outside air temperature.

The outside air is cooler than when the ignition switch was turned OFF (ACC or LOCK) position:

- If the ignition switch was turned OFF for less than 2 hours, the displayed temperature when you turn the ignition switch to ON (II) is the ignition switch-off temperature.
The displayed temperature then drops 1 degree every 2 seconds until the reading matches the outside air temperature.
- If the ignition switch was turned OFF for 2 hours or more, the displayed temperature is the measured outside air temperature.

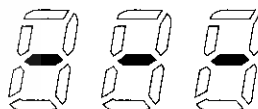
Forced Display

You can also force the indicator to display the measured temperature.

1. Turn the ignition switch OFF.
2. Remove the No. 7 (10 A) fuse from the under-dash fuse/relay box for 60 seconds, then reinstall it.
3. Turn the ignition switch ON (II).

Troubleshooting

If the indicator displays “— — —” for more than 2 seconds after selecting the outside air temperature display mode, check the climate control system for DTCs, or an open in the LT BLU wire between the under-dash fuse/relay box and the climate control unit.



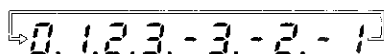


Calibration

NOTE: This procedure must be done after the temperature sensor stabilizes.

The outside air temperature indicator's displayed temperature can be recalibrated $\pm 3^{\circ}$ to meet the customer's expectations.

1. Turn the ignition switch ON (II).
2. Press and hold the reset select button for 10 seconds. While you continue to hold the button, the display will scroll through temperature settings from $+3^{\circ}$ to -3° as shown.



3. When the desired correction value appears on the display, release the button, and the recalibrated outside air temperature will be displayed. Each time a desired correction value is entered, it replaces the previous value.

Example:

Incorrect value = 68°F (20°C)

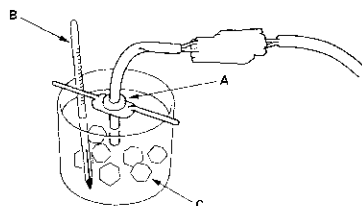
Desired correction valve = $+2^{\circ}\text{F}$ ($+1^{\circ}\text{C}$)

Correct valve = 70°F (21°C)

Desired correction valve = -2°F (-1°C)

Correct valve = 66°F (19°C)

NOTE: To recalibrate the display to the true temperature, remove the outside air temperature sensor (A), but leave it connected. Submerge the sensor and a thermometer (B) in a container of ice water (C). Select the calibration mode as described above, then recalibrate the display to the true temperature.



Resetting the Maintenance Required Indicator

Blinking Pattern:

Miles (km)	Maintenance Reminder Light
At 7,900 (12,640) to 8,100 (12,960)	Blinks for 10 seconds when the ignition switch is turned ON (II).
At 9,900 (15,840) to 11,000 (16,160)	Comes on and stays on while the ignition switch is ON (II).

How to Reset

Push and hold the trip/reset button, turn the ignition switch ON (II), and continue to hold the button for more than 10 seconds.

Gauges

DTC Troubleshooting

DTC B1152: Gauge Control Module EEPROM Error

1. Clear the DTCs using the HDS.
2. Start the engine.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1152 indicated?

YES—Faulty gauge control module; replace the gauge control module (see page 22-235). ■

NO—Intermittent failure, the gauge control module is OK at this time. Check pinfits and connections. If the connections are good, check the battery condition (see page 22-71), and the charging system. ■

DTC B1155: Gauge Control Module Lost Communication (Headlight Switch Message) with the Combination Switch Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1155 indicated?

YES—Go to step 4.

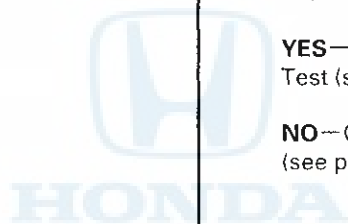
NO—Intermittent failure. The gauge control system is OK at this time. Check pinfits and connections. ■

4. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Are DTCs B1007 or B1062 also indicated?

YES—Go to Combination Switch Control Unit Input Test (see page 22-122). ■

NO—Go to Gauge Control Module Input Test (see page 22-119). ■





DTC B1156: Gauge Control Module Lost Communication (Wiper Switch Message) with the Combination Switch Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1156 indicated?

YES—Go to step 4.

NO—Intermittent failure. The gauge control system is OK at this time. Check pinfits and connections. ■

4. Check for DTCs by selecting the DTCs MENU (DTCs) of the HDS.

Are DTCs B1009 or B1063 also indicated?

YES—Go to Combination Switch Control Unit Input Test (see page 22-122). ■

NO—Go to Gauge Control Module Input Test (see page 22-119). ■



Gauges

DTC Troubleshooting (cont'd)

DTC B1157: Gauge Control Module Lost Communication with Multiplex Integrated Control Unit (MICU)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1157 indicated?

YES—Go to step 4.

NO—Intermittent failure. The gauge control system is OK at this time. Check pinfits and connections. ■

4. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Are DTCs B1055 and B1255 also indicated?

YES—Go to Multiplex Integrated Control Unit Input Test (see page 22-116). ■

NO—Go to Gauge Control Module Input Test (see page 22-119). ■

DTC B1158: Gauge Control Module Lost Communication with Relay Module

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1158 indicated?

YES—Go to step 4.

NO—Intermittent failure. The gauge control system is OK at this time. Check pinfits and connections. ■

4. Check for DTCs by the DTCs MENU (DTCs) of the HDS.

Is DTC B1005 also indicated?

YES—Go to Relay Control Module Input Test (see page 22-123). ■

NO—Go to Gauge Control Module Input Test (see page 22-119). ■



DTC B1159: Gauge Control Module Lost Communication (Door Switch Message) with the Multiplex Integrated Control Unit (MICU)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1159 indicated?

YES—Go to step 4.

NO—Intermittent failure. The gauge control system is OK at this time. Check pinfits and connections. ■

4. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1057 also indicated?

YES—Go to Multiplex Integrated Control Unit Input Test (see page 22-116). ■

NO—Go to Gauge Control Module Input Test (see page 22-119). ■

DTC B1160: Gauge Control Module Lost Communication (Door Lock Switch Message) with the Door Multiplex Control Unit

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check for DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1160 indicated?

YES—Go to step 4.

NO—Intermittent failure. The gauge control system is OK at this time. Check pinfits and connections. ■

4. Check for DTCs by the DTCs MENU (DTCs) of the HDS.

Are DTCs B1006 or B1058 also indicated?

YES—Go to Door Multiplex Control Unit Input Test (see page 22-120). ■

NO—Go to Gauge Control Module Input Test (see page 22-119). ■

Gauges

DTC Troubleshooting (cont'd)

DTC B1175: Fuel Gauge Sending Unit Signals Input Error

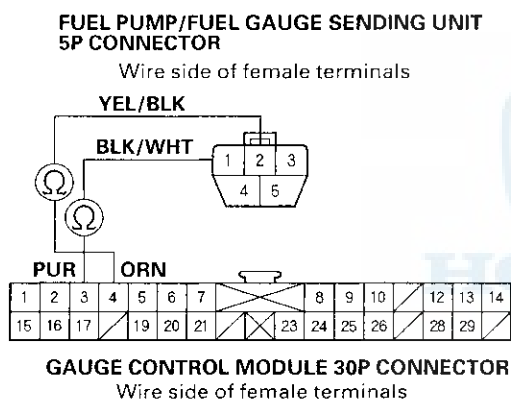
1. Do the fuel gauge sending unit test (see page 11-371).

Is the fuel gauge sending unit OK?

YES—Go to step 2.

NO—Replace the fuel gauge sending unit. ■

2. Disconnect the gauge 30P connector control module.
3. Check for continuity between the No. 3 and No. 4 terminals of the gauge control module 30P connector and No. 1 and No. 2 terminals of the fuel pump/fuel gauge sending unit 5P connector.

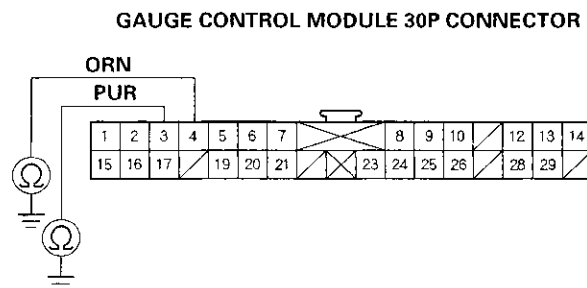


Is there continuity?

YES—Go to step 4.

NO—Repair an open in the wire between the gauge control module and fuel gauge sending unit. ■

4. Check for continuity between the No. 3 and No. 4 terminals of the gauge control module 30P connector and body ground.



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire. ■

NO—Inspect all pinfits between the gauge control module and the sending unit. If circuit integrity is good, and the problem still exist, swap gauge control module with a known-good one. If the problem is gone, replace the gauge control module (see page 22-235). ■



DTC B1177: Abnormal Battery Voltage (7.5 V)

1. Clear the DTCs using the HDS.
2. Cycle the ignition switch to OFF and then back ON.
3. Check the DTCs by selecting the DTCs MENU (DTCs) from the HDS.

Is DTC B1177 indicated?

YES—Go to step 5.

NO—Go to step 4.

4. Crank the engine.

Is DTC B1177 indicated?

YES—Go to step 5.

NO—Intermittent failure. The gauge control module and power supply voltage (IG 1) that is supplied to the gauge control module are OK at this time. ■

5. Check the battery (see page 22-71), and the charging system.

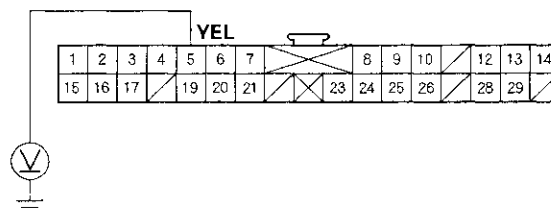
Is the battery condition and the charging system normal?

YES—Go to step 6.

NO—Abnormal battery condition which needs a recharge or replacement, or a charging system repair. ■

6. With the gauge control module 30P connector still connected, turn the ignition switch to ON, and check for voltage between the No. 5 terminal and body ground.

GAUGE CONTROL MODULE 30P CONNECTOR



Wire side of female terminals

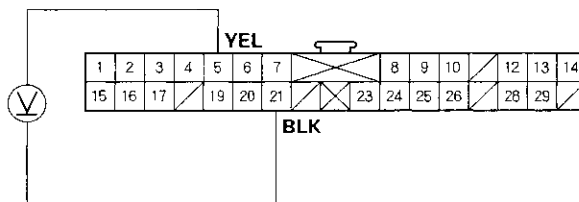
Is there 7.5 V or more?

YES—Go to step 7.

NO—Repair an open or high resistance in the YEL wire between the gauge control module and under-dash fuse/relay box. ■

7. Check for voltage between the No. 5 and No. 21 terminals.

GAUGE CONTROL MODULE 30P CONNECTOR



Wire side of female terminals

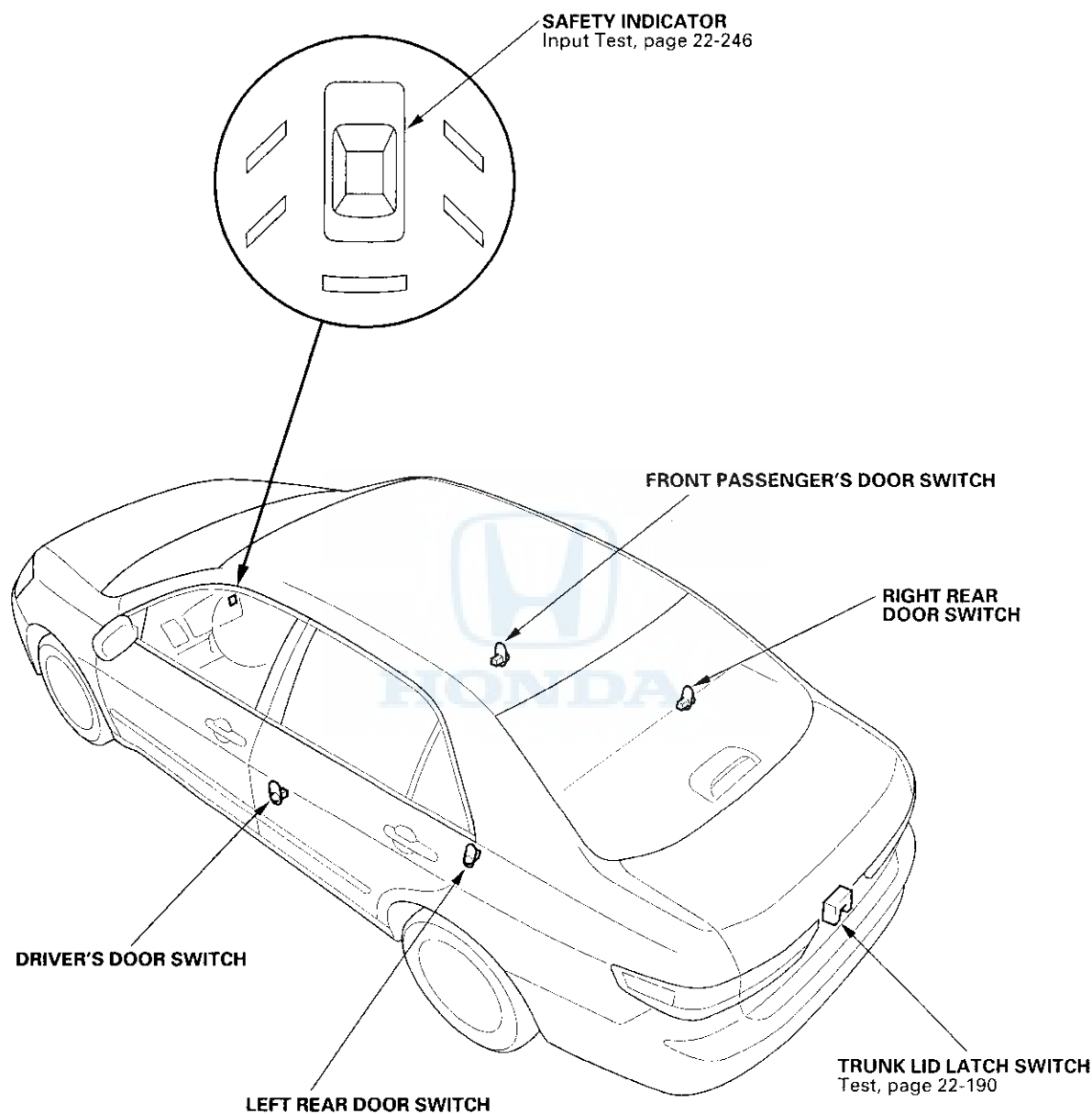
Is there 7.5 V or more?

YES—Faulty gauge control module; Replace the gauge control module (see page 22-235). ■

NO—Repair an open or high resistance in the BLK wire between the gauge control module and ground. ■

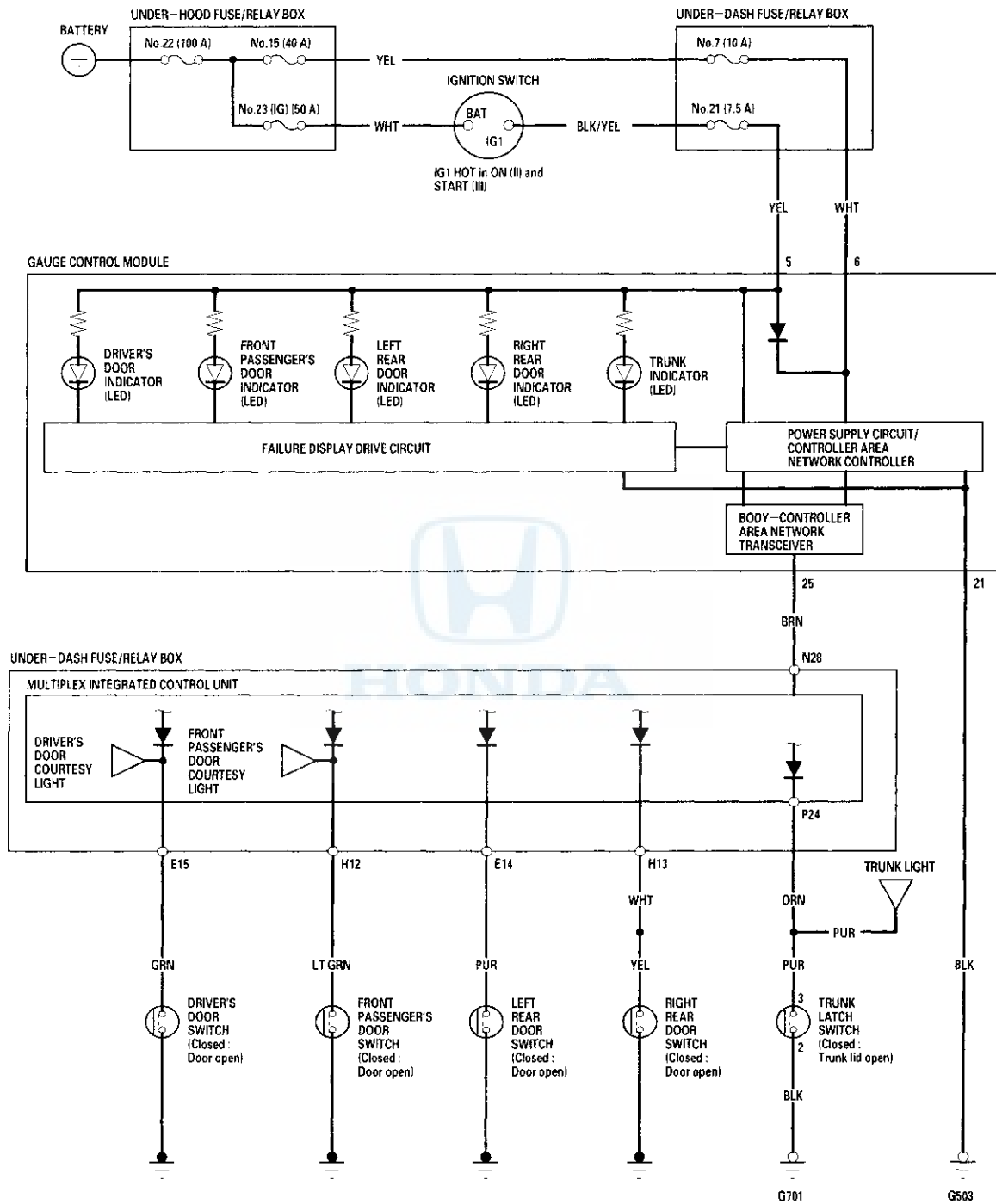
Safety Indicator System

Component Location Index





Circuit Diagram



Safety Indicator System

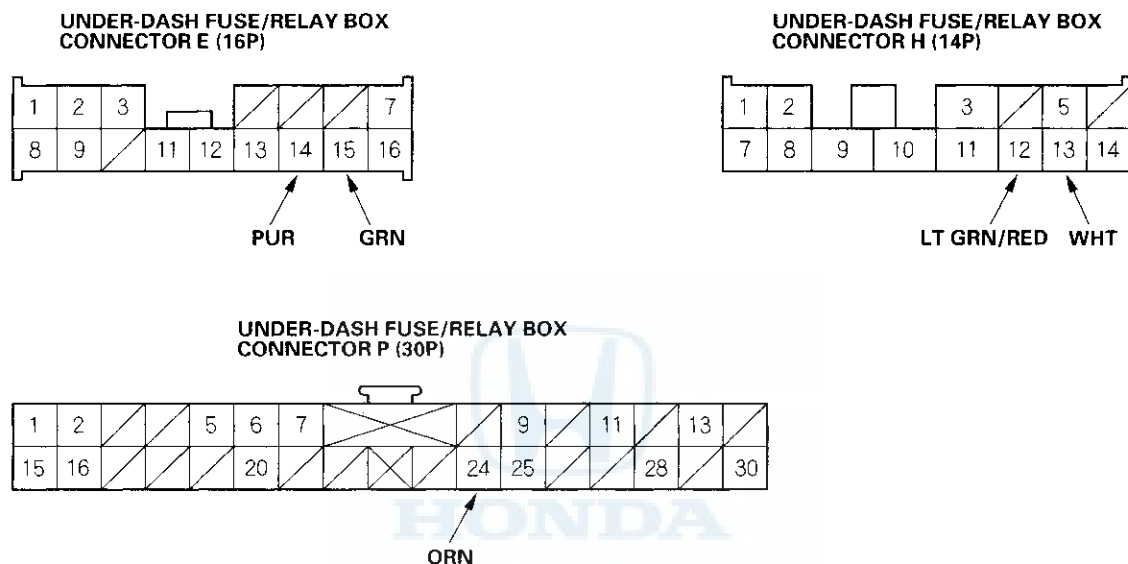
Safety Indicator Input Test

1. Before testing the safety indicator functions, troubleshoot the multiplex integrated control system using the B-CAN System Diagnosis Test Mode A (see page 22-84).

Multiplex Integrated Control Unit

2. Remove the left kick panel (see page 20-45).
3. Disconnect the under-dash fuse/relay box connectors E, H and P.

NOTE: All connectors are wire side of female terminals.



4. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 5.



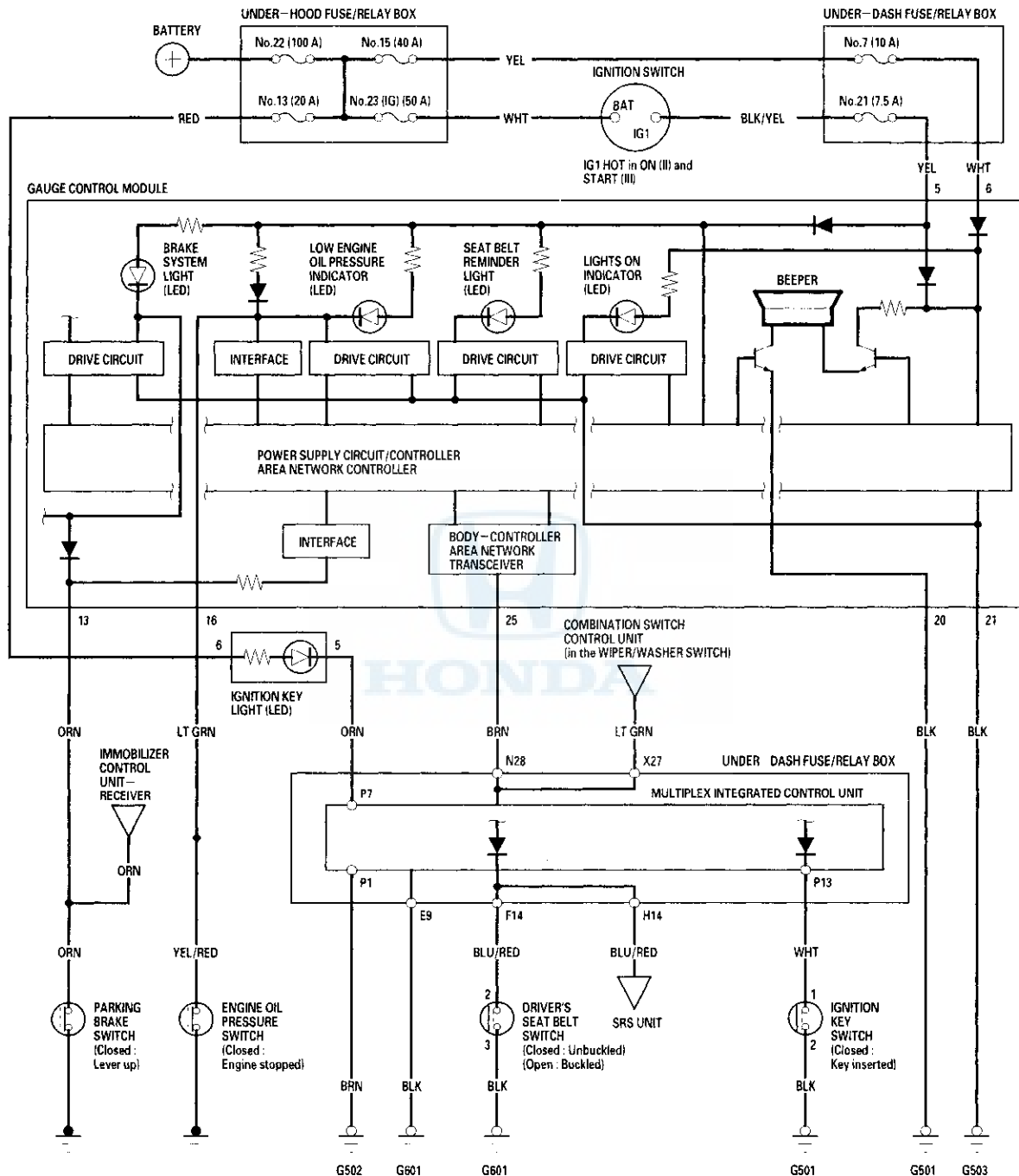
5. Reconnect the connectors to the under-dash fuse/relay box.
6. Turn the ignition switch to ON (II) to keep the system awake and make sure these input tests at the appropriate connectors on the under-dash fuse/relay box.
 - If any test indicates a problem, find and correct the cause, then recheck the system.
 - If all the input tests prove OK, go to step 7.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
E15	GRN	Driver's door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • An open in the wire
		Driver's door closed	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> • Faulty driver's door switch • Short to ground
H12	LT GRN/ RED	Front passenger's door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • An open in the wire
		Front passenger's door closed	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> • Faulty front passenger's door switch • Short to ground
E14	GRN/YEL	Left rear door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty left rear door switch • An open in the wire
		Left rear door closed	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> • Faulty left rear door switch • Short to ground
H13	WHT	Right rear door open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Faulty right rear door switch • An open in the wire
		Right rear door closed	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> • Faulty right rear door switch • Short to ground
P24	ORN	Trunk lid open	Check for voltage to ground: There should be less than 1 V.	<ul style="list-style-type: none"> • Poor ground (G701) • Faulty trunk latch switch • An open in the wire
		Trunk lid closed	Check for voltage to ground: There should be about 5 V.	<ul style="list-style-type: none"> • Faulty trunk latch switch • Short to ground

7. Run the gauge control module Self-diagnostic Function (see page 22-226).
 - If the indicators flash, go to step 8.
 - If the indicators do not flash, replace the gauge control module.
8. Substitute a known-good under-dash fuse/relay box and recheck the system.
 - If the symptom is gone, the multiplex integrated control unit (MICU) is faulty; replace the under-dash fuse/relay box.
 - If the symptom is still present, the gauge control module must be faulty; replace the gauge control module.

Reminder Systems, Key Light Timer, and Engine Oil Pressure Indicator Systems

Circuit Diagram





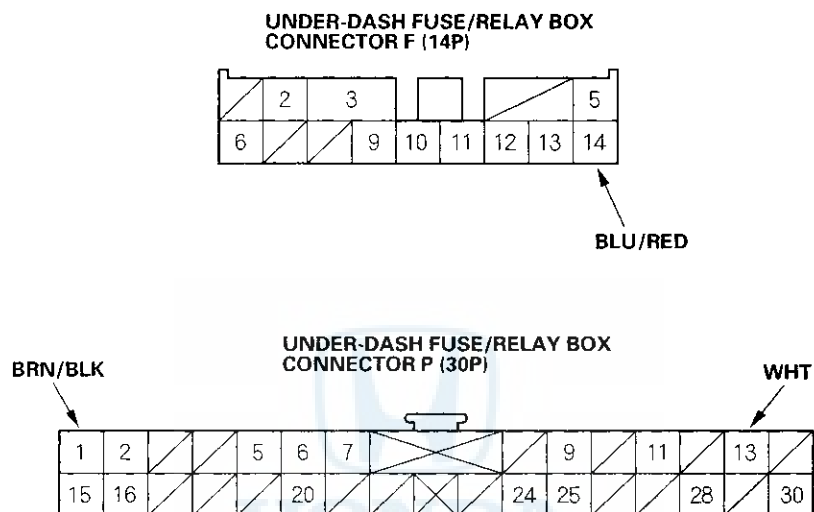
Control Unit Input Test

1. Before testing, troubleshoot the multiplex integrated control system using B-CAN System Diagnosis Test Mode A (see page 22-84).

Multiplex Integrated Control Unit

2. Remove the left kick panel (see page 20-45).
3. Disconnect the under-dash fuse/relay box connectors F and P.

NOTE: All connectors are wire side of female terminals.



4. Inspect the connector and socket terminals to be sure they are all making good contact.
 - If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
 - If the terminals are OK, go to step 5.

(cont'd)

Reminder Systems, Key Light Timer, and Engine Oil Pressure Indicator Systems

Control Unit Input Test (cont'd)

5. Reconnect the connectors, and make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If all the input tests prove OK, go to step 6.

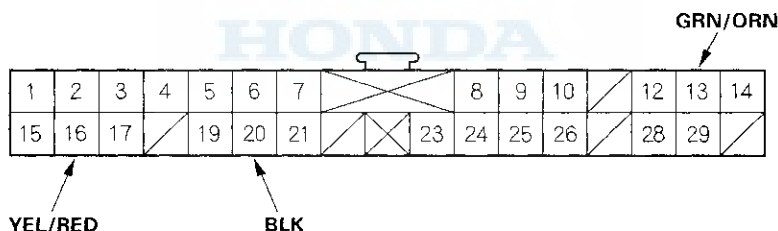
Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
F14 H14	BLU/RED	Ignition switch ON (II), driver's seat belt is buckled.	Check for voltage to ground: There should be 1 V or less.	• Faulty driver's seat belt switch • Poor ground (G601) • An open in the wire
		Ignition switch ON (II), driver's seat belt is unbuckled.	Check for voltage to ground: There should be about 5 V.	• Faulty driver's seat belt switch • Short to ground
P13	WHT	Ignition key in the ignition switch.	Check for voltage to ground: There should be 1 V or less.	• Faulty ignition switch • Poor ground (G501) • An open in the wire
		Ignition key out of the ignition switch.	Check for voltage to ground: There should be about 5 V*.	• Faulty ignition switch • Short to ground

* : Within 5 seconds of pulling the key out of the ignition switch, the system will go into sleep mode and the reference voltage drops from about 5 V to about 1 V.

6. Remove the gauge control module (see page 22-235).

7. Disconnect the gauge control module 30P connector.

GAUGE CONTROL MODULE 30P CONNECTOR



Wire side of female terminals

8. Inspect the connector and socket terminals to be sure they are all making good contact.

- If the terminals are bent, loose or corroded, repair them as necessary, and recheck the system.
- If the terminals are OK, go to step 9.



9. With the connectors still disconnected, make these input tests at the connector.

- If any test indicates a problem, find and correct the cause, then recheck the system.
- If the input tests prove OK, go to step 10.

Cavity	Wire	Test condition	Test: Desired result	Possible cause if result is not obtained
16	YEL/RED	Engine OFF	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none">• Faulty engine oil pressure switch• An open in the wire
		Engine running	Check for continuity to ground: There should be no continuity.	<ul style="list-style-type: none">• Mechanical problem in the engine• Faulty engine oil pressure switch• An short to ground in the wire
13	GRN/ORN	Parking brake lever pulled	Check for voltage to ground: There should be less than 1V.	<ul style="list-style-type: none">• Faulty parking brake switch• An open in the wire
		Parking brake lever released	Check for voltage to ground: There should be about 5 V or more.	<ul style="list-style-type: none">• Faulty parking brake switch• Short to ground
20	BLK	Under all conditions	Check for continuity to ground: There should be continuity.	<ul style="list-style-type: none">• Poor ground (G501)• An open in the wire

10. Run the gauge control module Self-diagnostic Function (see page 22-226).

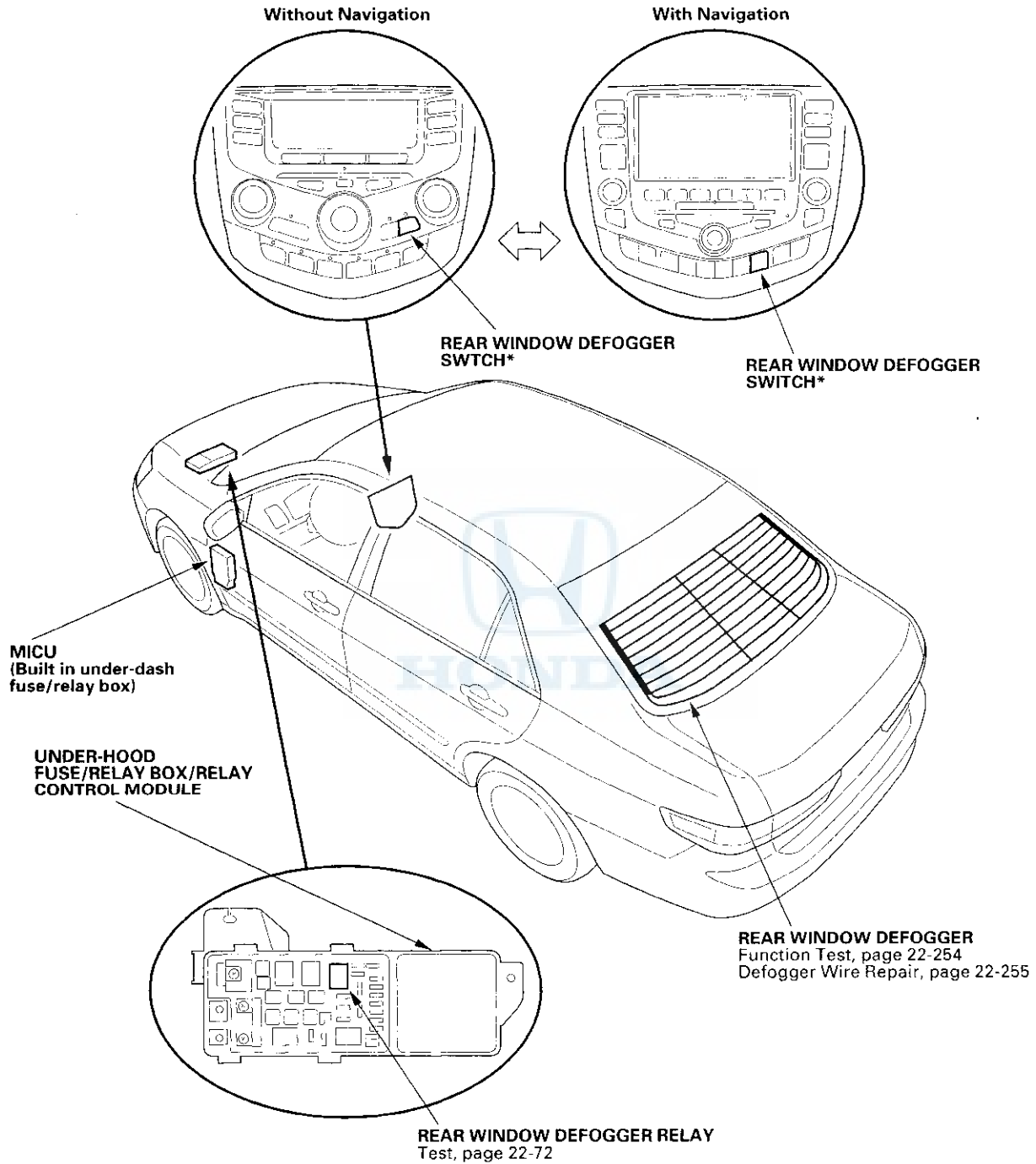
- If the beeper sounds and the seatbelt light flashes, go to step 11.
- If the beeper does not sounds, or the seatbelt light does not flash, replace the gauge control module (see page 22-235).

11. Substitute a known-good under-dash fuse/relay box and recheck the system.

- If the symptom is gone, the MICU is faulty; replace the under-dash fuse/relay box.
- If the symptom is still present, the gauge control module is faulty; replace the gauge control module (see page 22-235).

Rear Window Defogger

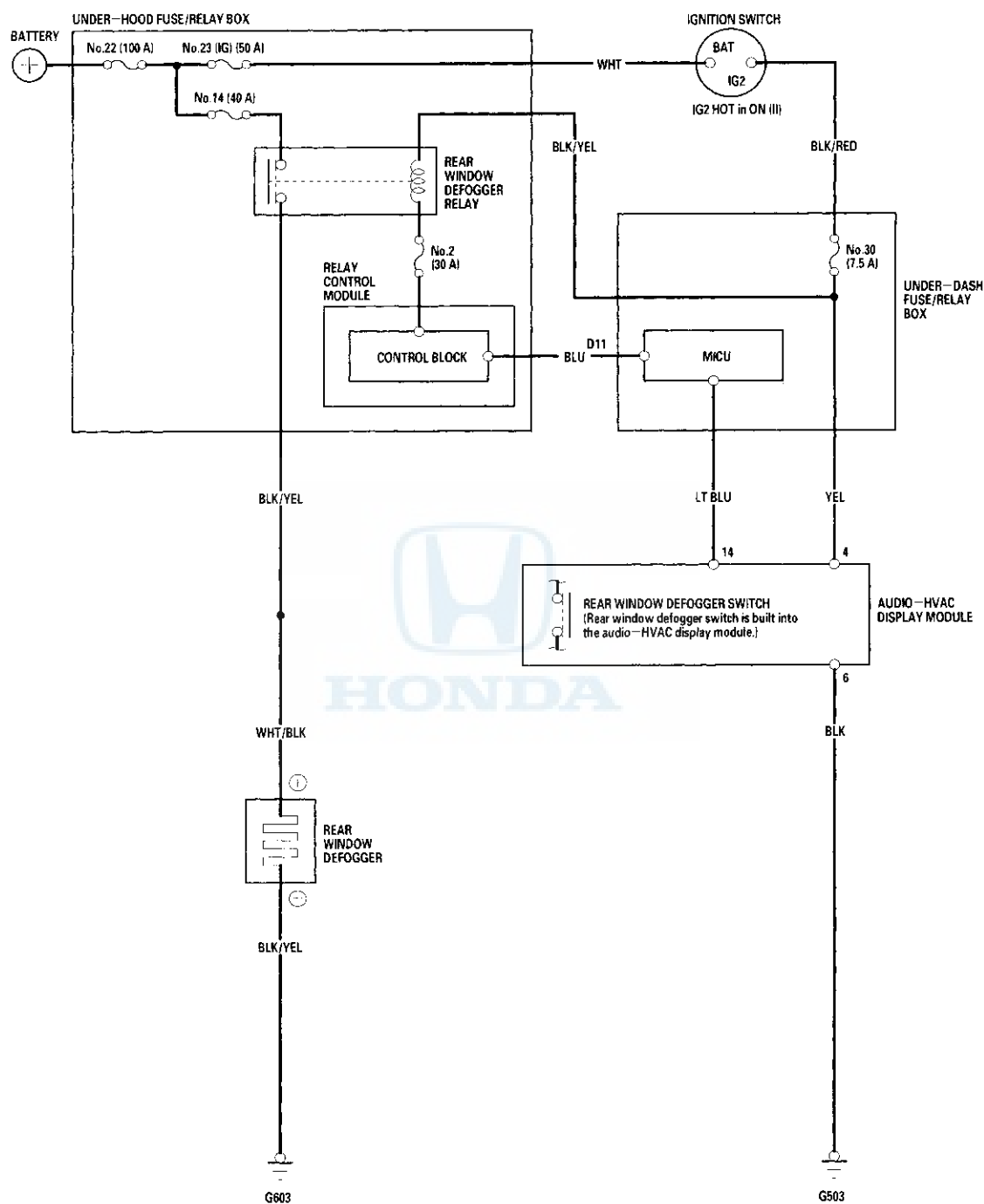
Component Location Index



*: Rear window defogger switch is built into the climate control unit (audio-HVAC display module).



Circuit Diagram



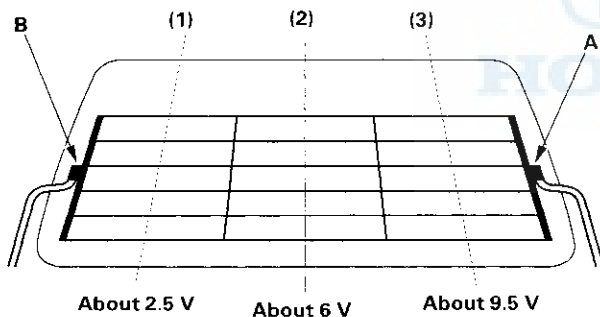
Rear Window Defogger

Function Test

Before troubleshooting the rear window circuit, perform multiplex integrated control system troubleshooting using B-CAN System Diagnosis Test Mode A (see page 22-84).

NOTE:

- Be careful not to scratch or damage the defogger wires with the tester probe.
 - Before testing, check the No. 14 (40 A) fuse in the under-hood fuse/relay box and No. 30 (7.5 A) fuse in the under-dash fuse/relay box.
1. Check for voltage between the positive terminal (A) and body ground with the ignition switch and defogger switch ON.
There should be battery voltage.
 - If there is no voltage, check for:
 - Faulty defogger relay.
 - Faulty window antenna coil.
 - Faulty climate control unit (audio-HVAC display module)
 - An open in the BLK/YEL wire to the positive terminal.
 - If there is voltage, go to step 2.

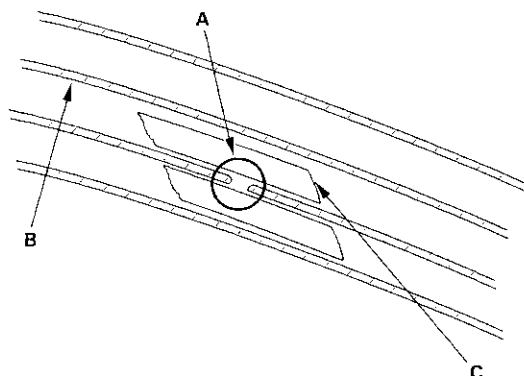


2. Disconnect the negative terminal (B) from the rear window defogger.
3. Check for continuity between the negative terminal and body ground.
 - If there is no continuity, check for an open in the BLK/YEL wire and ground.
 - If there is continuity, go to step 4.
4. Reconnect the negative terminal to the rear window defogger.
5. Turn the ignition switch ON (II) and the rear window defogger switch ON.
6. Touch the voltmeter positive probe to the points (1), (2), (3) on each defogger wire, and the negative probe to the negative terminal.
 - If the voltage is as specified, the defogger wire up to that point is OK.
 - If the voltage is not as specified, repair the defogger wire.
 - If it is more than specified at one of the points, there is a break in the negative half of the wire.
 - If it is less than specified at one of the points, there is a break in the negative half of the wire.

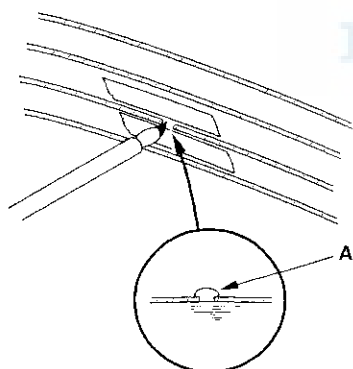
Defogger Wire Repair

NOTE: To make an effective repair, the broken section must be no longer than one inch.

1. Lightly rub the area around the broken section (A) with fine steel wool, then clean it with alcohol.



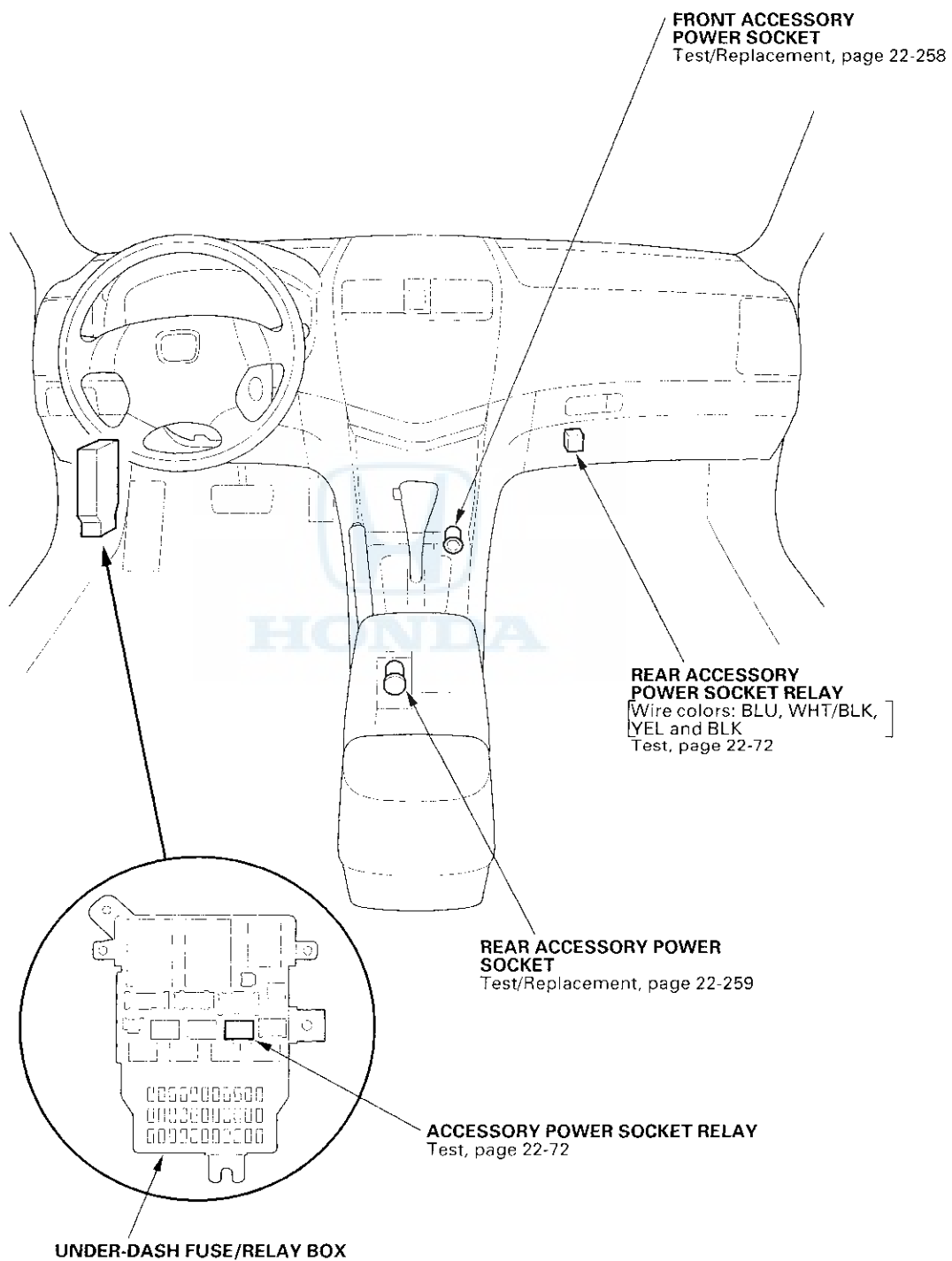
2. Carefully mask above and below the broken portion of the defogger wire (B) with cellophane tape (C).
3. Using a small brush, apply a heavy coat of silver conductive paint (commercially available) extending about 1/8" on both sides of the break. Allow 25 minutes to dry.



4. Perform the function test to confirm that the wire is repaired.
5. Apply a second coat of paint in the same way. Let it dry 3 hours before removing the tape.

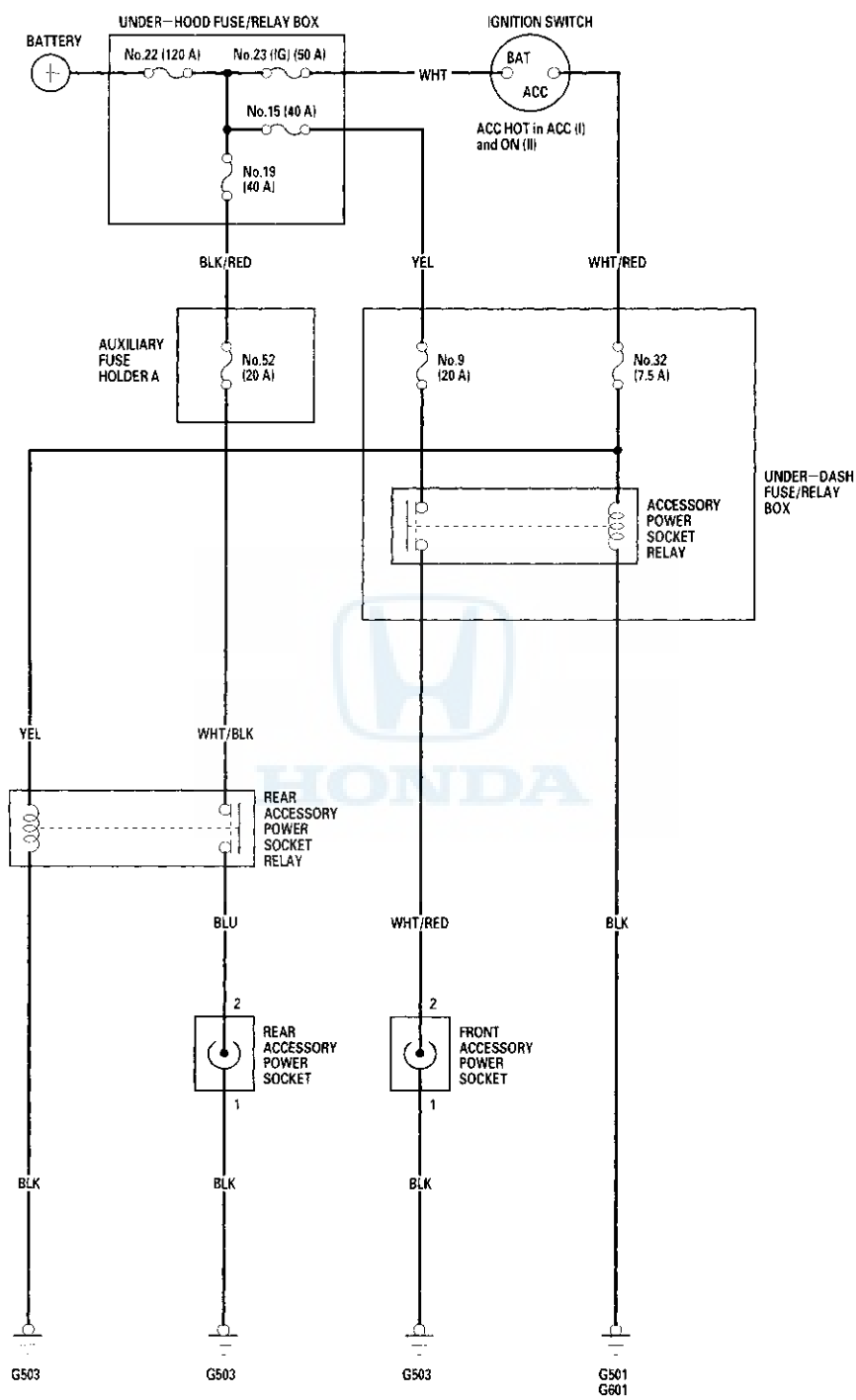
Accessory Power Sockets

Component Location Index





Circuit Diagram

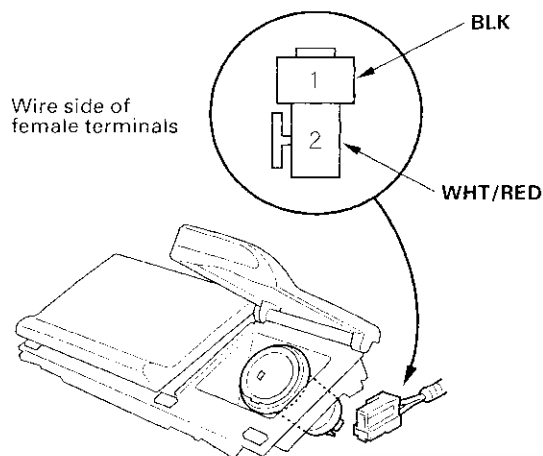


Accessory Power Sockets

Front Accessory Power Socket Test/Replacement

1. Remove the center console holder (see page 20-62).

2. Disconnect the 2P connector from the front accessory power socket.



3. Inspect the connector terminals to be sure they are all making good contact.

- If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
- If the terminals look OK, go to step 4.

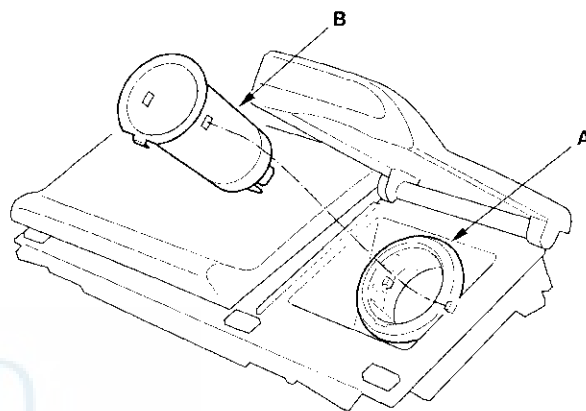
4. Turn the ignition switch to ACC (I), and check for voltage between the No. 2 terminal and body ground. There should be battery voltage.

- If there is battery voltage, go to step 5.
- If there is no battery voltage, check for:
 - Blown No. 9 (15 A) or No. 32 (7.5 A) fuse in the under-dash fuse/relay box.
 - Faulty accessory power socket relay.
 - Poor ground (G501, G601).
 - An open in the wire.

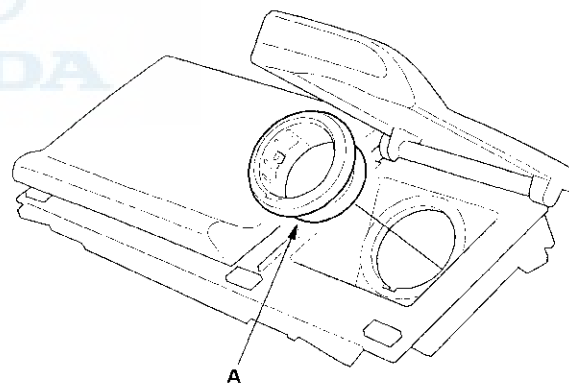
5. Check for continuity between the No. 1 terminal and body ground. There should be continuity.

- If there is continuity, go to step 6.
- If there is no continuity, check for:
 - Poor ground (G503).
 - An open in the wire.

6. Remove the housing (A) and socket (B).



7. Remove the ring (A).

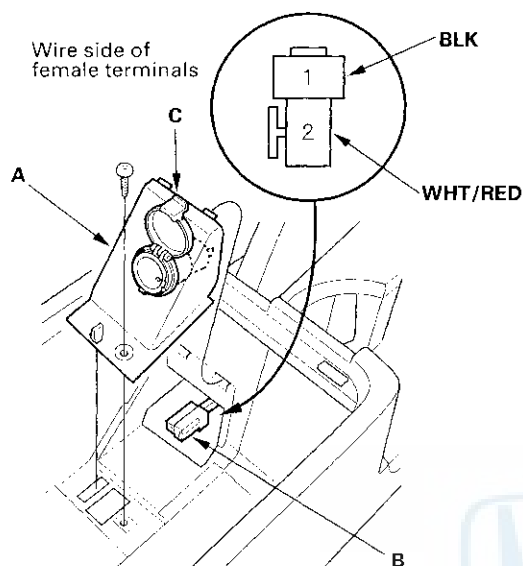


8. Install the power socket in the reverse order of removal.



Rear Accessory Power Socket Test/Replacement

1. Open the center console.
2. Remove the screw and accessory power socket panel (A).

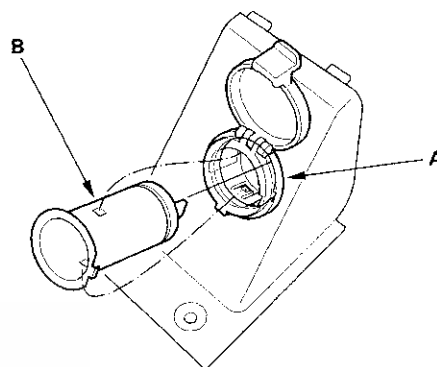


3. Disconnect the 2P connector (B) from the rear accessory power socket (C).
4. Inspect the connector terminals to be sure they are all making good contact.
 - If the terminals are bent, loose, or corroded, repair them as necessary, and recheck the system.
 - If the terminals look OK, go to step 5.
5. Turn the ignition switch to ACC (I), and check for voltage between the No. 2 terminal and body ground. There should be battery voltage.
 - If there is battery voltage, go to step 6.
 - If there is no battery voltage, check for:
 - Blown No. 9 (15 A) or No. 32 (7.5 A) fuse in the under-dash fuse/relay box.
 - Faulty accessory power socket relay.
 - Poor ground (G501, G601).
 - An open in the wire.

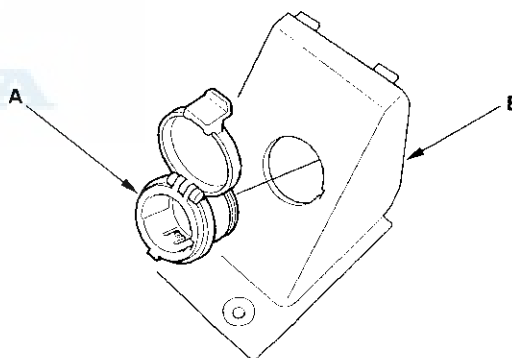
6. Check for continuity between the No. 1 terminal and body ground. There should be continuity.

- If there is continuity, go to step 7.
- If there is no continuity, check for:
 - Poor ground (G503).
 - An open in the wire.

7. Remove the housing (A) and socket (B).



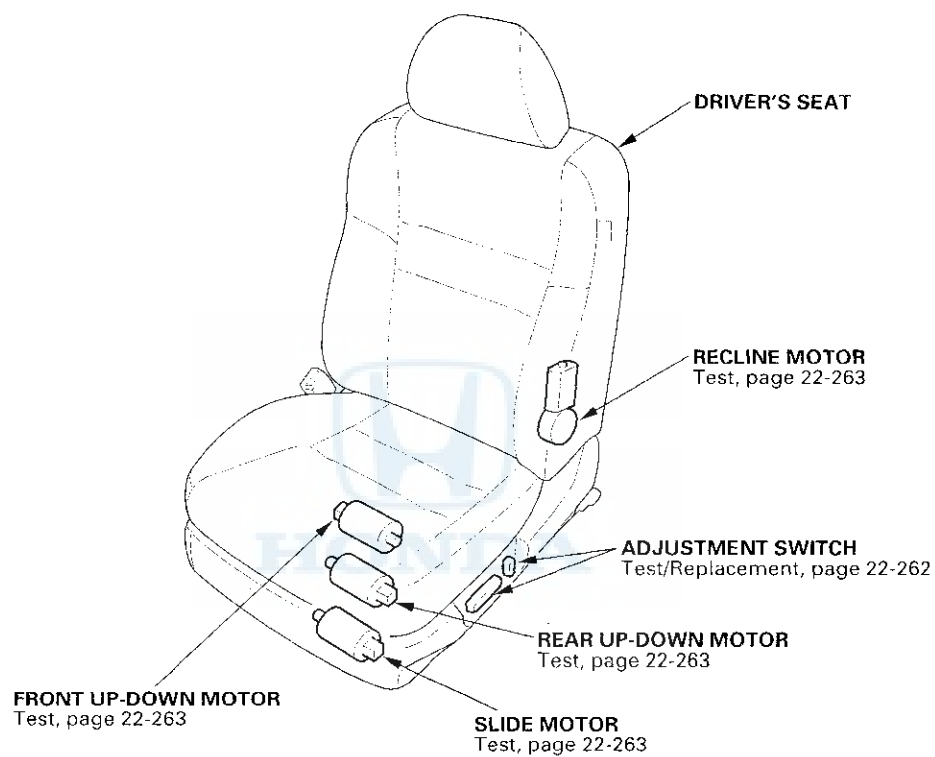
8. Remove the housing (A) from the panel (B).



9. Install the power socket in the reverse order of removal.

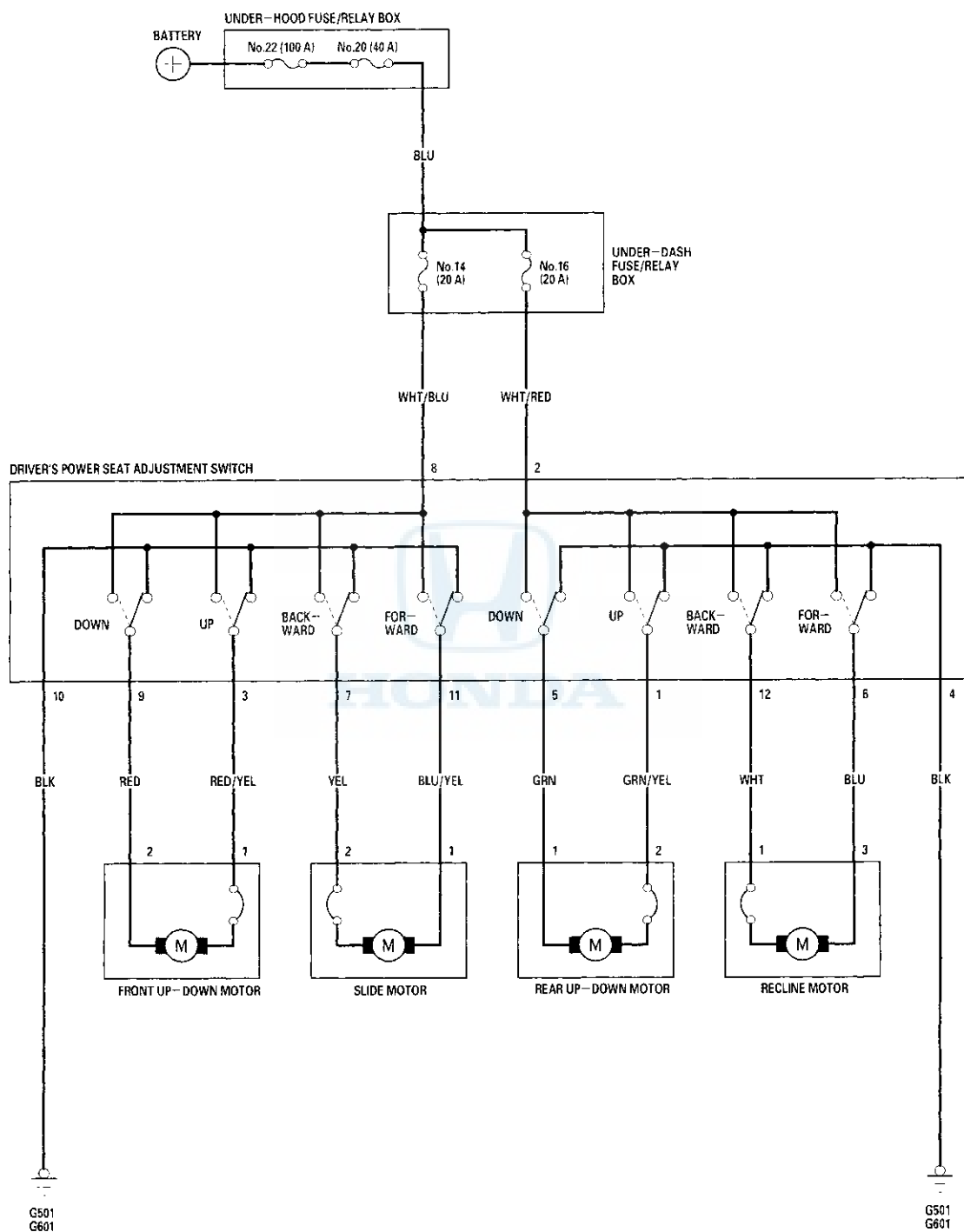
Power Seats

Component Location Index





Circuit Diagram

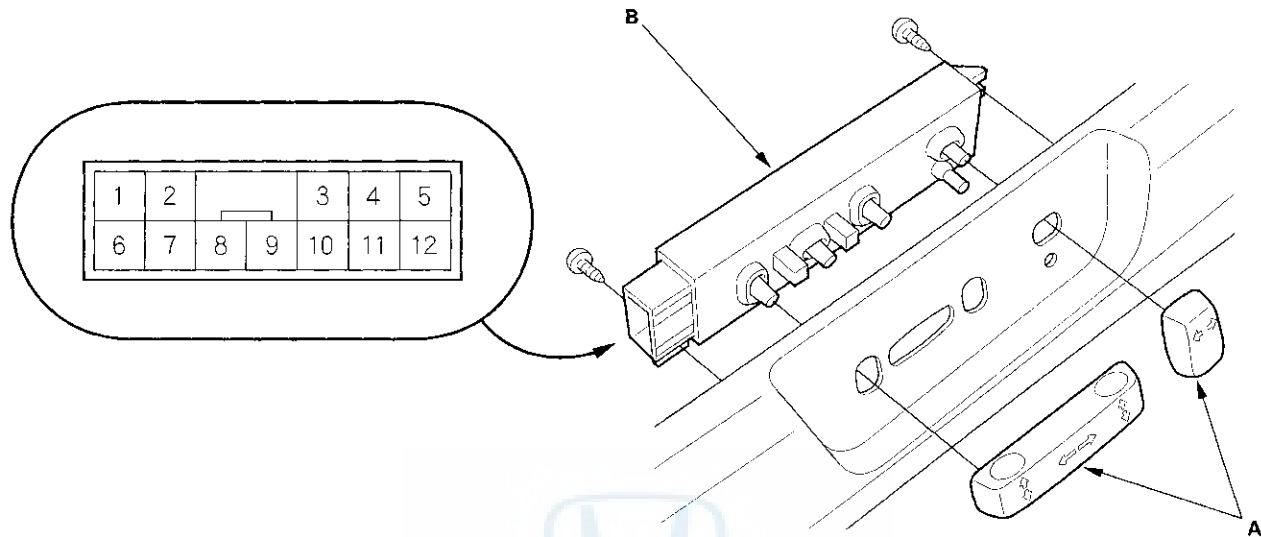


Power Seats

Switch Test/Replacement

Driver's Power Seat

1. Remove the power seat adjustment switch knobs (A) and recline cover (see page 20-83) from the driver's power seat, then remove the two screws and the power seat switch.



2. Disconnect the 12P connector from the power seat adjustment switch (B).
3. Reinstall the adjustment switch knobs to the switch.
4. Check for continuity between the terminals in each switch position according to the table.

Terminal		1	2	3	4	5	6	7	8	9	10	11	12
Position													
SLIDE SWITCH	Forward							○	○	○	○		
	Backward							○	○		○	○	
RECLINE SWITCH	Forward		○		○		○						○
	Backward		○		○		○						○
FRONT UP-DOWN SWITCH	UP			○					○		○	○	
	DOWN			○					○		○	○	
REAR UP-DOWN SWITCH	UP	○	○			○	○						
	DOWN	○	○			○	○						

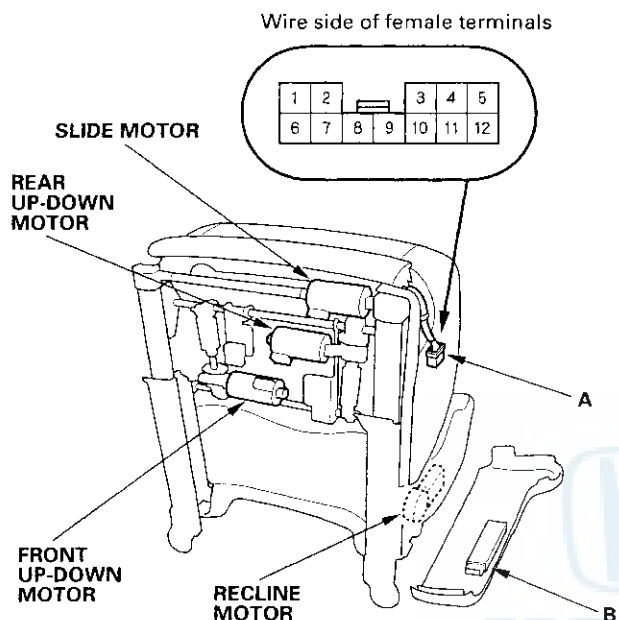
5. If the continuity is not as specified, replace the switch.



Motor Test

Driver's Power Seat

1. Remove the driver's seat (see page 20-80).
2. Disconnect the 12P connector (A) from the power seat adjustment switch (B).



3. Test each motor by applying battery voltage and body ground to the terminals.

Slide motor

Terminal	7	11
Position		
Forward	⊖	⊕
Backward	⊕	⊖

Recline motor

Terminal	6	12
Position		
Forward	⊖	⊕
Backward	⊕	⊖

Front up-down motor

Terminal	3	9
Position		
UP	⊕	⊖
DOWN	⊖	⊕

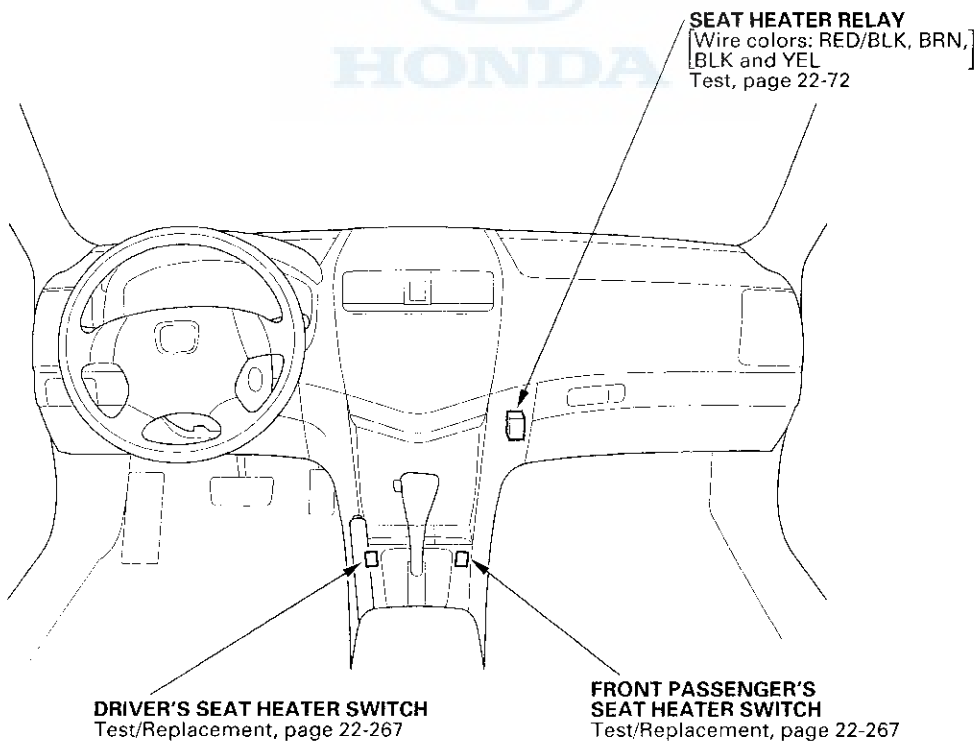
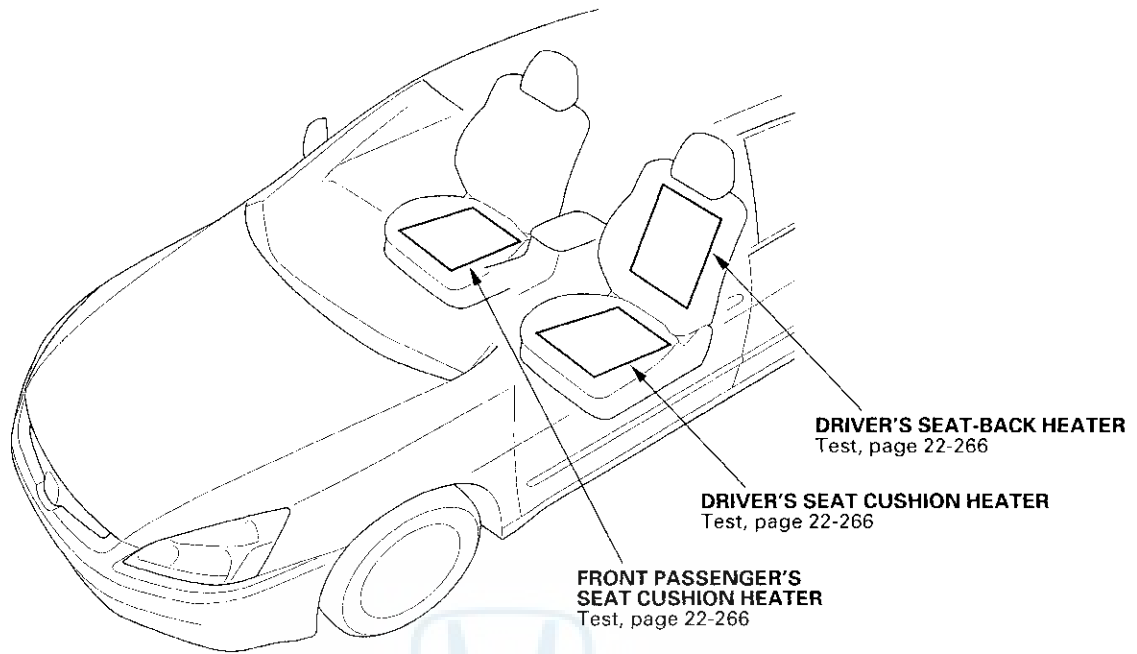
Rear up-down motor

Terminal	1	5
Position		
UP	⊕	⊖
DOWN	⊖	⊕

4. If the motor does not run or fails to run smoothly, check for an open in the driver's seat wire harness between the 12P connector and each motor connector. If the harness is OK, replace the motor (see page 20-86).

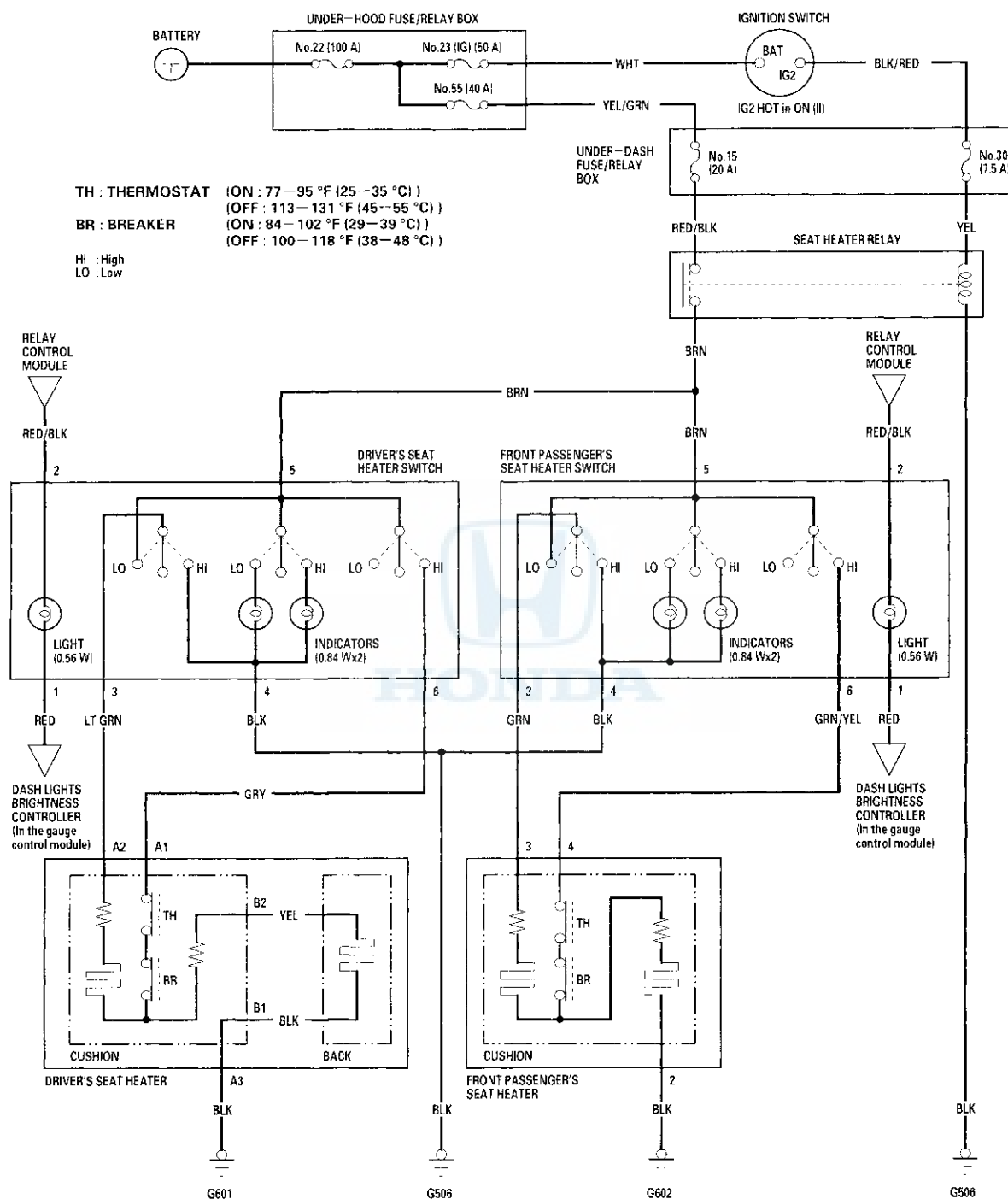
Seat Heaters

Component Location Index





Circuit Diagram

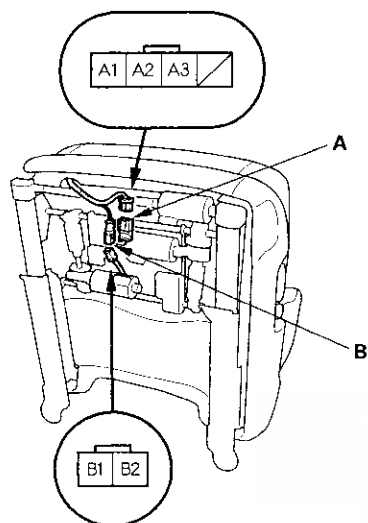


Seat Heaters

Seat Heater Test

Driver's Seat

1. Remove the driver's seat (see page 20-80).
2. Disconnect the 4P connector (A) and 2P connector (B) from the seat heater.

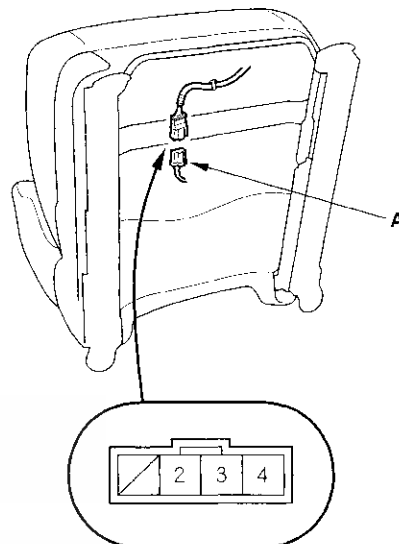


Wire side of female terminals

3. Check for continuity between the B1 and B2 terminals of the seat-back heater 2P connector. There should be continuity.
4. Check for continuity between the A1 and A2 terminals, and the A1 and B2 terminals. There should be continuity.
5. If the continuity check is not as specified, replace the seat heater.

Front Passenger's Seat

1. Remove the passenger's seat (see page 20-80).
2. Disconnect the 4P connector (A) from the seat heater.

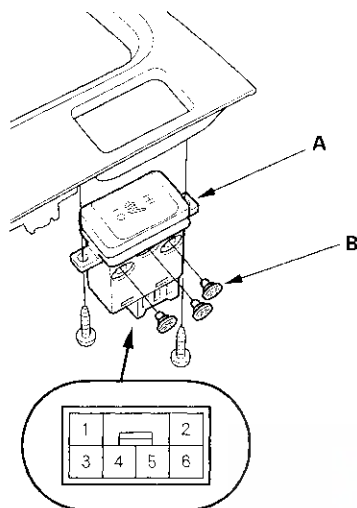


Terminal side of male terminals

3. Check for continuity between the No. 2 and No. 3 terminals, and No. 3 and No. 4 terminals of the 4P connector. There should be continuity.
4. If the continuity is not as specified, replace the seat heater.

Switch Test

1. Remove the center console front panel (see page 20-62).
2. Disconnect the 6P connector from the seat heater switch (A), then remove the switch.



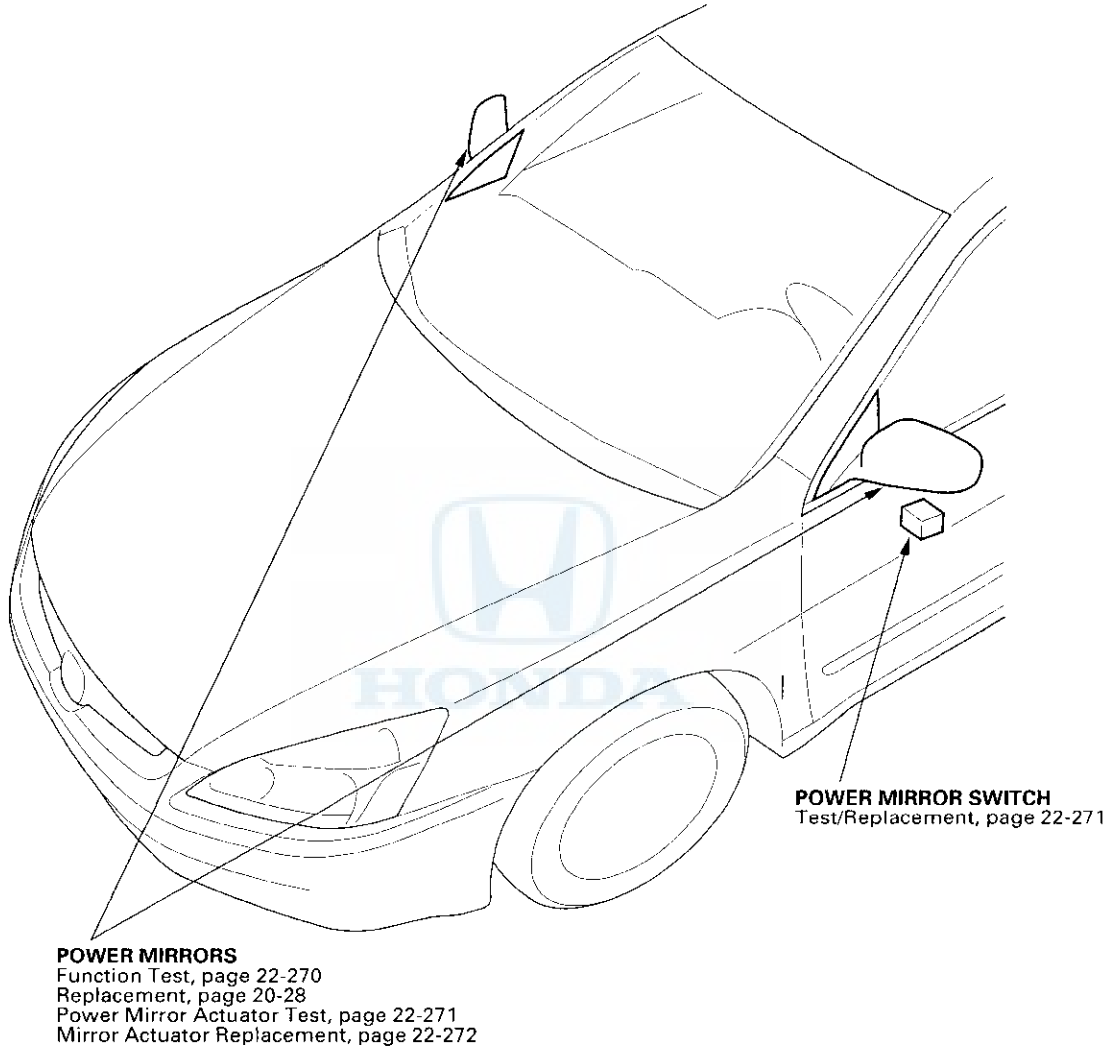
3. Check for continuity between the terminals in each switch position according to the table.

Terminal Position		1	2	3	4	5	6
ON	HIGH	○	○	○	○	○	○
	LOW	○	○	○	○	○	○
OFF		○	○	○			

4. If the continuity check is not as specified, replace the illumination bulbs (B) or the switch.

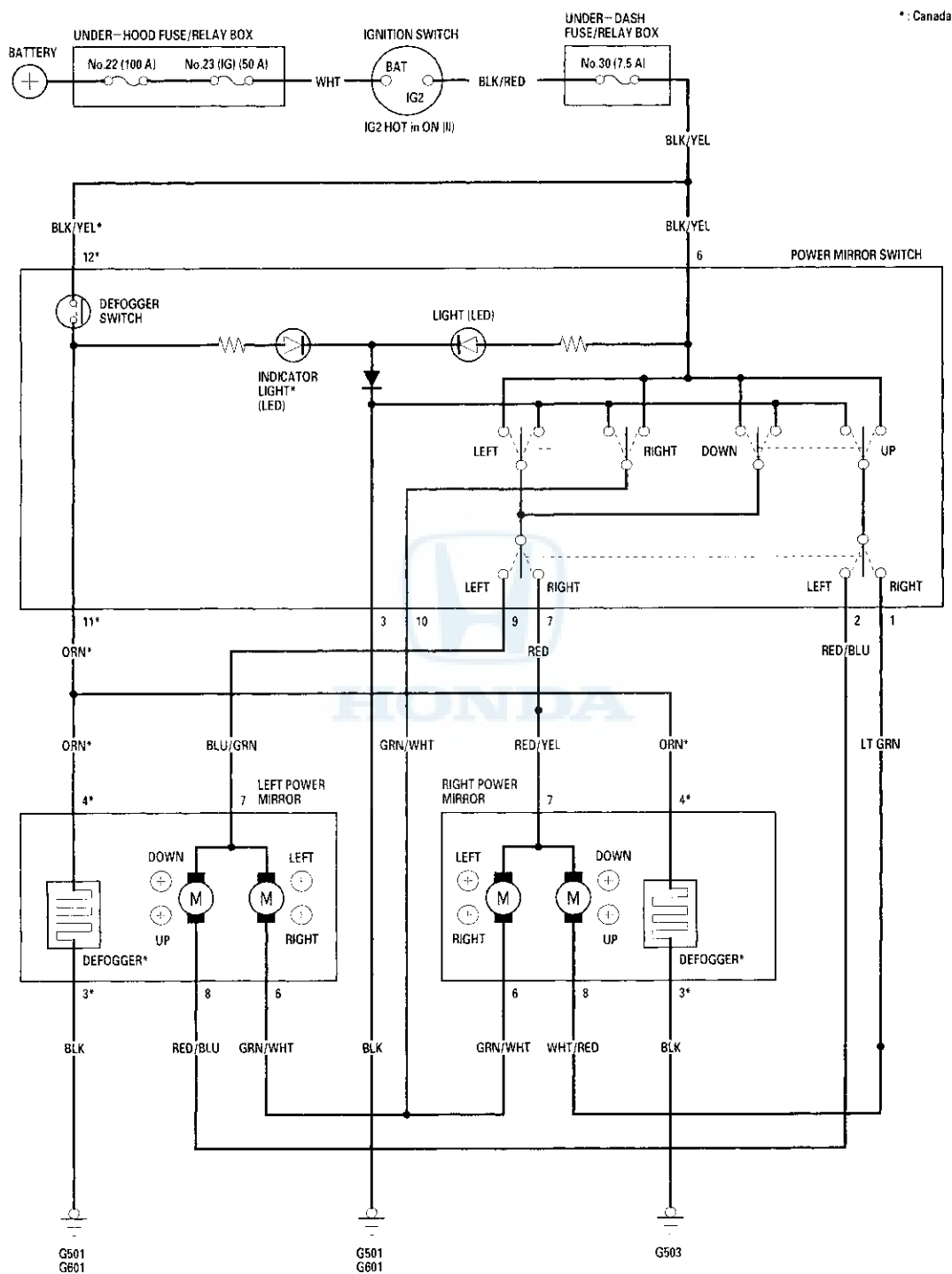
Power Mirrors

Component Location Index





Circuit Diagram

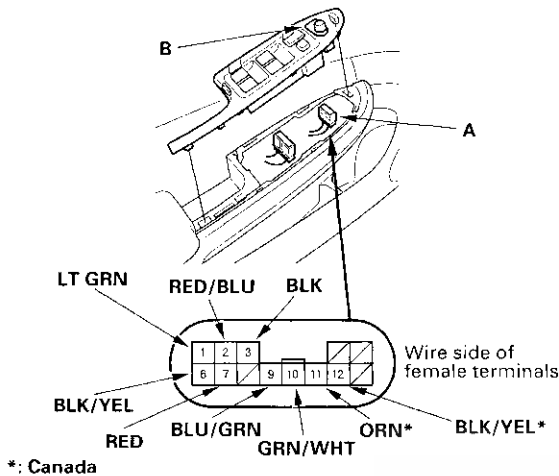


Power Mirrors

Function Test

1. Remove the driver's door switch trim (see page 20-7).

NOTE: The illustration shows 4-door.



2. Disconnect the 13P connector (A) from the power mirror switch (B), and inspect the terminals. If OK, go to step 3.
3. Choose the appropriate test based on the symptom:
 - Both mirrors don't work, go to step 4.
 - Left mirror doesn't work, go to step 6.
 - Right mirror doesn't work, go to step 7.
 - Defogger doesn't work (Canada), go to step 8.

Both mirrors

4. Check for voltage between the No. 6 terminal and body ground with the ignition switch ON (II). There should be battery voltage.
 - If there is no battery voltage, check for:
 - Blown No. 30 (7.5 A) fuse in the under-dash fuse/relay box.
 - An open in the BLK/YEL wire.
 - If there is battery voltage, go to step 5.
5. Check for continuity between the No. 3 terminal and body ground. There should be continuity.
 - If there is no continuity, check for:
 - An open in the BLK wire.
 - Poor ground (G501, G601).
 - If there is continuity, check both mirrors individually as described in step 6 and 7.

Left mirror

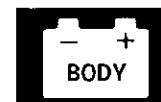
6. Connect the No. 6 terminal to the No. 9 terminal, and the No. 2 (or No. 10) terminal to the No. 3 terminal with jumper wires. The left mirror should tilt down (or swing left) with the ignition switch ON (II).
 - If the mirror does not tilt down (or does not swing left), check for an open in the RED/BLU (or GRN/WHT) wire between the left mirror and the 13P connector. If the wire is OK, check the left mirror actuator.
 - If the mirror neither tilts down nor swings left, repair the BLU/GRN wire.
 - If the mirror works properly, check the mirror switch.

Right mirror

7. Connect the No. 6 terminal to the No. 7 terminal, and the No. 1 (or No. 10) terminal to the No. 3 terminal with jumper wires. The right mirror should tilt down (or swing left) with the ignition switch ON (II).
 - If the mirror does not tilt down (or does not swing left), check for an open in the LT GRN (or GRN/WHT) wire between the right mirror and the 13P connector. If the wire is OK, check the right mirror actuator.
 - If the mirror neither tilts down nor swings left, repair the RED wire.
 - If the mirror works properly, check the mirror switch.

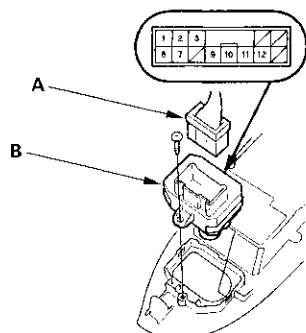
Defogger (Canada)

8. Connect the No. 12 and No. 11 terminals with a jumper wire, and check for voltage between the No. 4 terminal of the mirror connectors and body ground. There should be battery voltage and both mirrors should warm up with the ignition switch ON (II).
 - If there is no voltage or neither warms up, check for:
 - An open in the BLK/YEL or ORN wire.
 - Blown No. 30 (7.5 A) fuse in the under-dash fuse/relay box.
 - If only one fails to warm up, check:
 - Its defogger.
 - Poor ground (G501, G601).
 - If both warm up, check the defogger switch.



Power Mirror Switch Test/ Replacement

1. Remove the driver's door switch trim (see page 20-7).
2. Disconnect the 13P connector (A) from the power mirror switch (B).



3. Check for continuity between the terminals in each switch position according to the table.

Mirror Switch:

Terminal Position	1	2	3	6	7	9	10
L	UP	○	○	○	○	○	○
	DOWN	○	○	○	○	○	○
	LEFT	○	○	○	○	○	○
	RIGHT	○	○	○	○	○	○
R	UP	○	○	○	○	○	○
	DOWN	○	○	○	○	○	○
	LEFT	○	○	○	○	○	○
	RIGHT	○	○	○	○	○	○

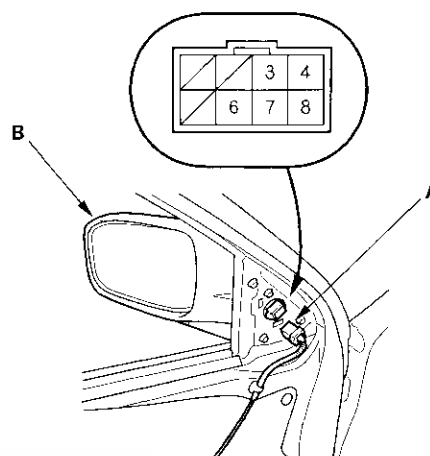
Defogger Switch (Canada):

Terminal Position	11	12
ON	○	○
OFF	○	○

4. If the continuity is not as specified, replace the power mirror switch.

Power Mirror Actuator Test

1. Remove the door panel (see page 20-7).
2. Disconnect the 8P connector (A) from the power mirror actuator (B).



3. Check actuator operation by connecting power and ground according to the table.

Terminal Position	6	7	8
TILT UP		⊖	⊕
TILT DOWN		⊕	⊖
SWING LEFT	⊖	⊕	
SWING RIGHT	⊕	⊖	

4. If the mirror fails to work properly, replace the mirror actuator.

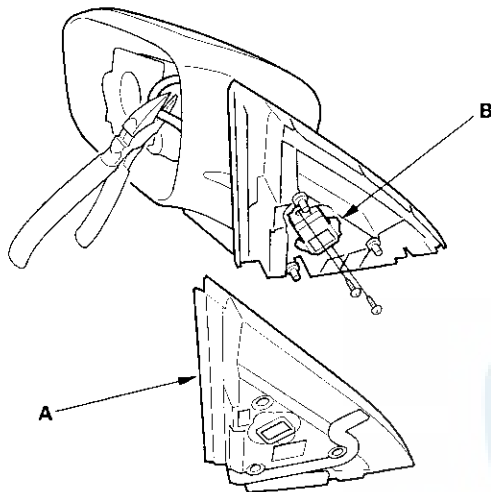
Defogger Test (Canada)

5. Check for continuity between the No. 3 and No. 4 terminals of the 8P connector. There should be continuity with the defogger switch ON. If there is no continuity, check for an open circuit.

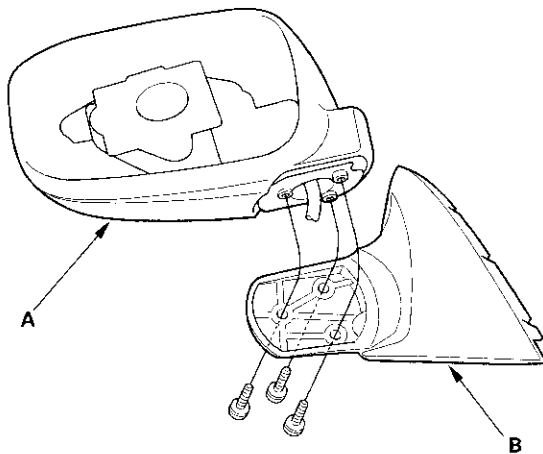
Power Mirrors

Power Mirror Actuator Replacement

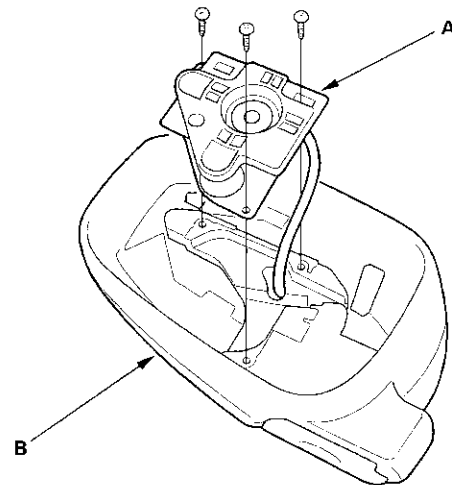
1. Remove the power mirror (see page 20-28).
2. Disconnect the 8P connector.
3. Carefully remove the mirror holder from the mirror housing. Gently pull it out by hand (see page 20-30).
4. Remove the cover (A), then remove the two screws from the mirror connector (B).



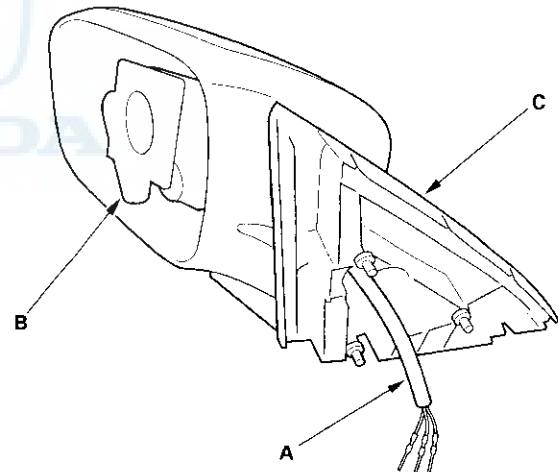
5. Record the terminal locations and wire colors.
6. Cut the wire harness with the wire cutter.
7. Remove the three screws, and separate the mirror housing (A) from the bracket (B).



8. Remove the three screws and separate the actuator (A) from the housing (B).



9. Route the wire harness (A) of the new actuator (B) through the hole in the bracket (C).

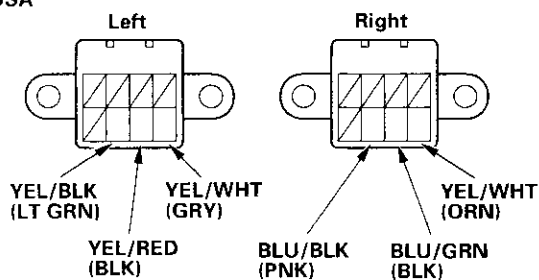


10. Install the new actuator in the reverse order of removal.

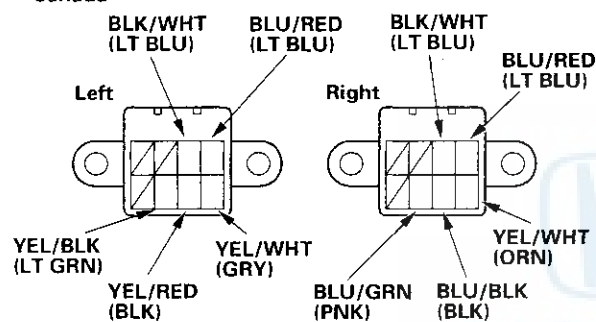
11. Insert the terminals into the connector in the original arrangement as shown.

Terminal View:

USA



Canada

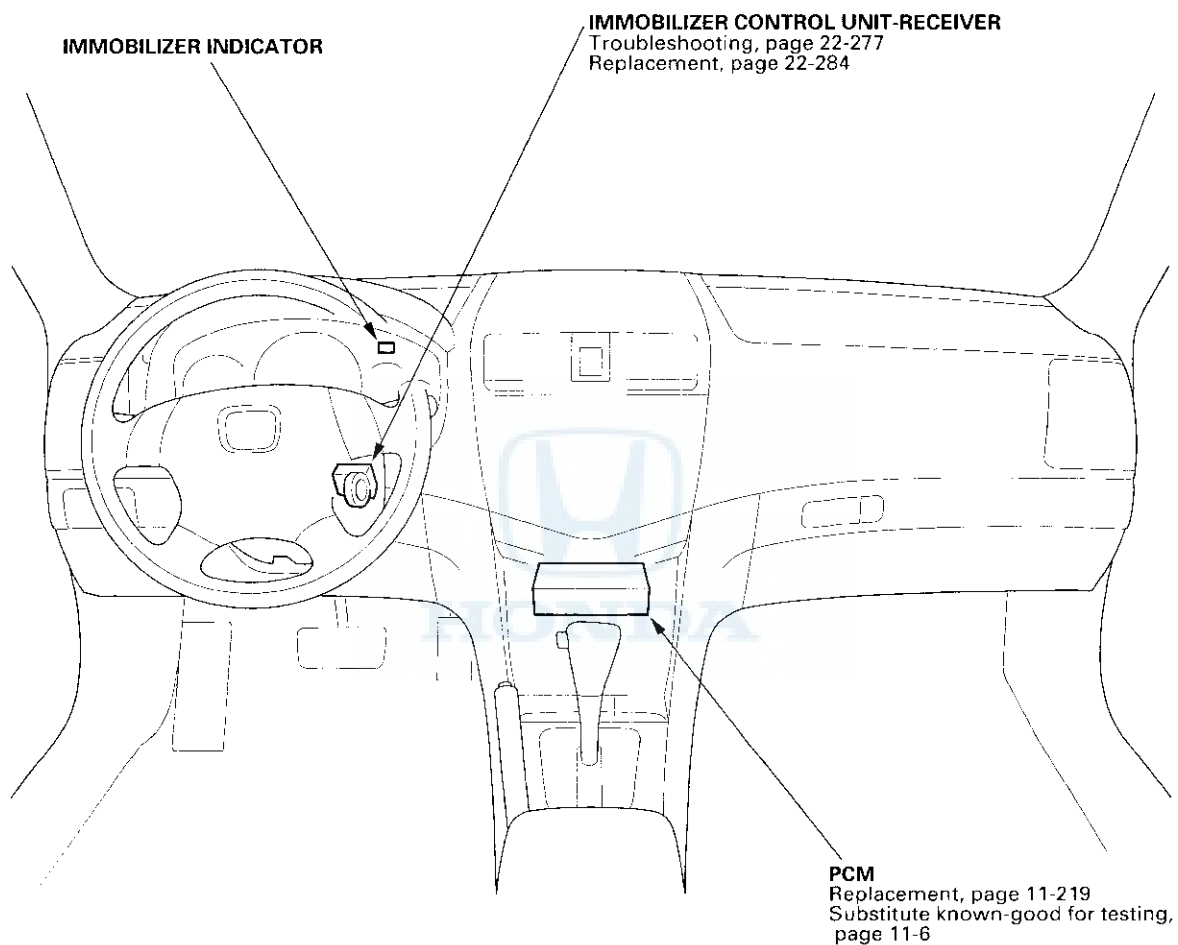


(): Donelly made

12. Reassemble in the reverse order of disassembly. Be careful not to break the mirror holder when reinstalling it to the actuator.
13. Reinstall the mirror assembly to the door.
14. Operate the power mirror to ensure smooth operation.

Immobilizer System

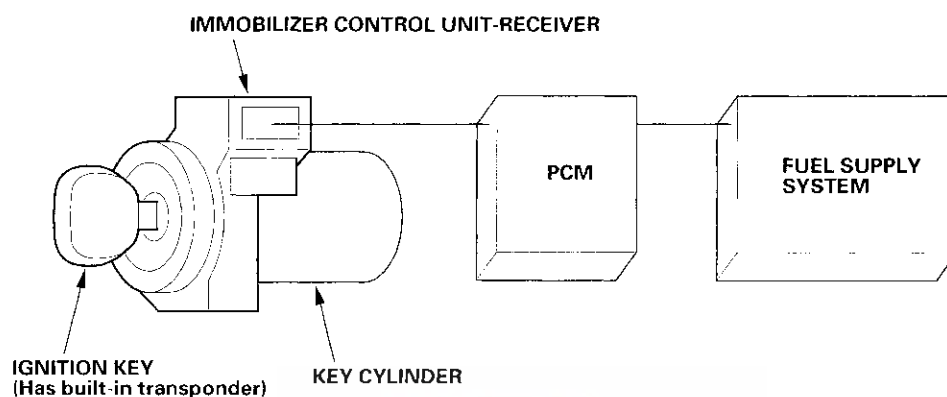
Component Location Index



System Description

The vehicle is equipped with an immobilizer system that will disable the vehicle unless the proper ignition key is used. This system consists of a transponder located in the ignition key, an immobilizer control unit-receiver, an indicator light, and the PCM.

When the key is inserted in the ignition switch and turned to the ON (II) position, the immobilizer control unit-receiver sends power to the transponder in the ignition key. The transponder then sends a coded signal back to the immobilizer control unit-receiver which then sends a coded signal to the PCM.



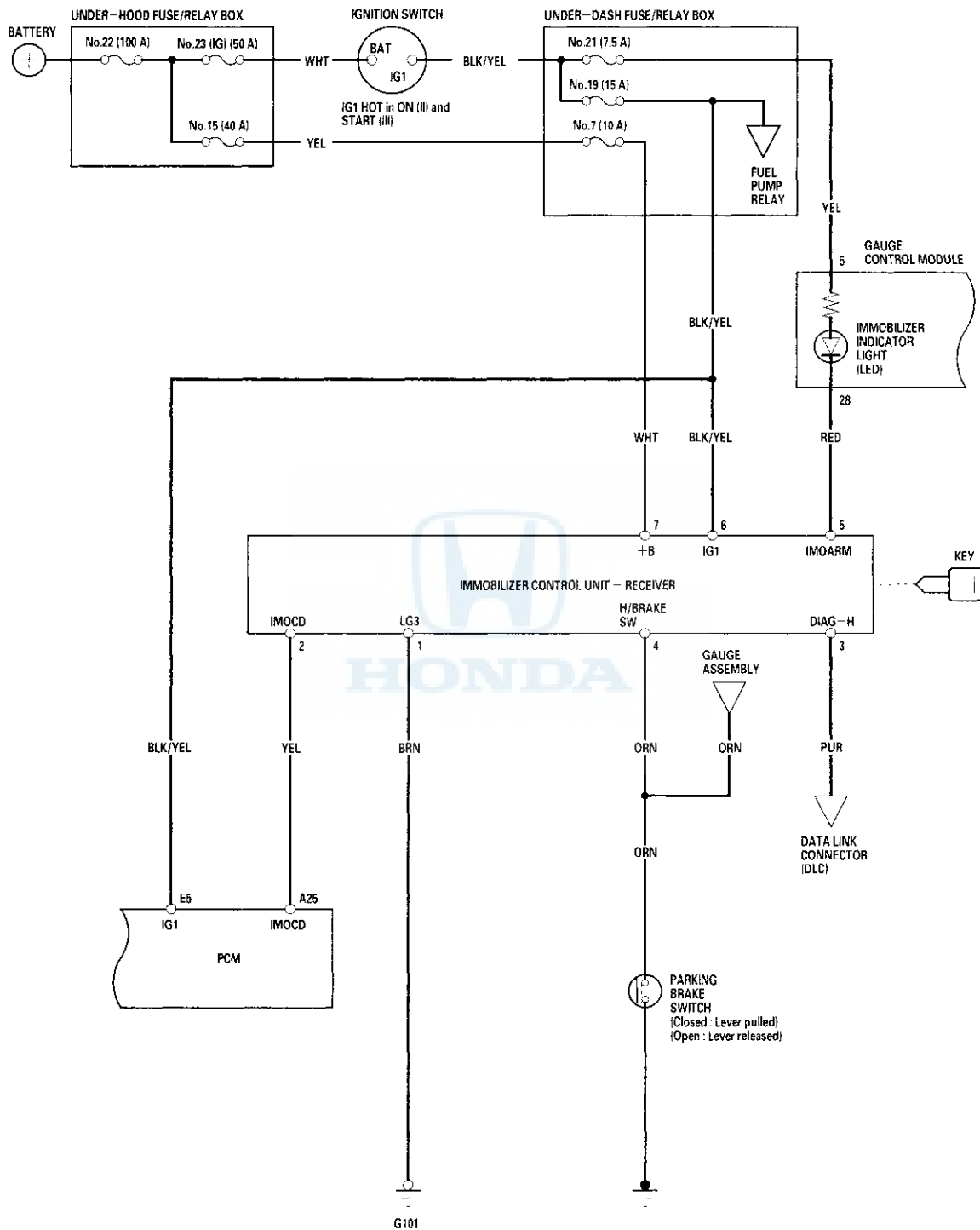
- If the proper key has been used, the immobilizer indicator light will come on for about 2 seconds, then go off.
- If the wrong key has been used or the code was not received or recognized by the unit, the indicator light will come on for about 2 seconds, then it will blink until the ignition switch is turned OFF.
- If the ignition switch is turned OFF, the indicator will blink for about 5 seconds to signal that the unit has reset correctly, then the indicator will go off.
- If the customer has lost his key, and cannot start the engine, contact Honda Customer Relations.

IMMOBILIZER INDICATOR LIGHT BLINKING PATTERN:

IGNITION SWITCH		ON	OFF
PROPER KEY INSERTED	INDICATOR LIGHT	ON	2 sec
		OFF	5 sec
WRONG KEY INSERTED	INDICATOR LIGHT	ON	1 Hz
		OFF	

Immobilizer System

Circuit Diagram





Troubleshooting

1. Turn the ignition switch ON (II) with a programmed key.

2. Check to see if the immobilizer indicator comes on.

Does the indicator come on?

YES—Go to step 3.

NO—Go to step 12.

3. Check the immobilizer indicator operation.

Does the indicator come on for 2 seconds, then go off?

YES—Go to step 4.

NO—Go to step 6.

4. Try to crank the engine.

Does the starter motor operate?

YES—Go to step 5.

NO—Check the starter motor. ■

5. Try to start the engine.

Does the engine start?

YES—If available, check the Status Log in the Immobilizer info with the HDS (see page 22-283). If the Status Log is not available, the Immobilizer system is OK at this time. ■

NO—Go to step 25. ■

6. Check to see if the immobilizer indicator comes on and blinks.

Does the indicator blink?

YES—Go to step 24.

NO—Go to step 7.

7. Disconnect the 7P connector from the immobilizer control unit-receiver.

8. Check to see if the immobilizer indicator goes off.

Does the indicator go off?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

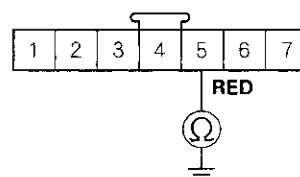
NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the gauge control module and disconnect its 30P connector (see page 22-235).

11. Check for continuity between the immobilizer control unit-receiver 7P connector No. 5 (IMOARM) terminal and body ground.

IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire. ■

NO—Faulty immobilizer indicator, replace the gauge control module. ■

{cont'd}

Immobilizer System

Troubleshooting (cont'd)

12. Try to start the engine.

Does the engine start?

YES—Go to step 13.

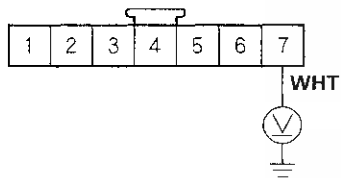
NO—Go to step 18.

13. Turn the ignition switch OFF.

14. Disconnect the 7P connector from the immobilizer control unit-receiver.

15. Check for voltage between the immobilizer control unit-receiver 7P connector No. 7 (+B) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

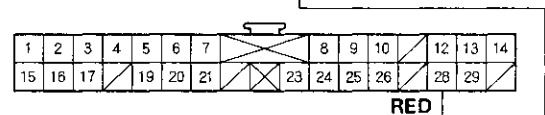
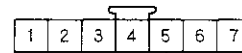
YES—Go to step 16.

NO—Faulty No. 7 (10 A) fuse in the under-dash fuse/relay box. If the fuse is OK, check for an open in the wire between the immobilizer control unit-receiver and under-dash fuse/relay box. ■

16. Remove the gauge control module, and disconnect its 30P connector (see page 22-235).

17. Check for continuity between the immobilizer control unit-receiver 7P connector No. 5 (IMOARM) terminal and gauge control module 30P connector No. 28 terminal.

**IMMOBILIZER CONTROL UNIT-
RECEIVER 7P CONNECTOR**
Wire side of female terminals



GAUGE CONTROL MODULE 30P CONNECTOR
Wire side of female terminals

Is there continuity?

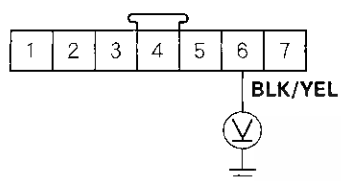
YES—Faulty immobilizer indicator, replace the gauge control module. ■

NO—Repair an open in the wire. ■



18. Turn the ignition switch OFF.
19. Disconnect the 7P connector from the immobilizer control unit-receiver.
20. Disconnect the PCM connector E (31P).
21. Turn the ignition switch ON (II).
22. Check for voltage between the immobilizer control unit-receiver 7P connector No. 6 (IG1) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there battery voltage?

YES—Go to step 23.

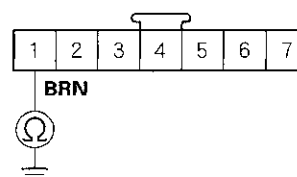
NO—Check for these problems:

- Blown No. 19 (15A) fuse in the under-dash fuse/relay box. ■
- An open in the wire between the immobilizer-control unit-receiver and under-dash fuse/relay box. ■

23. Turn the ignition switch OFF.

24. Check for continuity between the immobilizer control unit-receiver 7P connector No. 1 (LG3) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

NO—Repair an open in the wire. If the wire is OK, repair G101. ■

(cont'd)

Immobilizer System

Troubleshooting (cont'd)

25. Turn the ignition switch OFF.
26. Connect the HDS to the data link connector.
27. Turn the ignition switch ON (II).
28. Look at the System Check in the Immobilizer Info with the HDS (see page 22-282).

Is the immobilizer system normal?

YES—Go back to step 1.

NO—Go to step 29.

29. Verify the System Check display on the HDS.

Does the HDS display the following information?

- Harness short from the PCM to the immobilizer unit. (S-net line short)
- The communication was not good between the PCM and the immobilizer unit by the battery voltage low.
- The communication was not good between the immobilizer unit and the PCM by influence of some noise.
- Immobilizer unit failure
- PCM failure

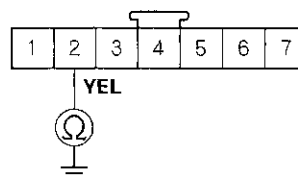
YES—Go to step 30.

NO—Go to step 34.

30. Turn the ignition switch OFF.
31. Disconnect the 7P connector from the immobilizer control unit-receiver.
32. Disconnect the 31P E connector from the PCM.

33. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 (IMOD) terminal and body ground.

**IMMOBILIZER CONTROL UNIT-RECEIVER
7P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Repair a short in the wire. ■

NO—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

34. Verify the System Check display on the HDS.

Does the HDS display the following information?

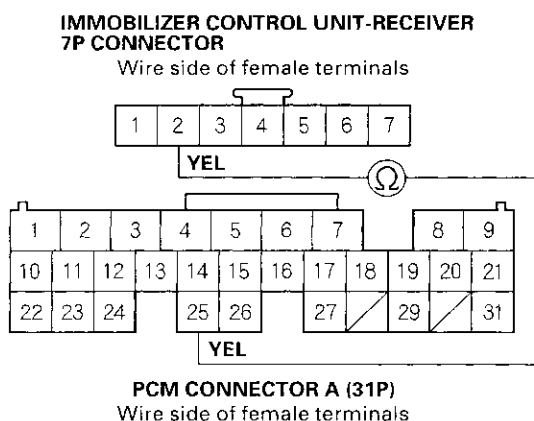
- Blown fuse
- Harness open from the PCM and the immobilizer unit.
- The communication was not good between the PCM and the immobilizer unit by battery voltage low.
- The communication was not good between the immobilizer unit and the PCM by influence of some noise.
- Immobilizer unit failure
- PCM failure

YES—Go to step 35.

NO—Check the Possible Failures shown on the System Check display (see page 22-282). ■

35. Turn the ignition switch OFF.
36. Disconnect the 7P connector from the immobilizer control unit-receiver.
37. Disconnect the 31P A connector from the PCM.

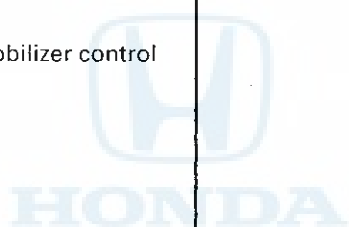
38. Check for continuity between the immobilizer control unit-receiver 7P connector No. 2 (IMOCD) terminal and PCM connector A (31P) No. 25 terminal.



Is there continuity?

YES—Substitute a known-good immobilizer control unit-receiver and/or PCM. ■

NO—Repair an open in the wire. ■

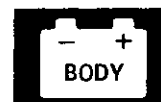


Immobilizer System

System Check

1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. Monitor the System Check in the Immobilizer Info with the HDS.
4. If the HDS displays the "Immobilizer system is normal", the immobilizer system is OK. If the HDS displays any other messages, check as follows:

Status Log No.	System Check	Possible Failures
A-1	Immobilizer system is not normal	<ul style="list-style-type: none"> • This key is not registered in the immobilizer unit. Try to register keys by using "KEYS". • The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. • The communication was not good between the antenna and the immobilizer key by battery voltage low.
A-2	Immobilizer system is not normal	<ul style="list-style-type: none"> • Intermittent interruption between transponder and immobilizer unit. • The immobilizer key type is different. It is not for this vehicle but for another one or for other company's one. • Key failure (transponder failure) • The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. • The communication was not good between the antenna and the immobilizer key by battery voltage low.
A-3	Immobilizer system is not normal	<ul style="list-style-type: none"> • The ignition switch was turned on with a non-immobilizer key. • The immobilizer key type is different. It is not for this vehicle but for another one or for other company's one. • Key failure (transponder failure) • The communication was not good between the antenna and the immobilizer key by influence of metal such as key chains. • The communication was not good between the antenna and the immobilizer key by battery voltage low. • Immobilizer unit failure
B-1	Immobilizer system is not normal	<ul style="list-style-type: none"> • The PCM was not registered. Try to register the PCM by using "REPLACE PCM". • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise.
B-2	Immobilizer system is not normal	<ul style="list-style-type: none"> • The PCM was not registered. Try to register the PCM by using "REPLACE PCM". • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise.
D-1	Immobilizer system is not normal	<ul style="list-style-type: none"> • Harness short from the PCM to the immobilizer unit. (S-net line short) • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise. • Immobilizer unit failure • PCM failure
D-3	Immobilizer system is not normal	<ul style="list-style-type: none"> • Blown fuse • Harness open from the PCM to the immobilizer unit. • The communication was not good between the PCM and the immobilizer unit by battery voltage low. • The communication was not good between the immobilizer unit and the PCM by influence of some noise. • Immobilizer unit failure • PCM failure



Status Log

If you suspect there is a immobilizer system problem, check the status log.

NOTE: Status log may not be available for all models. If you have an updated immobilizer control unit-receiver, status log should be available.

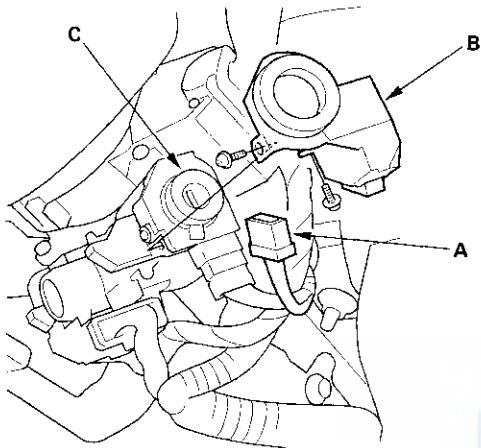
1. Connect the HDS to the data link connector.
2. Turn the ignition switch ON (II).
3. On the HDS screen, select Honda systems, select immobilizer set-up, select immobilizer information, then select status log.
4. Check the Status log count. Troubleshoot the status with the highest count first. If no counts are listed, the immobilizer system is OK. Continue with normal symptom troubleshooting.

Status Log No.	Detected Item	Probable Cause
A-1	KEY CODE MISMATCH (Code format normal, but code data is mismatch)	1. The key was not registered 2. Interference from metal such as key chains 3. Low battery voltage
A-2	KEY CODE MISMATCH (Code format failure)	1. Ignition switch was turn on with another type of immobilizer key or aftermarket key 2. Interference from metal such as key chains 3. Low battery voltage
A-3	KEY CODE MISMATCH (No key code or non-immobilizer key)	1. Ignition switch was turn on with another type of immobilizer key or aftermarket key 2. Interference from metal such as key chains 3. Low battery voltage 4. Key failure 5. Immobilizer control unit-receiver failure
B-1	PCM CODE MISMATCH (Code format normal, but code data is mismatch)	1. PCM was not registered correctly 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver 4. Communication line electrical noise
B-2	PCM MISMATCH (Code format failure)	1. PCM was not registered correctly 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver 4. Communication line electrical noise
D-1	SECURITY-NET LINE PROBLEM (Short to ground)	1. Low battery voltage 2. Poor or loose terminal connections at the immobilizer control unit-receiver and the PCM 3. Communication line electrical noise
D-3	SECURITY-NET LINE PROBLEM (Open line or PCM failure)	1. Open or short in the harness from the PCM to the immobilizer control unit-receiver 2. Low battery voltage 3. Poor or loose terminal connections at the immobilizer control unit-receiver and the PCM 4. Communication line electrical noise

Immobilizer System

Immobilizer Control Unit-Receiver Replacement

1. Remove the dashboard lower cover (see page 20-67).
2. Remove the steering column covers (see page 17-9).
3. Disconnect the 7P connector (A) from the immobilizer control unit-receiver (B).



4. Remove the two screws and the immobilizer control unit-receiver from the ignition key cylinder (C).
5. Install the immobilizer control unit-receiver in the reverse order of removal.
6. After replacement, check the immobilizer system.

Navigation Tools: Click on the "Table of Contents" below, or use the Bookmarks to the left.

Audio, Navigation, and Telematics

Audio, Navigation, and Telematics

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Audio System

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Navigation System

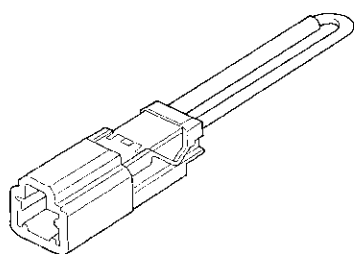
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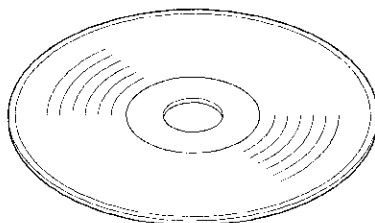
Audio, Navigation, and Telematics

Special Tools

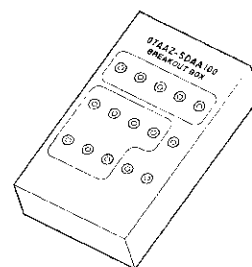
Ref. No.	Tool Number	Description	Qty
①	07PAZ-0010100	SCS Service Connector	1
②	07AAZ-SDBA100	Diagnostics CD	1
③	07AAZ-SDBA200 (ABEX TCD-725B)	Skip Test CD	1
④	07AAZ-SDBA300 (ABEX TCD-721)	Skip Test CD	1
⑤	07AAZ-SDAA100	Radio Test Harness Breakout Box	1
⑥	070AZ-SDAA100	Test Harness A and B (Alpine)	1
⑦	070AZ-SDAA200	Test Harness (Stanley)	1



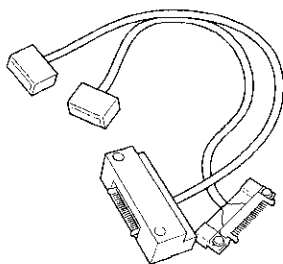
①



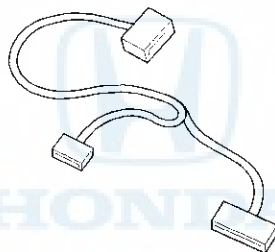
②, ③, ④



⑤



⑥

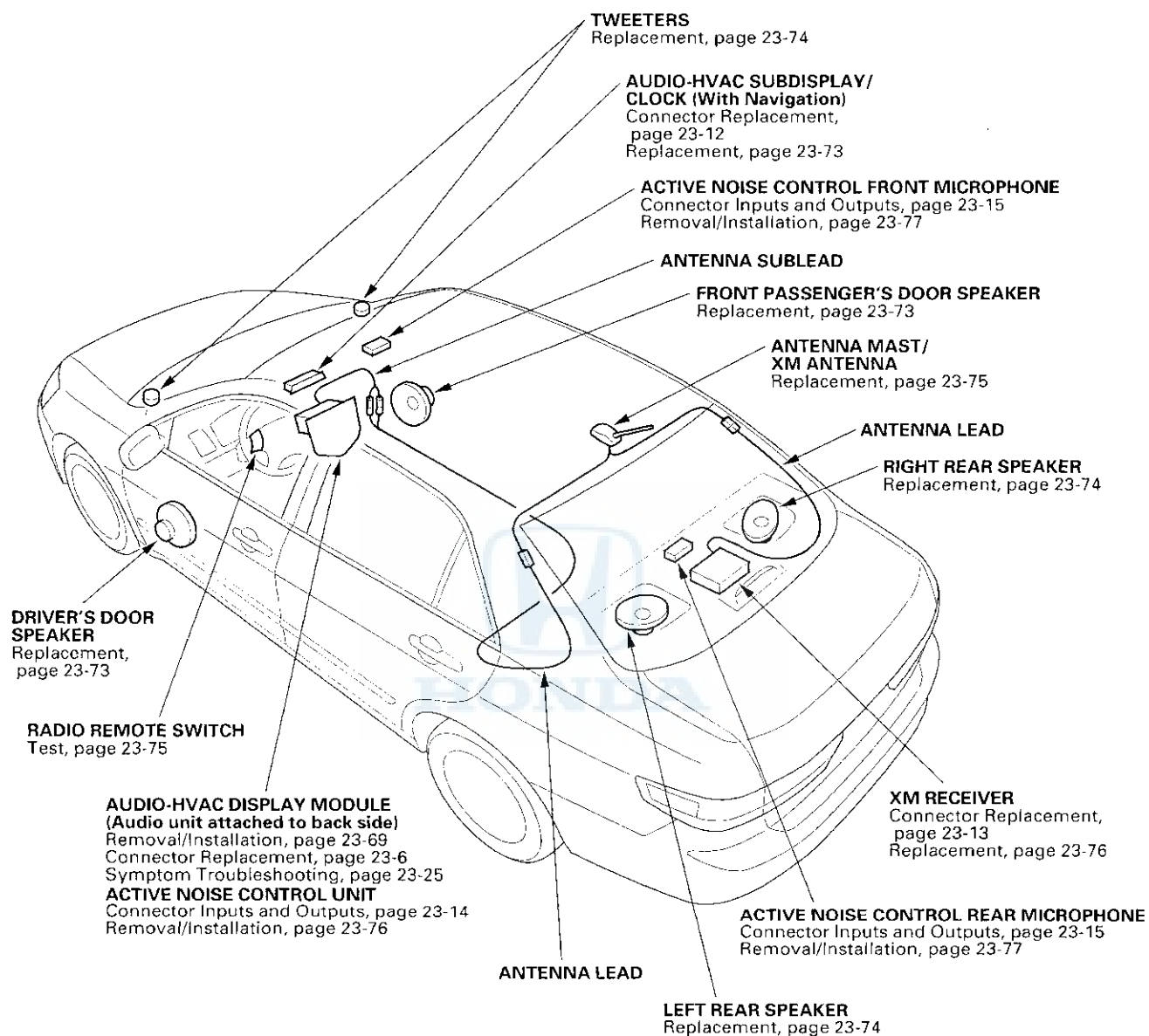


⑦

Audio System



Component Location Index



Audio System

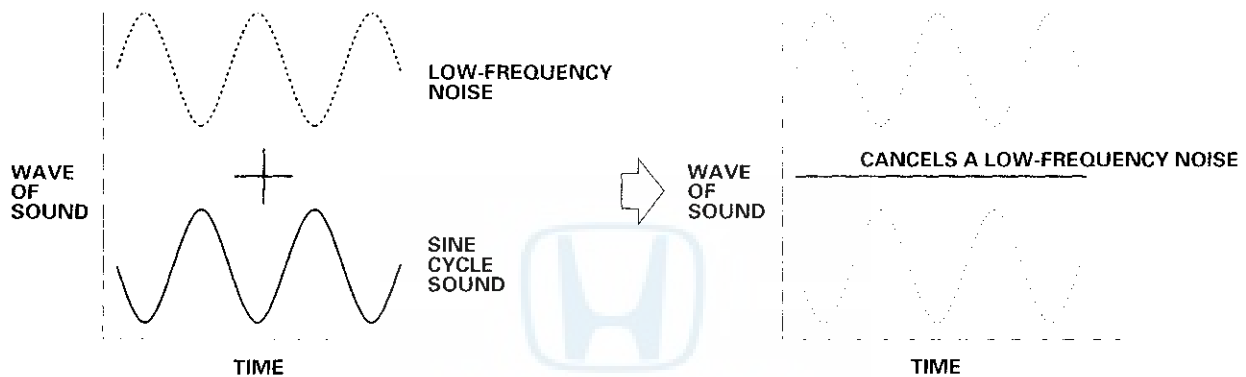
System Description

Overview

The audio unit acts as the “processor” for all audio functions. Selection of the audio functions can be done from the front panel, the audio remote (on steering wheel), or by using the navigation voice control system. The audio display provides the current front and rear audio status. For vehicles with the navigation option, additional audio information is available by touching the audio button. (See the owner’s manual for more details.)

Each audio component passes its audio signal to the audio unit. In addition it communicates with the audio unit via the GA-Net bus. Any open connection in this circuit will cause audio and navigation functions to appear inoperative.

The system includes an active noise control system to cancel some of the vehicle noise. It use a sine-wave shaped sound output to cancel low frequency noise. Two microphones detect the low frequency sound, and the system outputs a canceling sound through the audio speakers.

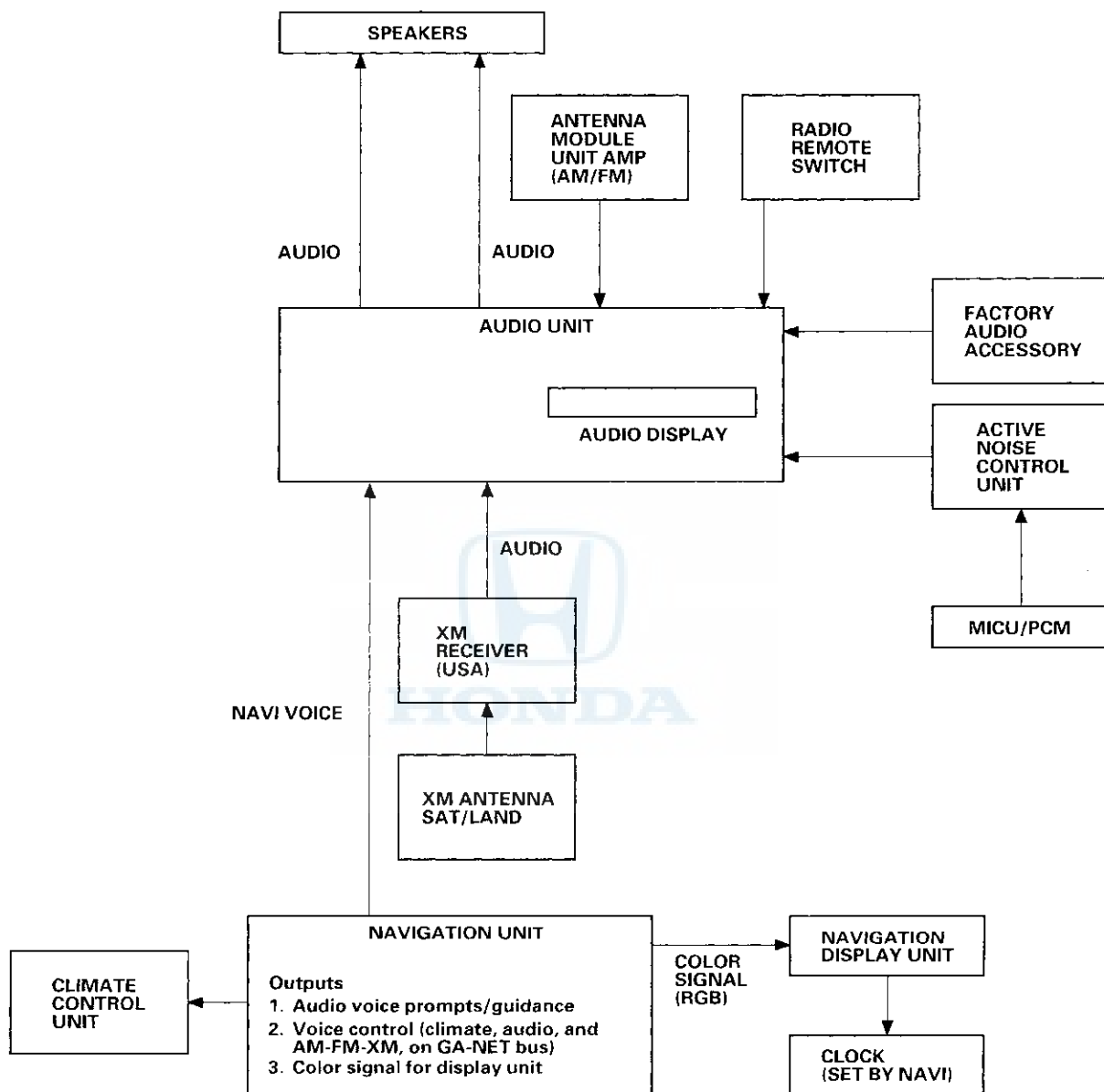


The 6CD changer output can be directed to the audio unit.

The XM can be output to the audio unit.



System Diagram



(cont'd)

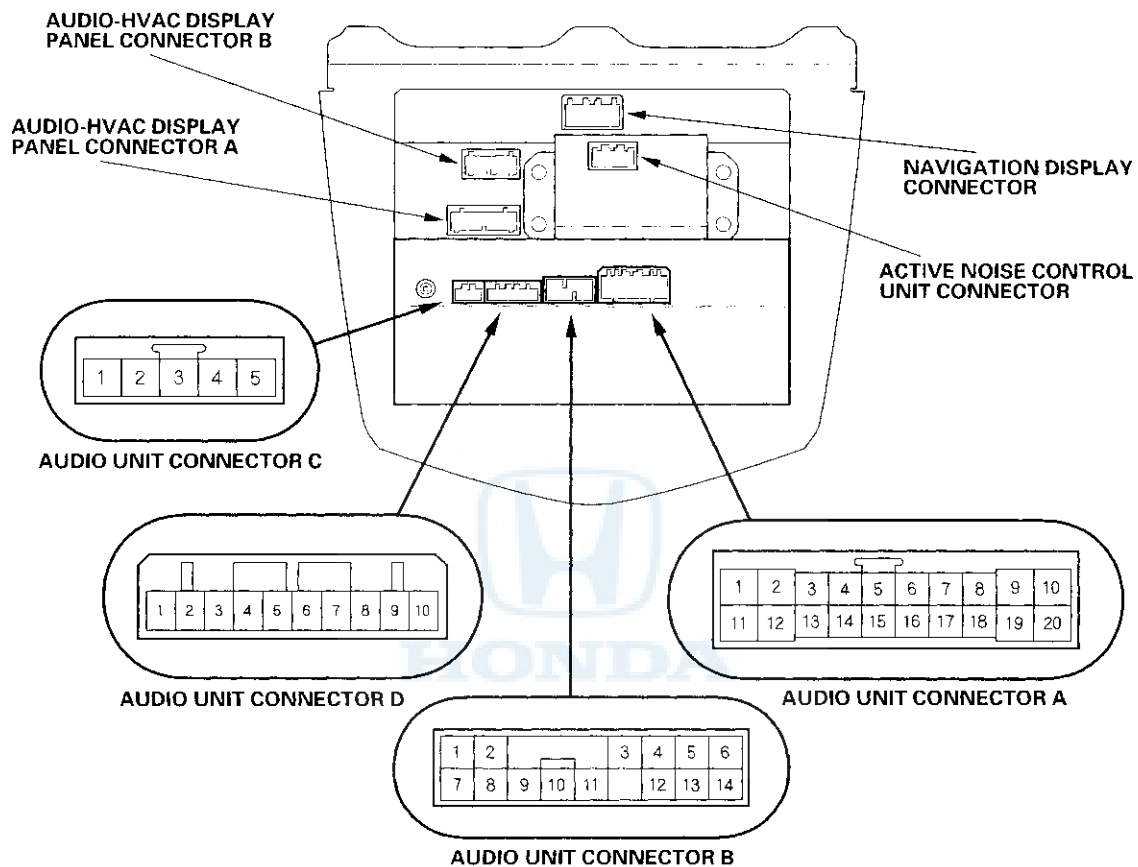
Audio System

System Description (cont'd)

Audio Unit Connector Inputs and Outputs

When replacing an audio unit connector, match the wires to the cavities listed in the following table.

With Navigation





AUDIO UNIT CONNECTOR A

Cavity	Wire	Connect to
A1	YEL/GRN	Radio switch (Amp.)
A2	YEL	ACC (main stereo power supply)
A3	ORN	Radio remote switch
A4	GRN	(Security input)
A5	PNK	Right rear speaker (+)
A6	BLU/WHT	Left rear speaker (+)
A7	GRN/YEL	Front passenger's door speaker (+), Right tweeter (+)
A8	GRN/BLK	Driver's door speaker (+), Left tweeter (+)
A9	RED/BLK	Lights-on signal
A10	PNK	Constant power
A11	WHT	Radio remote switch ground
A12	BLU/RED	Navigation unit (RG GND)
A13	WHT	Navigation unit (RG L+)
A14	---	Not used
A15	BLU/YEL	Right rear speaker (-)
A16	BLU/BLK	Left rear speaker (-)
A17	GRY	Front passenger's door speaker (-), Right tweeter (-)
A18	LT GRN	Driver's door speaker (-), Left tweeter (-)
A19	RED	Dash lights brightness controller
A20	BLK	Ground (G504)

AUDIO UNIT CONNECTOR B

Cavity	Wire	Connect to
B1	WHT	XM receiver constant power
B2	LT BLU	XM receiver (ACC power)
B3	BLK	XM receiver bus ground
B4	BRN	XM receiver audio shield ground
B5	ORN	XM receiver (Right+)
B6	GRY	XM receiver (Left+)
B7	YEL	XM receiver constant power
B8	RED/BLK	Lights-on signal (+)
B9	BLU	XM receiver bus (+)
B10	GRN	XM receiver bus (-)
B11	BLK	XM receiver ground
B12	RED	Dash lights brightness controller (-)
B13	PUR	XM receiver (Right-)
B14	LT GRN	XM receiver (Left-)

AUDIO UNIT CONNECTOR C

Cavity	Wire	Connect to
C1	GRN	Active noise control unit (ANC F+)
C2	WHT	Active noise control unit (ANC F-)
C3	RED	Active noise control unit (ANC R+)
C4	LT BLU	Active noise control unit (ANC R-)
C5	PNK	Active noise control unit (ANC CHK2)

AUDIO UNIT CONNECTOR D

Cavity	Wire	Connect to
D1	BLK	Audio-HVAC subdisplay/clock-ground
D2	BLU	Audio-HVAC subdisplay/clock-5 V signal line
D3	---	Not used
D4	YEL	Audio-HVAC subdisplay/clock-reset signal line
D5	PUR	Audio-HVAC subdisplay/clock-clock signal line
D6	ORN	Audio-HVAC subdisplay/clock-data signal line
D7	BLU	Audio-HVAC subdisplay/clock-CE signal line
D8	GRY	Audio-HVAC subdisplay/clock-shielding ground
D9	RED	Audio-HVAC subdisplay/clock-LCD (BL-) signal line
D10	GRN	Audio-HVAC subdisplay/clock-LCD (BL+) signal line

(cont'd)

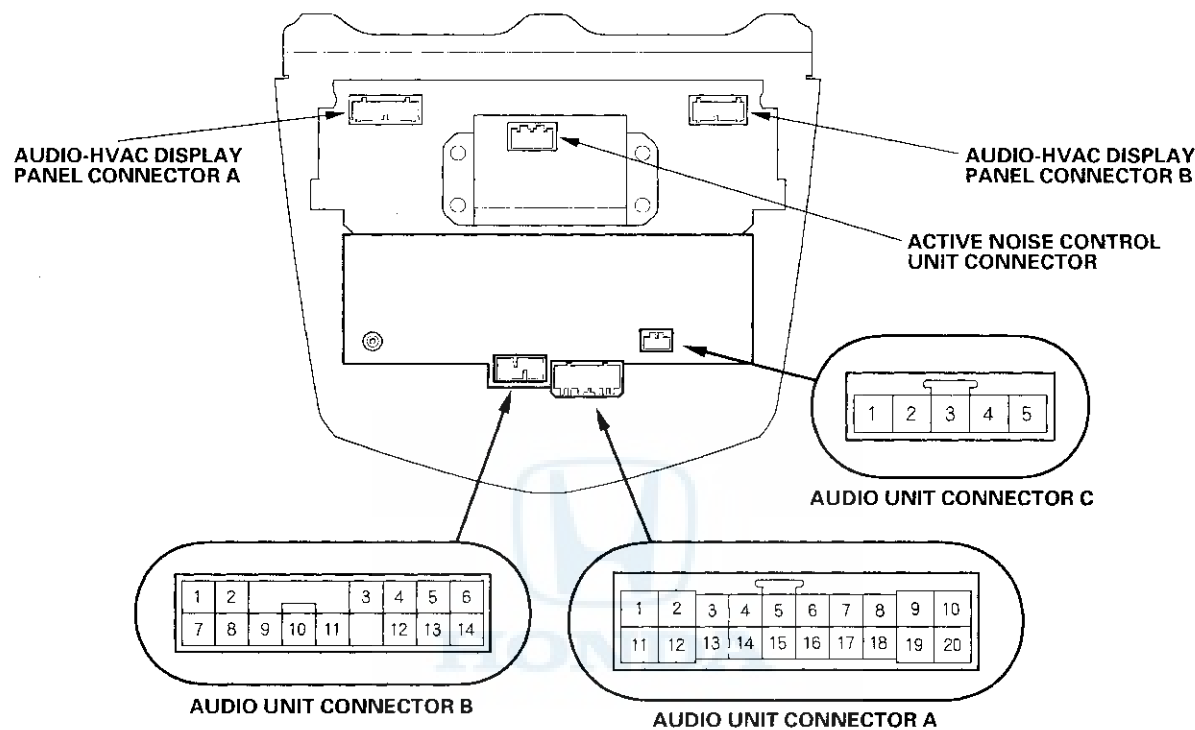
Audio System

System Description (cont'd)

Audio Unit Connector Inputs and Outputs

When replacing an audio unit connector, match the wires to the cavities listed in the following table.

Without Navigation





AUDIO UNIT CONNECTOR A

Cavity	Wire	Connect to
A1	YEL/GRN	Radio switch (AMP.)
A2	YEL	ACC (main stereo power supply)
A3	ORN	Radio remote switch
A4	GRN	(Security input)
A5	PNK	Right rear speaker (+)
A6	BLU/WHT	Left rear speaker (+)
A7	GRN/YEL	Front passenger's door speaker (+), Right tweeter (+)
A8	GRN/BLK	Driver's door speaker (+), Left tweeter (+)
A9	RED/BLK	Lights-on signal
A10	PNK	Constant power
A11	WHT	Radio remote switch ground
A12	---	Not used
A13	---	Not used
A14	---	Not used
A15	BLU/YEL	Right rear speaker (-)
A16	BLU/BLK	Left rear speaker (-)
A17	GRY	Front passenger's door speaker (-), Right tweeter (-)
A18	LT GRN	Driver's door speaker (-), Left tweeter (-)
A19	RED	Dash lights brightness controller
A20	BLK	Ground (G504)

AUDIO UNIT CONNECTOR C

Cavity	Wire	Connect to
C1	GRN	Active noise control unit (ANC F+)
C2	WHT	Active noise control unit (ANC F-)
C3	RED	Active noise control unit (ANC R+)
C4	LT BLU	Active noise control unit (ANC R-)
C5	PNK	Active noise control unit (ANC CHK2)

AUDIO UNIT CONNECTOR B with XM radio

Cavity	Wire	Connect to
B1	WHT	XM receiver constant power
B2	LT BLU	XM receiver (ACC power)
B3	BLK	XM receiver bus ground
B4	BRN	XM receiver audio shield ground
B5	ORN	XM receiver (Right +)
B6	GRY	XM receiver (Left +)
B7	YEL	XM receiver constant power
B8	RED/BLK	Lights-on signal (+)
B9	BLU	XM receiver bus (+)
B10	GRN	XM receiver bus (-)
B11	BLK	XM receiver ground
B12	RED	Dash lights brightness controller (-)
B13	PUR	XM receiver (Right -)
B14	LT GRN	XM receiver (Left -)

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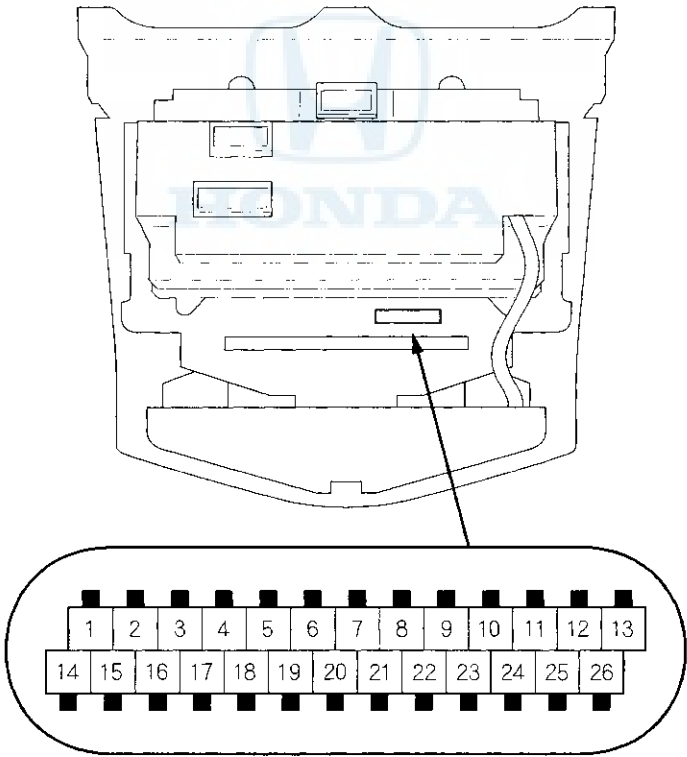
Audio System

System Description (cont'd)

Audio Unit Connector Inputs and Outputs

With navigation type printed circuit board connector

Terminal	Signal	Terminal	Signal
1	SWD-VDD	14	D-GND
2	CD-LED-G	15	CD-LED-R
3	ANTI-IND	16	EJECT
4	TUNE VOL-UP	17	TUNE VOL-DN
5	KEY-CLK	18	KEY-DATA
6	KEY-IN	19	KEY PS
7	ENC VOL-UP	20	ENC VOL-DN
8	IS-BUS-DATA	21	PW SW
9	LAMP +B	22	IS-BUS-FLAME
10	LAMP-RET	23	LAMP +B
11	IGN-DET	24	LAMP-RET
12	BUS+	25	P-GND
13	P-GND	26	BUS-





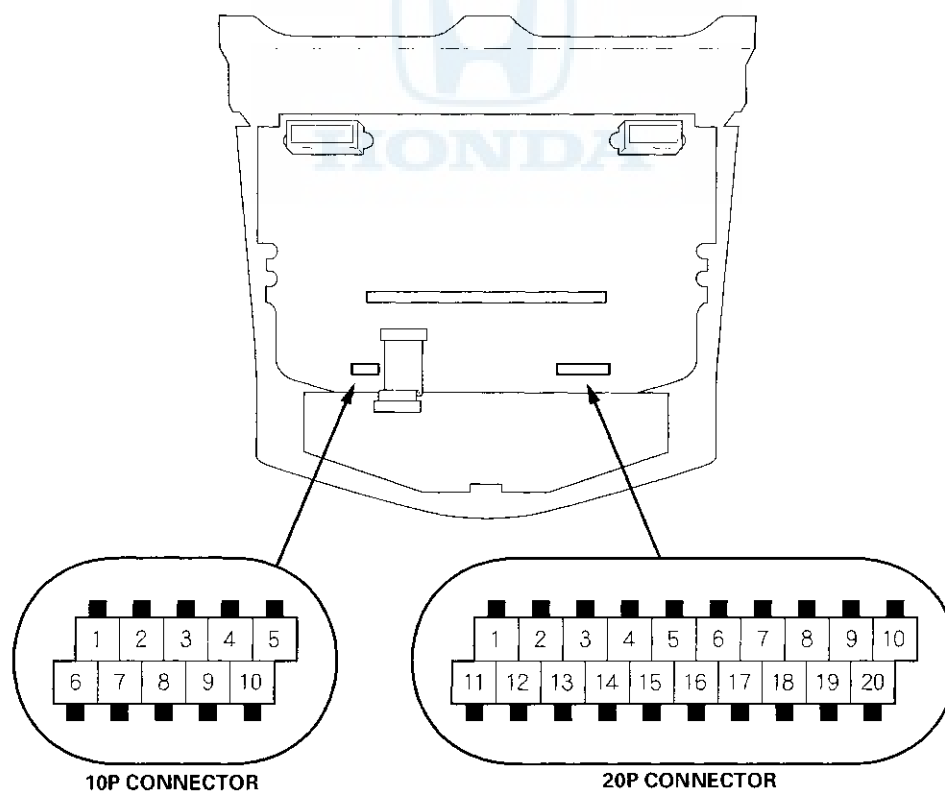
Without navigation type printed circuit board connector

10P Connector

Terminal	Signal	Terminal	Signal
1	AUDIO-GND	6	VDD 5 V
2	Power switch	7	SEC-LED
3	ILLUMI-GND 4	8	RED-LED
4	ILLUMI 8 V-4	9	GREEN-LED
5	VOL-B	10	VOL-A

20P Connector

Terminal	Signal	Terminal	Signal
1	ILLUMI-GND-1	11	ILLUMI 8 V-1
2	ILLUMI-GND-3	12	LCD-CK
3	ILLUMI 8 V-3	13	LCD-CE
4	ILLUMI-GND-2	14	LCD-DO
5	ILLUMI 8 V-2	15	ACC 5 V
6	SET4	16	LCD-GND
7	SET3	17	LCD 8 V
8	SET2	18	AC-DATA
9	SET1	19	EJECT switch
10	Not used	20	LCD-DI



(cont'd)

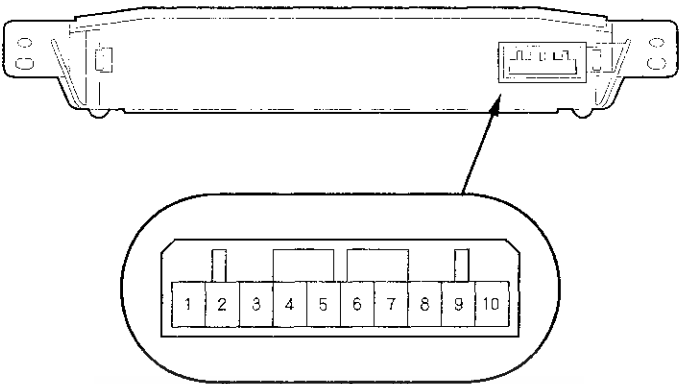
Audio System

System Description (cont'd)

Audio-HVAC Subdisplay/Clock Connector Inputs and Outputs

When replacing an audio-HVAC subdisplay/clock connector, match the wires to the cavities listed in the following table.

With Navigation

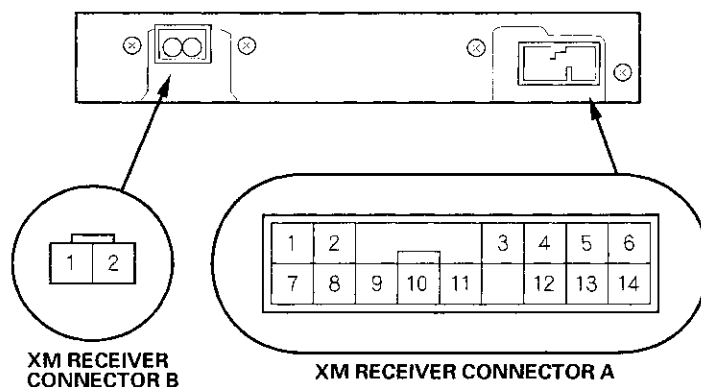


Cavity	Wire	Connect to
1	BLK	GND (5 V)
2	BLU	5 V
3	BLK	GND
4	YEL	RESET
5	PUR	CLOCK
6	ORN	DATA
7	BLU	CE (LOAD)
8	GRY	SHIELDING GND
9	RED	LCD BACKLIGHT (−)
10	GRN	LCD BACKLIGHT (+)



XM Receiver Connector Inputs and Outputs

When replacing an XM receiver connector, match the wires listed in the following table.



XM RECEIVER CONNECTOR A

Cavity	Wire	Connect to
A1	PNK	Constant power
A2	LT BLU	XM receiver (ACC power)
A3	BLK	Bus ground
A4	BRN	Audio shield ground
A5	GRN	Audio unit (Right +)
A6	BLU	Audio unit (Left +)
A7	—	Not used
A8	—	Not used
A9	BLU	Audio unit bus (+)
A10	RED	Audio unit bus (—)
A11	BLK	XM receiver ground
A12	—	Not used
A13	RED	Audio unit (Right —)
A14	WHT	Audio unit (Left —)

XM RECEIVER CONNECTOR B

Cavity	Wire	Connect to
B1	—	Terrestrial signal antenna
B2	—	Satellite signal antenna

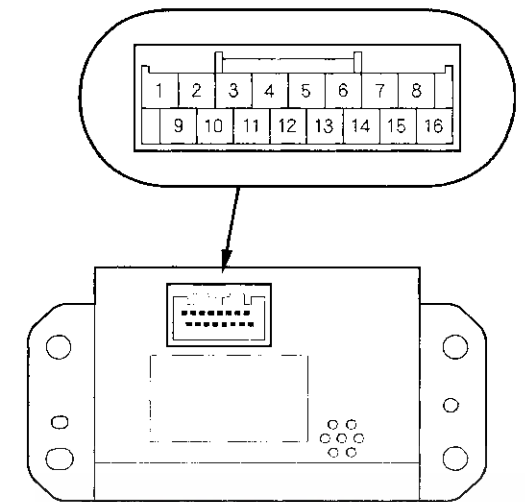
(cont'd)

Audio System

System Description (cont'd)

Active Noise Control Unit Connector for Inputs and Outputs

When replacing an active noise control unit connector, match the wires to the cavities listed in the following table.

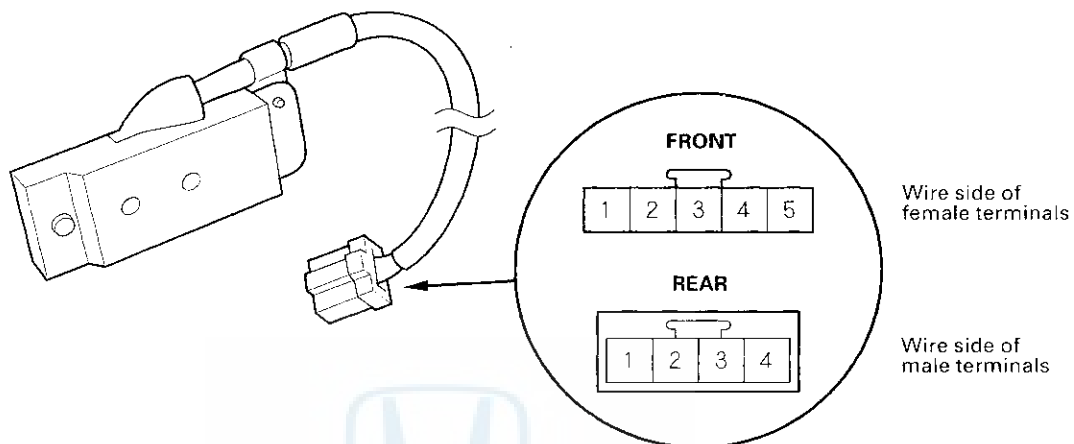


Cavity	Wire	Connect to
1	RED	Audio unit (R (+))
2	GRN	Audio unit (F (+))
3	ORN	Active noise control front microphone (MIC F (+))
4	WHT	Active noise control rear microphone (MIC R (+))
5	RED	Active noise control rear microphone (MIC R (-))
6		Not used
7	BLK	Ground (G503)
8	YEL	ACC (active noise control power supply)
9	LT BLU	Audio unit (R (-))
10	WHT	Audio unit (F (-))
11	YEL	Active noise control front microphone (MIC F (-))
12	PNK	Audio unit (ANC CHK2)
13		Not used
14	RED/WHT	PCM, Engine mount control unit
15	BLU/RED	PCM, Test tachometer connector (NEP)
16	GRN/RED	Multiplex integrated control unit (MICU) (INTR LT (-))



Active Noise Control Microphone Connector for Inputs and Outputs

When replacing an active noise control microphone connector, match the wires to the cavities listed in the following table.



Front

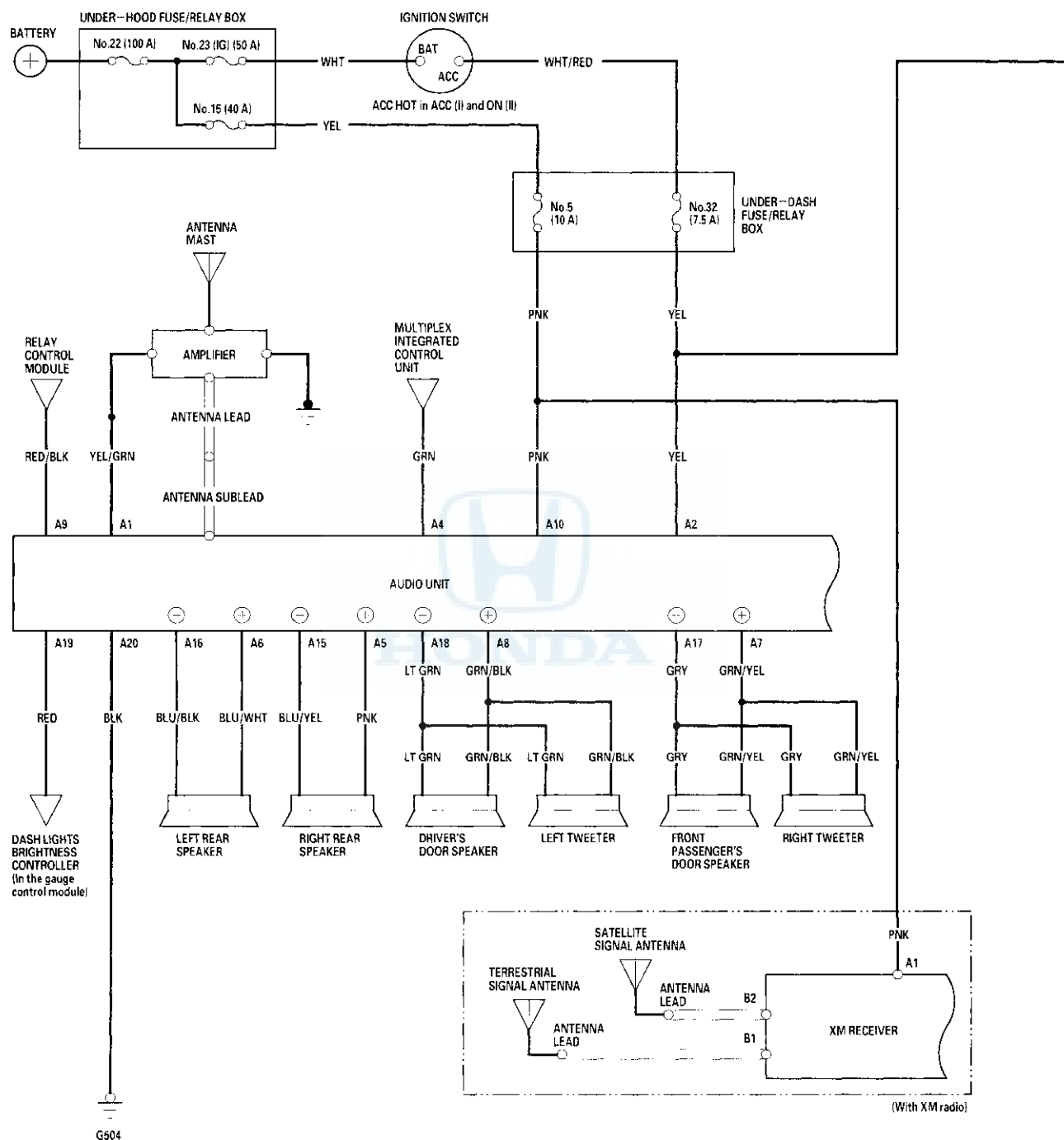
Cavity	Wire	Connect to
1	ORN	Active noise control unit (MIC F IN (+))
2	BRN	Active noise control unit (MIC F IN (-))
3	BLK	Ground (G601)
4	RED	ACC (active noise control front microphone power supply)
5		Not used

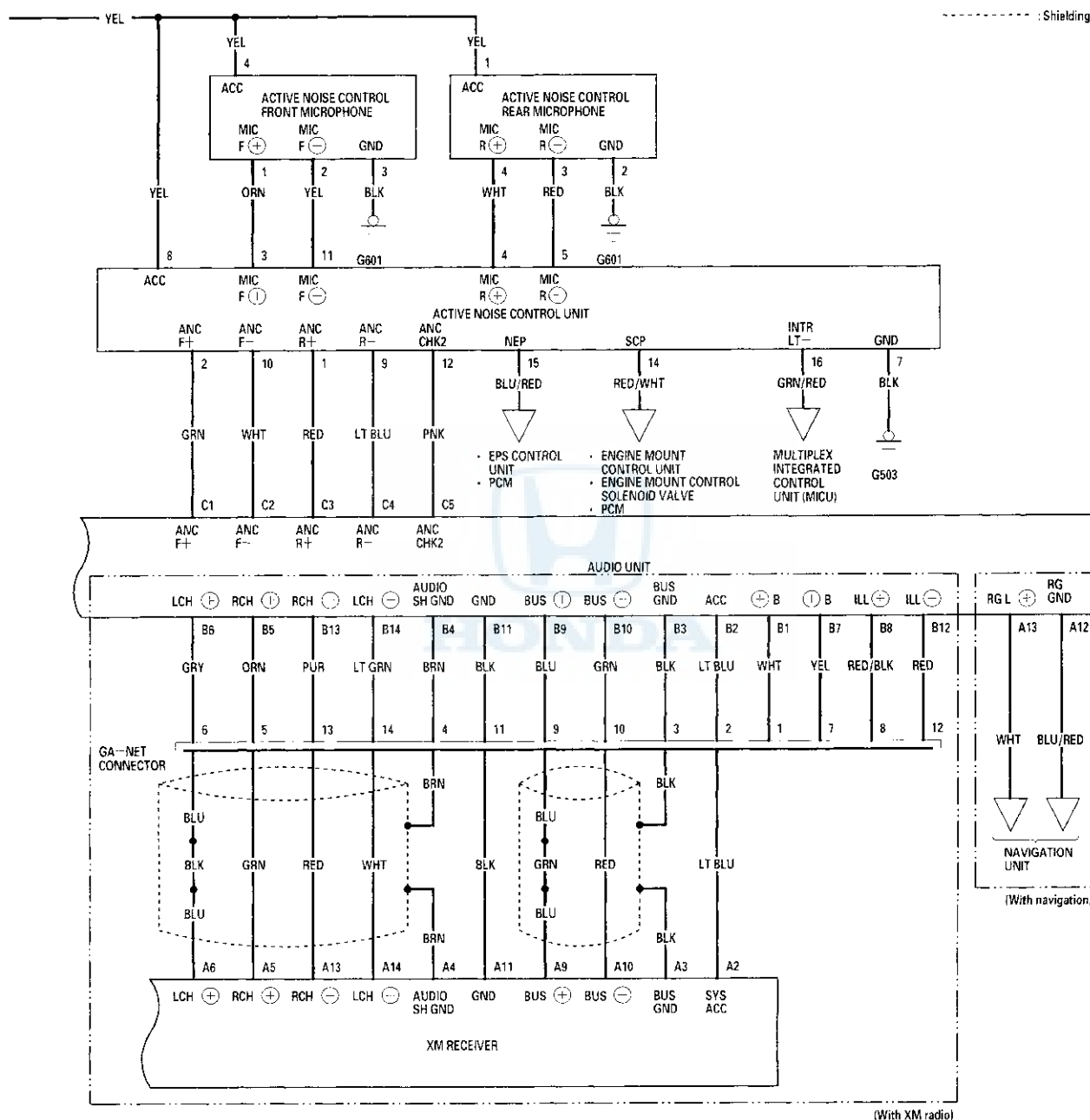
Rear

Cavity	Wire	Connect to
1	ORN	ACC (active noise control rear microphone power supply)
2	BRN	Ground (G601)
3	BLK	Active noise control unit (MIC R IN (-))
4	RED	Active noise control unit (MIC R IN (+))

Audio System

Circuit Diagram

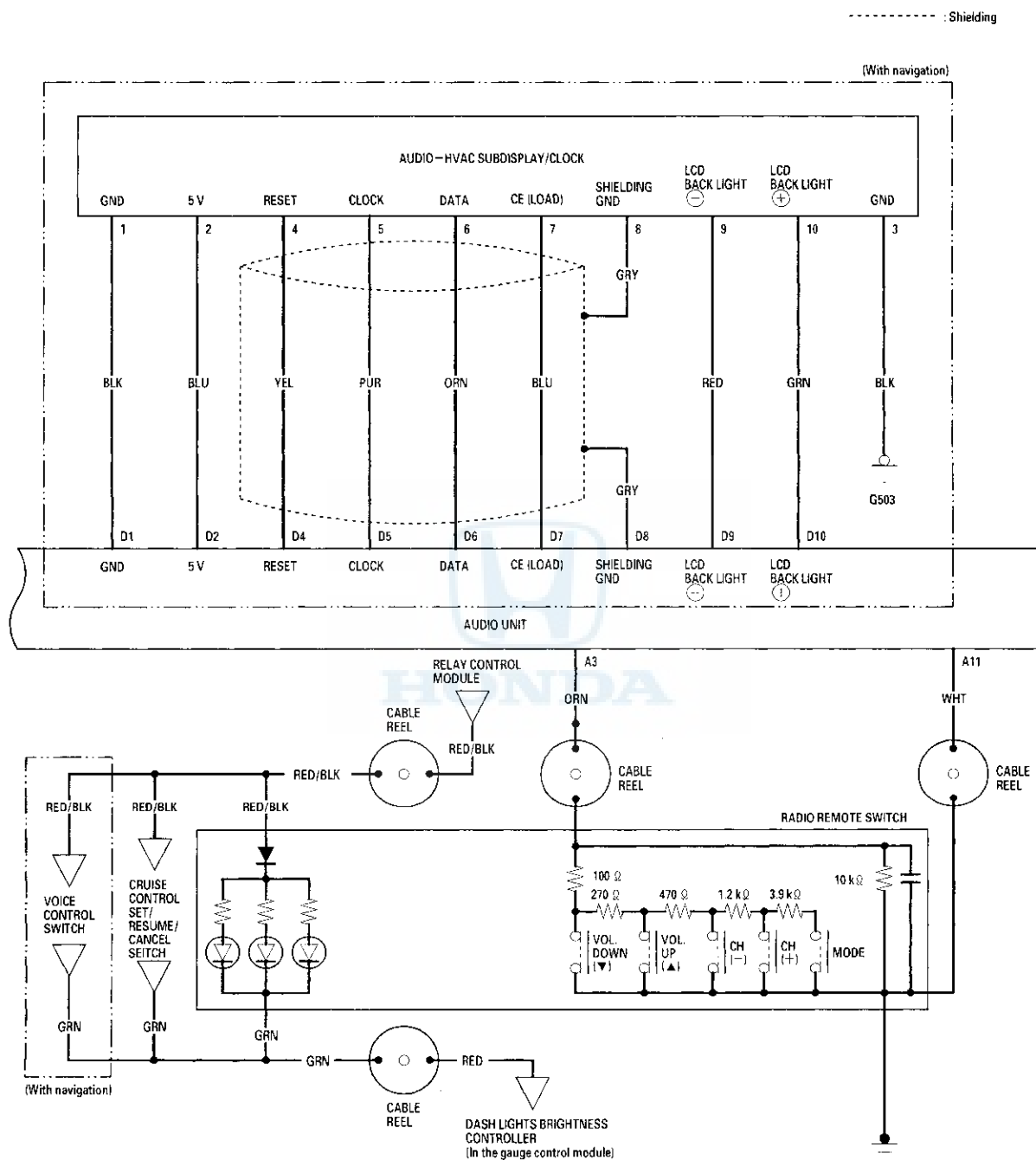




(cont'd)

Audio System

Circuit Diagram (cont'd)





Self-diagnostic Procedure

Starting the self-diagnostic function (with Navigation)

1. Turn the ignition switch to ACC (I) or ON (II).
2. Turn the audio unit off.
3. While holding down the upper part of both the "CH/DISK" and "SEEK/SKIP" bars simultaneously, press the VOL/PWR knob.
4. "DIAG" will appear on the audio-HVAC subdisplay/clock to indicate you have entered the self-diagnostic mode.



5. By pressing a button while "DIAG" is displayed, the input will trigger a mode that is assigned to that switch.

AM/FM button

Entire LCD lighting mode: Turns on the entire LCD to show the presence or absence of an LCD failure.

CD/AUX or CD/SAT button

Entire LCD light-out mode: Turns off the entire LCD to show the presence or absence of an LCD failure.

SEEK SKIP bar (▶▶)

Display IS-BUS communication verification status: Displays the verification of the communication between the climate control unit and Navigation-display (toggles between "NVD" and "AC" every 5 seconds).

SEEK SKIP bar (◀◀)

Display 12C-BUS communication verification status: Displays the verification of the communication among the display, the EEPROM, and the tuner (toggles between "DSP", "EEP" and "TNR" every 5 seconds).

SCAN button

Active noise control (ANC) system mode: Pressing the SCAN button toggles the active control function between ON and OFF. After each toggle to OFF, in order to repeat the test, turn the ignition switch to OFF(0), then repeat step 1 then 4.

6. The self-diagnostic function will end when the audio unit is turned off, or the ignition switch is turned off.

(cont'd)

Audio System

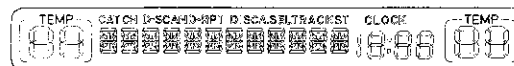
Self-diagnostic Procedure (cont'd)

Display Specifications

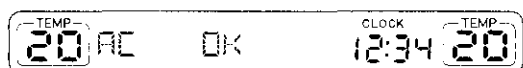
Entire LCD lighting
AM/FM Display



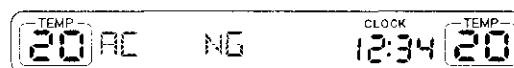
Entire LCD lights-outs
CD/AUX or CD/SAT



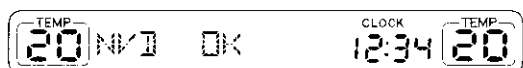
IS-BUS communication verification status
SEEK/SKIP Display (A/C Bus OK)
(▶▶)



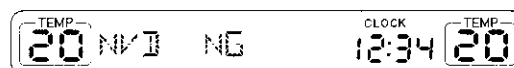
SEEK/SKIP Display (A/C Bus Faulty)
(▶▶)



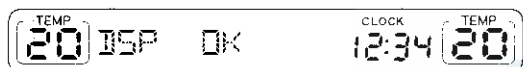
SEEK/SKIP Display (Navigation Bus OK)
(▶▶)



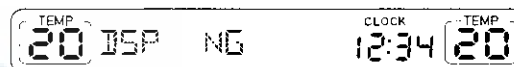
SEEK/SKIP Display (Navigation Bus Faulty)
(▶▶)



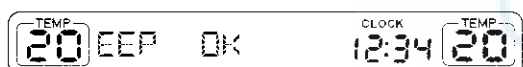
SEEK/SKIP Display (Display Bus OK)
(◀◀)



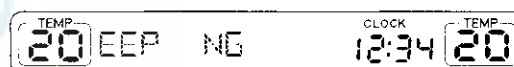
SEEK/SKIP Display (Display Bus Faulty)
(◀◀)



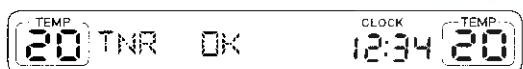
SEEK/SKIP Display (EEPROM Bus OK)
(◀◀)



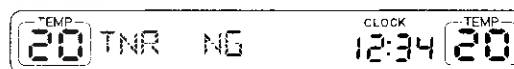
SEEK/SKIP Display (EEPROM Bus Faulty)
(◀◀)



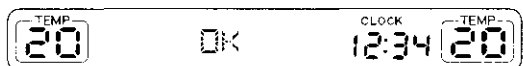
SEEK/SKIP Display (Tuner Bus OK)
(◀◀)



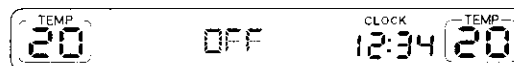
SEEK/SKIP Display (Tuner Bus Faulty)
(◀◀)



SCAN button (ANC ON)



SCAN button (ANC OFF)



If Bus faulty indicated, check for loose or poor connections.

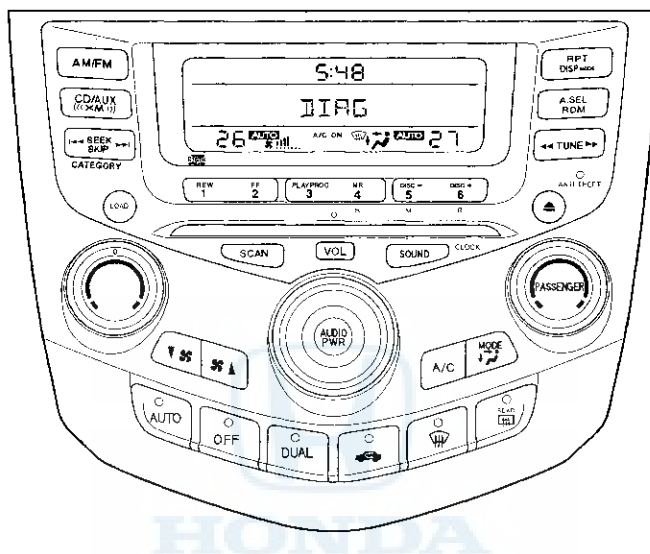
How to check the active noise control system in this check mode

- With the engine stopped and while in DIAG mode, turn the ANC ON to OFF by pressing the SCAN button, a low-frequency hum (50 Hz) should sound for about a minute.
 - If the hum does not sound, check for an open in the wire between the active noise control unit and the audio unit.
 - If the hum does not sound for minute, check for an open in the wire between the active noise control unit and the microphones.
- Start the engine while the hum is sounding, the hum should stop. If the hum does not stop, check for an open in the wire (NEP line) between the active noise control unit and the PCM.



Starting the self-diagnostic function (without Navigation)

1. Turn the ignition switch to ACC (I) or ON (II).
2. Turn the audio unit ON.
3. While holding down both the "Preset 1" and "Preset 6" buttons simultaneously, press the AUDIO PWR knob.
4. "DIAG" will appear on the audio unit display to indicate you have entered the self-diagnostic mode.



5. By pressing a button while "DIAG" is displayed, the input will trigger a mode that is assigned to that button.

Preset 1 button

Active noise control (ANC) system check mode: Pressing the preset 1 button toggles the active control function between ON and OFF. After each toggle to OFF, in order to repeat the test, turn the ignition switch to OFF(0), then repeat step 1 then 4.

Preset 3 button

Entire LCD lighting mode: Turns on the entire LCD to show the presence or absence of an LCD failure.

Preset 4 button

Entire LCD lights-out mode: Turns off the entire LCD to show the presence or absence of an LCD failure.

6. The self-diagnostic function will end when the audio unit is turned off, or the ignition switch is turned off.

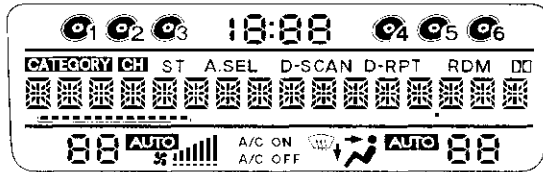
(cont'd)

Audio System

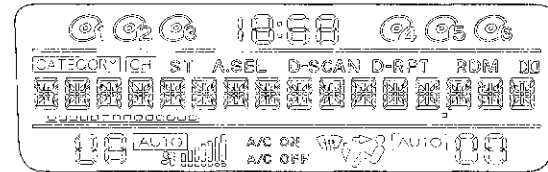
Self-diagnostic Procedure (cont'd)

Display Specifications

Entire LCD lighting
Preset 3 Display



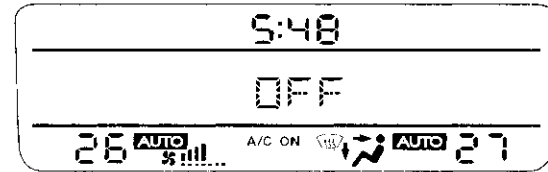
Entire LCD lights-outs
Preset 4 Display



Preset 1 Display (ANC ON)



Preset 1 Display (ANC OFF)



If Bus faulty indicated, check for loose or poor connections.

How to check the active noise control system in this check mode

- With the engine stopped and while in DIAG mode, turn the ANC ON to OFF by pressing the No. 1 button, a low-frequency hum (50 Hz) should sound for about a minute.
 - If the hum does not sound, check for an open in the wire between the active noise control unit and the audio unit.
 - If the hum does not sound for minute, check for an open in the wire between the active noise control unit and the microphone.
- Start the engine while the hum is sounding, the hum should stop. If the hum does not stop, check for an open in the wire (NEP line) between the active noise control unit and the PCM.



Error Codes

The audio system displays error codes when a problem is detected with the disc changer, the disc, the XM radio, or the anti-theft code.

Error Code Displayed	Possible Cause	Solution
DISC	Cannot read disc.	Eject the disc and try another one.
DISC ERROR	There is a problem with the disc player. A common problem is disc labels coming off the disc in the player.	Try to eject the disc and try another one. If there is still a problem, replace the audio unit.
DISC FORMAT	A disc was inserted that has a format that is not recognized.	Eject the disc and try another one.
DISC-H	Disc player is hot. This can happen if the vehicle is parked out in the hot sun all day.	Park the vehicle in a cooler place for awhile and try the disc player again. If the error code is still present, try another disc. If the error code is still present, replace the audio unit.
LOADING	XM radio is acquiring audio or program information.	Wait until the radio has received the information.
XM OFF AIR	XM channel not in service.	Try another XM channel.
XM NO SIGNAL	Loss of signal.	Both terrestrial and satellite antennas have lost signal. Park the vehicle outside with a clear view of the southern horizon.
XM UPDATING	XM radio is receiving information update from the network.	This message will disappear once the update is done.
XM ANTENNA	XM antenna error.	Repair the open or short in the terrestrial or satellite antenna. Substitute the XM antenna and recheck. If the error is gone, replace the original XM antenna. If the error is still present, replace the antenna lead.
-----	No signal from XM.	Check known-good vehicle with XM radio. If the known-good vehicle has the same symptoms, contact XM at (800) 852-9090.
ERR 1	Anti-theft code mismatch (1 st try).	Enter the correct anti-theft code.
ERRE	Anti-theft code mismatch (10 th try).	Remove fuse No. 5 (20 A) in the under-dash fuse/relay box, then reinsert it. You will have 10 more tries to enter the correct anti-theft code.

Audio System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Poor radio reception or interference	Symptom Troubleshooting (see page 23-25)	Antenna lead short or open in the wire
Disc changer does not move between discs (with navigation)	Symptom Troubleshooting (see page 23-27)	
Radio preset memory is lost	Symptom Troubleshooting (see page 23-28)	• Battery condition • Battery cable condition
XM radio preset memory is lost	Symptom Troubleshooting (see page 23-29)	
Power will not turn OFF	Symptom Troubleshooting (see page 23-30)	
No sound is heard from speakers (display is normal)	Symptom Troubleshooting (see page 23-30)	
Poor or no sound with XM radio	Symptom Troubleshooting (see page 23-32)	
XM radio display is blank and no station information is displayed	Symptom Troubleshooting (see page 23-33)	
Disc does not play	Symptom Troubleshooting (see page 23-35)	
Disc skips	Symptom Troubleshooting (see page 23-35)	Tire pressure (over inflated)
Radio remote switch does not work properly	Symptom Troubleshooting (see page 23-36)	
Volume does not change (with navigation)	Symptom Troubleshooting (see page 23-38)	
Volume does not change (without navigation)	Symptom Troubleshooting (see page 23-39)	
Disc does not load	Symptom Troubleshooting (see page 23-40)	
Disc does not eject (with navigation)	Symptom Troubleshooting (see page 23-41)	
Disc does not eject (without navigation)	Symptom Troubleshooting (see page 23-42)	
Disc changer does not load all six discs (with navigation)	Symptom Troubleshooting (see page 23-43)	
Audio-HVAC display module switches do not work	Symptom Troubleshooting (see page 23-43)	
Disc LED does not turn ON or OFF	Symptom Troubleshooting (see page 23-44)	
Power switch will not turn ON (with navigation)	Symptom Troubleshooting (see page 23-45)	
Power switch will not turn ON (without navigation)	Symptom Troubleshooting (see page 23-47)	
Display is missing information (without navigation)	Symptom Troubleshooting (see page 23-48)	
Audio-HVAC subdisplay/clock does not display (with navigation)	Symptom Troubleshooting (see page 23-49)	
Audio display and controls are dim, no back lighting (LCD segments can be read)	Symptom Troubleshooting (see page 23-50)	
No display appears on the screen (LCD segments cannot be read)	Symptom Troubleshooting (see page 23-51)	
Security indicator does not work properly	Symptom Troubleshooting (see page 23-51)	



Symptom Troubleshooting

Poor radio reception or interference

NOTE: Check the radio reception in an open area. Poor reception/interference can be caused by the following:

- The radio station is far away.
- A tall building, a mountain, or high-voltage power line is nearby.

1. Do the seek stop test (see page 23-65)

Is the test vehicle within 10 % of the known-good vehicle?

YES—Multipath interference or weak station.
Operation is normal. ■

NO—Go to step 2.

2. Check if the radio reception/interference is the same in several locations.

Is the reception/interference the same?

YES—Go to step 3.

NO—Multipath interference or weak station.
Operation is normal. ■

3. Check to see if the problem is interference while the engine is running.

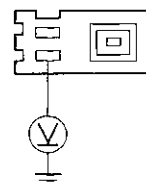
Is there noise with the engine running?

YES—Check the antenna and radio grounds. If OK, check the charging system and the ignition system. ■

NO—Go to step 4.

4. Disconnect the antenna cable 3P connector from the antenna mast (see page 23-75).
5. Measure the voltage between the antenna cable connector No. 3 terminal at the antenna mast lead and body ground.

ANTENNA MAST 3P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 6.

NO—Faulty antenna cable. ■

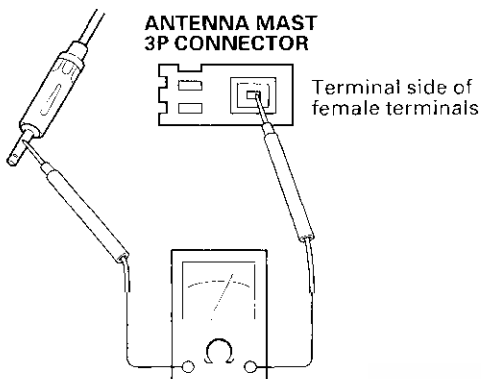
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

6. Remove the audio-HVAC display module (see page 23-69), and disconnect the antenna lead.

7. Check for continuity between the antenna cable center pin at the audio unit lead and the antenna cable 3P connector No. 1 terminal at the antenna mast lead.

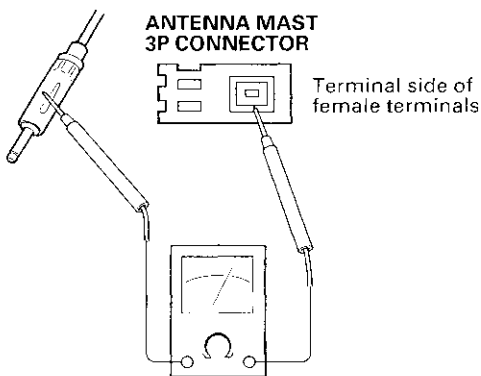


Is there continuity?

YES—Go to step 8.

NO—Replace the antenna cable. ■

8. Check for continuity between the shield surface of the audio unit lead and the antenna cable 3P connector No. 2 terminal of the antenna mast lead.

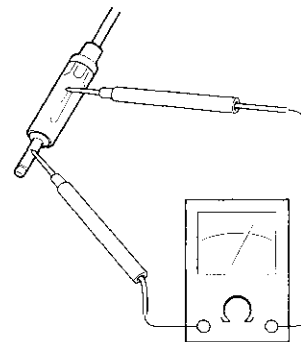


Is there continuity?

YES—Go to step 9.

NO—Replace the antenna cable. ■

9. Check for continuity between the antenna cable center pin and the surface of the antenna lead.



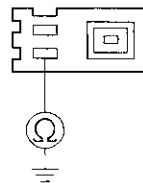
Is there continuity?

YES—Go to step 10.

NO—Replace the antenna mast and recheck. If the reception is still poor, replace the audio unit. ■

10. Check for continuity between the antenna mast 3P connector No. 3 terminal and body ground.

ANTENNA MAST 3P CONNECTOR



Terminal side of female terminals

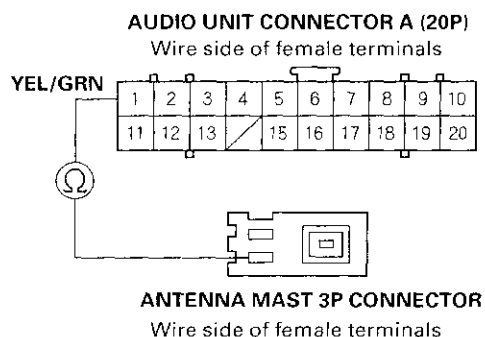
Is there continuity?

YES—Replace the antenna lead. ■

NO—Go to step 11.



11. Disconnect the audio unit connector A (20P) from the audio-HVAC display.
12. Check for continuity between audio unit connector A (20P) terminal No. 1 and antenna mast 3P connector No. 3 terminal.



Is there continuity?

YES—Substitute a known-good audio-HVAC display module and retest. ■

NO—Repair the open in the wire between the audio unit and the antenna mast. ■

Disc changer does not move between discs (with navigation)

1. Insert the CDs into the audio unit and see if the changer moves between CDs.

Does the changer operate normally?

YES—Intermittent failure, the CD changer is OK at this time. ■

NO—Go to step 2.

2. Insert six different CDs into the audio unit.

Does the changer operate normally?

YES—At least one of the original CDs is faulty. ■

NO—Replace the audio unit (see page 23-71). ■

Audio System

Symptom Troubleshooting (cont'd)

Radio preset memory is lost

1. Set each of the radio station preset buttons.

Do each of the preset buttons set properly?

YES—Go to step 2.

NO—Replace the audio-HVAC display module (see page 23-69). ■

2. Turn the ignition switch OFF for 1 minute, then turn it back to ON (II).

3. Test all the preset buttons for proper recall operation.

Do the preset buttons recall the set radio stations?

YES—System is normal at this time. Check connections at the audio unit. ■

NO—Go to step 4.

4. Inspect the under-dash fuse/relay box No. 5 (10 A) fuse.

Is it OK?

YES—Go to step 5.

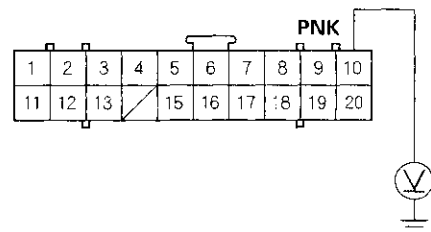
NO—Replace the fuse and reset. If it fails again, repair the short to ground in the harness. ■

5. Remove the audio-HVAC display module (see page 22-69).

6. Turn the ignition switch ON (II).

7. Measure voltage between the audio unit connector A (20P) terminal No. 10 and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

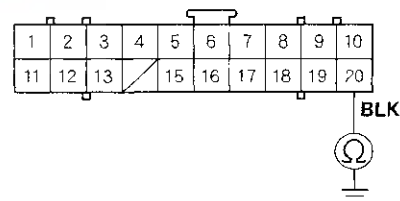
Is there battery voltage?

YES—Go to step 8.

NO—An open wire between the under-dash fuse/relay box and audio unit A10 terminal. ■

8. Check for continuity between the audio unit connector A (20P) terminal No. 20 and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Replace the audio-HVAC display module. ■

NO—An open wire between the audio unit A20 terminal and body ground (G504). ■



XM radio preset memory is lost

1. Set each of the XM radio channel preset buttons.

Do each of the XM radio channel preset buttons set properly?

YES—Go to step 2.

NO—Replace the audio-HVAC display module (see page 23-69). ■

2. Turn OFF the ignition switch for 1 minute, then turn it back to ON (II).
3. Test all of the XM radio channel preset buttons for proper recall operation.

Do the preset buttons recall the set radio stations?

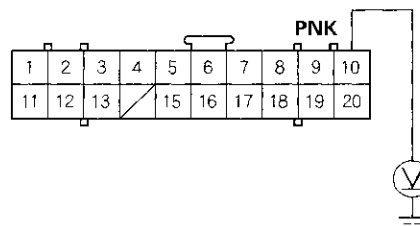
YES—System is normal at this time. Check connections at the audio unit. ■

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Measure voltage between audio unit connector A (20P) No. 10 terminal and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

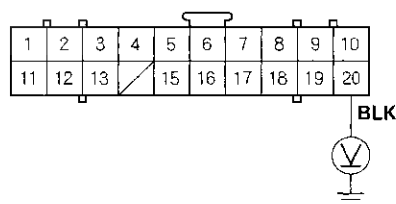
Is there battery voltage?

YES—Go to step 6.

NO—Repair an open in the wire between the driver's under-dash fuse/relay box and audio unit connector A (20P) No. 10 terminal. ■

6. Check for voltage between audio unit connector A (20P) No. 20 terminal and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Replace the audio unit. ■

NO—Repair an open in the wire between audio unit connector A (20P) No. 20 terminal and body ground (G504). ■

Audio System

Symptom Troubleshooting (cont'd)

Power will not turn OFF

1. With the ignition switch ON (II), push the power switch OFF, or turn the ignition switch OFF to see if the audio unit turns OFF.

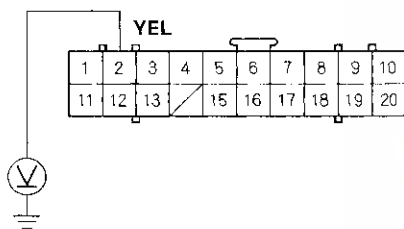
Is the audio unit OFF?

YES—Operation is normal. ■

NO—Go to step 2.

2. Turn the ignition switch OFF.
3. Remove the audio unit (see page 23-71).
Disconnect the audio unit connector A (20P).
4. Measure the voltage between the No. 2 terminal of the audio unit connector A (20P) and body ground.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there voltage?

YES—Check for short to power on YEL wire. ■

NO—Replace the audio unit. ■

No sound is heard from speakers (display is normal)

NOTE:

- Set the fader and balance positions to the center.
- Before performing symptom troubleshooting, check for power switch will not turn ON troubleshooting (see page 23-45).

1. Check that the volume button is not set to min level.

Is it at MIN level?

YES—Raise the volume level, and recheck the function. ■

NO—

- With navigation: Go to step 2.
- Without navigation: Go to step 3.

2. Check the NAVIGATION MUTE MODE.

Is the NAVIGATION MUTE MODE set?

YES—Cancel the NAVIGATION MUTE MODE by pressing the voice command button, and recheck the function. ■

NO—Go to step 3.

3. Check to see if there is a specific speaker that has no sound.

Is there a specific one?

YES—Go to step 4.

NO—Go to step 9.

4. Turn the ignition switch OFF.



5. Remove the speaker(s) with no sound (see page 23-73), and disconnect its connector.

6. Check the speaker with no sound for damage.

Is there any damage?

YES—Substitute the speaker and recheck. ■

NO—Go to step 7.

7. Check the speaker 2P connector for a loose or poor connection.

Reconnect the speaker 2P connector and recheck the symptom; does it still fail?

YES—Go to step 8.

NO—Operation is normal. ■

8. Measure the resistance between the No. 1 and No. 2 terminals of the speaker connector.

Is there about 4 Ω ?

YES—Go to step 9.

NO—Faulty speaker(s). ■

9. Remove the audio unit (see page 23-71).

10. Disconnect the audio unit connector A (20P).

11. Check the resistance between the following terminals of audio unit connector A (20P).

Speaker	Terminal	Wire color
Driver's door speaker, Left tweeter	A8 (+)	GRN/BLK
	A18 (—)	LT GRN
Front passenger's door speaker, Right tweeter	A7 (+)	GRN/YEL
	A17 (—)	GRY
Left rear speaker	A6 (+)	BLU/WHT
	A16 (—)	BLU/BLK
Right rear speaker	A5 (+)	PNK
	A15 (—)	BLU/YEL

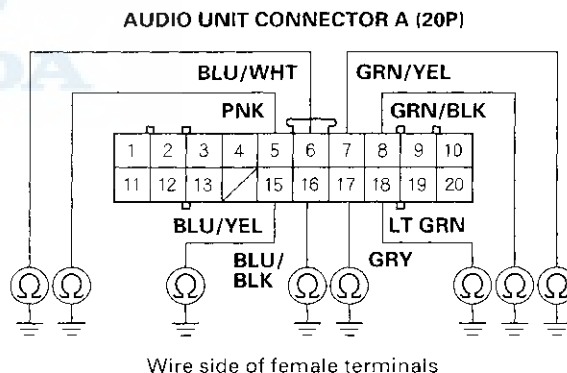
Is there more than 4 Ω ?

YES—Go to step 12.

NO—Repair an open in the wire between the audio unit and speaker. ■

12. Disconnect the speaker 2P connector.

13. Check for continuity between body ground and audio unit connector A (20P) terminals No. 5, 6, 7, 8, 15, 16, 17, and 18 individually.



Is there continuity?

YES—Repair short to ground in the wire between the audio unit and speaker. ■

NO—Substitute a known-good audio unit and recheck. If the symptom/indication goes away, replace the original audio unit. ■

Audio System

Symptom Troubleshooting (cont'd)

Poor or no sound with XM radio

NOTE: Check the radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines are nearby.

1. Turn the ignition switch to ACC (I).
2. Turn on the audio unit and select XM radio.
3. Check for an error message on the display.

Is there any message displayed?

YES—Go to error code list (see page 23-23). ■

NO—Go to step 4.

4. Disconnect audio unit connector B (14P).
5. Check for continuity between XM receiver connector A (14P) and body ground according to the table.

XM receiver connector	Wire color
A6	BLU
A14	WHT
A5	GRN
A13	RED
A9	BLU
A10	RED
A2	LT BLU

Is there continuity?

YES—Repair a short to ground in the wire between the audio unit and the XM receiver. ■

NO—Go to step 6.

6. Check for continuity between XM receiver connector A (14P) and audio unit connector B (14P) according to the table.

XM receiver connector	Audio unit connector	Wire color
A6	B6	BLK, GRY
A14	B14	WHT, LT GRN
A5	B5	GRN, ORN
A13	B13	RED, PUR
A9	B9	BLU
A10	B10	RED, GRN
A11	B11	BLK
A2	B2	LT BLU

Is there continuity?

YES—Substitute a known-good XM receiver, then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the audio unit. ■

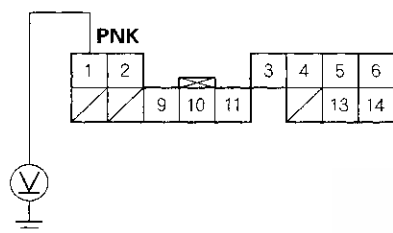
NO—Repair open in the wire between audio unit and XM receiver. ■



XM radio display is blank and no station information is displayed

1. Turn the ignition switch to LOCK (0).
2. Disconnect XM receiver connector A (14P).
3. Turn the ignition switch to ACC (I).
4. Check the voltage between XM receiver connector A (14P) No. 1 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

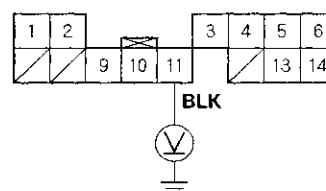
Is there battery voltage?

YES—Go to step 5.

NO—Repair an open in the wire between fuse No. 5 (10 A) under-dash fuse/relay box and XM receiver connector A (14P) No. 1 terminal. ■

5. Check for voltage between XM receiver connector A (14P) No. 11 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 6.

NO—Repair an open in the wire between XM receiver connector A (14P) No. 11 terminal and audio unit connector B (14P) No. 11 terminal. ■

6. Turn the ignition switch to LOCK (0).

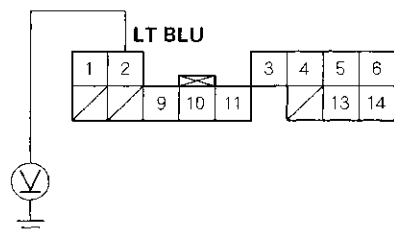
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

7. Check the voltage between XM receiver connector A (14P) No. 2 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there 10 V or more present?

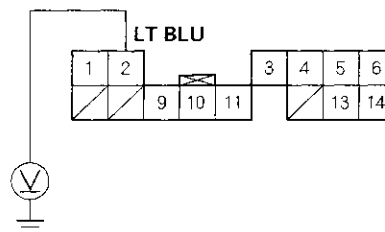
YES—Go to step 8.

NO—Substitute a known-good XM receiver and recheck. If 10 V or more are present, replace the original XM receiver. ■

8. Turn the ignition switch ON (II).

9. Check the voltage between XM receiver connector A (14P) No. 2 terminal and body ground.

XM RECEIVER CONNECTOR A (14P)



Wire side of female terminals

Is there less than 0.1 V?

YES—Substitute a known-good XM receiver, then reconnect all connectors and recheck. If the symptom/indication goes away, replace the original XM receiver. If symptom/indication is still present, replace the audio unit. ■

NO—Substitute a known-good audio unit and recheck. If 0.5 V or less are present, replace the original audio unit. ■



Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Disc does not play

1. Try loading a disc.

Does the disc load?

YES—Go to step 2.

NO—Go to disc does not load (see page 23-40). ■

2. Insert another disc to see if the symptom can be duplicated.

Does the disc play?

YES—Operation is normal. ■

NO—Go to step 3.

3. Insert audio diagnostic CD (T/N 07AAZ-SDBA100) in the audio unit.

Does the disc play?

YES—The original disc is faulty or has an unreadable format. ■

NO—Replace the audio unit (see page 23-71). ■

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Disc skips

1. Confirm the vehicle's tires are properly inflated.

2. Check customer's CD for scratches, fingerprints, and marks.

NOTE: The following test should be performed with the audio unit bass and treble set to customer's listening preference. When comparing to known-good vehicles, comparison should be performed on same model and trim level.

3. Test-drive to identify when customer's CD skipping occurs. The audio diagnostic CD (T/N: 07AAZ-SDBA100) can be used if customer's CD is not available. Use tracks 10–12.

Does the skipping occur?

YES—Go to step 4.

NO—Operation is normal. ■

4. Compare the customer's CD that is skipping to a known-good vehicle under the same conditions.

Does the CD skip in the known-good vehicle under the same conditions?

YES—Operation is normal. ■

NO—Go to step 5.

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

5. With the vehicle parked and the engine running, insert the diagnostic skip test CD (07AAZ-SDBA300). Play tracks 2—11 and note the track number(s) the CD starts skipping. Do the same test on a known-good vehicle.

Does the CD skip on same track(s) number as the known-good vehicle?

YES—Operation is normal. ■

NO—Go to step 6.

6. Insert the diagnostic skip test CD (07AAZ-SDBA200) play tracks 7—11 and tracks 13—15 and note the track number(s) the CD starts skipping. Perform the same test on a known-good vehicle.

Does the CD skip on same track(s) number as known-good vehicle?

YES—Operation is normal. ■

NO—Replace the audio unit (see page 23-71). ■

Radio remote switch does not work properly

1. Test the radio remote switch (see page 23-75).

Is the radio remote switch OK?

YES—Intermittent failure, the radio remote switch and audio unit is OK at this time. ■

NO—Go to step 2.

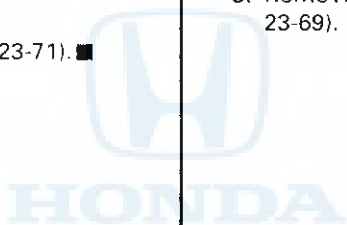
2. Check the audio unit operation (volume up, volume down, CH (—), CH (+), MODE).

Is the audio unit operation OK?

YES—Go to step 3.

NO—Replace the audio unit (see page 23-71), and recheck. ■

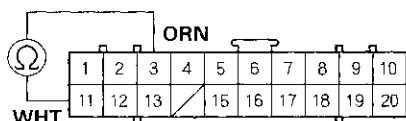
3. Remove the audio-HVAC display module (see page 23-69).





4. Measure resistance between the No. 3 and No. 11 terminals of the audio unit connector (20P). The resistance should be as shown in the table.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

RADIO REMOTE SWITCH TABLE

Button held down	VOL DOWN	VOL UP	CH (-)	CH (+)	MODE	(NONE)
Resistance	about 100 Ω	about 360 Ω	about 780 Ω	about 1.7 k Ω	about 3.7 k Ω	10 k Ω

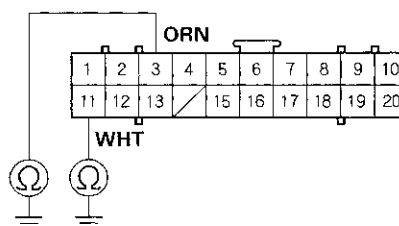
Is resistance OK?

YES—Go to step 5.

NO—Repair open or high resistance in the circuit between the audio unit and the radio remote switch. If the wires are OK, replace the cable reel (see page 24-150). ■

5. Check for continuity between the No. 3 terminal of the audio unit connector A (20P) and body ground, and between the No. 11 terminal and body ground. There should be no continuity.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Repair the short to body ground in the circuit between the audio unit and the radio remote switch. If the wires are OK, replace the cable reel (see page 24-150). ■

NO—Replace the audio unit (see page 23-71). ■

Audio System

Symptom Troubleshooting (cont'd)

Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness A&B (Alpine) 070AZ-SDAA100

Volume does not change (with navigation)

1. Set the fader and balance position to the center.
2. Operate the volume knob to see if the volume changes accordingly.

Does it change?

YES—Operation is normal. ■

NO—Go to step 3.

3. Operate the volume knob to see if the LCD display changes accordingly.

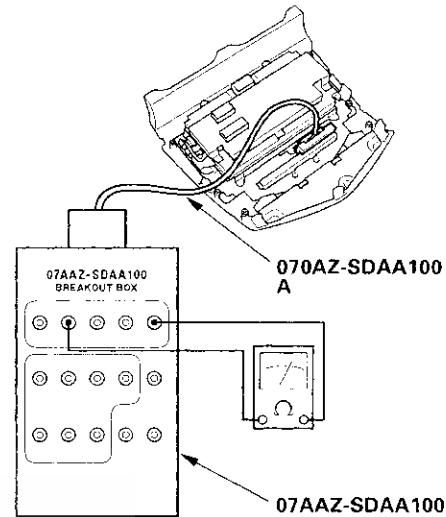
Does it change?

YES—Replace the audio unit (see page 23-71). ■

NO—Go to step 4.

4. Remove the audio unit (see page 23-71).
5. Connect test harness (070AZ-SDAA100) test harness A to radio test harness breakout box (07AAZ-SDAA100).

6. Connect the test harness (070AZ-SDAA100) PTN-1 (A) connector to the printed circuit board connector.



7. Connect the ohm meter to the breakout box (07AAZ-SDAA100) GND terminal and VOL+ terminal.
8. Turn the volume knob clockwise one click at a time. The resistance should change as follows with each turn of the knob:
1.0 Ω → infinity → 1.0 Ω → infinity → 1.0 Ω

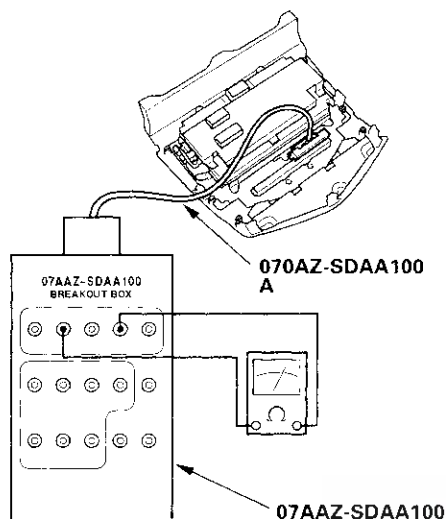
Does the resistance change as indicated?

YES—Go to step 9.

NO—Replace the audio-HVAC display panel (see page 23-71). ■



9. Connect the ohm meter to the breakout box (07AAZ-SDAA100) GND terminal and VOL— terminal.



10. Turn the volume knob clockwise one click at a time. The resistance should change as follows with each turn of the knob:
1.0 k Ω → infinity → 1.0 k Ω → infinity → 1.0 k Ω

Does the resistance change as indicated?

YES—Replace the audio unit (see page 23-71). ■

NO—Replace the audio-HVAC display panel (see page 23-71). ■

Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness (Stanley) 070AZ-SDAA200

Volume does not change (without navigation)

1. Set the fader and balance position to the center.
2. Operate the volume knob to see if the volume changes accordingly.

Does it change?

YES—Operation is normal. ■

NO—Go to step 3.

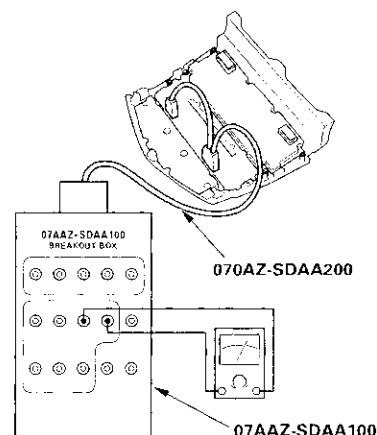
3. Operate the volume knob to see if the LCD display changes accordingly.

Does it change?

YES—Replace the audio unit (see page 23-71). ■

NO—Go to step 4.

4. Remove the audio unit (see page 23-71).
5. Connect the test harness (070AZ-SDAA200) to the radio test harness breakout box (07AAZ-SDAA100).
6. Connect the test harness (070AZ-SDAA200) connectors to the printed circuit board connector.



7. Connect the ohm meter to the breakout box (07AAZ-SDAA200 adapter) GND terminal and VOL—A terminal.

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

8. Turn the volume knob clockwise one click at a time. The resistance should change as follows with each turn of the knob:

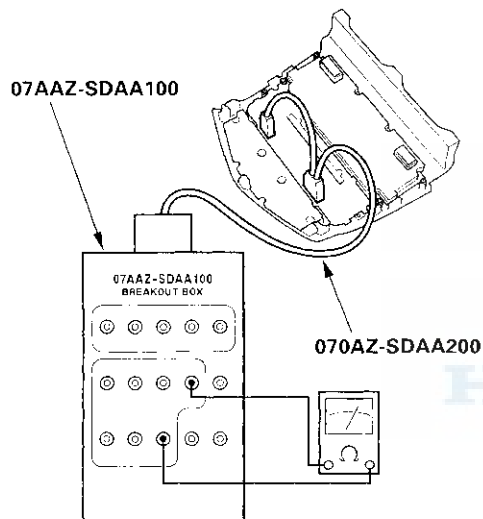
0 k Ω \rightarrow infinity \rightarrow 0 k Ω \rightarrow infinity \rightarrow 0 k Ω

Does the resistance change as indicated?

YES—Go to step 9.

NO—Replace the audio-HVAC display panel (see page 23-71). ■

9. Connect the ohm meter to the breakout box (07AAZ-SDAA200 adapter) GND terminal and VOL-B terminal.



10. Turn the volume knob clockwise one click at a time. The resistance should change as follows with each turn of the knob:

0 k Ω \rightarrow infinity \rightarrow 0 k Ω \rightarrow infinity \rightarrow 0 k Ω

Does the resistance change as indicated?

YES—Replace the audio unit (see page 23-71). ■

NO—Replace the audio-HVAC display panel (see page 23-71) ■

Disc does not load

1. Insert a Disc to see if the symptom can be duplicated.

Does the Disc load?

YES—Operation is normal. If the Disc loads normally, but will not play, go to Disc does not play (see page 23-35). ■

NO—Go to step 2.

2. Insert another Disc.

Does the Disc load?

YES—The original Disc is faulty. ■

NO—Replace audio unit. ■



Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness A&B (Alpine) 070AZ-SDAA100

Disc does not eject (with navigation)

NOTE: Inspect the quality of the Discs, and make sure there are no adhesive labels applied to them.

1. Check to see if the CD is ejected correctly by pushing the EJECT button.

Is it normal?

YES—Operation is normal. ■

NO—Go to step 2.

2. Check to see if the disc is ejected with some binding or does not ejected at all.

Does the disc bind when it ejects?

YES—Go to step 3.

NO—Go to step 4.

3. Replace the disc with a different one and recheck.

Does the problem continue?

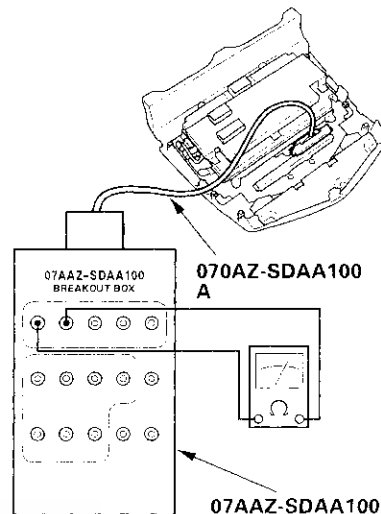
YES—Faulty audio unit. ■

NO—Faulty disc. ■

4. Remove the audio unit (see page 23-71).

5. Connect the test harness (070AZ-SDAA100) to the radio test harness breakout box (07AAZ-SDAA100).

6. Connect the test harness connector to the printed circuit board connector of the audio unit.



7. Connect the ohm meter to the breakout box (07AAZ-SDAA100 adapter) EJECT and GND terminals.

8. Press the EJECT button and check for continuity between the EJECT and GND terminals.

Is there continuity?

YES—Replace the audio unit. ■

NO—Replace the audio-HVAC display panel (see page 23-71). ■

Audio System

Symptom Troubleshooting (cont'd)

Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness (Stanley) 070AZ-SDAA200

Disc does not eject (without navigation)

NOTE: Inspect the quality of the Discs, and make sure there are no adhesive labels applied to them.

1. Check to see if the CD disc is ejected correctly by pushing the EJECT button.

Is it normal?

YES—Operation is normal. ■

NO—Go to step 2.

2. Check to see if the disc is ejected with some binding or does not ejected at all.

Does the disc bind when it ejects?

YES—Go to step 3.

NO—Go to step 4.

3. Replace the disc with a different one and recheck.

Does the problem continue?

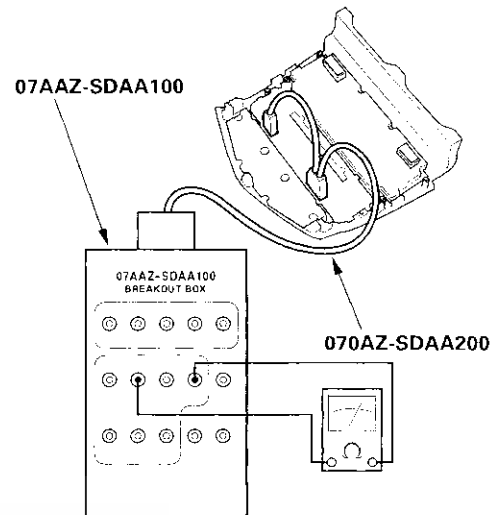
YES—Replace audio unit. ■

NO—Faulty CD disc. ■

4. Remove the audio unit (see page 23-71).

5. Connect the test harness (070AZ-SDAA200) to the radio test harness breakout box (07AAZ-SDAA100).

6. Connect the test harness connectors to the printed circuit board connector of the audio unit.



7. Connect the ohm meter to the breakout box (07AAZ-SDAA200) EJECT and GND terminals.

8. Push the EJECT button and check for continuity between the EJECT and GND terminals.

Is there continuity?

YES—Go to step 9.

NO—Replace the audio-HVAC display panel (see page 23-71). ■

9. Check the connections between the audio-HVAC display panel and the audio unit.

Are the connections OK?

YES—Replace the audio unit. ■

NO—Reinstall the audio-HVAC display panel onto the audio unit, and check the problem. ■



Disc changer does not load all six Discs (with navigation)

NOTE: Disc labels should not be used in the audio unit. They may damage the player mechanism.

1. Try loading six discs into the audio unit.

Does the audio unit accept all six disks?

YES—Intermittent failure, the audio unit is OK at this time. ■

NO—Go to step 2.

2. Try loading the disc player with six known-good discs.

Does the audio unit accept all six disks?

YES—At least one of the original discs is faulty. ■

NO—Replace audio unit (see page 23-71). ■

Audio-HVAC display module switches do not work

NOTE: In order to troubleshoot the main power switch, go to "Power switch will not turn on" (see page 23-47).

1. Refer to the following switch list, and find the appropriate switch for each button. Then perform the following test to identify the switch that does not work by operating various buttons which only belong to that switch.

Switch List:

Switch A: AM/FM, CD/AUX, SCAN, SEEK/SKIP, UP/DOWN, CH/DISC UP/DOWN, LOAD, EJECT

Switch B: INFO, MAP, MENU, JOY, CANCEL, SET UP, ZOOM UP/DOWN

Switch C: TUNE Push MODE

Switch D: TEMPERATURE CONTROL, AUTO, OFF, DEF, RECIRCULATION, REAR DEF, DUAL

Switch E: AUDIO

Switch F: A/C

2. Check to see if the buttons that do not function all belong to switch A.

Are they all switch A's?

YES—Faulty audio-HVAC display panel and audio unit. Replace the audio-HVAC display module (see page 23-69). ■

NO—Go to step 3.

3. Check to see if the buttons that do not function all belong to switch B.

Are they all switch B's?

YES—Faulty audio-HVAC display panel and audio unit. Replace the audio-HVAC display module (see page 23-69). ■

NO—Go to step 4.

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

4. Check to see if the buttons that do not function all belong to switch C.

Are they all switch C's?

YES—Faulty audio-HVAC display panel and audio unit. Replace the audio-HVAC display module (see page 23-69). ■

NO—Go to step 5.

5. Check to see if the buttons that do not function all belong to switch D.

Are they all switch D's?

YES—Faulty audio-HVAC display panel, audio unit and navigation display. Replace the audio-HVAC display panel (see page 23-71). ■

NO—Go to step 6.

6. Check to see if the buttons that do not function all belong to switch E.

Are they all switch E's?

YES—Faulty audio-HVAC display panel, audio unit and navigation display. Replace the audio-HVAC display module (see page 23-69). ■

NO—Go to step 7.

7. Check to see if the button that do not function all belong to switch F.

Are they all switch F's?

YES—Faulty audio-HVAC display panel, climate control unit and navigation display. Replace the audio-HVAC display module (see page 23-69). ■

NO—Replace the audio-HVAC display panel (see page 23-71). ■

Disc LED does not turn ON or OFF

1. Check the disc load indicator.

- Green indicator: Ready to load disc.
- Red indicator: Loading on unloading disc.

Does the indicator work properly?

YES—Operation is normal. ■

NO—Replace the audio unit (see page 23-71). ■



Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness A&B (Alpine) 070AZ-SDAA100

Power switch will not turn ON (with navigation)

1. With the ignition switch ON (II), push the power switch ON to see if the audio unit turns ON.

Does the power turn on?

YES—Operation is normal. ■

NO—Go to step 2.

2. Turn the ignition switch OFF, then check the No. 5 (10 A) and No. 32 (7.5 A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 3.

NO—Replace the fuse(s) and recheck. ■

3. Remove the audio-HVAC display module (see page 23-69). Check that audio unit connector A (20P) is properly connected.

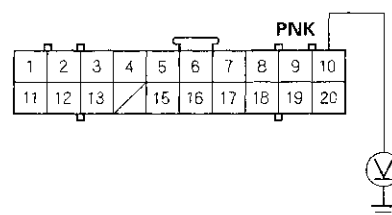
Is it connected properly?

YES—Go to step 4.

NO—Reconnect the connector, and recheck the function. ■

4. Measure voltage between audio unit connector A (20P) terminal No. 10 and body ground. There should be battery voltage.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

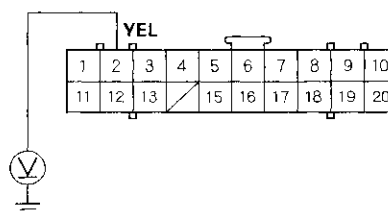
YES—Go to step 5.

NO—Repair the open circuit or poor connection in the wire between the under-dash fuse/relay box No. 5 (10 A) fuse and audio unit connector A terminal No. 10. ■

5. Turn the ignition switch ON (II).

6. Measure the voltage between the audio unit connector A (20P) terminal No. 2 and body ground. There should be battery voltage.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 7.

NO—Repair the open circuit or poor connection in the wire between the under-dash fuse/relay box No. 32 (7.5 A) fuse and audio unit connector A terminal No. 2. ■

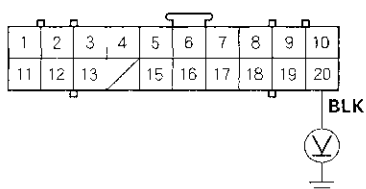
(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

7. With the ignition switch ON, check for voltage between audio unit connector A terminal No. 20 and body ground. There should be less than 0.1 V.

AUDIO UNIT CONNECTOR A (20P)



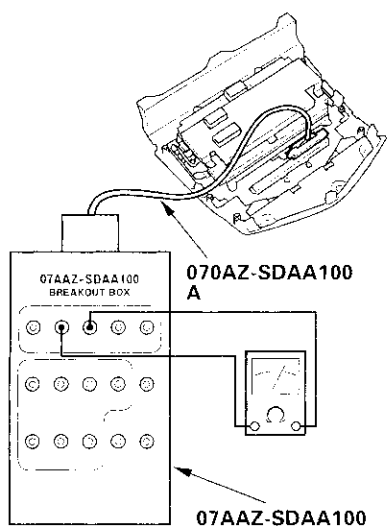
Wire side of female terminals

Is there less than 0.1 V?

YES—Go to step 8.

NO—Repair the open wire between audio unit connector A20 and body ground (G504). ■

8. Remove the audio unit (see page 23-71).
9. Connect the test harness (070AZ-SDAA100) to the radio test harness breakout box (07AAZ-SDAA100).
10. Connect the test harness connector to the printed circuit board connector on the audio unit.



11. Connect the ohm meter to the breakout box (07AAZ-SDAA100 adapter) POWER and GND terminals.

12. Push the POWER button and check for continuity between the POWER and GND terminals.

Is there continuity?

YES—Replace the audio unit. ■

NO—Replace the audio-HVAC display panel (see page 23-71). ■



Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness (Stanley) 070AZ-SDAA200

Power switch will not turn ON (without navigation)

1. With the ignition switch ON (II), push the power switch ON to see if the audio unit turns ON.

Does the power turn on?

YES—Operation is normal. ■

NO—Go to step 2.

2. Turn the ignition switch OFF, then check the No. 5 (10 A) and No. 32 (7.5 A) fuses in the under-dash fuse/relay box.

Are the fuses OK?

YES—Go to step 3.

NO—Replace the fuse(s) and recheck. ■

3. Remove the audio-HVAC display module (see page 23-69). Check that audio unit connector A (20P) is properly connected.

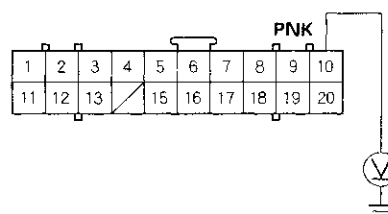
Is it connected properly?

YES—Go to step 4.

NO—Reconnect the connector, and recheck the function. ■

4. Measure voltage between audio unit connector A (20P) terminal No. 10 and body ground. There should be battery voltage.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

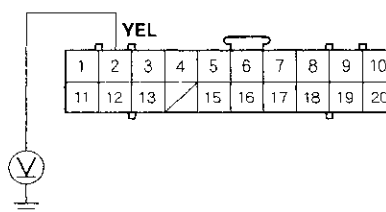
YES—Go to step 5.

NO—Repair the open circuit or poor connection in the wire between the under-dash fuse/relay box No. 5 (10A) fuse and the audio unit connector A10 terminal. ■

5. Turn the ignition switch ON (II).

6. Measure the voltage between the audio unit connector A (20P) terminal No. 2 and body ground. There should be battery voltage.

AUDIO UNIT CONNECTOR A (20P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 7.

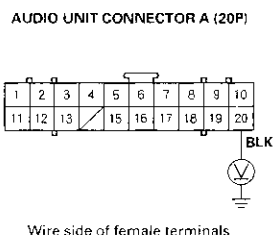
NO—Repair the open circuit or poor connection in the wire between the under-dash fuse/relay box No. 32 (7.5 A) fuse and audio unit connector A2 terminal. ■

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

7. With the ignition switch ON, check for voltage between audio unit connector A (20P) terminal No. 20 and body ground. There should be less than 0.1 V.

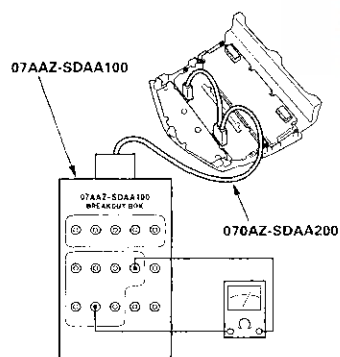


Is there less than 0.1 V?

YES—Go to step 8.

NO—Repair the open wire between audio unit connector A20 and body ground (G504). ■

8. Remove the audio unit (see page 23-71).
9. Connect the test harness (070AZ-SDAA200) to the radio test harness breakout box (07AAZ-SDAA100).
10. Connect the test harness connectors to the printed circuit board connector on the audio unit.



11. Connect the ohm meter to the breakout box (07AAZ-SDAA100) POW SW and GND terminals.
12. Push the POWER button and check for continuity between the POW SW and GND terminals.

Is there continuity?

YES—Replace the audio unit. ■

NO—Replace the audio-HVAC display panel (see page 23-71). ■

Special Tools Required

- Radio test harness breakout box 07AAZ-SDAA100
- Test harness (Stanley) 070AZ-SDAA200

Display is missing information (without navigation)

NOTE:

- A part of the A/C does not display.
- There is A/C information in the display.
- Wrong indication in LCD.

1. Repeat turning the ignition switch ON (II) and OFF to see if the problem appears.

Does the problem appear?

YES—Go to step 2.

NO—Operation is normal. ■

2. Remove the audio-HVAC display module (see page 23-69), and check for the proper connection of the connectors.

Is it connected properly?

YES—Go to step 3.

NO—Reconnect the connectors, and recheck the problem. ■

3. Check all A/C information in the LCD display.

Do all the indicators work?

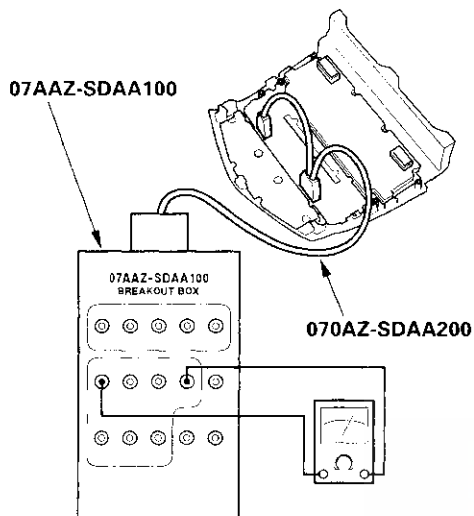
YES—Go to step 4.

NO—Replace the audio-HVAC display module. ■

4. Remove the audio unit (see page 23-71).



5. Connect test harness (070AZ-SDAA200) to the radio test harness breakout box (07AAZ-SDAA100).
6. Connect the test harness connectors to the printed circuit board connector on the audio unit.



7. Connect the ohm meter to the breakout box (07AAZ-SDAA200) AUTO/MANU and GND terminals.

Is there continuity?

YES—Faulty audio-HVAC display panel. ■

NO—Operation is normal. ■

Audio-HVAC subdisplay/clock does not display (with navigation)

1. Remove the audio-HVAC subdisplay/clock (see page 23-73).
2. Check the connections at the audio-HVAC subdisplay/clock 10P connector and the audio unit connector D (10P).

Are the connectors and terminals connected properly?

YES—Go to step 3.

NO—Repair the connection and recheck. ■

3. Check for continuity between the audio-HVAC subdisplay/clock 10P connector and the audio unit connector D (10P) terminals for each wire listed in the chart.

Wire	Audio-HVAC subdisplay/clock 10P connector terminal	Audio unit connector D (10P) terminal
BLU	2	2
YEL	4	4
PUR	5	5
ORN	6	6
BLU	7	7
GRY	8	8
BLK	1	1
RED	9	9
GRN	10	10
BLK	3	(body ground)

Is there continuity?

YES—Go to step 4.

NO—Repair the open in the wire between the audio unit and the audio-HVAC subdisplay/clock. ■

(cont'd)

Audio System

Symptom Troubleshooting (cont'd)

4. Check for continuity between each audio-HVAC subdisplay/clock 10P connector terminal and body ground.

Wire	Audio-HVAC subdisplay/clock 10P connector terminal
BLU	2
YEL	4
PUR	5
ORN	6
BLU	7
GRY	8
BLK	1
RED	9
GRN	10

Is there continuity?

YES—Repair the short to ground in the wire between the audio unit and the audio-HVAC subdisplay/clock. ■

NO—Go to step 5.

5. Substitute a known-good audio-HVAC subdisplay/clock and recheck.

Does the subdisplay work properly?

YES—Replace the original audio-HVAC subdisplay/clock. ■

NO—Substitute a known-good audio-HVAC display panel and retest. If the problem is gone, replace the original audio unit (see page 23-71). ■

Audio display and controls are dim, no back lighting (LCD segments can be read)

1. Repeat turning the ignition switch ON (II) and OFF to see if the back lighting returns.

Does the back lighting return?

YES—Operation is normal at this time. ■

NO—Go to step 2.

2. Shine a flashlight against the audio unit display.

Can the audio unit display information be seen?

YES—Replace the audio unit (see page 23-71).

NO—Go to no display appears on the screen (LCD segments can not be read) (see page 23-51)



No display appears on the screen (LCD segments cannot be read)

1. Repeat turning the ignition switch ON (II) and OFF to see if the LCD segments appear.

Do the LCD segments appear?

YES—Operation is normal. ■

NO—Go to step 2.

2. Remove the audio-HVAC display module (see page 23-69), and check for the proper connection of the audio unit connector A (20P).

Is it connected properly?

YES—Go to step 3.

NO—Reconnect the connector, and recheck the problem. ■

3. Check that the audio unit switches correctly respond to your operation.

Do they function correctly?

YES—Faulty audio unit; replace the audio unit (see page 23-71). ■

NO—Faulty audio-HVAC display panel; replace the audio-HVAC display panel (see page 23-71). ■

Security indicator does not work properly

1. Check if the operation of the security indicator when turning the ignition switch OFF.

Does the security indicator flash?

YES—Operation is normal. ■

NO—Go to step 2.

2. Check the operation of the radio station preset buttons.

Do the preset buttons set and keep their memory?

YES—Replace the audio unit (see page 23-71) ■

NO—Go to radio preset memory is lost (see page 23-28). ■

Audio System

Active Noise Control System Troubleshooting

Booming sound while driving

1. Turn the ignition switch ON (II).
2. Operate the audio unit, and check the function of the speakers.

Is sound heard from all of the speakers?

YES—Go to step 3.

NO—Go to no sound is heard from speakers (see page 23-30). ■

3. Turn the audio power switch OFF.
4. Perform the Self-diagnostic Procedure (see page 23-19).
5. Press the SCAN button (with navigation) or the "No. 1" button (without navigation).

Is the low-frequency hum heard?

YES—Go to step 6.

NO—Go to step 26.

6. Check that the low-frequency hum continues sounding for about 1 minute.

Does the low-frequency hum sound continue sounding for about 1 minute?

YES—Go to step 45.

NO—Go to step 7.

7. Check for the No. 32 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 8.

NO—Replace the fuse, and recheck. ■

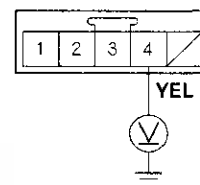
8. Turn the ignition switch OFF.

9. Disconnect the active noise control front microphone 5P connector and the active noise control rear microphone 4P connector from active noise control microphone harness.

10. Turn the ignition switch ON (II).

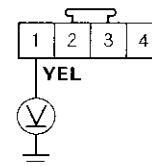
11. Check for voltage between the active noise control front or rear microphone 4P or 5P harness connector No. 4 (front) or No. 1 (rear) terminal and body ground.

ACTIVE NOISE CONTROL FRONT MICROPHONE HARNESS 5P CONNECTOR



Terminal side of male terminals

ACTIVE NOISE CONTROL REAR MICROPHONE HARNESS 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

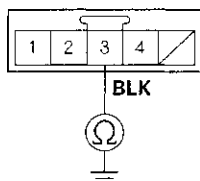
YES—Go to step 12.

NO—Repair an open in the wire between the No. 32 (7.5 A) in the under-dash fuse/relay box and the active noise control front or rear microphone 4P or 5P connector. ■



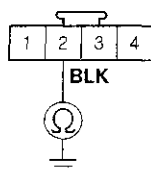
12. Check for continuity between the active noise control front or rear microphone 4P or 5P harness connector No. 3 (front) or No. 2 (rear) terminal and body ground.

**ACTIVE NOISE CONTROL FRONT MICROPHONE
HARNESS 5P CONNECTOR**



Terminal side of male terminals

**ACTIVE NOISE CONTROL REAR MICROPHONE
HARNESS 4P CONNECTOR**



Wire side of female terminals

Is there continuity?

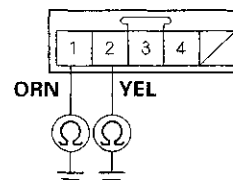
YES—Go to step 13.

NO—Repair an open in the wire between the active noise control front or rear microphone 4P or 5P connector and body ground (G601). ■

13. Turn the ignition switch OFF.

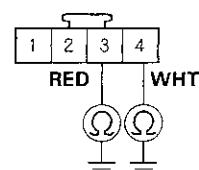
14. Check for continuity between body ground and the active noise control front or rear microphone 4P or 5P harness connector No. 1 and No. 2 (front) or No. 3 and No. 4 (rear) terminals individually.

**ACTIVE NOISE CONTROL FRONT MICROPHONE
HARNESS 5P CONNECTOR**



Terminal side of male terminals

**ACTIVE NOISE CONTROL REAR MICROPHONE
HARNESS 4P CONNECTOR**



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between body ground and the active noise control front or rear microphone 4P or 5P connector. ■

NO—Go to step 15.

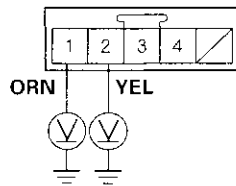
(cont'd)

Audio System

Active Noise Control System Troubleshooting (cont'd)

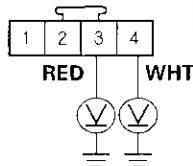
15. Reconnect the active noise control front and rear microphone connectors.
16. Turn the ignition switch ON (II).
17. Check for voltage between body ground and the active noise control front or rear microphone 4P or 5P harness connector No. 1 and No. 2 (front) or No. 3 and No. 4 (rear) terminals individually, while lightly tapping on the microphones.

ACTIVE NOISE CONTROL FRONT MICROPHONE HARNESS 5P CONNECTOR



Terminal side of male terminals

ACTIVE NOISE CONTROL REAR MICROPHONE HARNESS 4P CONNECTOR



Wire side of female terminals

Does the voltage change when the microphone is tapped?

YES—Go to step 18.

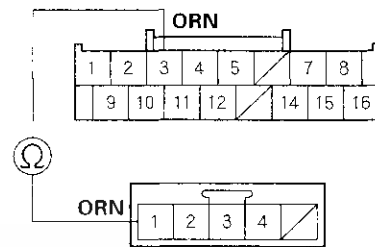
NO—Replace the active noise control front or rear microphone (see page 23-77). ■

18. Turn the ignition switch OFF.

19. Disconnect the active noise control unit 16P connector.
20. Disconnect the active noise control front microphone 5P connector.
21. Check continuity between the active noise control unit 16P connector No. 3 terminal and the active noise control front microphone 5P harness connector No. 1 terminal.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

Wire side of female terminals



ACTIVE NOISE CONTROL FRONT MICROPHONE HARNESS 5P CONNECTOR

Terminal side of male terminals

Is there continuity?

YES—Go to step 22.

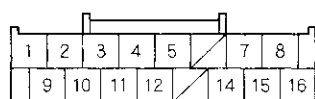
NO—Repair an open in the wire between the active noise control unit 16P connector No. 3 terminal and the active noise control front microphone 5P connector No. 1 terminal. ■



22. Check continuity between the active noise control unit 16P connector No. 11 terminal and the active noise control front microphone 5P harness connector No. 2 terminal.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

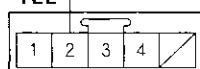
Wire side of female terminals



YEL



YEL



ACTIVE NOISE CONTROL FRONT MICROPHONE HARNESS 5P CONNECTOR

Terminal side of male terminals

Is there continuity?

YES—Go to step 23.

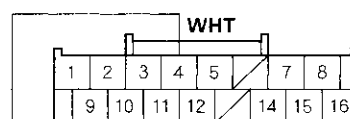
NO—Repair an open in the wire between the active noise control unit 16P connector No. 11 terminal and the active noise control front microphone 5P connector No. 2 terminal. ■

23. Disconnect the active noise control rear microphone 4P connector.

24. Check continuity between the active noise control unit 16P connector No. 4 terminal and the active noise control rear microphone 4P harness connector No. 4 terminal.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

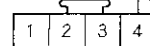
Wire side of female terminals



WHT



WHT



ACTIVE NOISE CONTROL REAR MICROPHONE HARNESS 4P CONNECTOR

Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair an open in the wire between the active noise control unit 16P connector No. 4 terminal and the active noise control rear microphone 4P connector No. 4 terminal. ■

(cont'd)

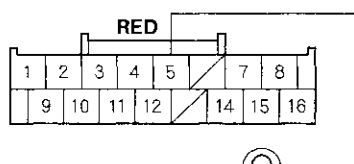
Audio System

Active Noise Control System Troubleshooting (cont'd)

25. Check continuity between the active noise control unit 16P connector No. 5 terminal and the active noise control rear microphone 4P harness connector No. 3 terminal.

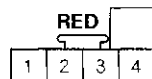
ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

Wire side of female terminals



ACTIVE NOISE CONTROL REAR MICROPHONE HARNESS 4P CONNECTOR

Wire side of female terminals



Is there continuity?

YES—Replace the active noise control unit (see page 23-76). ■

NO—Repair an open in the wire between the active noise control unit 16P connector No. 5 terminal and the active noise control rear microphone 4P connector No. 3 terminal. ■

26. Check for the No. 32 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

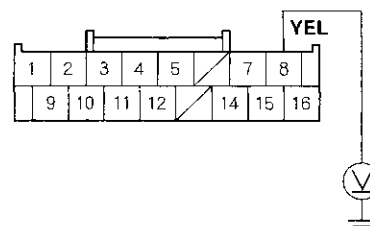
YES—Go to step 27.

NO—Replace the fuse, and recheck. ■

27. Disconnect the active noise control unit 16P connector.

28. Check for voltage between the active noise control unit 16P connector No. 8 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

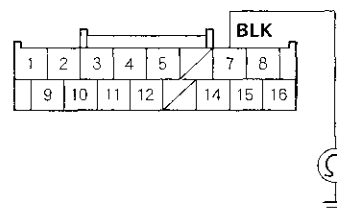
Is there battery voltage?

YES—Go to step 29.

NO—Repair an open in the wire between the No. 32 (7.5 A) in the under-dash fuse/relay box and the active noise control unit 16P connector No. 8 terminal. ■

29. Check for continuity between the active noise control unit 16P connector No. 7 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

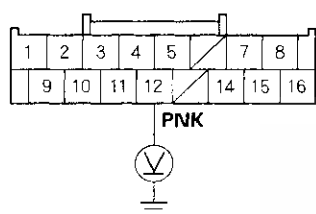
YES—Go to step 30.

NO—Repair an open in the wire between the active noise control unit 16P connector No. 7 terminal and body ground (G503). ■



30. Reconnect the active noise control unit 16P connector.
31. Perform the Self-diagnostic Procedure (see page 23-19).
32. Press the SCAN button (with navigation) or the "No. 1" button (without navigation).
33. Check for voltage between the active noise control unit 16P connector No. 12 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there about 5 V?

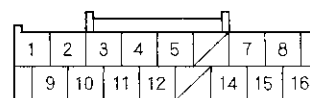
YES—Go to step 38.

NO—Go to step 34.

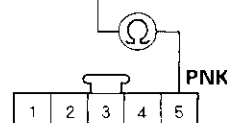
34. Turn the ignition switch OFF.
35. Disconnect the active noise control unit 16P connector and audio unit connector C (5P).
36. Check for continuity between the active noise control unit 16P connector No. 12 terminal and audio unit connector C (5 P) No. 5 terminal.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

Wire side of female terminals



PNK



AUDIO UNIT CONNECTOR C (5P)

Wire side of female terminals

Is there continuity?

YES—Go to step 37.

NO—Repair an open in the wire between the active noise control unit 16P connector No. 12 terminal and the audio unit connector C (5P) No. 5 terminal. ■

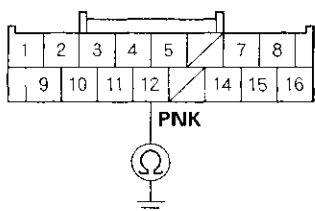
(cont'd)

Audio System

Active Noise Control System Troubleshooting (cont'd)

37. Check for continuity between body ground and the active noise control unit 16P connector No. 12 terminal.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between the active noise control unit 16P connector No. 12 terminal and audio unit connector C (6P) No. 5 terminal. ■

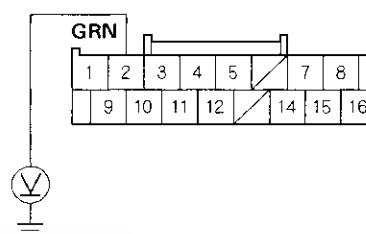
NO—Replace the audio unit (see page 23-71). ■

38. Perform the Self-diagnostic Procedure (see page 23-19).

39. Press and release the SCAN button (with navigation) or the "No. 1" button (without navigation).

40. Check for voltage between the active noise control unit 16P connector No. 2 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there about 2.5 V?

YES—Replace the audio unit (see page 23-71). ■

NO—Go to step 41.

41. Turn the ignition switch OFF.
42. Disconnect the the active noise control unit 16P connector and audio unit connector C (5P).

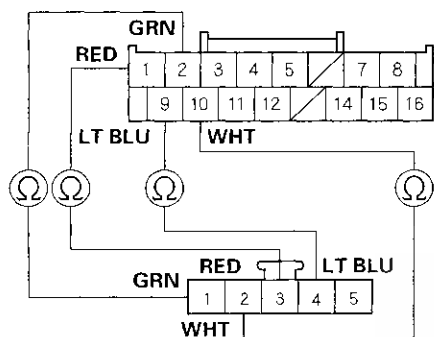


43. Check for continuity between the active noise control unit 16P connector and audio unit connector C (5 P).

16P:	5P:
No. 1	No. 3
No. 2	No. 1
No. 9	No. 4
No. 10	No. 2

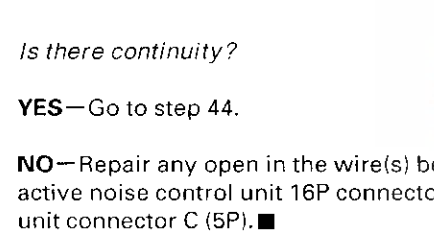
ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

Wire side of female terminals



AUDIO UNIT CONNECTOR C (5P)

Wire side of female terminals



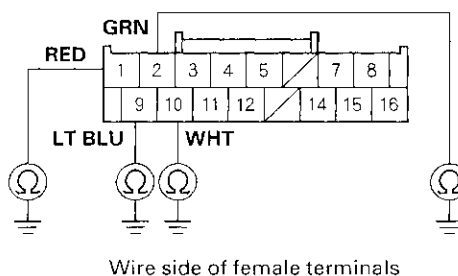
Is there continuity?

YES—Go to step 44.

NO—Repair any open in the wire(s) between the active noise control unit 16P connector and audio unit connector C (5P). ■

44. Check for continuity between body ground and the active noise control unit 16P connector No. 1, 2, 9, and 10 terminal individually.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Is there continuity?

YES—Repair any short to ground in the wire between the active noise control unit 16P connector and the audio unit connector C (5P). ■

NO—Replace the active noise control unit (see page 23-76). ■

(cont'd)

Audio System

Active Noise Control System Troubleshooting (cont'd)

45. Start the engine, and let it idle.
46. Perform the Self-diagnostic Procedure (see page 23-19).
47. Press the SCAN button (with navigation) or the "No. 1" button (without navigation).

Is the low-frequency hum heard?

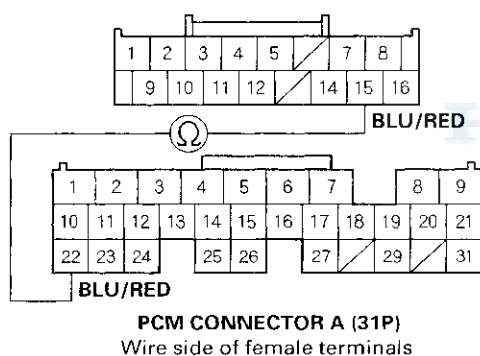
YES—Go to step 48.

NO—The system is OK. ■

48. Turn the ignition switch OFF.
49. Disconnect the active noise control unit 16 P connector and PCM connector A (31P).
50. Check for continuity between the active noise control unit 16P connector No. 15 terminal and PCM connector A (31P) No. 23 terminal.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR

Wire side of female terminals



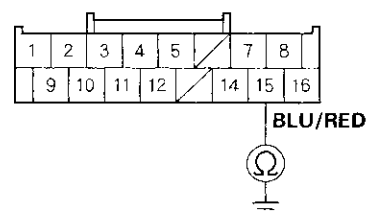
Is there continuity?

YES—Go to step 51.

NO—Repair an open in the wire between the active noise control unit 16P connector No. 15 terminal and the PCM connector A (31P) No. 23 terminal. ■

51. Check for continuity between the active noise control unit 16P connector No. 15 terminal and body ground.

ACTIVE NOISE CONTROL UNIT 16P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short to ground in the wire between body ground and the active noise control unit 16P connector and PCM connector A (31P) No. 23 terminal. ■

NO—Faulty the PCM. ■



Sound Quality Diagnosis

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Use the following tests to check sound quality.

NOTE: Before beginning the following tests, write down the client's bass, treble, fader and balance settings, then set them to their center positions for the testing.

Left/Right Channel ID

Do this test to confirm proper channel routing.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
2. Play track No. 1 (left, both, right channel ID) at a normal, or slightly higher than normal, volume level.
3. The voice should be audible only from the channel or channels when indicated.
 - If the channel ID is correct for each side, go to phase test (see page 23-61).
 - If the channel ID is not correct, check for
 - Shorted speaker wire
 - Faulty audio unit

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Phase Test

Do this test to confirm proper speaker phasing.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
2. Play track No. 2 (phase) at a normal, or slightly higher than normal, volume level.
3. The voice should sound centered and focused when it is in-phase.
4. The voice should sound diffused, and have "less bass" when it is out of phase.
 - If the voice changes from in-phase to out of phase as indicated by the prompt, the phasing is correct. Go to electrical noise test (see page 23-62).
 - If the voice always sounds out of phase, phasing is not correct. Check for
 - Crossed speaker wires
 - Faulty audio unit



Audio System

Sound Quality Diagnosis (cont'd)

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Electrical Noise Test

Do this test to check for electrical noise being induced into the audio system.

NOTE: Electrical noise may be caused by outside sources that cannot be filtered by the audio system. Make sure you remove cell phones and/or turn off any aftermarket devices before beginning this test.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
2. Play track No. 4 (digital zero) at a normal, or slightly higher than normal, volume level.
3. Operate any electrical device that may causes noise from the audio system, including starting the engine.
4. Play track No. 5 (near digital zero) at a normal, or slightly higher than normal, volume level.
5. Operate any electrical device that may causes noise from the audio system, including starting the engine.
6. Play track No. 6 (SNR) at a normal, or slightly higher than normal, volume level.

7. Operate any electrical device that causes noise from the audio system, including starting the engine.

- If no abnormal noise is heard, go to the individual speaker test (see page 23-63).
- If the noise is present only during the SNR track, replace the audio unit.
- If the noise is heard during the digital zero or near digital zero track, check for
 - Poor ground at the audio unit, engine, or battery cable
 - Pinched or shorted speaker wire
 - Faulty audio unit
 - Other faulty components causing excessive electrical noise (ignition coils, alternator, door lock actuators, etc.). Disconnect any suspect components, and then replay the tracks that were originally noisy. If the noise is gone, check the component's circuit and the component.



Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Individual Speaker Test

Do this test to identify a faulty speaker.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
2. Play track No. 30 (steady 300 Hz tone) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound, and compare it to the other speakers. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
 - If the sound quality produced by a specific speaker is poor, substitute it with a known-good speaker. If the poor sound quality continues, go to the sound balance test (see page 23-63).
 - If the sound quality is OK, go to the sound balance test (see page 23-63).

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Sound Balance Test

Perform this test to identify a faulty channel or speaker.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
2. Confirm the bass and treble are set to the center positions.
3. Play track No. 3 (pink noise) at a normal, or slightly higher than normal, volume level.
4. A "static" type sound should be heard through all speakers.
5. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit of a known-good vehicle.
6. Set the bass and treble to the center positions.
7. Play track No. 3 (pink noise) all the same level as was played in step 3.
8. Compare the sounds made by the two vehicles.
 - If the sounds made by the two vehicles are very similar, go to the Frequency Sweep Test (see page 23-64).
 - If the sound does not have as much bass, go to the phase test (see page 23-61).
 - If the sound does not have enough "hiss," check the tweeters and their circuits.

Audio System

Sound Quality Diagnosis (cont'd)

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Frequency sweep

Do this test to find rattles or reverberation that may cause a perception of poor sound quality.

1. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
2. Play track No. 13 (sweep from 500 Hz to 35 Hz) at a normal, or slightly higher than normal, volume level.
3. Listen to each speaker for poor sound quality or reverberations caused by specific frequencies. Use the voice-over to estimate the frequency that causes the vibration. Use the audio unit's fader and balance settings to help isolate the channel with the problem.
 - If vibrations or poor sound quality is heard, go to step 4.
 - If no vibrations or poor sound quality is heard, go to sound judging (see page 23-64).
4. Choose the appropriate track from No. 14 to 25 (small range frequency sweep) or 26 to 53 (single frequencies) to recreate the frequency that caused the poor sound quality or vibration located in step 3; this aids in diagnosis of the cause.

NOTE: When you get to the track that recreates the problem, select the repeat function on the audio unit, this will help you isolate the cause.

5. Replace or insulate the source of the vibration or, if the speaker is the source of the poor sound quality, replace it.

Special Tools Required

Diagnostics CD 07AAZ-SDBA100

Sound judging

Do this test to compare overall sound quality, imaging, and dynamics between the customer's vehicle and a known-good vehicle. Only use a vehicle of the same model and trim level for this test.

1. In the customer's vehicle, set the bass, treble, fader, and balance settings to the customer's normal settings that were written down before beginning the test.
2. Insert the audio diagnostic CD (T/N 07AAZ-SDBA 100) into the audio unit.
3. Play tracks No. 7 to 12 (sound quality, midland, dynamics, and imaging demonstration tracks) at a normal, or slightly higher than normal, volume level. Write down the volume setting being used.
4. Listen to areas of the track that stand out as being either real clear or poorer than other areas of the track.
5. In a known-good vehicle, insert the audio diagnostic CD (T/N 07AAZ-SDBA100) into the audio unit.
6. Play the tracks at the same volume level and the same bass, treble, balance, and fader settings as used in step 3 in the customer's vehicle.
7. Listen to the same area of the track that stood out as being either real clear or poorer than other areas of the track.



8. Compare the customer's vehicle's sound quality results the known-good vehicle's results.

- If the sound quality in the customer's vehicle is comparable to the sound quality in the known-good vehicle, then the customer's vehicle is operating as designed.
- If the sound quality is not comparable, check these items in order.
 - Loose or improperly installed speakers or other hardware that may become excited by the vibrations generated by the speakers
 - Damaged speaker(s)
 - Faulty audio unit

Seek Stop Test

Do this test to check the performance of the audio unit's AM and FM reception. Refer to symptom troubleshooting: no sound is heard from speakers (display is normal) (see page 23-30) before continuing with this test.

NOTE:

- Aftermarket theft-recovery devices and other aftermarket accessories may reduce radio reception.
- Changes in cloud cover and other atmospheric conditions will affect the ability of the audio unit to receive radio signals.

1. Park the client's vehicle in an open area away from buildings or other obstacles.
2. Park a known-good vehicle (same year, model, and trim level) next to the customer's vehicle, facing the same direction.
3. Start the engine in the customer's vehicle, and turn on the radio.
4. Set the FM receiver to 87.7 MHz.
5. Press the "Seek +" button, and record the first station that the audio unit locks onto.
6. Press the "Seek +" button repeatedly, and write down each station that the audio unit locks onto until the station recorded in step 5 is reached again.
7. Set the AM receiver to 530 kHz.
8. Press the "Seek +" button, and record the first station that the audio unit locks onto.
9. Press the "Seek +" button repeatedly, and write down each station that the audio unit locks onto until the station recorded in step 8 is reached again.

(cont'd)

Audio System

Sound Quality Diagnosis (cont'd)

10. Turn the ignition switch to LOCK (0).
11. Start the engine in the known-good vehicle, and then perform steps 4 thru 10 on the known-good vehicle.
12. Compare the number of stations received in steps 6 and 9 in the customer's vehicle with the number of stations received in the known-good vehicle.
 - If the number of stations received is the same, or within 10 %, the audio unit's tuner performance is OK. The problem may be atmospheric conditions, multi-path interference, or other obstructions to the radio signal.
 - If the customer's vehicle receives fewer stations by at least 10 %, go to step 2 of poor radio reception of interference (see page 23-25).

Audio-HVAC Display Module Illumination Troubleshooting

NOTE: If the display is blank when the headlights are off, the problem is not in the illumination circuit (see page 23-51).

1. Turn the ignition switch to the ON (II) position.
2. Turn the combination light switch ON.
3. Turn the set/reset knob on the gauge control module back and forth between full dim and full bright.

Does the problem with the illumination affect only the audio-HVAC display panel?

YES—Go to step 4.

NO—Go to B-CAN Diagnosis Test Mode A (see page 22-84).

4. Turn the set/reset knob on the gauge control module back and forth between full dim and full bright while watching the audio-HVAC display panel buttons, button LEDs, LCD displays.
5. Proceed with the diagnostic procedure for the appropriate symptom(s).



Symptom	Diagnostic Procedure
<ul style="list-style-type: none"> Buttons stay bright and do not adjust with dimmer LEDs do not dim with dimmer off of full bright position LCD display or subdisplay is full bright and does not adjust with dimmer Lower panel ambient light may or may not dim with dimmer 	Go to step 6.
<ul style="list-style-type: none"> Buttons do not light up LEDs do not dim LCD display or subdisplay is full bright and does not adjust with dimmer, or does not fully dim Lower panel ambient light may or may not dim with dimmer 	Go to step 9.
<ul style="list-style-type: none"> Lower panel ambient light does not light up Buttons dim with dimmer LEDs dim with dimmer off of full bright position LCD display dims with dimmer 	Replace the audio-HVAC display module (see page 23-69). ■
Symptom other than those listed above	Replace the audio-HVAC display module (see page 23-69) ■

6. Remove the audio-HVAC display module (see page 23-69) and check for loose wires terminals or poor connections at audio unit connector A (20P).

Are all the wire terminals tight, and is audio unit connector A (20P) connected properly?

YES—Go to step 7.

NO—Repair the loose wire terminal, or properly connect audio unit connector A (20P), and recheck the symptom. ■

7. Turn the set/reset knob on the gauge control module to the full bright position.

8. Measure the voltage between the No. 19 and No. 20 terminals of audio unit connector A (20P).

Is there 0.1 V or less?

YES—Check connections at audio unit connector A (20P). If connections are OK substitute a known-good audio-HVAC display module and recheck the symptom. If the symptom is gone, replace the original audio-HVAC display module. ■

NO—Repair open in the RED wire between the MICU and the audio-HVAC display module. ■

9. Remove the audio-HVAC display module (see page 23-69) and check for loose wire terminals or poor connections at audio unit connector A (20P).

Are all the wire terminals tight, and is audio unit connector A (20P) connected properly?

YES—Go to step 10.

NO—Repair the loose wire terminal, or properly connect audio unit connector A (20P) and recheck the symptom. ■

10. With the combination light switch still ON, turn the illumination control dial on the gauge control module to the full bright position.

11. Measure the voltage between the No. 9 and No. 20 terminals of the audio unit connector A (20P).

Is there battery voltage?

YES—Check connections at the audio unit connector A (20P). If connections are OK substitute a known-good audio-HVAC display module and recheck the symptom. If the symptom is gone, replace the original audio-HVAC display module. ■

NO—Repair open in the RED/BLK wire between the under-hood fuse/relay box and the audio-HVAC display panel. ■

Audio System

XM Antenna Troubleshooting

Radio displays error code: XM NOSIGNAL or XM ANTENNA

NOTE: Check XM radio reception in an open area. Poor reception/interference can be caused by tall buildings, mountains, or high-voltage power lines.

1. Park vehicle outside with a clear view of the southern horizon.

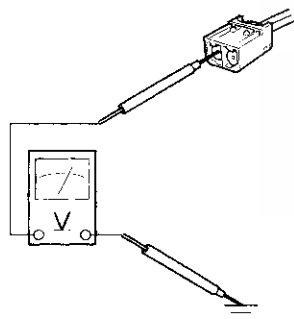
Does XM radio receive a signal?

YES—Reception interference operation is normal. ■

NO—Go to step 2.

2. Disconnect the XM receiver connector B (2P).
3. Check for voltage between the No. 2 terminal of the XM receiver connector B (2P) and body ground.

XM RECEIVER CONNECTOR B (2P)



Is there 3.0 V or more?

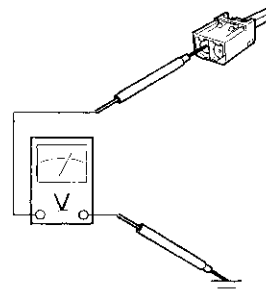
YES—Go to step 4.

NO—Replace the XM receiver (see page 23-76). ■

4. Turn the ignition switch OFF.
5. Reconnect XM receiver connector B (2P).
6. Disconnect the XM antenna module unit 2P connector.
7. Turn the ignition switch ON (II).

8. Check for voltage between the XM antenna module unit 2P connector No. 2 terminal and body ground.

XM ANTENNA MODULE UNIT 2P CONNECTOR



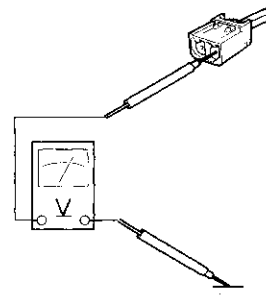
Is there 3.0 V or more?

YES—Go to step 9.

NO—Replace the antenna lead. ■

9. Turn the ignition switch OFF.
10. Reconnect the XM antenna module unit 2P connector.
11. Disconnect XM receiver connector B (2P).
12. Turn the ignition switch ON (II).
13. Check for voltage between the No. 1 terminal of the XM receiver connector B (2P) and body ground.

XM RECEIVER CONNECTOR B (2P)



Is there 3.0 V or more?

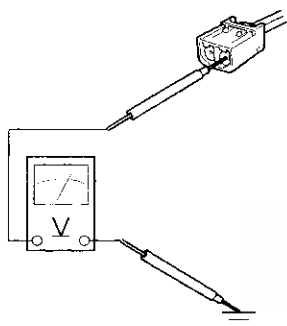
YES—Go to step 14.

NO—Replace the XM antenna module unit (see page 23-75). ■



14. Turn the ignition switch OFF.
15. Reconnect the XM receiver connector B (2P).
16. Disconnect the XM antenna module unit 2P connector.
17. Turn the ignition switch ON (II).
18. Check for voltage between the XM antenna module unit 2P connector No. 1 terminal and body ground.

XM ANTENNA MODULE UNIT 2P CONNECTOR



Is there 3.0 V or more?

YES—Replace the XM receiver (see page 23-76). ■

NO—Replace the antenna lead. ■

Audio-HVAC Display Module Removal/Installation

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE:

- Put on gloves to protect your hands.
- Take care not to scratch the dashboard and related parts.
- Lay a shop towel under the parts when working on them to protect the face panel from scratches or other damage.
- Do not work in a dusty or dirty place.
- Discharge static electricity from your body before and during the work.
- Do not touch the circuit board with your bare hands.
- Do not work with dirty hands.
- Be careful not to fold the flat plate cable.
- Do not touch the terminal connector of the flat plate cable with your bare hands. (If you have touched it, wipe it off thoroughly.)

1. Make sure you have the anti-theft codes for the radio and navigation system, then write down the audio presets.
2. Remove the upper panel (see page 20-68).
3. Remove the center pocket (see page 20-69).
4. With navigation: Remove the navigation control unit (see page 23-145)

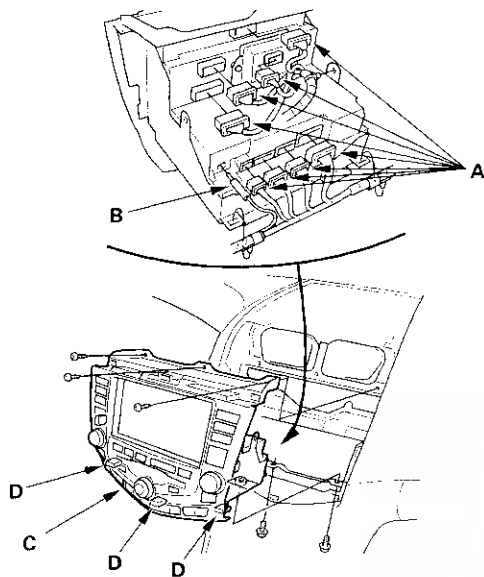
(cont'd)

Audio System

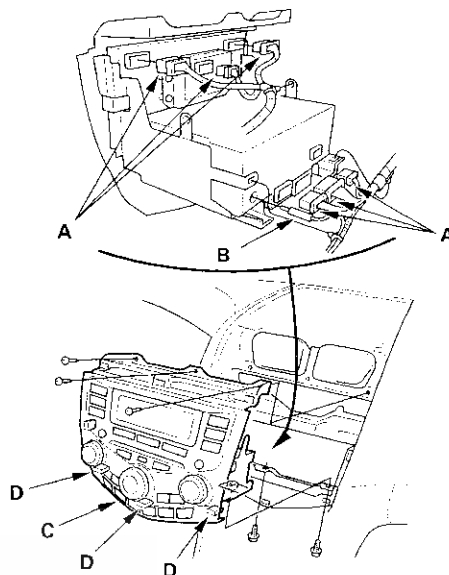
Audio-HVAC Display Module Removal/Installation (cont'd)

5. Remove the screws and bolts, disconnect the audio-HVAC display module connectors (A) and the antenna lead (B), then remove the audio-HVAC display module (C) by releasing the three clips (D).

With Navigation:



Without Navigation:



6. Install the audio-HVAC display module and note these items:

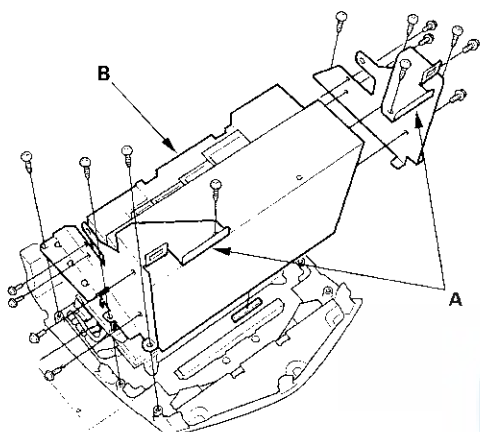
- Make sure the disconnected connectors are plugged in properly, and the antenna lead is connected properly.
- Enter the anti-theft code for the radio, then enter the customer's audio presets.



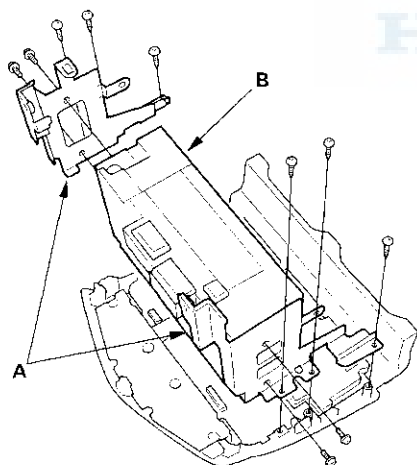
Audio-HVAC Display Panel and Audio Unit Removal/Installation

1. Remove the audio-HVAC display module (see page 23-69).
2. Remove the mounting screws and the audio brackets (A) from the audio unit(B).

With Navigation:



Without Navigation:

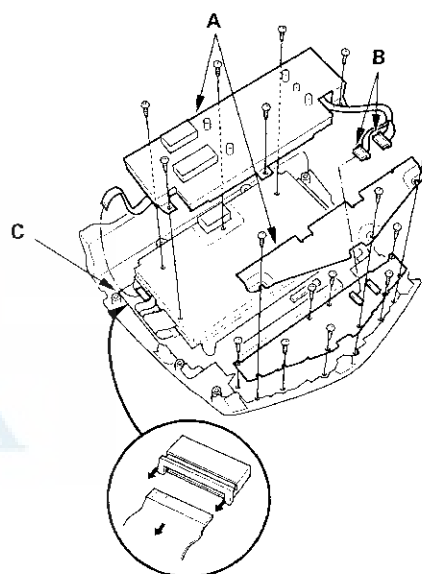


3. Install in the reverse order of removal.

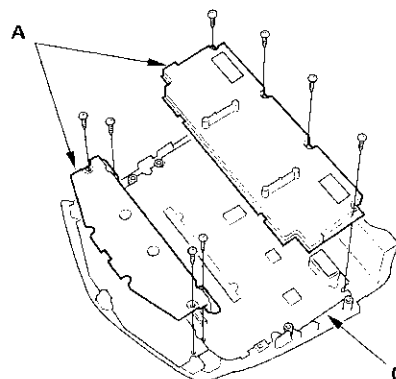
Audio-HVAC Display Panel Disassembly/Reassembly

1. Remove the audio-HVAC display panel (see page 23-71).
2. Remove the active noise control unit (see page 23-76).
3. Remove the mounting screws and the covers (A), then disconnect the connectors (B) (Navigation system) from the printed circuit board (C).

With Navigation:



Without Navigation:



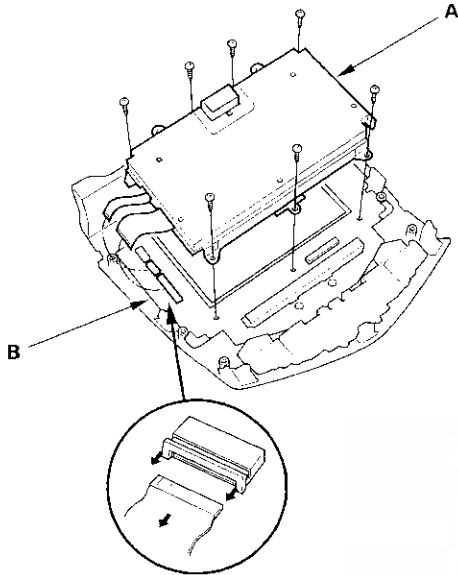
(cont'd)

Audio System

Audio-HVAC Display Panel Disassembly/Reassembly (cont'd)

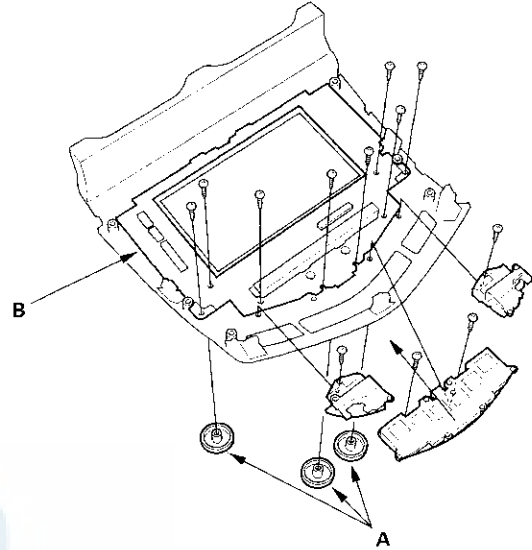
4. With navigation system: Remove the mounting screws and display unit (A) from the printed circuit board (B).

With Navigation:

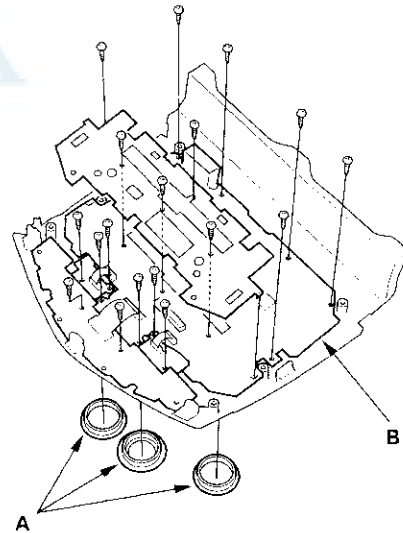


5. Remove the mounting screws and control knobs (A), then remove the printed circuit board (B).

With Navigation:



Without Navigation:



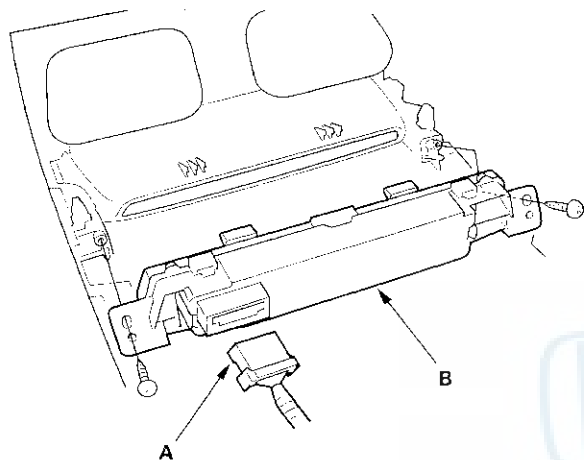
6. Install the audio unit and printed circuit board in the reverse order of removal.



Audio-HVAC Subdisplay/Clock Replacement

With Navigation

1. Remove the upper panel (see page 20-68).
2. Remove the two mounting screws.
3. Disconnect the 10P connector (A) from the audio-HVAC subdisplay/clock (B).



4. Install in the reverse order of removal.

Speaker Replacement

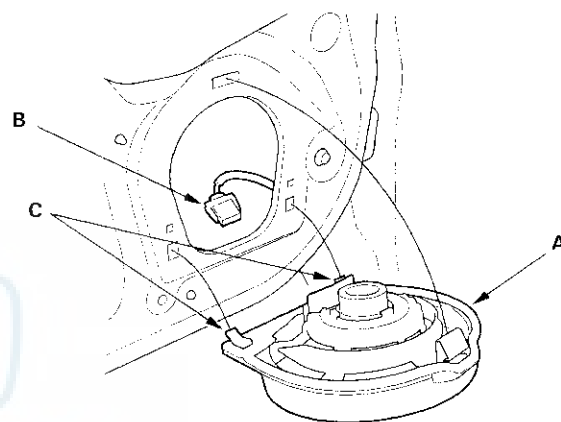
Front Speaker

1. Remove the door panel (see page 20-7).

NOTICE

If you pull the speaker out too far from the door, you will damage the lower clips (C).

2. Pull the top of the speaker (A) straight out, just enough to release the upper clips. Then lift the speaker straight up to release the lower clips (C).



3. Disconnect the 2P connector (B), and remove the speaker.

4. Install in the reverse order of removal.

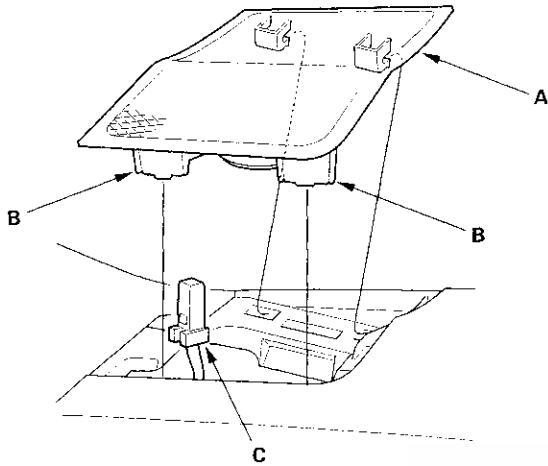
(cont'd)

Audio System

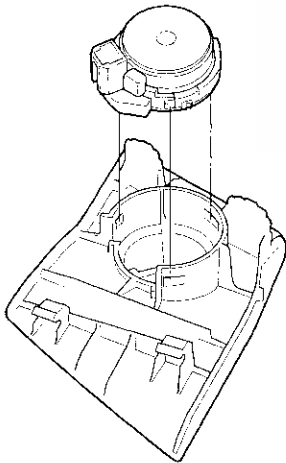
Speaker Replacement (cont'd)

Tweeter

1. Remove the tweeter speaker grille (A) by releasing the two clips (B).



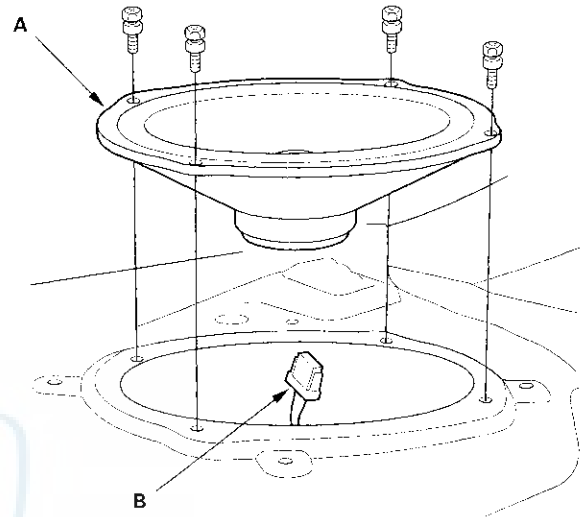
2. Disconnect the 2P connector (C) from the tweeter.
3. Remove the tweeter from the tweeter speaker grille.



4. Install in the reverse order of removal.

Rear Speaker

1. Remove the rear speaker cover by prying straight up to release the clips.
2. Remove the four mounting bolts from the rear speaker (A).

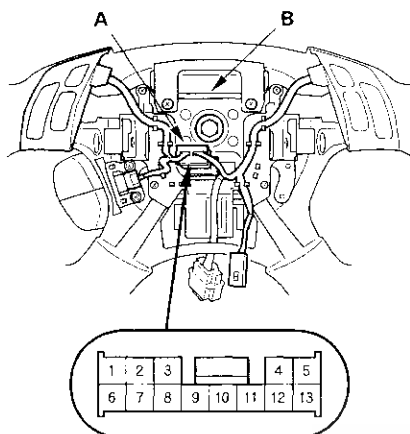


3. Disconnect the 2P connector (B), and remove the speaker.
4. Install in the reverse order of removal.



Radio Remote Switch Test

1. Remove the driver's airbag assembly (see page 24-139).
2. Remove the 13P connector (A) from the cable reel (B).



3. Measure resistance between the No. 11 and No. 12 terminals in each switch position according to the table.

Position	Resistance
OFF	About 10 k Ω
MODE	About 4 k Ω
CH (+)	About 2 k Ω
CH (-)	About 840 Ω
▲ (VOL. UP)	About 370 Ω
▼ (VOL. DOWN)	About 100 Ω

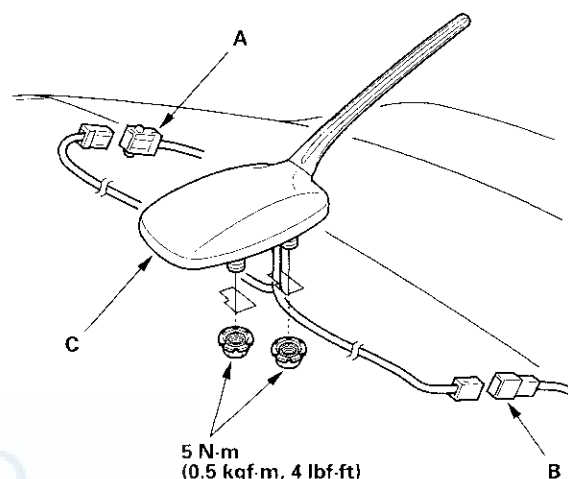
4. If the resistance is not as specified, replace the remote switch.
5. Check for continuity between the terminals in each switch position according to the table.

Terminal	4	10
Position		
OFF	○	○
ON	○	○

6. If the continuity check is not as specified, replace the switch.

Antenna Mast/XM Antenna Replacement

1. Remove the headliner (see page 20-56).
2. Disconnect the 2P connector (A) and lead connector (B) from the antenna mast/XM antenna (C).

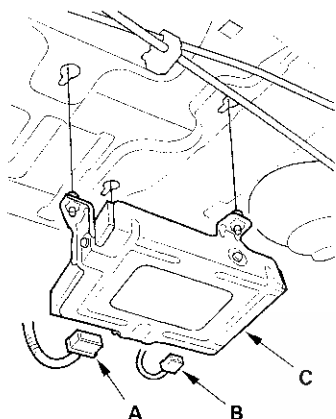


3. Remove the nuts from the antenna mast/XM antenna.
4. Install in the reverse order of removal.

Audio System

XM Receiver Replacement

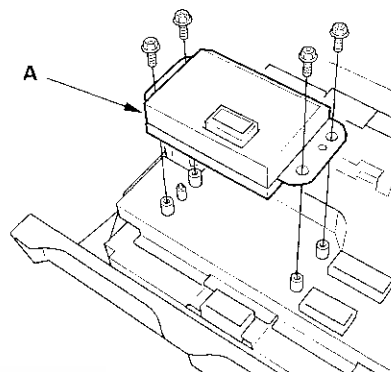
1. Open the trunk lid.
2. Remove the rear shelf (see page 20-51).
3. Loosen the three nuts from the XM receiver.
4. Disconnect the 14P connector (A) and 2P connector (B) from the XM receiver (C), and remove the receiver.



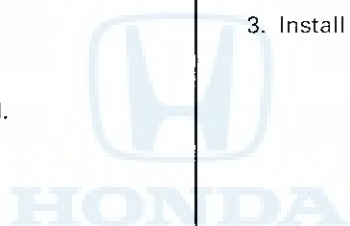
5. Install in the reverse order of removal.

Active Noise Control Unit Removal/Installation

1. Remove the audio-HVAC display module (see page 23-69).
2. Remove the screws and the active noise control unit (A).



3. Install in the reverse order of removal.

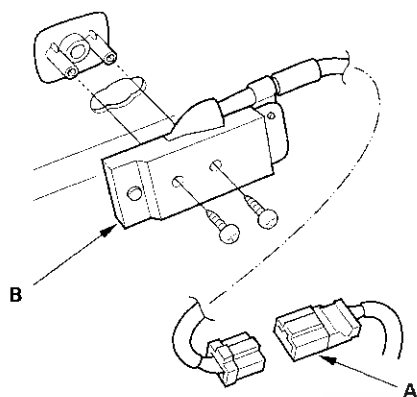




Active Noise Control Microphone Removal/Installation

Front

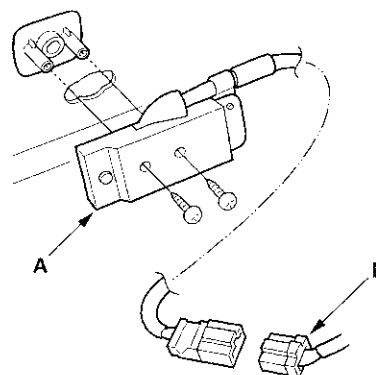
1. Remove the headliner (see page 20-56).
2. Disconnect the connector (A), then remove the screws and the active noise control microphone (B).



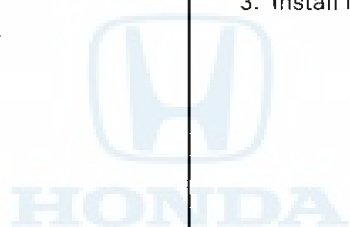
3. Install in the reverse order of removal.

Rear

1. Remove the rear shelf (see page 20-51).
2. Disconnect the connector (A), then remove the screws and the active noise control microphone (B).

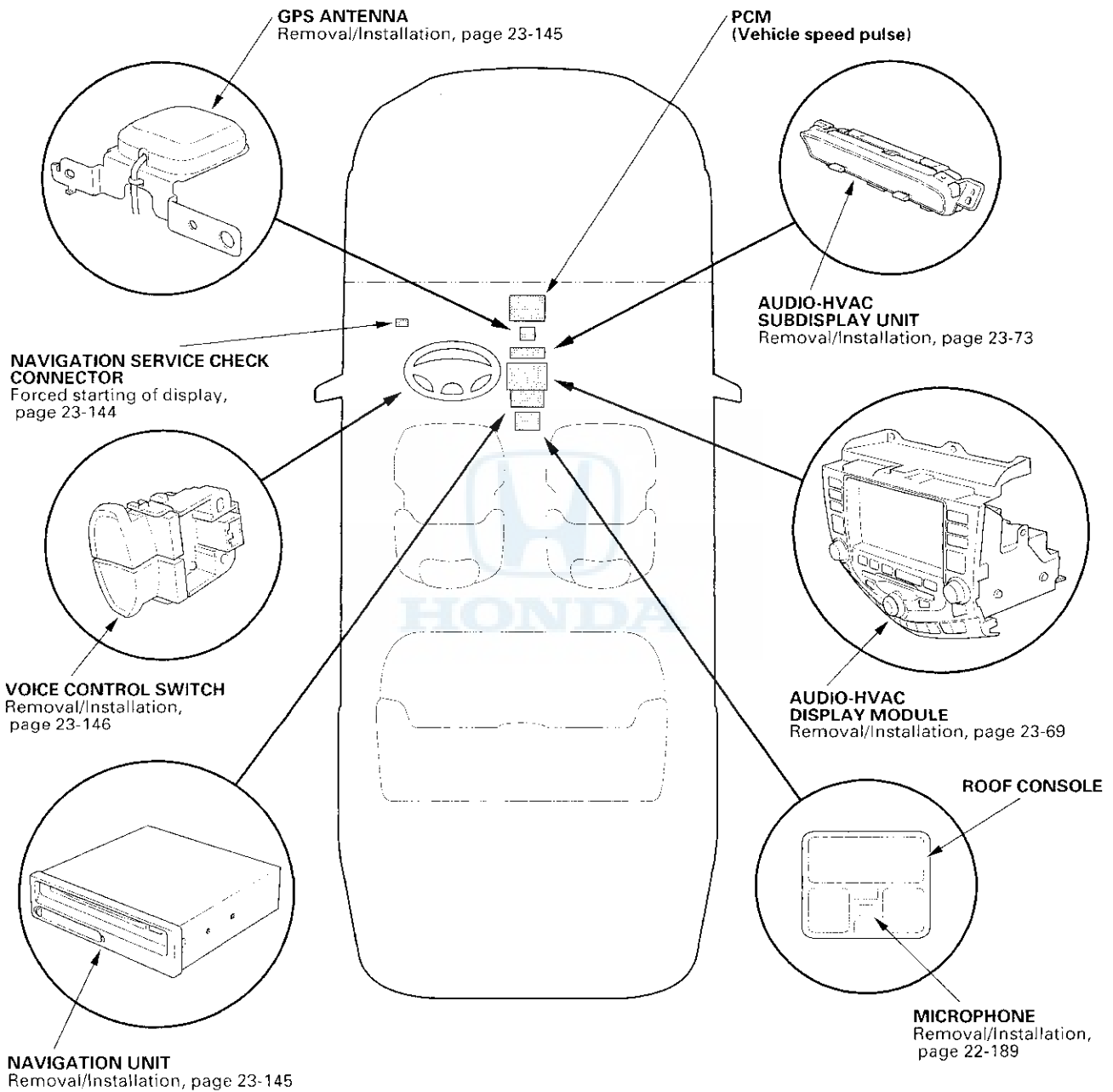


3. Install in the reverse order of removal.



Navigation System

Component Location Index





General Troubleshooting Information

General Operation

Refer to the Navigation System owner's manual for the navigation system operating procedures.

Anti-theft Feature

The navigation system and audio unit have a coded theft protection circuit. Be sure to get the customer's anti-theft security codes number before:

- Disconnecting the battery.
- Disconnecting the navigation unit 8P connector.
- Removing the No. 7 (10 A) fuse from the under-dash fuse/relay box.

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit anti-theft security code, then select "Done".

If the code cannot be found, use the interactive Network (iN) to look it up. You will need the serial number from the navigation unit in the trunk. It is on a label on the underside of the unit. Alternatively, you can view the serial number in the Navi ECU diagnostic screen (see page 23-113).

When replacing the navigation unit, be sure to give the customer the new anti-theft security code.

Symptom Diagnosis

Certain circumstances and system limitations will result in occasional vehicle positioning errors. Some customers may think this indicates a problem with the navigation system when, in fact, the system is normal. Keep the following items in mind when interviewing customers about symptoms of the navigation system.

Self-Inertial Navigation Limitations

The limitations of the self-inertial portion of the navigation system (the yaw rate sensor and the vehicle speed signal) can cause some discrepancies between the vehicle's actual position and the indicated vehicle position (GPS vehicle position).

The following circumstances may cause vehicle positioning errors:

- Moving the vehicle with the engine stopped and the vehicle stopped, such as by ferry or tow truck, or if the vehicle is spun on a turn table.

- Tire slippage, changes in tire rolling diameters, and some driving situations may cause discrepancies in travel distances. Examples of this include:
 - Continuous tire slippage on a slippery surface
 - Driving with snow chains mounted
 - Abnormal tire pressure
 - Incorrect tire size
 - Frequent lane changes across a wide highway
 - Continuous driving on a straight or gently curving highway
 - Very bumpy roads
- Tolerances in the system and map inaccuracies sometimes limit how precisely the vehicle position is indicated. Examples of this include:
 - Driving on roads not shown on the map (map matching is not possible)
 - Driving on a road that winds in one direction, such as a loop bridge, an interchange, or a spiral parking garage
 - Driving on a road with a series of sharp hair-pin turns
 - Driving near a gradual highway exit or transition
 - Driving on one of two close parallel roads
 - Making many 90 degree turns

Global Positioning System (GPS) Limitations

The GPS cannot detect the vehicle's position during the following instances:

- For the first 5 to 10 minutes after reconnecting the battery (This can take as long as 45 minutes).
- When the satellite signals are blocked by tall buildings, mountains, tunnels, large trees, inside parking structures, or large trucks.
- When the GPS antenna is blocked by metallic window tinting or by an object placed above it in the vehicle. The GPS antenna requires a clear unobstructed view of the sky.
- When there is no satellite signal output (Signal output is sometimes stopped for satellite servicing).
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors, and theft recovery systems), and cellphones placed near the navigation system.

(cont'd)

Navigation System

General Troubleshooting Information (cont'd)

The accuracy of GPS is reduced during these instances:

- Metallic window tinting above the GPS antenna.
- When only two satellite signals can be received (Three satellite signals are required for accurate positioning).
- When the satellite control centers are experiencing problems.
- When driving near high tension power lines.
- When the satellite signals are blocked by the operation of some electronic aftermarket accessories including, but not limited to, non-OEM in-dash entertainment units (radio, CD players/changers, radar detectors, and theft recovery systems), and cellphones placed near the navigation system.

Muting Logic

Whenever the navigation system is giving guidance, the front speakers are muted. When the voice control system is being used, all of the speakers are muted.

LCD Display Unit Limitations

- In cold temperatures, the display may stay dark for the first 2 or 3 minutes until it warms up.
- When the display is too hot because of direct summer sunlight, it will remain dark until the temperature drops (You may see an error message displayed stating this fact).
- When the humidity is high and the interior temperature is low, the display may appear cloudy. The display will clear up after some use.
- Fingerprints on the touch panel may sometimes be noticeable because of the panel's low-reflection coating. Clean the screen with a soft, damp cloth. You may use a mild cleaner intended for eye glasses or computer screens. To avoid scratching the panel, do not rub too hard, or use abrasive cleaners or shop towels.
- The touch panel is an infrared system, so there is no need to press hard. If a touch switch does not function immediately, shift your finger slightly, and touch it again.

NOTE: Input may be affected by direct sunlight.

Symptom Duplication

- When the symptom can be duplicated, verify that it is not a characteristic of the system. Review the navigation manual and compare it to a known-good vehicle (with the same software and database), under the same conditions. If not the same, follow the self-diagnostic procedures and the appropriate troubleshooting procedures.
- When the symptom does not reappear or only reappears intermittently, ask the customer about the conditions when the symptom occurred.
 - Ask the customer to demonstrate the problem.
 - Try to establish possible user error or misunderstanding of the system.
 - Try to establish if outside interference may have been the cause.
 - Try to duplication the symptom under the same conditions the customer was experiencing.
 - Vibration, temperature extremes, and moisture (dew, humidity) are factors that are difficult to duplicate.
 - Inspect the vehicle for after-market electronic devices (vehicle locators, amps, radar detectors, etc.) that may be hidden.

Service Precautions

- If the navigation unit needs to be replaced, inform the customer that personal information in the navigation system will be lost. If possible, have the customer record their personal information before the unit is replaced.
- Before disconnecting the battery, make sure you have the anti-theft codes for the radio and the navigation system, and write down the audio channel presets. Also obtain any PCM or transmission DTCs and freeze frame data (which will be lost when the PCM loses power).
- When the battery is disconnected, the internal GPS clock is reset to "0:00." The clock will reset to the correct time after the system finishes GPS initialization.
- After reconnecting the battery, you have to wait to get the initial signal from the satellite. It will take from 10 to 45 minutes.
- Before returning the vehicle to the customer, enter the radio and navigation anti-theft security code, then enter the customer's audio presets, and set the clock.



System Initialization

If for any reason, you lose power to the navigation system (like the battery was disconnected). The navigation system will require initialization. Once completed, your system will be ready to use.

This initialization requires the following:

- Entry of the 4-digit anti-theft security code to “unlock” the system
- GPS initialization (may not be needed depending of the length of time the system was without power)
- Map matching to align the GPS to a location on the map

Entering Security Code

The navigation system and audio unit have a coded theft protection circuit. Be sure to get the customer's anti-theft security codes number before;

- Disconnecting the battery
- Disconnecting the navigation unit 8P connector
- Removing the No. 7 (10A) fuse from the under-dash fuse/relay box

After service, reconnect power to the navigation unit, and turn the ignition switch ON (II). Enter the 4-digit anti-theft security code, then select “Done.”

When replacing the navigation unit or audio unit, be sure to give the customer the new anti-theft security code.

GPS initialization

Depending on the length of time the battery was disconnected, your system may require GPS initialization. If it does, the following screen appears:

Wait

The system is acquiring its GPS signal.
This could take up to 10 minutes.

- Engine must be running
- Vehicle must be parked outside, away from buildings
- Do not move the vehicle at this time

If this procedure is not necessary the system proceeds directly to the Disclaimer screen. During initialization, the system searches for all available GPS satellites, and obtains their orbital information. During this procedure the vehicle should be out in the open with a clear view of the sky.

If the navigation system finds the satellites properly, this box clears, and changes to the Disclaimer screen. If within 10 minutes the system fails to locate a sufficient number of satellites to locate your position, the following screen appears.

Navigation system is unable acquire a proper GPS signal.

- Move vehicle to another location
- Turn the ignition switch off
- Disconnect the battery for 30 minutes to clear the GPS receiver's memory
- Reconnect the battery and follow the screen prompts

After 30 minutes with this screen displayed, turn off the engine, then restart the vehicle. If you now see the Disclaimer screen, the GPS initialization is complete.

NOTE:

- The average acquiring time is less than 10 minutes, but it can take as long as 45 minutes.
- If the system is still unable to acquire a signal, follow the instructions on the screen. If this screen appears again, go to troubleshooting for the GPS icon does not indicate (see page 23-133).

(cont'd)

Navigation System

General Troubleshooting Information (cont'd)

Map Matching

This part of the initialization matches the GPS coordinates with a road on the map screen. To perform this part of the procedure, ensure that the navigation system is displaying a map, and drive the vehicle on a mapped road shown on the map screen). Do not enter a destination at this time. When the name of the current road you are driving on, appears at the bottom of the screen, the entire procedure is complete. Your system is now ready to use.

Obtaining A Navigation DVD

If the Navigation DVD is lost or damaged, or you need a yearly updated DVD, there are two ways to purchase one. You can either call (888) 291-4675, or order on-line at www.honda.com.

Both methods require a credit card. The DVD for this model has an orange label, and cannot be ordered through the parts system. The following DVDs will not work in this navigation system:

- Different model navigation DVDs (black or white labels)
- Map software programs manufactured by other companies
- DVD movies, or DVDs containing audio recordings

Update DVDs are available for purchase usually in the fall of each year. They may contain the following:

- Enhanced maps and points of interest (POI) coverage
- Fixes for minor software bugs
- Additional features

NOTE: Updating is optional, and there is no program to provide free DVDs containing yearly mapping updates.



System Description

Overview

The navigation system is a highly-sophisticated, hybrid locating system that uses satellites and a map database to show you where you are and to help guide you to a desired destination.

The navigation system receives signals from the global positioning system (GPS), a network of 24 satellites in orbit around the earth. By receiving signals from several of these satellites, the navigation system can determine the latitude, longitude elevation of the vehicle. In addition, signals from the system's yaw rate sensor and the PCM (vehicle speed pulse) enable the system to keep track of the vehicle's direction and speed of travel.

This hybrid system has advantages over a system that is either entirely self-contained or one that relies totally on the GPS. For example, the self-contained portion of the system can keep track of vehicle position even when satellite signals cannot be received. When the navigation system is on, the GPS can keep track of the vehicle position even when the vehicle is transported by ferry.

The navigation system applies all location, direction, and speed information to maps and calculates a route to the destination entered. As you drive to that destination, the system provides both visual and audio guidance.

This navigation system also has voice recognition that allows voice control of most of the navigation functions. The Talk and BACK buttons on the steering wheel activate the voice control. The voice control also allows control of the audio and climate control.

The navigation system provides a trip computer function. The fuel economy display is calculated by data provided by the PCM. The PCM provides fuel pulses via the F-CAN bus, and a dedicated speed signal.

The illumination signal is used by the navigation unit to automatically switch the display between Night and Day brightness modes when Display is set to Auto. When the instrument panel brightness control is set to full brightness, the navigation system stays in the Day mode, even with the headlights on. Display unit button illumination is supplied through the audio unit.

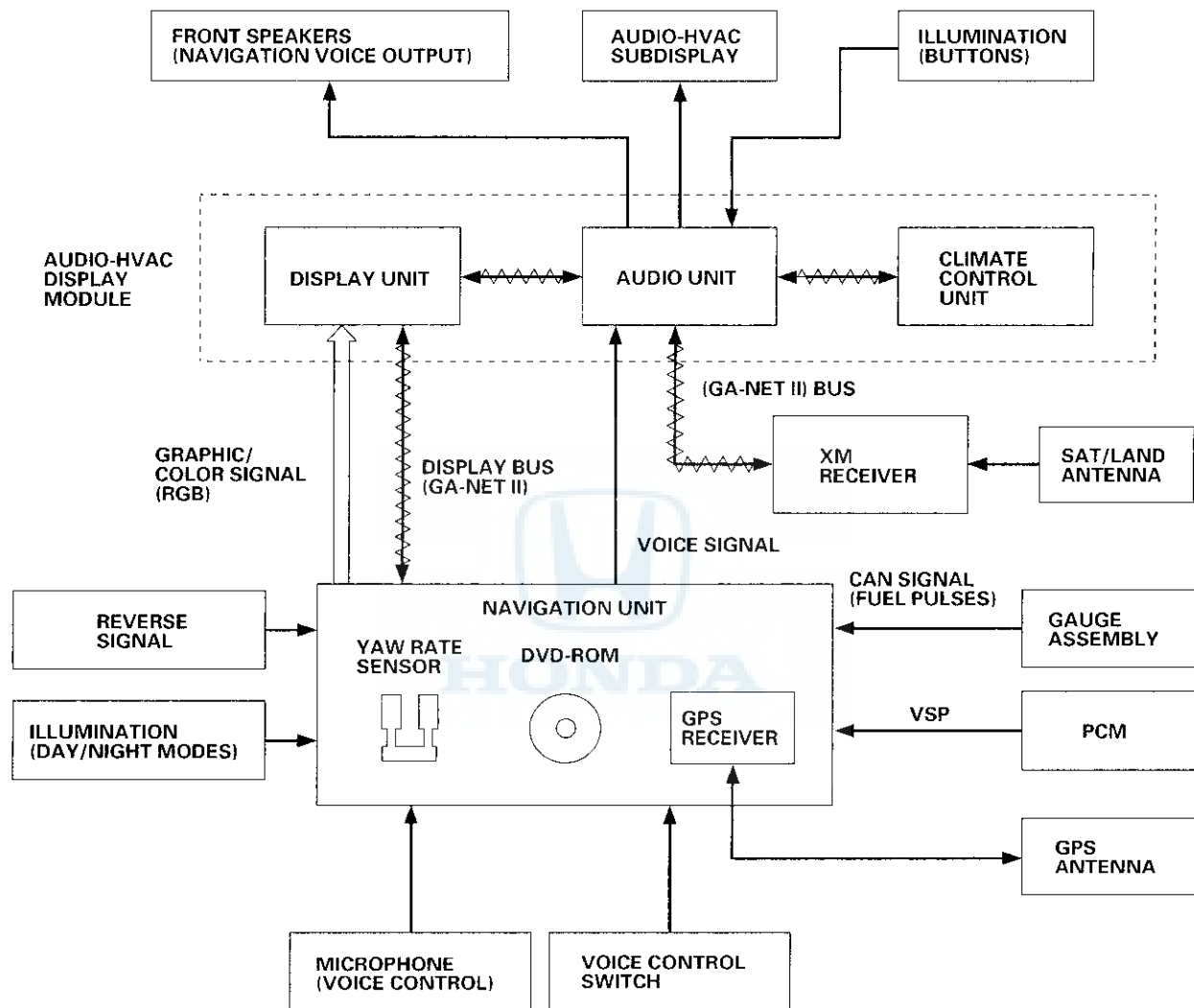
The GA-NET bus provides communication between the navigation unit and the display unit. This bus also links the components in the audio-HVAC display module. The bus is used to pass button and touch-screen commands to the navigation unit. In addition, muting and voice control commands are sent to the display unit and the audio and climate control systems for processing. The audio unit uses the bus to control the XM-receiver or other accessories.

(cont'd)

Navigation System

System Description (cont'd)

System Diagram

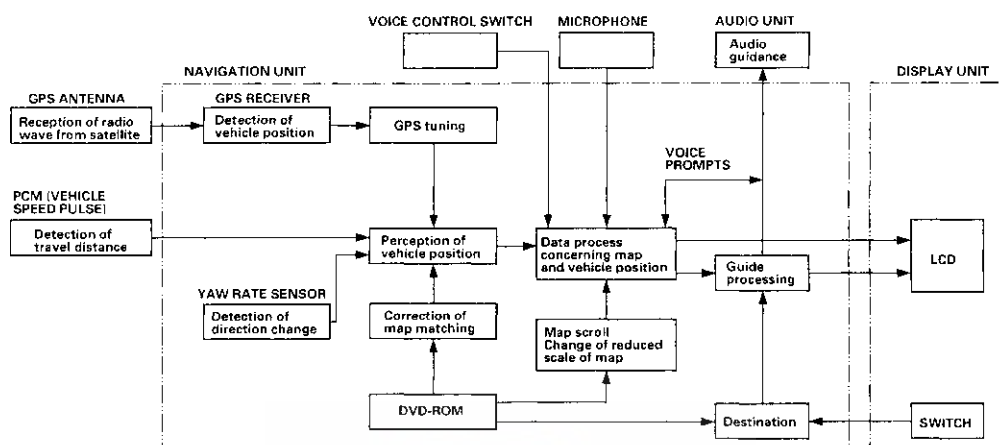




Navigation Function

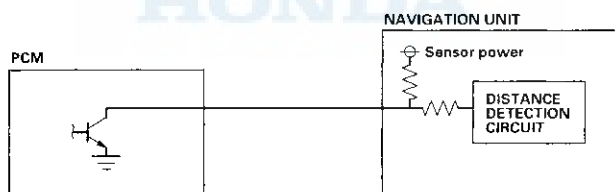
The navigation system is composed of the navigation unit, the PCM (vehicle speed signal), the GPS antenna, microphone, voice control switch, audio unit, climate control unit, and the display unit.

Function Diagram



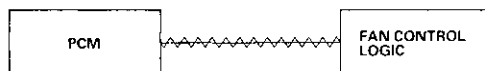
Vehicle Speed Pulse

The vehicle speed pulse is sent by the PCM. The PCM receives a signal from the countershaft speed sensor, then it processes the signal and transmits it to the speedometer and other systems.



Charge Signal

The PCM sends a charge signal to the navigation unit via F-CAN. A thermister inside the navigation unit monitors the units internal temperature. This information combined with charge signal determines the control units internal cooling fan operation.



(cont'd)

Navigation System

System Description (cont'd)

Yaw Rate Sensor

The yaw rate sensor (located in the navigation unit) detects the direction change (angular speed) of the vehicle. The sensor is an oscillation gyro built into the navigation unit.

Sensor Element Structure

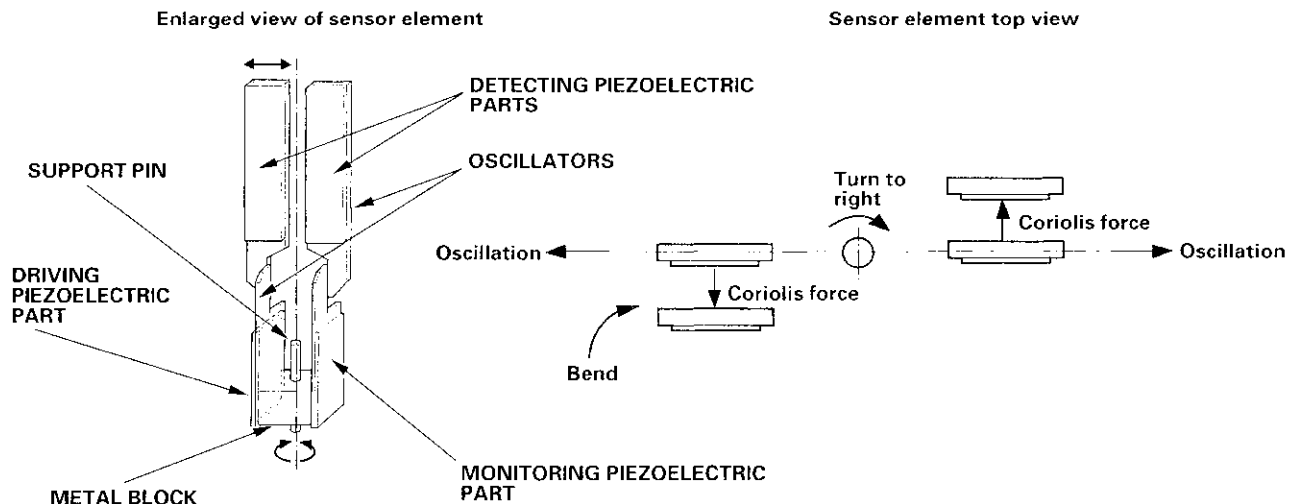
The sensor element is shaped like a tuning fork, and it consists of the piezoelectric parts, the metal block, and the support pin. There are four piezoelectric parts: one to drive the oscillators, one to monitor and maintain the oscillation at a regular frequency, and two to detect angular velocity. The two oscillators, which have a 90-degree twist in the center, are connected at the bottom by the metal block and supported by the support pin. A detection piezoelectric part is attached to the top of each oscillator. The driving piezoelectric part is attached to the bottom of one oscillator, and the monitoring piezoelectric part is attached to the bottom of the other oscillator.

Oscillation Gyro Principles

The piezoelectric parts have "electric/mechanical transfer characteristics." They bend vertically when voltage is applied to both sides of the parts, and voltage is generated between both sides of the piezoelectric parts when they are bent by an external force. The oscillation gyro functions by utilizing this characteristic of the piezoelectric parts and "Coriolis force." (Coriolis force deflects moving objects as a result of the earth's rotation.) In the oscillation gyro, this force moves the sensor element when angular velocity is applied.

Operation

1. The driving piezoelectric part oscillates the oscillator by repeatedly bending and returning when an AC voltage of 6 kHz is applied to the part. The monitoring-side oscillator resonates because it is connected to the driving-side oscillator by the metal block.
2. The monitoring piezoelectric part bends in proportion to the oscillation and outputs voltage (the monitor signal). The navigation unit control circuit controls the drive signal to stabilize the monitor signal.
3. When the vehicle is stopped, the detecting piezoelectric parts oscillate right and left with the oscillators, but no signal is output because the parts are not bent (no angular force).
4. When the vehicle turns to the right, the sensor element moves in a circular motion with the right oscillator bending forward and the left oscillator bending rearward. The amount of forward/rearward bend varies according to the angular velocity of the vehicle.
5. The detecting piezoelectric parts output voltage (the yaw rate signal) according to the amount of bend. The amount of vehicle direction change is determined by measuring this voltage.

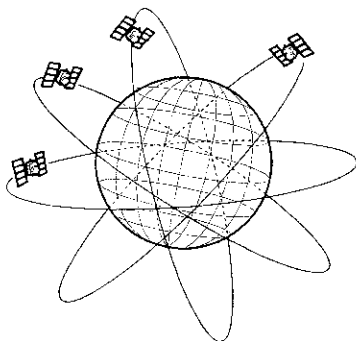




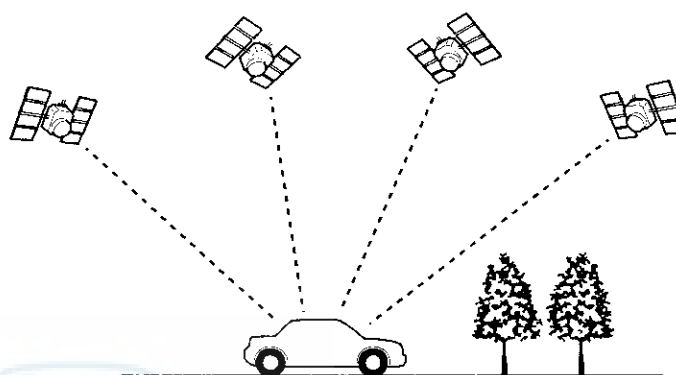
Global Positioning System (GPS)

The global positioning system (GPS) enables the navigation system to determine the current position of the vehicle by utilizing the signals transmitted from the satellites in orbit around the earth. The satellites transmit the satellite identification signal, orbit information, transmission time signal, and other information. When the GPS receiver receives a signal from three or more satellites simultaneously, it calculates the current position of the vehicle based on the distance to each satellite and the satellites position in its respective orbit.

Position detection Image with GPS satellite



NOTE: Four satellites on each of 6 orbits.



Precision of GPS

The precision of the GPS varies according to the number of satellites from which signals are received and the view of the sky. The precision is indicated by the color of the GPS icon shown on the display.

GPS ICON	NUMBER OF SATELLITES	CONDITION	DESCRIPTION
No GPS icon shown	2 or less	Impossible to detect vehicle position	GPS function is normal. The satellite signals received by the GPS are too few to detect the vehicle position.
Square GPS icon shown with white "GPS"	3	Vehicle position detectable in 2 dimensions	The longitude and latitude of the vehicle position can be detected. (Less precise than detection in three dimensions)
Cube GPS icon shown with green "GPS"	4 or more	Vehicle position detectable in 3 dimensions	The longitude, latitude and the altitude of the vehicle position can be detected. (More precise than detection in two dimensions)

GPS Antenna

The GPS antenna amplifies and transmits the signals received from the satellite to the GPS receiver.

GPS Receiver

The GPS receiver is built in the navigation unit. It calculates the vehicle position by receiving the signal from the GPS antenna. The vehicle position and signal reception condition is transmitted from the GPS receiver to the navigation control unit to adjust vehicle position.

(cont'd)

Navigation System

System Description (cont'd)

Navigation Unit

The navigation unit calculates the vehicle position and guides you to the destination. The unit performs map matching correction, GPS correction, and distance tuning. It also controls the menu functions and the DVD-ROM drive, and interprets voice commands. With control of all these items, the navigation unit makes the navigation picture signal, then it transmits the signal to the display unit and audio driving instructions to the audio unit.

Calculation of Vehicle Position

The navigation unit calculates the vehicle position (the driving direction and the current position) by receiving the directional change signals from the yaw rate sensor and the travel distance signals from the PCM's vehicle speed pulse (VSP) signal.

Map Matching Tuning

The map matching tuning is accomplished by indicating the vehicle position on the roads on the map. The map data transmitted from the DVD-ROM is checked against the vehicle position data, and the vehicle position is indicated on the nearest road. Map matching tuning does not occur when the vehicle travels on a road not shown on the map, or when the vehicle position is far away from a road on the map.

GPS Tuning

The GPS tuning is accomplished by indicating the vehicle position as the GPS's vehicle position. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. If there is large difference between the two, the indicated vehicle position is adjusted to the GPS vehicle position.

Distance Tuning

The distance tuning reduces the difference between the travel distance signal from the VSP and the distance data on the map. The navigation unit compares its calculated vehicle position data with the GPS vehicle position data. The navigation unit then decreases the tuning value when the vehicle position is always ahead of the GPS vehicle position, and it increases the tuning value when the vehicle position is always behind the GPS vehicle position.

Route Guidance

The navigation unit can calculate different routes to a selected destination. You have five options:

- Direct Route — Calculate a route that is the most direct.
- Easy Route — Calculate a route that minimizes the number of turns needed.
- Minimize Freeways — Calculate a route that avoids freeway travel. If that is not possible, keep the amount of freeway travel to a minimum.
- Minimize Toll Roads — Calculate a route that avoids, or minimizes travel on toll roads.
- Maximize Freeways — Calculate a route that uses freeways as much as possible.

Audio Guidance

The navigation unit transmits audio driving instructions before entering an intersection or passing a junction. The audio instructions come through the audio unit to the front speakers.

NOTE: The front speakers are muted whenever the navigation system is giving guidance commands, and all of the speakers when the voice control system is being used.

DVD-ROM

The map data (including all scale rates) is stored in the DVD-ROM. The map data includes:

- Road distances, road widths, speed limits, traffic regulations, passing time at junction, distances to junctions, and the driving instructions for audio guidance.
- Latitude and longitude GPS.



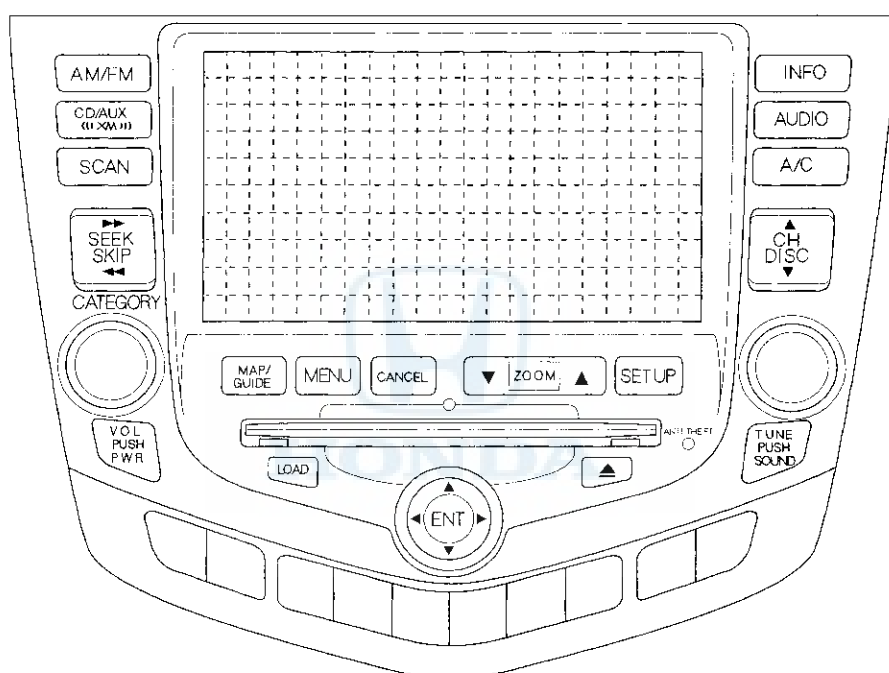
Audio Unit

The audio unit receives the audio driving instructions from the navigation unit and transmits the instructions through the front speakers even when the audio system is in use.

Display Unit

The display unit uses a liquid crystal display (LCD). The LCD is a 7-inch-diagonal, thin film transistor (TFT), stripe type with 280,800 picture elements. The color film and fluorescent light are laid out on the back of the liquid crystal film. The touch sensor on the front of the LCD is an infrared type with 20 vertical and 9 horizontal infrared rays to produce 180 sensing points. The display unit transmits the signal from each button and the touch screen command to the navigation unit using the GA-NET bus.

Infrared rays



----- : Infrared for touch screen commands

Microphone

The microphone (on the ceiling, near the front map light) receives voice commands and transmits them to the navigation unit for interpretation.

Talk Button

Activates the voice control system in the navigation unit to accept voice commands.

Back Button

Returns the display to the previous screen (similar function as the CANCEL button).

(cont'd)

Navigation System

System Description (cont'd)

Glossary

The following is a glossary of terms pertaining to the Voice Recognition Navigation System.

Item	Definition
Audio-HVAC subdisplay	The upper display that shows the time and current status of the audio and climate control systems.
Breadcrumbs	Off road tracking dots that can be followed on the map to retrace your route back to a mapped (digitized) road. This function can be turned on/off in Setup screen 1.
CAN	Controller Area Network. This communication network allows processors in the vehicle to send/receive information. The fuel pulses used by the trip computer are received from the PCM using the F-CAN (Fast Controller Area Network) bus.
B-CAN	Body CAN Bus (see CAN)
CPU	Central Processing Unit. The main device within the navigation unit that coordinates the rest of the electronic functions.
Database	This consists of the Map data, and the POI (Points Of Interest) data stored on the DVD
DBW	Drive By Wire. Allows electrical control of the throttle without the need of a mechanical linkage.
DCA	Detailed Coverage Area. Main metropolitan areas in the Lower 48 states, and Canada are mapped to this level. See the Navigation owner's manual for a list of these areas.
DTC	Diagnostic Trouble Codes. Use the HDS tablet to obtain, and troubleshoot the cause of these codes.
Dead Reckoning	The use of the speed signal, and yaw rate sensor to position the vehicle on the map even when the GPS signal is obscured by tall buildings, or while driving in a tunnel.
Digitized Road	A road that appears on the navigation screen. The road name will appear at the bottom of the navigation screen. If the user drives "off road," the navigation system will display "Not on a digitized road," and if 1/2 mile, then "breadcrumbs" will appear.
Disclaimer Screen	Screen containing cautionary information. It is meant to be read carefully and acknowledged by the customer when using the navigation system.
DVD or DVD-ROM	Digital Versatile Disk. The navigation program and database resides on this disk. See the Navigation System owner's manual for information on how to order a replacement or update DVD.
ECM	Engine Control Module. Typically referred to as the PCM.
E/T	Elapsed Time for the current trip as displayed by the trip computer screen.
FAQ	Frequently Asked Question. See the Navigation System owner's manual for a list of the customer FAQs, and troubleshooting information.
F-CAN	Fast CAN Bus (see CAN)
FE	Fuel Economy value as displayed on the trip computer screen.
Fuel Pulses	This signal is transmitted on the CAN bus, and is used by the Trip Computer to calculate the fuel economy.
GPS	Global Positioning System. A network of 24 satellites in orbit around the earth. The navigation system can simultaneously receive signals from up to 12 satellites to accurately position the vehicle on the map.
HDS	Honda Diagnostic System. A hand held tablet PC for use in diagnosing vehicle problems. This device can be used to obtain DTCs for diagnosis of navigation system CAN related problems.
H/U	Head Unit. The navigation system display unit assembly in the dash.
Initialization	This refers to the period needed to re-acquire the GPS satellite orbital information whenever the navigation system power has been disconnected. This can take from 10 to 45 minutes.
LCD	Liquid Crystal Display (the navigation screen)



Item	Definition
Map Matching	The received GPS information allows the navigation system to position the vehicle on the map. Map matching has occurred if the map screen is displaying the current street name in the bottom-shaded area.
Mic	Abbreviation for the microphone used for receiving voice commands. It is located near the map light in the ceiling.
MW	Maneuver Window. While on-route to a destination, this window displays information about the next maneuver.
Navi	Abbreviation for the Navigation System
Off Route	This occurs when the user leaves mapped roads. Off road tracking dots ("breadcrumbs") are displayed if the option is enabled in Setup. The user can use them to return to a mapped road. The bottom of the navigation screen will say "Not on a digitized road".
Outlying Areas	These are rural areas that typically have only their main roads mapped. All other roads are shown in light brown for reference only, since they have not been verified.
PC Card Slot	The PC Card (PCMCIA, type II) slot is for factory use only. Make sure that the sliding door is closed at all items. If opened, an error message is displayed on the screen.
PCM	Powertrain Control Module. This unit supplies the navigation system speed signal, and sends fuel pulses for the trip computer function via the F-CAN network.
PCMCIA	A computer industry defined term referring to the PC Card slot standard.
PIN	Personal Identification Number. A random 4 digit number created by the customer to protect personal information.
POI	Point Of Interest. These are the businesses, schools, etc. found under the "places" option on the main menu.
Polygon	Colored areas on the map screen denoting parks, schools etc. See the Navigation System owner's manual "Traveling to Your Destination" for a list of the assigned colors.
QWERTY	Keyboard layout resembling the typewriter keys. The keyboard layout can be changed to an alphabetical layout in the Setup mode.
SCS connector	The 2-pin connector used to put the navigation system into the diagnostic mode.
Security Code	Code needed to activate the navigation system. The security code can be obtained from the "iN" by entering the navigation system control serial number. The serial number can be found from the diagnostic screens (Unit Check, Navi ECU), or from the under side of the control unit.
Touch Switches or Touch Sensor	The sides of the navigation screen have 9 vertical and 20 horizontal infrared beams that are interrupted by the user's finger to select the desired function.
Tuning	A continual update of internal navigation system scaling factors. See the individual sensor tuning discussions under either "System Description," or "System Diagnostic Mode" (see page 23-108) in this manual.
Unverified Streets	These streets have not been verified for turn restrictions, one-way, etc. They are shown in light brown on the map. You can enter address destinations in these areas, but voice guidance ends at the last verified street closest to your destination.

(cont'd)

Navigation System

System Description (cont'd)

Item	Definition
Verified Streets	These streets consist of the detailed metropolitan coverage areas, and all other inter-town connection roads. These roads are shown in black on the map.
VP	Vehicle Position. When in map mode, this circular icon shows the vehicle position on the map. Touch this icon to show the latitude, longitude, and elevation of your current position.
VR	Voice Recognition. This allows voice control of many of the navigation functions. The hardware consists of the microphone, steering wheel (Talk/Back) buttons, and the front speakers. See the overview for more information.
VSP	Vehicle Speed Pulse. This pulse signal coming from the PCM is used to update the Vehicle position on the map, and to calculate the trip computer fuel economy. These pulses do not indicate direction (forward or backward). When in reverse, the navigation receives a signal from the MICU and directs the VP to move backwards on the map.
VSS	Vehicle Speed Sensor. This sensor reads the output shaft speed at the transmission and, provides a speed pulse to the PCM. The PCM sends this pulse to the navigation system and speedometer.
XM Satellite Radio	A satellite band radio system where signals are received from either a satellite or land based transmitters.
Yaw Sensor	This device is located in the navigation system control unit and senses the side-to-side twisting force generated when the vehicle turns.

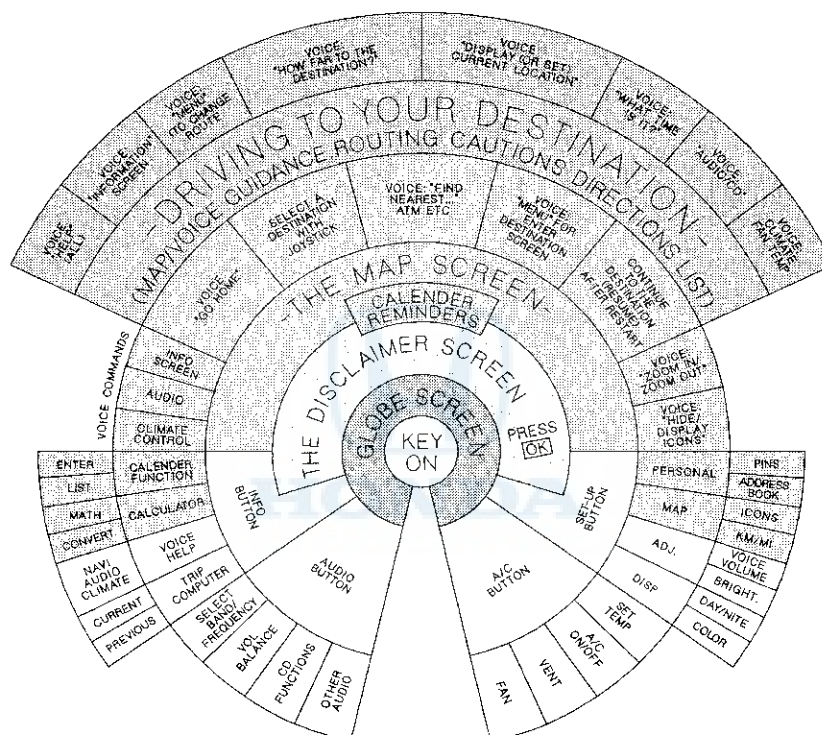




System Function Diagram

This diagram shows the features of the navigation system starting at the center and working outward in layers. The navigation program starts at "Key ON", and then displays the globe screen. Once the disclaimer screen is acknowledged, the next shaded portions of the diagram become active. However, some functions of the INFO and SET UP buttons, and all functions of the AUDIO and A/C buttons can be accessed immediately after the globe screen (white).

This items above the map screen show various methods to begin a destination, such as "Go Home". Once you begin driving to your destination, you are provided with map/voice guidance, routing cautions (in unverified areas), and a directions list. While driving to your destination, use the voice control system as much as possible to interact with the navigation, audio, and climate control systems.



- ☐ Functions accessible at any time
- ☐ Disclaimer screen
- ☐ Map screen/voice commands to enter a destination
- ☐ Driving to your destination
- ☐ Voice commands while driving to your destination
- ☐ Globe screen

(cont'd)

Navigation System

System Description (cont'd)

Diagnostic Function Diagram

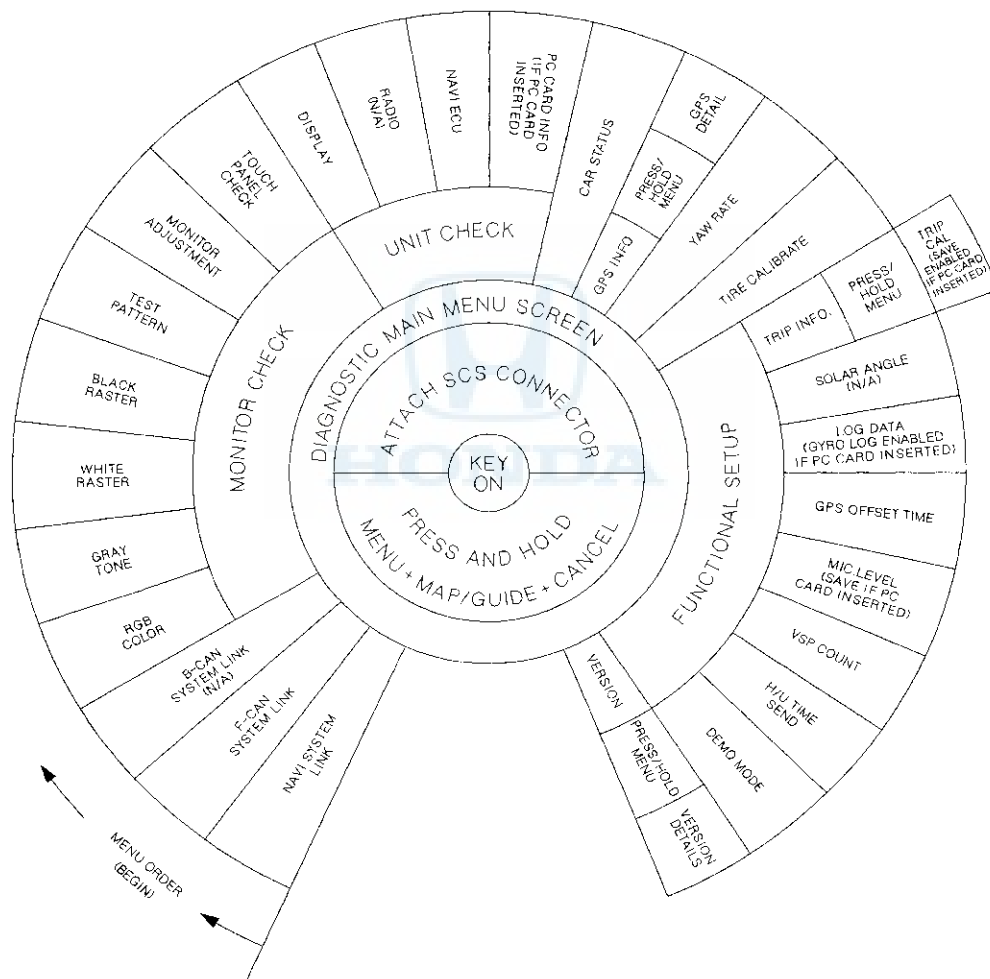
This diagram shows the diagnostic slice of the System Function Diagram. It has the diagnostic features of the navigation system starting at the center and working outward in layers. The diagnostic starts at "Key ON," and then displays the Diagnostic Main Menu (Select Diagnosis items) after:

Starting the vehicle with the SCS connector plugged in to the navigation service check connector (see page 23-144) to get to the System Links screen, then selecting Return.

Simultaneously pressing and holding the MENU, MAP/GUIDE, and CANCEL buttons.

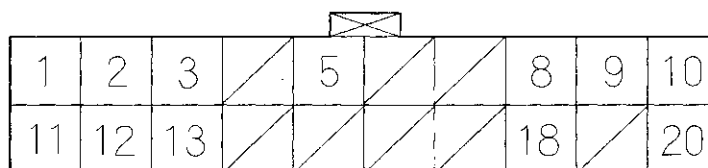
The diagram shows the available menu choices starting at the bottom left and moving clockwise.

In most cases, do not clear or change settings in any diagnostic screen unless instructed to do so in the explanation or by the factory. If the factory supplies you with a PCMCIA card to place in the PC slot, then the features specified in the diagram with "Card" are available. The section labeled "For Developer Only" contains items for factory use. For instance, the factory might ask you for information from System History.





Navigation Unit Inputs and Outputs for Connector A (20P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	R SIG (Red signal)	Red color signal	0—1 V AC	If open: Red color missing (see "RGB Color" diagnostic). If short to ground: Red color missing (see "RGB Color" diagnostic).
2	RED	G SIG (Green signal)	Green color signal	0—1 V AC	If open: Green color missing (see "RGB Color" diagnostic). If short to ground: Green color missing (see "RGB Color" diagnostic).
3	GRY	SH SIG (Shield signal)	Shield for terminal No. 1, 2, 11, 12, 13	0 V	If open: No change to display. If short to ground: No change to display.
5	RED/BLK	ILL (+) (Illumination positive)	Parking light on signal from dash and console lights, under-hood "Relay fuse box"	Lights on= battery voltage, Lights off=0 V	If open: When brightness="Auto," night mode for the display is inoperative when lights on. If short to ground: Blows fuse 4 in under-hood fuse/relay box.
8	WHT	CAN-H (CAN high)	F-CAN bus communication with the "gauge control module"	Pulses 2.5—6 V average 3 V	If open: 1) System Links FI-ECU, and Meter both show "NG." 2) F-CAN diagnostic="NG." 3) B-CAN diagnostic="NG." 4) Car status CHG (CAN)=0. 5) Functional Setup, Trip into, FUP & Sampled FL=0. If short to ground: Same diagnostic conditions as when open, and also sets the following DTCs. • B1168 Gauge Control Module loss of Comm. (Engine) • B1169 Gauge Control Module loss of Comm. (A/T) • B1178 F-CAN communication Circuit error. • U0073 (F-CAN Bus off) • U0155 (F-CAN Gauge control) • U0121 (F-CAN TCS control)
9	GRN/BLK	SH DISP BUS (Shield display bus)	Shield for display bus terminal No. 10, 20	0 V	If open: No change to display. If short to ground: No change to display.
10	BLU	DISP BUS (+) (Display bus positive)	Data bus (+) GA-Net	0 V—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.

(cont'd)

Navigation System

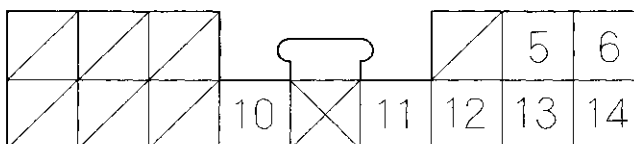
System Description (cont'd)

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
11	YEL	B SIG (Blue signal)	Blue color signal	0—1 V AC	If open: Blue color missing (see "RGB Color" diagnostic). If short to ground: Blue color missing (see "RGB Color" diagnostic).
12	GRN	C SIG (Composite signal)	Composite video (vertical/horizontal) Synchronizing signal	0.3 V AC	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
13	BLK	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	BLK	CAN-L (CAN low)	F-CAN bus communication with the "gauge control module"	Pulses 2.5—6 V average 3 V	If open: 1) System Links FI-ECU, and Meter both show "NG." 2) F-CAN diagnostic="NG." 3) B-CAN diagnostic="NG." 4) Car status CHG (CAN)=0. 5) Functional Setup, Trip into, FUP & Sampled FL=0. If short to ground: Same diagnostic conditions as when open, and also sets the following DTCs. • B1168 Gauge Control Module loss of Comm. (Engine) • B1169 Gauge Control Module loss of Comm. (A/T) • B1178 F-CAN communication Circuit error. • U0073 (F-CAN Bus off) • U0155 (F-CAN Gauge control) • U0121 (F-CAN TCS control)
20	PNK	DISP BUS (—) (Display bus negative)	Data bus (—) GA-Net	0 V—5 V pulses nominally 2.5 V	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.





Navigation Unit Inputs and Outputs for Connector B (14P)



Wire side of female terminals

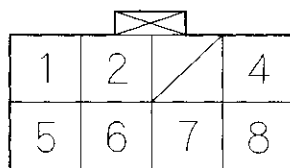
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
5	WHT	RG L (+) (Route guidance voice left positive)	Left audio signal of voice guidance, and Voice Recognition (VR) prompts	Audio signal 0.004—0.04 V	If open: If voice activated, radio speakers buzz; if voice off, no effect. If short to ground: If voice activated, radio speakers buzz; if voice off, no effect.
6	BLU	MIC SIG (+) (Mic signal positive)	Microphone output signal positive	4—5 V (with TALK button pressed)	If open: No microphone signal shown in diagnostic screens: "Navi System Link" and Functional Setup "Mic Level." If short to ground: No microphone signal shown in diagnostic screens: "Navi System Link" and Functional Setup "Mic Level."
10	PUR	STRG SW (Steering switches)	Steering switch output	4—5 V (Talk button depressed) 2.5—3 V (Back button depressed)	If open: Steering wheel "Talk," and "Back" switch/buttons do not work. If short to ground: Steering wheel "Talk," and "Back" switch/buttons do not work.
11	LT GRN	SH RG (Shield route guidance)	Shield for terminal No. 5, 12	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
12	BLU/RED	GND RG (Ground route guidance)	Ground for voice guidance, and Voice Recognition (VR) prompts	0 V	If open: No effect on voice output. If short to ground: No effect on voice output.
13	GRY	SH MIC (Shield mic)	Shield for terminal No. 6, 14	0 V	If open: No effect on voice recognition. If short to ground: No effect on voice recognition.
14	PNK	GND MIC (Ground mic)	Ground for microphone signal	0 V	If open: No microphone signal shown in diagnostics: "Navi System Link" and Functional Setup "Mic Level." If short to ground: No effect on voice recognition.

(cont'd)

Navigation System

System Description (cont'd)

Navigation Unit Inputs and Outputs for Connector C (8P)

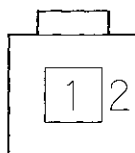


Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	+B (+B Power source)	Continuous power source	Battery voltage	If open: Display picture goes out (display back light still on). NOTE: System will reboot to "enter code" screen. If short to ground: Blows fuse No. 7 (10A) in the under-dash fuse/relay box.
2	YEL	ACC (Accessory)	Power source for accessories	Battery voltage at ACC (I)	If open: Display picture goes out (display back light still on). NOTE: When re-connected the system will reboot to "enter code" screen. If short to ground: Blows fuse No. 32 (7.5A) in the under-dash fuse/relay box.
4	BLK	GND (Ground)	Ground for navigation unit	0 V	If open: No effect on system. If short to ground: No effect on system.
5	WHT/RED	BACK LT (Back light)	Reverse signal of select lever from "Multiplex Integrated Control Unit" (A/T) or backup light switch (M/T)	In reverse, battery voltage: Otherwise 0 V	If open: Navigation never sees reverse. Diagnostic screen "Car Statue," "Back"=0. If short to ground: Blows fuse No. 21 (7.5A) in the under-dash fuse/relay box.
6	BLU	VSP (Vehicle speed pulse)	Vehicle speed pulse signal from PCM	Pulses 0—5 V: Average 2.5 V, when moving	If open: No vehicle speed pulses. Diagnostic screen "Car Status," VSP Navi=0. If short to ground: No vehicle speed pulses. Diagnostic screen "Car Status," VSP Navi=0.
7	RED	DIAG P (Diagnostic positive)	Service check signal for navigation system	5—6 V	If open: No effect on system. If short to ground: System goes into diagnostic mode.
8	ORN	DIAG N (Diagnostic negative)	Ground for service check signal	0 V	If open: No effect on system. If short to ground: No effect on system.



Navigation Unit Inputs and Outputs for Connector E (2P)



Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	—	GPS	GPS signal (5 V in, GPS signal out)	5 V	If open: GPS icon on screen is white, system links screen ANT shows "NG." If short to ground: Same as open.
2	—	GND GPS	Ground for GPS signal	0 V	If open: GPS icon on screen is white, system links screen ANT shows "NG." If short to ground: No effect on system.

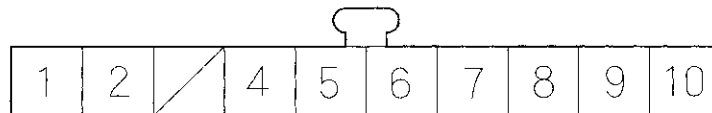


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Navigation System

System Description (cont'd)

Display Unit Inputs and Outputs for Connector A (10P)

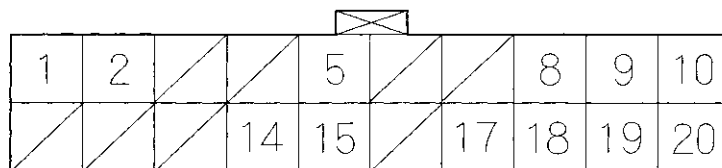


Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BLK	GND SIG		0 V	If open: Display visible, but very dim. If short to ground: Display unaffected.
2	BLU	5 V		5 V	If open: All display segments show briefly at key on. If short to ground: All LCD segments do not work, display backlight on.
4	YEL	RESET	Time set sync signal	5 V	If open: Clock display will not set to navigation time (when time offset is applied or when "Reset" touched in Setup "Clock Adjustment" screen). If short to ground: All LCD segments do not work, display backlight on.
5	PUR	CLOCK		0—0.04 V	If open: Randomly displays some characters, display backlight on. If short to ground: Randomly displayed characters, display backlight on.
6	ORN	DATA		0—0.04 V	If open: All LCD segments on, backlight on. If short to ground: All LCD segments on, backlight on.
7	BLU	CE		0 V	If open: All LCD segments on, backlight on. If short to ground: All LCD segments on, backlight on.
8	GRY	SH SIG	Shield for terminal No. 4, 5, 6, 7	0 V	If open: No effect on display. If short to ground: No effect on display.
9	RED	LCD BL (—) (LCD backlight—)	Power for LCD backlight—	0—0.2 V	If open: Display functions normal, but display is very dim. If short to ground: Display functions normally.
10	GRN	LCD BL (+) (LCD backlight+)	Power for LCD backlight+	9.2 V	If open: Display completely blank. If short to ground: Display completely blank.



Display Unit Inputs and Outputs for Connector B (20P)



Wire side of female terminals

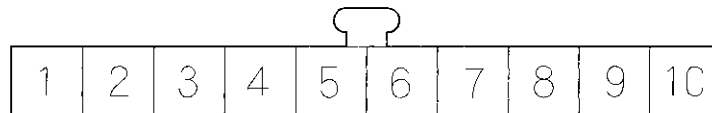
Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	WHT	+B (+B power source)	Continuous power source	Battery voltage	If open: Screen completely off (no backlight visible). If short to ground: Blows fuse No. 7 (10A) in the under-dash fuse/relay box.
2	YEL	ACC (Accessory)	Power source for accessory	Battery voltage at ACC (I)	If open: Display and buttons do not work. If short to ground: Blows fuse No. 32 (7.5A) in the under-dash fuse/relay box.
5	BLU	DISP BUS (+) (Display bus positive)	Data bus (+) GA-Net	0 V—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Navigation buttons and touch screen do not work.
8	WHT	R SIG (Red signal)	Red color signal	0—1 V AC	If open: Red color missing (see “RGB Color” diagnostic). If short to ground: Red color missing (see “RGB Color” diagnostic).
9	RED	G SIG (Green signal)	Green color signal	0—1 V AC	If open: Green color missing (see “RGB Color” diagnostic). If short to ground: Green color missing (see “RGB Color” diagnostic).
10	BLK	GND (Ground)	Ground for display unit	0 V	If open: No change to display. If short to ground: No change to display.
14	GRY	SH DISP BUS (Shield display bus)	Shield for display bus terminal No. 5, 15	0 V	If open: No change to display. If short to ground: No change to display.
15	PNK	DISP BUS (—) (Display bus negative)	Data bus (—) GA-Net	0 V—5 V pulses average 2.5 V depends on bus traffic	If open: Navigation buttons and touch screen do not work. If short to ground: Hard and touch buttons work OK.
17	BLK	GND SIG (Ground signal)	Ground for color signal	0 V	If open: No change to display. If short to ground: No change to display.
18	YEL	B SIG (Blue signal)	Blue color signal	0—1 V AC	If open: Blue color missing (see “RGB Color” diagnostic). If short to ground: Blue color missing (see “RGB Color” diagnostic).
19	GRN	C SIG (Composite signal)	Composite video (vertical/horizontal) synchronizing signal	0.3 V AC	If open: Picture rolls horizontally, colors still visible. If short to ground: Picture rolls horizontally, colors still visible.
20	GRY	SH SIG (Shield signal)	Shield for terminal No. 8, 9, 17, 18, 19	0 V	If open: No change to display. If short to ground: No change to display.

(cont'd)

Navigation System

System Description (cont'd)

Audio-HVAC Subdisplay Unit Inputs and Outputs for 10P Connector



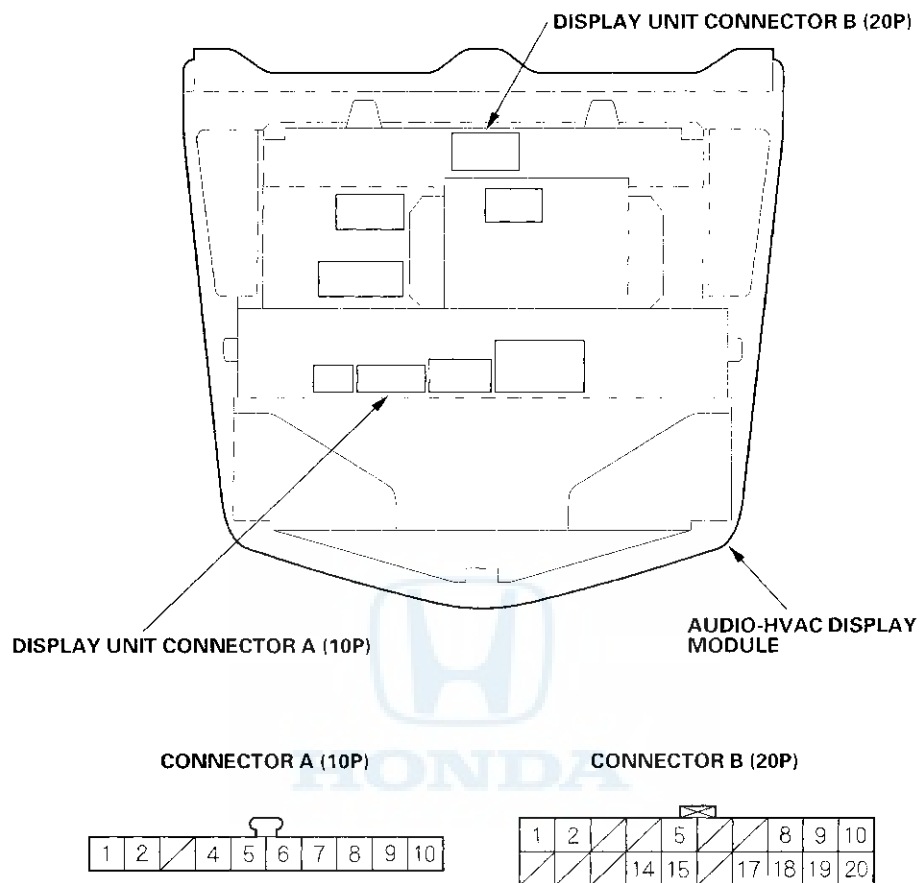
Wire side of female terminals

Terminal Number	Wire Color	Terminal Name	Description	Voltage (about)	Symptom
1	BLK	GND SIG		0 V	If open: Display visible, but very dim. If short to ground: Display unaffected.
2	BLU	5 V		5 V	If open: All display segments show briefly at key on. If short to ground: All LCD segments do not work, display backlight on.
3	BLK	GND		0 V	
4	YEL	RESET	Time set sync signal	5 V	If open: Clock display will not set to navigation time (when time offset is applied or when "Reset" touched in Setup "Clock Adjustment" screen). If short to ground: All LCD segments do not work display backlight on.
5	YEL	CLOCK		0—0.04 V	If open: Randomly displays some characters, display backlight on. If short to ground: Randomly displayed characters, display backlight on.
6	ORN	DATA		0—0.04 V	If open: All LCD segments on, backlight on. If short to ground: All LCD segments on, backlight on.
7	BLU	CE		0 V	If open: All LCD segments on, backlight on. If short to ground: All LCD segments on, backlight on.
8	GRY	SH SIG	Shield for terminal No. 4, 5, 6, 7	0 V	If open: No effect on display. If short to ground: No effect on display.
9	RED	LCD BL— (LCD backlight—)	Power for LCD backlight—	0—0.2 V	If open: Display function normal, but display is very dim. If short to ground: Display functions normally.
10	GRN	LCD BL+ (LCD backlight+)	Power for LCD backlight+	9.2 V	If open: Display completely blank. If short to ground: Display completely blank.



Circuit Diagram

Display unit connectors



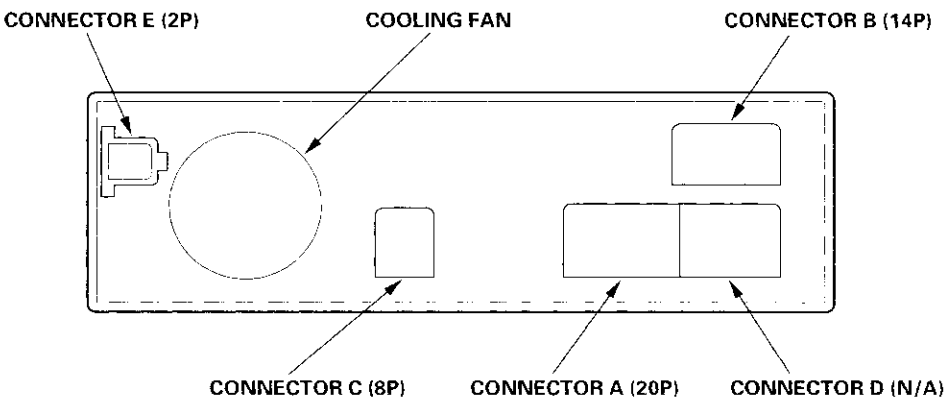
Wire side of female terminals

(cont'd)

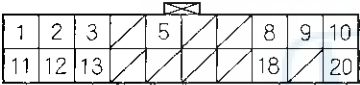
Navigation System

Circuit Diagram (cont'd)

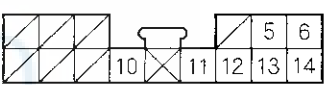
Navigation unit connectors



CONNECTOR A (20P)



CONNECTOR B (14P)



CONNECTOR C (8P)



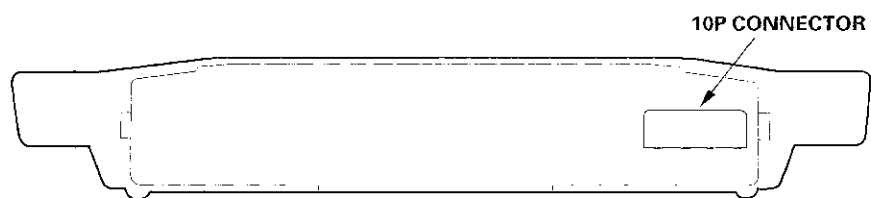
CONNECTOR E (2P)



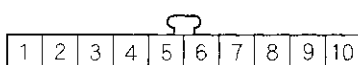
Wire side of female terminals



Audio-HVAC subdisplay unit 10P connector



10P CONNECTOR



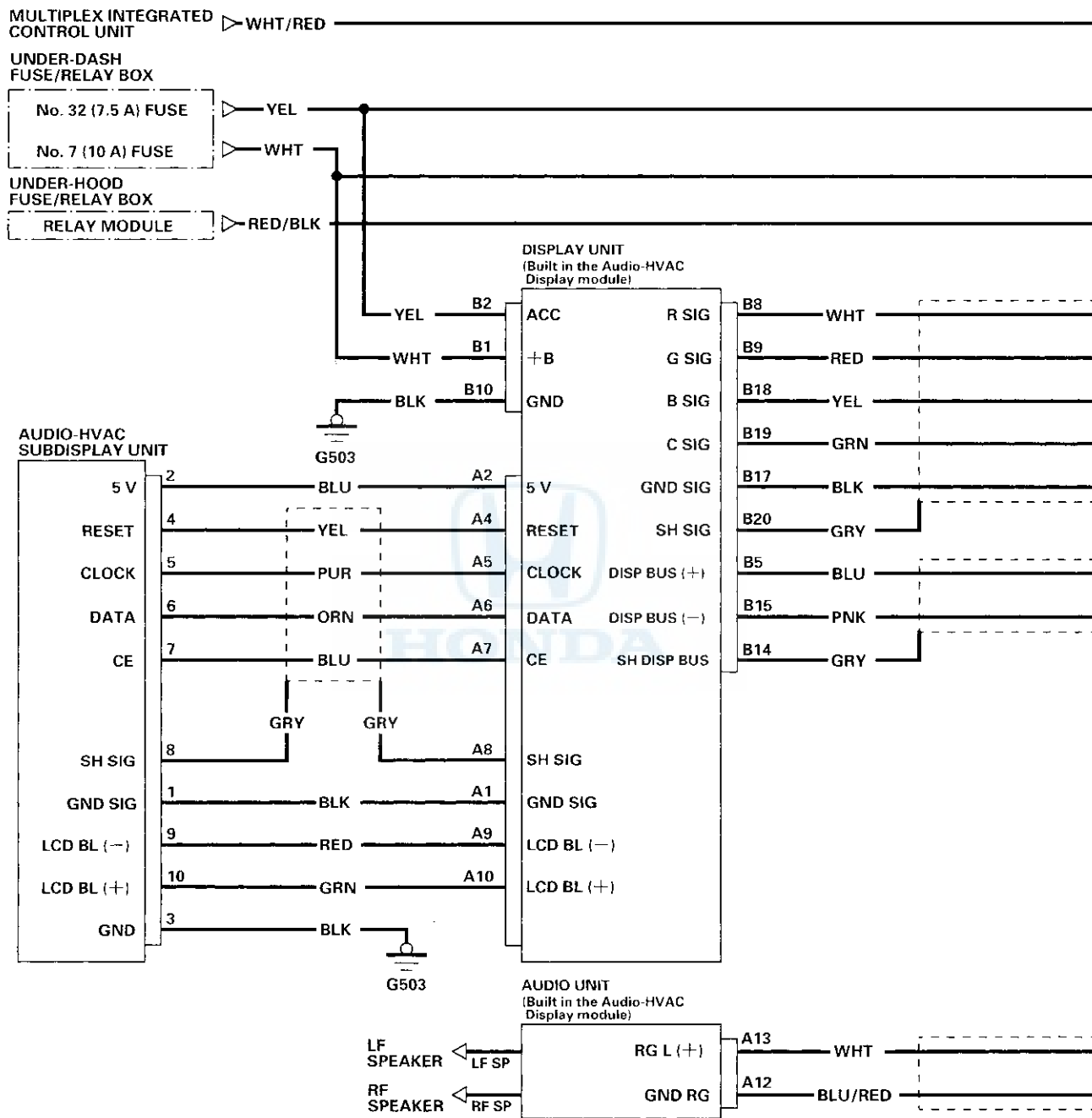
Wire side of female terminals

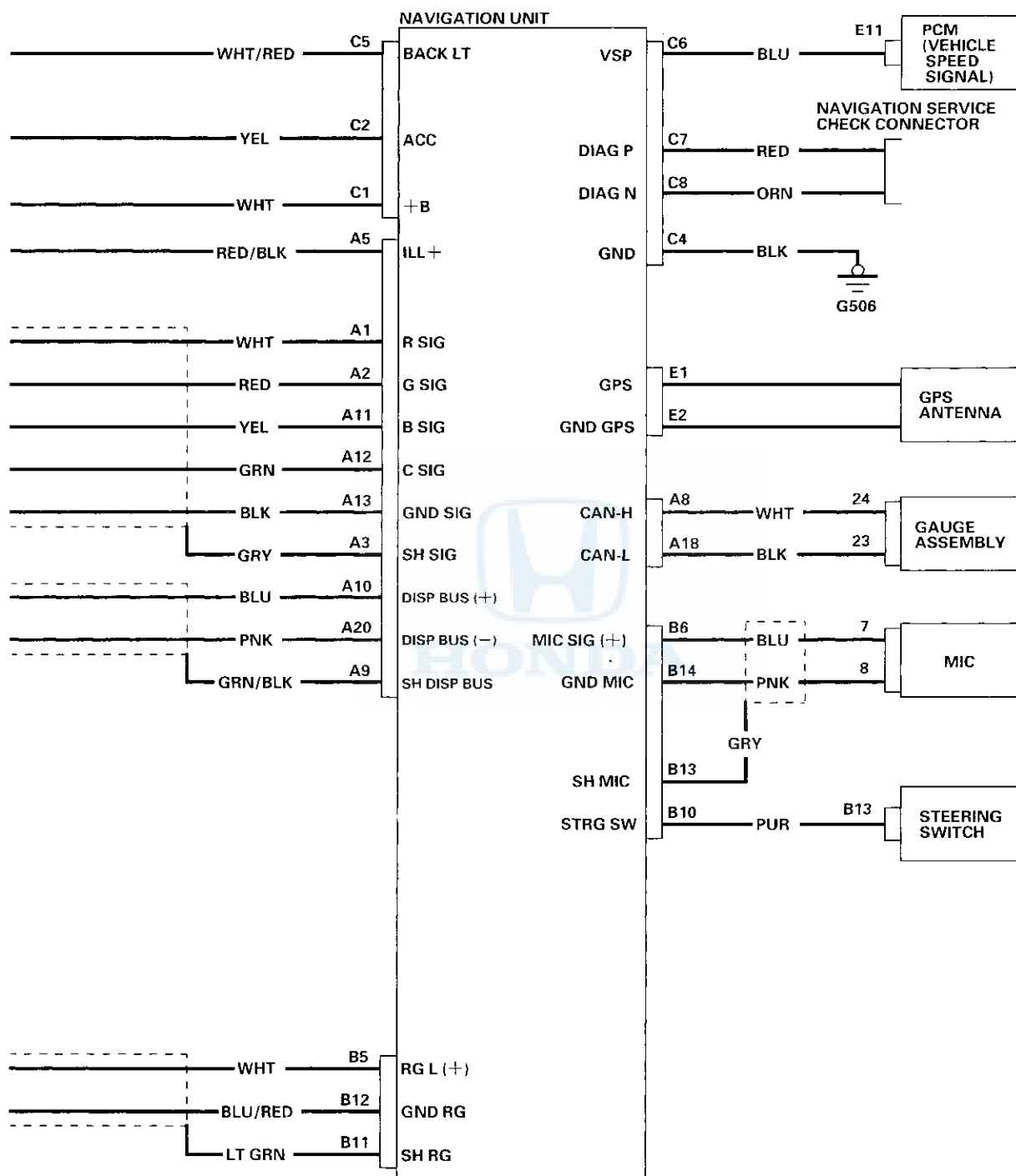


(cont'd)

Navigation System

Circuit Diagram (cont'd)





Navigation System

System Diagnostic Mode

Start-up procedure and Diagnosis Menu

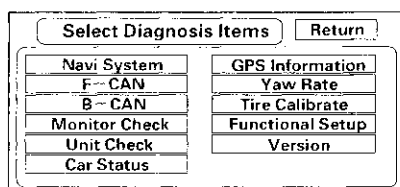
There are two ways to enter the diagnostic mode:

1. Connect the SCS connector (see page 23-144) to the navigation service connector located in the trunk. Turn the ignition switch to the ON (II) position. The display will go directly to the diagnostic menu screen shown.

NOTE: When finished troubleshooting, make sure to remove the SCS connector.
2. Turn the ignition switch ON (II). Use the navigation display hard buttons as described:
 - A. If the battery has not been disconnected, then press and hold the 3 buttons (Menu, Map/Guide, and Cancel), and keep them pressed for about 5 seconds. The display screen will go directly to the "Select Diagnosis Items" menu shown.
 - B. If the battery was disconnected and reconnected prior to this test, hold down the Menu and Zoom Out buttons at the "Code" or "GPS Acquire" screen. The display will go to the "Navi System Link" screen. Push the joystick to go to the "Functional Setup menu," then touch the Return icon to get to the "Select Diagnosis Items" menu.

NOTE: This only allows access to the diagnostic screens. All other navigation functions are disabled.

DIAGNOSTIC MENU SCREEN



3. After the display changes to the Select Diagnosis Items menu, select the item you want to check and the diagnostic will start. To return to the previous screen, select "RETURN".

- Navi System (Link)
- F-CAN (System link)
- B-CAN (System link)
- Monitor Check
- Unit Check
- Car Status
- GPS Information
- Yaw Rate
- Tire Calibrate
- Functional Setup
- Version

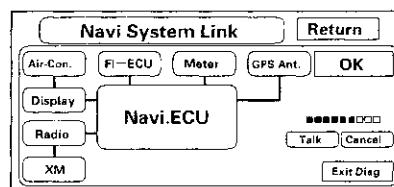


Navi System Link

- This diagnostic tests the cables connecting the navigation components. Ensure that the ignition switch is in the ON (II) position. When the diagnostic begins, a "bong" sound is heard. The system is in a "Detecting" mode, and is waiting for all items in white to be tested. This includes the navigation voice control (TALK/BACK) buttons, and microphone. Press the navigation TALK button on the steering wheel, and in a normal voice, say "testing". The Talk indicator on the screen should become green, and the voice level indicator should move to at least the 6th bar to pass. Next, press the navigation BACK button. This should cause the "Cancel" indicator to go green.
- If all of the communication lines connecting the system components, and the navigation TALK/BACK buttons/microphone check out OK (all block diagram items green), then the "OK" indicator will become green.
- If there is a problem with the system, the faulty system component item will change to red, and the screen will show "NG" in red. Use the troubleshooting index, and other diagnostic screens to help locate the problem.
- The indication on the screen will not change until the ignition switch is cycled. After repairing the affected cable or system, repeat this diagnostic.

NOTE: Green boxes and green "OK" indicate that the communications lines (cables) are intact. This diagnostic does not necessarily imply that the individual components are functioning properly. For instance, the GPS antenna wire may be crushed, but still show as "green". A road test, or other diagnostic may be necessary to find the problem.

- This navigation system is designed for use in the US or Canada market.
 - US Market: English is the only language choice.
 - Canada Market: On the disclaimer screen, English or French can be selected.
 - Touch the "Chg Canada" or "Chg US" button to select the desired choice.
- Select "Return" to return to the Diagnosis Menu.



NOTE:

- The mic level indicator must reach the 6th bar or greater to pass the test.
- If the XM link is red or flashing red, go to audio system symptom troubleshooting (see page 23-33).

(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

F-CAN System Link

F-CAN (Fast Controller Area Network) passes information between processors on the network. For example, the F-CAN network is used to pass fuel pulses between the PCM and the navigation unit for the trip computer function. The F-CAN network uses a communication protocol that transmits data at 500 Kbps.

- If the diagnostic screen below reads NG with the ignition switch ON (II), then diagnostic trouble codes (DTCs) for the F-CAN can be retrieved with the HDS (Honda Diagnostic System). The data displayed in the ID boxes is irrelevant.
- For more details on troubleshooting the F-CAN, refer to the multiplex system.

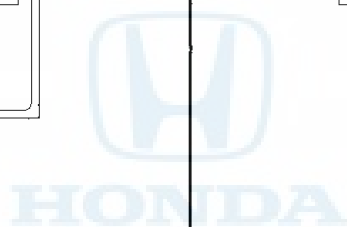
F-CAN System Link			Return
F-CAN	ERROR ACTIVE		OK
UNIT	ID	ID	
ENG	xxx	xxx	
METER	xxx	xxx	

B-CAN System Link

B-CAN (Body Controller Area Network) communication moves at a slower speed for convenience related items, and for other functions.

- If the diagnostic screen below reads NG with the ignition switch ON (II), then diagnostic trouble codes (DTCs) for the B-CAN can be retrieved with the HDS (Honda Diagnostic System). The data displayed in the ID boxes is irrelevant.
- For more details on troubleshooting the B-CAN, refer to the multiplex system.

B-CAN System Link				Return
B-CAN		OK		OK
UNIT	STATUS	UNIT	STATUS	
Headlight SW	OK	Door SW UNIT	OK	
Wiper SW	OK	A/C UNIT	OK	
MICU UNIT	OK	COMB UNIT	OK	



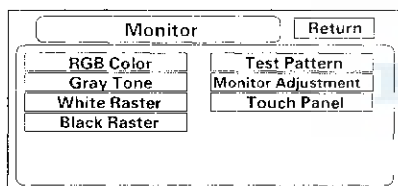


Monitor Check

Overview of display unit

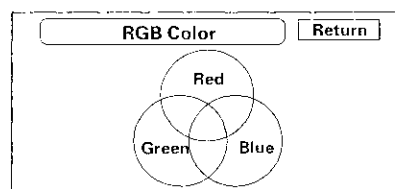
- The display unit communicates with the navigation unit over its own GA-Net bus. Information is sent to the navigation unit whenever the user activates the touch screen, or buttons. Information sent by the navigation unit to the display unit includes commands to control the LCD back light.
- The display unit is protected by the security system by daisy-chaining the security signal through it, and then passing the signal to the audio unit.
- The illumination input from the gauge brightness control provides back lighting for the buttons surrounding the screen.
- The display unit also communicates with the climate control unit to set the A/C, mode, and fan speed, and to receive the outside temperature that is displayed on the A/C-INFO screen.

These screens allow troubleshooting of the display unit. Select the item you want to troubleshoot, and follow the diagnostic instructions.



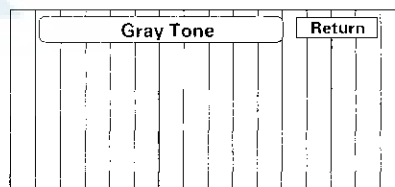
RGB Color

This screen verifies that the display unit is receiving the video (R, G, B and Composite sync) signals properly. The three primary colors should all be shown without distortion. The combination of all three should produce a central white section. If any of the colors are missing, troubleshoot for the color signal (see page 23-128). If the picture has lines in it, or scrolls horizontally or vertically, troubleshoot for a Composite sync problem (see page 23-129).



Gray Tone

This screen looks for problems with contrast. You should be able to see the changes from bar to bar across the scale. It is normal for the 2 bars on either side to appear the same.



White Raster

The entire display must be shown in white.



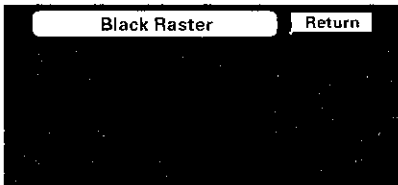
(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

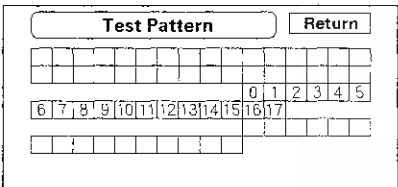
Black Raster

The entire display must be shown in black.



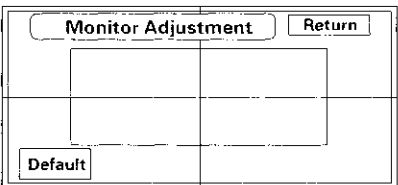
Test Pattern

The chart shows the colors being used for the Map and Menu screens. This is for factory use only. To check the color signal use the "RGB Color" test.



Monitor Adjustment

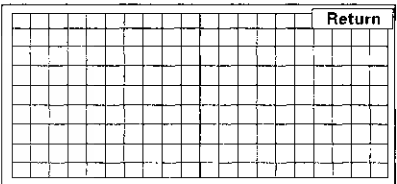
This allows the navigation display to be centered. Use the joystick to move the picture up/down or left/right. It is unlikely that you will ever need to adjust the monitor position. The "Default" button will reset the display position to factory specifications.



Touch Panel

The panel touch sensing system consists of 9 horizontal and 20 vertical infrared beams. Touching the screen blocks both a horizontal and a vertical beam. Every possible touch position is shown on this diagnostic screen. Touching one of these areas should cause its color to reverse, and sound a "beep". If any areas of the screen either don't respond, or respond at some other location when touched, then replace the display unit. The "Display" test under Unit Check provides an additional method to determine if one of the infrared sources or detectors is bad.

NOTE: Direct sunlight can affect this test by falsely triggering the infrared detectors, so perform this diagnostic inside or in a shaded area.





Unit Check

Select the item you want to check, and the test starts.

Select Check Units		Return
Display		
Radio		
Navi ECU		
PC Card Info.		

Display

This diagnostic performs additional checks on the communication bus between the control unit and the display. In addition, the internal electronics and touch screen functionality are confirmed.

- When the connection is NG, first check for loose terminals at the navigation unit and the display unit connections. Next check for an open or short in the communication line between the navigation unit and the display unit. If the line is found to have an open or short, replace the affected shielded harness.
- If the ROM or RAM is NG, replace the display unit.
- If the touch sensor is NG, then check for zeros in the "X", or "Y" values.
- The version represents the software version in the display.
- The "1" following the X, indicate the 20 working vertical infrared beams/receptors (from left to right). The "1s" following the Y, indicate the 9 working horizontal beams (from top to bottom). If any one of the "1s" is a zero, this indicates that there is a problem with one of the beams or receptors. Check all around the inside rim of the navigation screen for dirt or anything that may be blocking a beam. If nothing is found, replace the display unit. See the display unit diagram in the "System Description" (see page 23-89) showing the infrared beam layout. Individual touch positions can be verified by running the "Touch Panel" test under the Monitor Check.

Display		Return
Connection	OK	OK
ROM	OK	
RAM	OK	
Touch Sensor	OK	
Version	xxxxxx	
X: 11111111111111111111, Y: 11111111		

(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Radio

If the NG is indicated, check for loose audio unit connector.

Radio		Return
Connection	OK	OK

Navi ECU

This screen looks for problem with the navigation unit. When this diagnostic is initiated, there is a delay of up to a minute while it runs.

- "ROM (Application)", and "ROM (Loader)" are for factory use.
- If "V-RAM" or "D-RAM" is NG, then replace the navigation unit.
- If "GPS" indicates "NG (ANT)", then check the entire GPS antenna wire from the navigation unit to the antenna. If the wire is crushed or damaged, try a known good antenna. If this diagnostic reads OK, then order a new GPS antenna. If the diagnostic still reads NG (ANT), then replace the navigation unit.
- "DVD ROM" represents the database version on the DVD. This information can also be found in Setup Screen 4 by selecting System Information.
- "Serial No." should be the same as the serial number found on the underside of the navigation unit. This number is needed to obtain the security code from the Interactive Network (IN) system.
- Mem Clr is for factory use and should not be used unless instructed by the factory. Selecting this will erase the customer's settings, personal information, GPS orbital data, and anything else stored in memory.

Navi.ECU		Return
ROM(Application)	xxxxxxx	OK
ROM(Loader)	xxxxxxx	
V-RAM	OK	Mem Clr
D-RAM	OK	
GPS	OK	
DVD-ROM	xxxxxxx	
Serial No.	xxxxxxx	

PC Card info

There is no PC Card in the PC slot, and the screen should say, "PC Card is not inserted". Do not insert any card or object into the slot.

PC Card Info.	Return
PC Card is not inserted.	

If the factory provides a PC card and instructs you to insert a card, then the screen displays the Manufacturer, and Product Name as shown in the following screen.

PC Card Info.	Return
Manufacturer xxxxxx	
Product Name xxxxxx	



Car Status

This screen is used to confirm that navigation unit is properly receiving input signals. Signals equal to (0) are OFF, and signals equal to (1) are ON. If the value on the display does not match the actual vehicle status, then check the wire carrying the signal.

- CHG—(OBSOLETE-NOT USED) Charge indicator (Pin 3 of C-Connector)
 - a) OFF (0) when engine is off, or alternator is not charging
 - b) ON (1) when engine is running

This signal was used by the previous DVD navigation system. If CHG was off, then the screen was shut off after 10 minutes of inactivity to minimize battery consumption.

- VSP—Vehicle Speed Pulse from PCM (Pin 6 of C-connector)
 - a) OFF (0) when vehicle is not moving
 - b) ON (1) when vehicle is moving

The VSP comes from the PCM as a dedicated signal. Internally, the navigation unit compares the actual VP on the map against street data to adjust the pulse to speed scaling factor. As this scaling factor becomes more accurate, the "Level" gradually increases from 0 to 10.

- BACK—Reverse indication from taillight relay (Pin 5 of C-connector)
 - a) OFF (0) when shift lever is in any position other than reverse
 - b) ON (1) when shift lever is in reverse

The Back signal is used by the navigation unit to allow the map screen to show the VP moving backwards when in reverse. This signal is needed because the Speed Pulse has no direction indication.

- CHG (CAN)—Charge indicator from PCM using F-CAN bus (Pin 8, 18 of navigation unit A-connector)
 - a) OFF (0) when engine is off
 - b) ON (1) when engine is running

This signal is obtained off of the F-CAN bus. See the Multiplex control system for troubleshooting F-CAN. Diagnostic trouble codes (DTCs) for the F-CAN can be retrieved with the HDS (Honda Diagnostic System).

- ILL—Illumination Indication (Pin 5 of navigation unit A-connector)
 - a) OFF (0) when parking lights, or headlights are off
 - b) ON (1) when parking lights, or headlights are on

This signal is used by the navigation unit to determine whether to put the navigation screen into the Day or Night brightness mode. (Setup screen 1)

- DVD Lid—Senses if DVD door is open
 - a) (Close) when door is closed
 - b) (Open) when door is open

The navigation unit has a micro switch to detect this. If open is indicated when the door is closed, replace the navigation unit.

- PC Card Lid—Senses if PC Card door is open
 - a) (Close) when door is closed
 - b) (Open) when door is open

The navigation unit has a micro switch to detect this. If open is indicated when the door is slid shut, then replace the navigation unit. This slot is for insertion of PC Flash memory cards for gathering diagnostic information. This is for factory use only.

Car Status		Return	
CHG	[*]	ILL	[*]
VSP(NAVI)	[1]	BACK	[*]
CHG(CAN)	[*]		
DVD Lid	[Close]	PC Card Lid	[Close]

(cont'd)

Navigation System

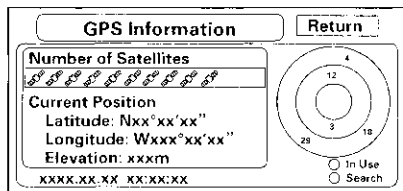
System Diagnostic Mode (cont'd)

GPS Information

This screen shows the current status of GPS reception. The circular diagram shows the current location of the GPS satellites (yellow numbers) as they would appear in the sky. The outer circle represents the horizon (0 degrees elevation). The middle and inner circles represents 30 and 60 degrees respectively. The very center of the diagram (90 degrees elevation) is directly overhead. Naturally, nearby obstructions, like tall buildings will block satellites in that direction. That is why it is necessary to be in an open area to effectively troubleshoot GPS reception issues. The satellite numbers shown on the diagram correspond to the "PRN" number in the "GPS Details" screen. There are always 24 "active" GPS satellites in orbit. Because satellites fail, and have to be removed from service, spares always parked in orbit, ready to be activated. This is why the PRN (satellite ID number) can be greater than 24.

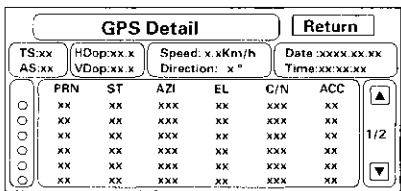
NOTE:

- To use this screen for troubleshooting, the vehicle should be out side away from buildings, tall trees, and high-tension wires for at least 10 minutes with the engine running.
- Metallic window tinting or after-market electronic accessories mounted near the navigation or display units can interfere with GPS acquisition.
- The "Number of Satellites" box shows the number of acquired satellites (maximum of 12). It should contain 3 or more icons. If not troubleshoot for "GPS icon does not indicate" (see page 23-133).
- The "Current Position" shows latitude, longitude, and elevation(in meters). If there are less than 3 satellites, the elevation can be grossly inaccurate.
- The Date/Time field shows the current date, and also a time that includes daylight savings and other offsets entered by the customer in Setup screen 2 "Adjust Time Zone/Clock".



GPS Detail

By pressing and holding the MENU button for 10 seconds, a GPS Detail screen is displayed. This screen displays real time incoming satellite positional data. Most of the information shown on this screen is for factory use, however some of the data can indicate partial GPS signal interference.



- The box TS/AS and HDop/VDop is for factory use.
- The Speed and Direction information is updated in real time when driving, and can be used to detect intermittent speed sensor problems.
- The Date/Time Information is the same as in Setup screen 2 "Adjust Time Zone/Clock."
- If the "3D" icon is shown above the yellow dots, this implies that at least 4 satellites are available for map positioning, and the "GPS" indicator on the map screen will be green. See the Global Positioning System detailed explanation in the "System Description" (see page 23-87).
- If the row of data in the table below begins with a "yellow dot," the AZI and EL fields can be used to locate each satellite on the circular GPS diagram (see prior screen).



NOTE: The data shown in the GPS Detail screen is an example only.

The table of values shown on the screen has the following columns:

Column	Description	Problem indication
Active	Active satellites (Yellow Dot)	If "3D" is missing, follow GPS icon does not indicate troubleshooting (see page 23-133).
PRN	The satellite ID number	
ST	The status: 0 = cannot view or searching, 2 = acquiring	If all 0, then, follow GPS icon does not indicate troubleshooting (see page 23-133).
AZI	Azimuth, the angle (0–360) clockwise from north	
EL	Elevation from the horizon (90 deg is overhead)	
C/N	N/A	Healthy signal is 49–52, no signal: 27–33
ACC	N/A	

Yaw Rate

This diagnostic checks the yaw rate sensor in the control unit. This device detects when the vehicle turns, and repositions the vehicle position icon on the map screen. For more detailed information, see the yaw rate sensor theory of operation under "System Description" (see page 23-86).

- "Sensor" indicates the voltage output from the yaw rate sensor. It should indicate about 2.500 V when stopped.
- "Offset" is the reference voltage or standard within the yaw rate sensor. It also should indicate about 2.500 V when stopped.
- A "sensor" output voltage HIGHER than the "Offset" voltage indicates that the vehicle is turning to the right.
A "sensor" output voltage LOWER than the "Offset" voltage indicates that the vehicle is turning to the left.
- The yaw rate offset, and sensor should both indicate about 2.500 V when stopped. If either reads zero, or 5.000 V replace the navigation unit.

- The yaw rate offset and sensor should be within ± 0.01 V of each other when stopped. The sensor value should change relative to the offset as the car is turned while driving. If not, replace the navigation unit.

Example: Car stopped

Normal		Abnormal	
Offset	2.526 V	Offset	2.526 V
Sensor	2.516–2.536 V	Sensor	2.623 V

Example: Car turning

Normal		Abnormal	
Offset	2.526 V	Offset	2.526 V
Sensor	2.678 V (right turn) 2.478 V (left turn)	Sensor	2.623 V (no change on turns)

- Auto tuning should always be on. If it is off, turn it on.
- "Sensitivity study" represents the status of the internal tuning function. At initialization, this value starts at 6 and increases to #10 as the internal correction values become more accurate.
- The settings "CCW Cal Factor," "CW Cal Factor," and "Set" are for factory use only. THIS SHOULD NEVER BE USED.

Yaw Rate
Return

Sensor	x.xxxV	
Offset	x.xxxV	
Auto Tuning	ON	OFF
Sensitivity study	Level 5	
CCW Cal Factor	+0.0	+ -
CW Cal Factor	+0.0	+ -
Set		

(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Tire Calibrate

As the vehicle moves, the navigation system receives speed pulses from the PCM. These pulses are converted using a conversion factor to a mph speed that moves the vehicle position (VP) on the map. The navigation system has an internal tuning function that generates and refines this factor based on actual driving. The "Level" indicates the status of the tuning. At navigation initialization, it begins at 0, and increases to 10 as the navigation system is used.

- The "Auto Tuning" is factory set to "ON", and should remain on.
- The "LEVEL" indicates the tuning status. If it is less than 10, the unit is still calibrating.
- The "Tire-Cal. Tuning" and "Set" should not be used. It is for factory use only.

Tire-Calibrate

Return

Auto Tuning

ON

ON

OFF

LEVEL

Level 2

Tire-Cal. Tuning

-1.0%

-

+

Set

Functional Setup

Select the item you want to check.

Functional Setup

Return

Trip Information

Solar Angle

Log Data

GPS Offset Time

Mic Level

VSP Count

H/U Time Send

Demonstration



Trip Information

This screen shows current internal values used for trip computer calculations. They are for factory use only.

- Simulation "Start" is for factory use.
- "Data Save" should always be on. It is for factory use only.

Trip Calibrate

By holding down the MENU button while on the "Trip Information" screen, you will see the screen. This screen allows you to adjust the vehicle range (distance to empty).

- "Calc. RANGE" is the calculated value.
- "Disp. RANGE" is the distance displayed on the trip computer "Range" field. If it reads "0", the vehicle will have enough fuel to travel about 20 miles.
- Range Tuning can be adjusted "+" or "-" to adjust the range to empty. It is recommended that this value not be changed.

NOTE: Setting the range offset too low (+10) could result in the vehicle running out of gas before the display reads "0". Make changes slowly when changing this value.

Solar Angle

This screen is used to graphically display the sun's position as determined by GPS. The navigation system uses the sun's angle, along with the sunlight sensor to control the driver/passenger A/C air flow. The heat that must be removed by the A/C unit varies, depending on the angle of the sun entering the vehicle. This screen is for factory use only, and should not be adjusted.

- The screen shows a circular diagram of the sky oriented in the direction that the vehicle is pointing. During daylight hours a red dot is shown, representing the direction and elevation of the sun. The outer circle represents the horizon (0 degrees elevation). The middle circle is 30 degrees, the center circle is 60 degrees, and the very center is directly overhead (90 degrees).
- "Auto" should always be on (yellow).
- The "Angle", "Dir", and "Reliability" settings are used by the factory to simulate the sun's position for debugging this function.

(cont'd)

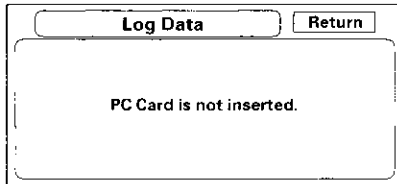
Navigation System

System Diagnostic Mode (cont'd)

Log Data

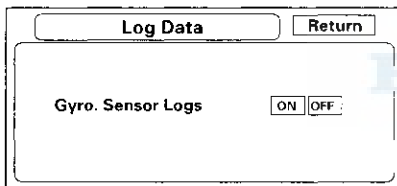
This screen allows the factory to collect log data to troubleshoot navigation system issues.

- Normally there is no card in the "PC Card Slot", and the PC slot door should always be closed.



The screenshot shows a screen with a title bar containing "Log Data" and "Return" buttons. The main area displays the text "PC Card is not inserted."

- However, if the factory provides a PC card and instructs you to insert it into the card slot (label side up), and then slide the PC Card door shut. If instructed by the factory, select "Gyro. Sensor Logs ON". Follow the factory procedure for gathering test data, and properly ending the test.

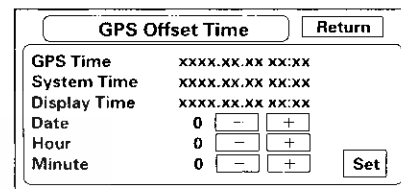


The screenshot shows a screen with a title bar containing "Log Data" and "Return" buttons. The main area displays the text "Gyro. Sensor Logs" followed by two buttons labeled "ON" and "OFF".

GPS Offset Time

This screen is for factory use only. It allows adjustment of the GPS time. This display updates in real time.

- "GPS Time" is the time as received from the GPS satellites. It is in Greenwich Mean Time (GMT).
- "System Time" is the internal time used by the navigation unit to calculate your position on the map. It is also in Greenwich Mean Time (GMT).
- "Display Time" is the time shown on Setup screen 2 "Adjust Time Zone/Clock", and reflects any changes due to daylight savings time or time adjustments entered by the customer.
- Date, Hour, Minute, and "Set" should not be used.



The screenshot shows a screen with a title bar containing "GPS Offset Time" and "Return" buttons. The main area contains the following fields and controls:

GPS Time	xxxx.xx.xx	xx:xx
System Time	xxxx.xx.xx	xx:xx
Display Time	xxxx.xx.xx	xx:xx
Date	0	- +
Hour	0	- +
Minute	0	- +

A "Set" button is located at the bottom right of the main area.

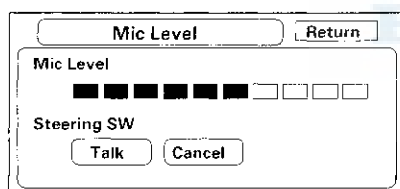


Mic Level

This diagnostic allows you to independently test the microphone and the TALK and BACK buttons. They are used to activate the voice control system. The microphone is located near the map light in the ceiling. It is directional, and works best if the voice is coming from the drivers seat.

- Press the TALK button on the steering wheel, and in a normal voice say "testing". The TALK indicator on the screen should momentarily become green, and the text "Now Recording..." should appear in yellow. In addition, the Mic Level indicator should on the screen does not briefly become green, then check the wiring from the TALK button to the navigation unit. If there is no "Mic Level" movement when you speak, then you should check the wire running from the microphone to the control unit.
- Press the BACK button on the steering wheel. This should cause the Cancel indicator on the screen to momentarily become green. If it does not briefly change to green, then check the wiring from the steering wheel BACK button to the navigation unit.

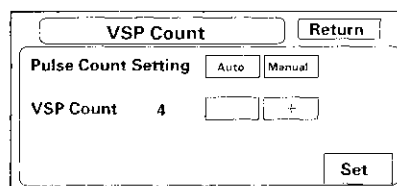
NOTE: The Mic Level indicator must reach the 6th bar or greater to pass the test.



VSP Count

This screen displays the number of pulses per revolution of the tire. This is for factory use only, and should not be changed.

- "Pulse Count Setting" should always be set to "Auto".
- "VSP Count" should always be "4", and should never be adjusted or set to any other value.

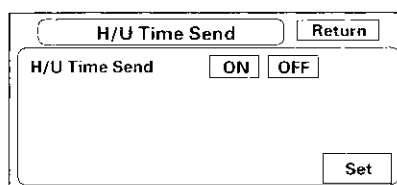


H/U Time Send

This screen determines whether to automatically send the navigation time to the upper display. The display unit connector A (10P) passes this information to the subdisplay unit. The navigation time can be found in the Setup screen 2 "Adjust Time Zone/Clock" setting.

- "H/U Time Send" should always be set to "ON".

NOTE: Selecting "Reset" on the Adjust Time Zone/Clock screen automatically resets this diagnostic function to "ON".



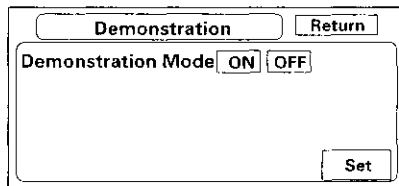
(cont'd)

Navigation System

System Diagnostic Mode (cont'd)

Demonstration

This screen is for factory use only, and should always be set to "OFF". Occasionally this setting is turned "ON" when vehicles are being used at Auto Shows or similar events. Turning this feature on, allows the navigation system to automatically follow a route to a destination when the vehicle is stationary.



Demonstration		Return
Demonstration Mode	ON	OFF
		Set

Version

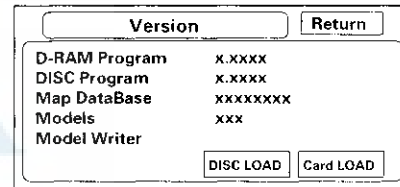
This screen displays the current version of the program, and allows the loading of a new version of the program either from a CD/DVD or from a PC card.

The D-Ram Program version should always be greater than or equal to the Disc Program version. The mapped database version is the date of the database on the DVD.

The Model code is 25H, and is for factory use only. This code is stored on a chip in the navigation unit. Therefore, every model has a unique part number for the navigation unit.

NOTE: If any model number other than 25H is displayed, replace the navigation unit with the correct part. The model code tells the navigation unit what software to load off the DVD.

Do not use DISC LOAD or Card LOAD, unless instructed to do so by the factory.



Version		Return
D-RAM Program	x.xxxx	
DISC Program	x.xxxx	
Map DataBase	xxxxxxxxx	
Models	xxx	
Model Writer		
		DISC LOAD Card LOAD



Error Message Table

Screen Error Message	Solution
Navigation system is unable to acquire a proper GPS signal.	Make sure there is nothing on the rear package tray blocking the GPS antenna. If not, move the vehicle to an open space away from tall buildings, trees, etc. After-market devices can affect the GPS reception.
Navigation unit door is open or No DVD disc installed. Please check system.	Make sure the navigation DVD is installed with the label side up and the navigation unit door is fully snapped closed.
PC card slot door is open. Please check system.	Make sure that the sliding door for the PC card is fully closed.
No DVD disc, please check system.	Check that the navigation DVD is installed with the label side up.
Display temp is too high. System will shut down until display cools down.	This message will appear briefly when the display temperature is too high, and then the display will turn off until the temperature cools down. The system will turn back on when the display cools down.
Outside temperature is low, system will take a while to start up.	The temperature is below -30°C and the navigation ECU has difficulties reading the DVD. The system will start up when the temperature warms up.
DVD disc reading error (unformatted), please consult your dealer.	Check the DVD source for deep scratches or other damage. Make sure you are using an official Honda navigation DVD (orange in color). The system cannot read other mapping databases or video DVDs. If the problem persists, see your dealer.
Route has not been completed. Please try again from a different location.	Routing to or from a place (new area) that is not in the database. Try planning a different route to or from a different location.
No alternate route found. Original route will be guided.	No alternate route method was found. The original route will be used.
This destination cannot be found in database.	The destination was not found in the database. Try another destination nearby, or select the destination with the joystick.

Navigation System

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
Navigation system stays on the GPS initialization screen	System Initialization (see page 23-81)	<ul style="list-style-type: none"> Navigation unit GPS antenna/cable Harness/fuses/switches
No picture is displayed	Troubleshooting (see page 23-126)	<ul style="list-style-type: none"> Navigation unit Display unit Harness/fuses/switches
Address cannot be found or system gives poor routing Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position	Verify proper operation using the Navigation System owner's manual Troubleshooting (see page 23-136)	Compare to another like vehicle <ul style="list-style-type: none"> Navigation unit GPS antenna/cable PCM (speed and fuel pulses) Harness/fuses/switches
Picture is missing a color or tone	Troubleshooting (see page 23-128)	<ul style="list-style-type: none"> Navigation unit Harness/fuses/switches
Picture has lines/rolls/other issues	Troubleshooting (see page 23-129)	<ul style="list-style-type: none"> Navigation unit Display unit Harness/fuses/switches
Display unit buttons or touch screen buttons do not work or respond properly	Troubleshooting (see page 23-130)	<ul style="list-style-type: none"> Display unit Harness/fuses/switches
GPS icon does not indicate	Troubleshooting (see page 23-133)	<ul style="list-style-type: none"> Navigation unit GPS antenna/cable Harness/fuses/switches
Voice guidance cannot be heard	Troubleshooting (see page 23-133)	<ul style="list-style-type: none"> Navigation unit Audio unit/amplifier Harness/fuses/switches
Voice control does not work/respond	Troubleshooting (see page 23-135)	<ul style="list-style-type: none"> Navigation unit Microphone/steering buttons Harness/fuses/switches
DVD screen error messages	Troubleshooting (see page 23-137)	<ul style="list-style-type: none"> Navigation unit Display unit DVD
Trip computer-no distance	Troubleshooting (see page 23-137)	<ul style="list-style-type: none"> PCM (speed and fuel pulses) Harness/fuses/switches
Trip computer-no fuel information	Troubleshooting (see page 23-138)	<ul style="list-style-type: none"> Gauge assembly (CAN) Harness/fuses/switches
Navigation cannot control A/C	Troubleshooting (see page 23-138)	<ul style="list-style-type: none"> Display unit Harness/fuses/switches
Display day/night mode does not work	Troubleshooting (see page 23-139)	<ul style="list-style-type: none"> Display unit Gauge assembly (CAN) Harness/fuses/switches
System locks up constantly	Troubleshooting (see page 23-139)	<ul style="list-style-type: none"> Navigation unit Harness/fuses/switches DVD
Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins	Troubleshooting (see page 23-140)	Navigation unit
Navigation drives by itself when parked	Troubleshooting (see page 23-140)	
Navigation stays on with ignition switch off	Troubleshooting (see page 23-141)	Harness/fuses/switches



Symptom	Diagnostic procedure	Also check for
Navigation cannot control audio/disc	Troubleshooting (see page 23-142)	<ul style="list-style-type: none"> • Display unit • Audio unit/amplifier
Navigation cannot control XM radio	Troubleshooting (see page 23-142)	<ul style="list-style-type: none"> • Display unit • Harness
Audio-HVAC subdisplay not working properly	Troubleshooting (see page 23-143)	<ul style="list-style-type: none"> • Navigation unit • Subdisplay unit • Harness/fuses/switches
Audio-HVAC subdisplay does not match time in set-up	Make sure H/U Time Send is ON. Go to H/U Time Send under functional setup (see page 23-118)	
Time is not correct	Reset Time Adjustment in Set-up	
Navigation frequently asks for code and needs GPS initialization	Troubleshooting (see page 23-143)	<ul style="list-style-type: none"> • Navigation unit • Harness/fuses/switches
Some set-up and information functions of the navigation system have items that are grayed out	Customer did not select "OK" from Disclaimer screen. Refer to System Function Diagram (see page 23-93)	
Previous Destinations button is dim and not selectable in the Enter destination by screen	The vehicle may be new, or the customer deleted the destination. Enter a destination, and allow the system to route to it. After the trip, the Previous Destinations button will be selectable.	
Today's Destinations button is dim and not selectable in the Enter destination by screen	The customer has not entered a group of locations for Today's Destinations. This is normal. The button is only selectable if the customer is using this function.	

HONDA

Navigation System

Symptom Troubleshooting

No picture is displayed

Diagnostic Test: Navi System Link

NOTE: Always check the connectors for poor connections or loose terminals.

1. Check the No. 7 (10 A) fuse and No. 32 (7.5 A) fuse in the under-dash fuse/relay box, and reinstall the fuse if it is OK.

Is the fuse OK?

YES—Go to step 2.

NO—Replace the fuse and recheck. ■

2. Turn the ignition switch to ACC (I).
3. Operate the radio and listen to the audio.

Can audio be heard?

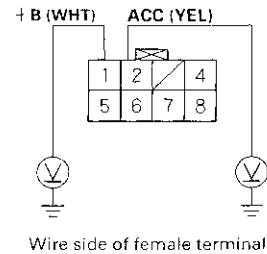
YES—Go to step 4.

NO—Check the ACC circuit. ■

4. Turn the ignition switch OFF.
5. Remove the navigation unit (see page 23-145).
6. Disconnect navigation unit connector C (8P) from the navigation unit (see page 23-103).
7. Turn the ignition switch ON (II).

8. Measure the voltage between body ground and navigation unit connector C (8P) terminals No. 1 and No. 2 individually.

NAVIGATION UNIT CONNECTOR C (8P)



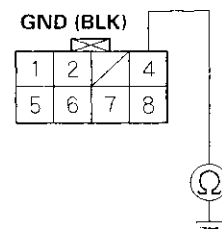
Is there battery voltage?

YES—Go to step 9.

NO—If the +B wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit. If the ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

9. Turn the ignition switch OFF.
10. Check for continuity between navigation unit connector C (8P) terminal No. 4 and body ground.

NAVIGATION UNIT CONNECTOR C (8P)



Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the navigation unit and body ground (G506). ■



11. Reconnect the navigation unit connector C (8P).
12. Perform the forced starting of the display (see page 23-144).

Is the diagnosis menu of the picture diagnosis displayed?

YES—Go into the Diagnostic mode and use the “Navi System Link” diagnostic (see page 23-109) to check the links. ■

NO—Go to step 13.

13. Shield the display unit from the sun with your hand, and check that the display is back lit (only back light is ON.)

Can you see the back light?

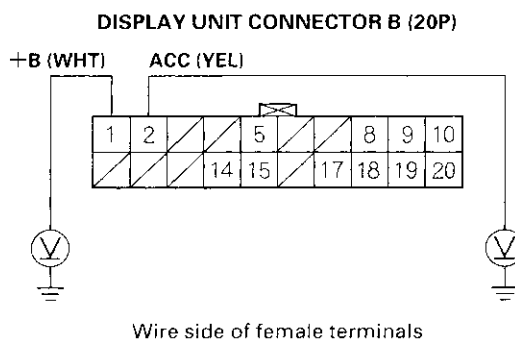
YES—Replace the navigation unit (see page 23-145). ■

NO—Go to step 14.

14. Turn the ignition switch OFF.
15. Remove the audio-HVAC display module (see page 23-69).
16. Disconnect display unit connector B (20P) from the display unit (see page 23-103).

17. Turn the ignition switch ON (II).

18. Measure the voltage between body ground and display unit connector B (20P) terminal No. 1 and No. 2 individually.



Is there battery voltage?

YES—Replace the display unit (see page 23-71). ■

NO—If the +B wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit.
If the ACC wire does not have voltage, repair open in the wire between the under-dash fuse/relay box and the navigation unit. ■

Navigation System

Symptom Troubleshooting (cont'd)

Picture is missing a color or tone

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.

1. Go into the Diagnostic Menu and use "RGB Color" test under Monitor Check (see page 23-111).

Are the red, green, and blue colored circles shown?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Turn the ignition switch to OFF.
3. Remove the navigation unit (see page 23-145)
4. Disconnect the navigation unit connector A (20P) and display unit 20P connector.
5. Check for loose terminals at navigation unit connector A (20P) and display unit 20P connector.

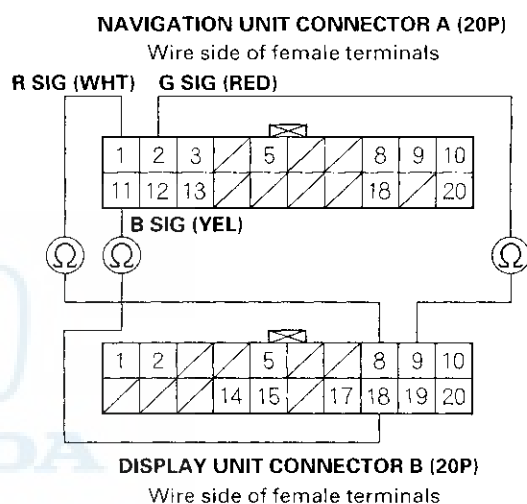
Are there loose terminals?

YES—Repair the terminal. ■

NO—Go to step 6.

6. Check for continuity between the appropriate terminals of navigation unit connector A (20P) to display unit connector B (20P) based on the missing color(s).

Missing color	Navigation unit connector A (20P)	Display unit connector B (20P)	Wire color
Blue	A11	B18	YEL
Green	A2	B9	RED
Red	A1	B8	WHT



Is there continuity?

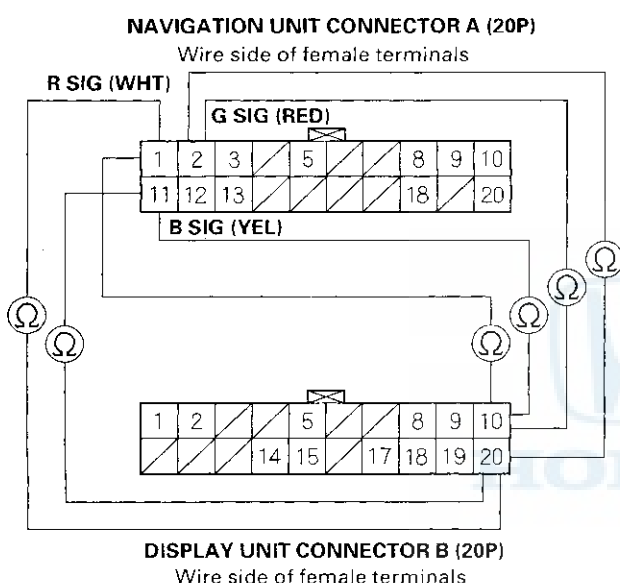
YES—Go to step 7.

NO—There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness. ■



7. Check for continuity between the appropriate terminals of navigation unit connector A (20P) and display unit connector B (20P) individually based on the missing color(s).

Missing color	Navigation unit connector A (20P)	Display unit connector B (20P)
Blue	A11	B10, B20
Green	A2	B10, B20
Red	A1	B10, B20



Is there continuity?

YES—There is a short to body ground in the circuit between the display unit and the navigation unit. Replace the affected shielded harness. ■

NO—Replace the navigation unit. If the problem is still unresolved, replace the display unit (see page 23-71). ■

Picture has lines/rolls/other issues

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.

1. Check for electronic aftermarket accessories (possibly hidden) mounted near the display unit or the navigation unit.

Are there any electronic accessories?

YES—Disable the accessories, and recheck. ■

NO—Go to step 2.

2. Start up the navigation picture.

Is the picture scrolling horizontally (left to right or right to left)?

YES—Check for an open or short to ground in the C SIG wire from navigation unit connector A (20P) terminal No. 12 to display unit connector B (20P) terminal No. 19. Also check for a short to ground between display unit connector B terminal No. 19 and terminal No. 20. ■

NO—Go to step 3.

3. Go into the Diagnostic mode and use "RGB Color" test under Monitor Check (see page 23-111).

Is the picture missing a red, green or blue color?

YES—Do the troubleshooting for the picture is missing a color or tone (see page 23-128). ■

NO—Go to step 4.

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

4. Turn the ignition switch OFF.
5. Substitute a known-good display unit (see page 23-71), and recheck.

Is the picture OK?

YES—Replace the original display unit. ■

NO—Replace the navigation unit (see page 23-145).
■

Display unit buttons or touch screen buttons do not work or respond properly

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.

1. Turn the ignition switch to ACC (I).
2. Go into the Diagnostic mode and use the "Touch Panel" test under Monitor Check (see page 23-111) and, if necessary, the "Display" test under Unit Check (see page 23-113).

Do the buttons work properly?

YES—System is OK. ■

NO—Go to step 3.

3. Try all the buttons on the navigation system.

Is there a specific row or columns of buttons, set of buttons, or a certain button that does not respond properly (i.e., pressing a button in the lower left corner causes a button in the right lower corner to respond.)?

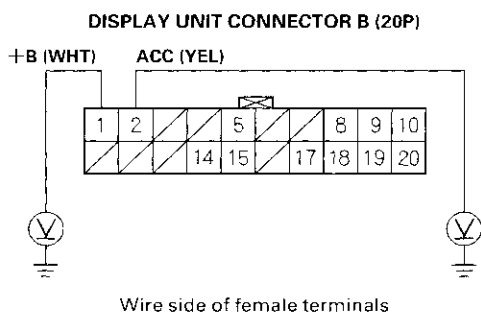
YES—Replace the display unit (see page 23-71). ■

NO—Go to step 4.

4. Turn the ignition switch OFF.
5. Remove the audio-HVAC display module (see page 23-69).
6. Disconnect display unit connector B (20P) (see page 23-103).
7. Turn the ignition switch to ACC(I).



8. Measure the voltage between body ground and display unit connector B (20P) terminal No. 1 and No. 2 individually.

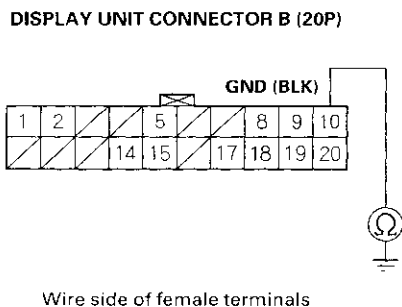


Is there battery voltage?

YES—Go to step 9.

NO—If the +B wire does not have voltage, repair the open in the wire between the under-dash fuse/relay box and the display unit. If the ACC wire does not have voltage, repair the open in the wire between the under-dash fuse/relay box and the display unit. ■

9. Turn the ignition switch OFF.
10. Check for continuity between display unit connector B (20P) terminal No. 10 and body ground.



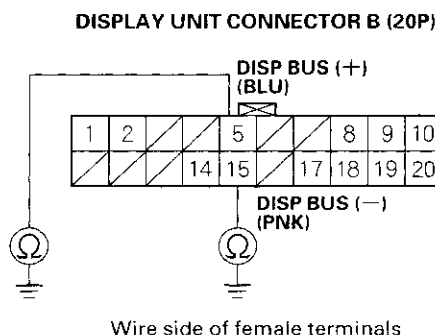
Is there continuity?

YES—Go to step 11.

NO—Repair the open in the wire between the display unit and body ground (G503). ■

11. Disconnect the navigation unit connector A (20P).

12. Check for continuity between body ground and display unit connector B (20P) terminal No. 5 and No. 15 individually.



Is there continuity?

YES—There is a short to body ground in the circuit between the display unit and the navigation unit. Replace the affected shielded harness. ■

NO—Go to step 13.

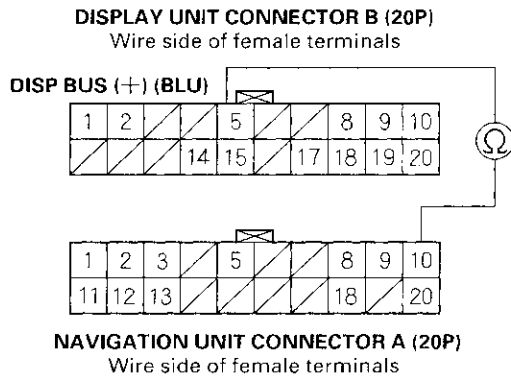
13. Remove the navigation unit (see page 23-145).
14. Disconnect navigation unit connector A (20P) from the navigation unit (see page 23-103)

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

15. Check for continuity between display unit connector B (20P) terminal No. 5 and navigation unit connector A (20P) terminal No. 10.

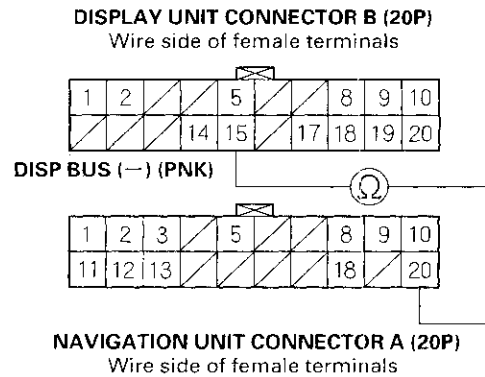


Is there continuity?

YES—Go to step 16.

NO—There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness. ■

16. Check for continuity between display unit connector B (20P) terminal No. 15 and navigation unit connector A (20P) terminal No. 20.



Is there continuity?

YES—Replace the display unit (see page 23-71). ■

NO—There is an open in the circuit between the display unit and the navigation unit. Check for poor connections or loose terminals at the display and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness. ■



GPS icon does not indicate

NOTE:

- Make sure the vehicle is parked outside and away from buildings.
- Refer to GPS Information (see page 23-116) for realtime satellite reception display.

1. Check for metallic window tint on the windshield and electronic aftermarket accessories (possibly hidden) mounted near the GPS antenna or the navigation unit.

Is there metallic window tint or electronic accessories?

YES—Remove tint or the accessories and recheck. ■

NO—Go to step 2.

2. Go into the Diagnostic Menu and use the “Navi System Link” test (see page 23-109) to check the GPS antenna.

Is “GPS Ant” icon red?

YES—Use the “Navi ECU” test under Unit Check (see page 23-113) to check for a kinked, crushed, or disconnected GPS antenna wire. If necessary, try a known-good GPS antenna. If icon is still red, replace the navigation unit (see page 23-145). ■

NO—Check that nothing is blocking the GPS antenna located under the rear shelf and recheck. Substitute a known-good navigation unit (see page 23-145), and recheck. ■

Voice guidance cannot be heard

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, write down the customer’s audio presets, and get the radio and navigation system anti-theft codes.
- After troubleshooting, enter the radio and navigation system anti-theft codes, and the audio presets.

1. Press the display unit SET-UP button.

2. Check the volume setting for the navigation system.

Is it set to OFF?

YES—Set the volume to an audible level. ■

NO—Go to step 3.

3. Check the radio operation.

Can you hear the radio?

YES—Go to step 4.

NO—Troubleshoot the audio system (see page 23-19). ■

4. Go into the Diagnostic Menu and use the “Navi System Link” test (see page 23-109) to check the radio.

Is the “Radio” icon red?

YES—Troubleshoot the audio system (see page 23-19). ■

NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Remove the navigation unit (see page 23-145).

7. Remove the audio-HVAC display module (see page 23-69)

8. Disconnect navigation unit connector B (14P) and the audio unit connector A (20P).

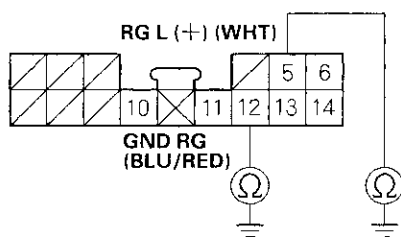
(cont’d)

Navigation System

Symptom Troubleshooting (cont'd)

9. Check for continuity between body ground and navigation unit connector B (14P) terminals No. 5, No. 12 individually.

NAVIGATION UNIT CONNECTOR B (14P)



Wire side of female terminals

Is there continuity?

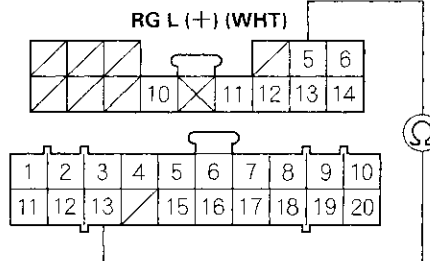
YES—Replace the affected shielded harness. ■

NO—Go to step 10.

10. Check for continuity between navigation unit connector B (14P) terminal No. 5 and the audio unit connector A (20P) terminal No. 13.

NAVIGATION UNIT CONNECTOR B (14P)

Wire side of female terminals



AUDIO UNIT CONNECTOR A (20P)

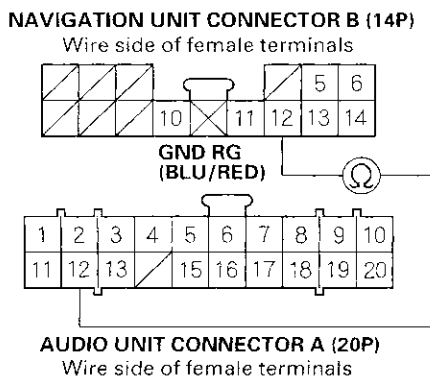
Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—There is an open in the circuit between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness. ■

11. Check for continuity between navigation unit connector B (14P) terminal No. 12 and the audio unit connector A (20P) terminal No. 12.



Is there continuity?

YES—Go to step 10.

NO—There is an open in the circuit between the navigation unit and audio unit. Check for poor connections or loose terminals at the audio and navigation units. If a poor connection or loose terminal is found, replace the affected shielded harness. ■

12. Substitute a known-good audio unit, and recheck.

Is the system OK?

YES—Replace the original audio unit. ■

NO—Replace the navigation unit (see page 23-145).

Voice control does not work/respond

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, write down the customer's audio presets, and get the radio and navigation system anti-theft codes.
- After troubleshooting, enter the radio and navigation system anti-theft codes, and the audio presets.

Before assuming that a voice complaint is hardware related, ensure that the voice control system is being operated correctly.

- Make sure you are on the correct screen when trying to issue a voice command. For instance, the command "Find the nearest Italian Restaurant" only works on a Map screen.
(See the Navigation System owner's manual for a complete list of allowed voice commands for the information being displayed.)
- Close the windows and sunroof.
- Set the fan speed to low (1 or 2).
- Adjust the air flow from the air conditioning vents so that they do not blow against the microphone on the ceiling.
- Pause after pressing the TALK button, then give a voice command clearly in a natural speaking voice. If the system cannot recognize your command, speak louder.
- If the microphone picks up voices other than yours, the system may not interpret your voice commands correctly.
- If you speak a command with something in your mouth, or your voice is too husky, the system may misunderstand your command.

(cont'd)

Navigation System

Symptom Troubleshooting (cont'd)

1. Go into the Diagnostic Menu and use the "Mic Level" test under Functional Setup (see page 23-118) to check the operation of the TALK and BACK buttons.

Are the TALK and BACK buttons operational?

YES—Go to step 2.

NO—Check for an open or short to ground on navigation unit connector B (14P) terminal No. 10 (see page 23-97). ■

2. Use the "Mic Level" diagnostic under Functional Setup (see page 23-118) to check the operation of the microphone.

Is the microphone operational?

YES—Check the operation of the voice control system (see the Navigation System owner's manual). ■

NO—Check for a loose front map light (microphone) assembly. If OK, check for an open or short to ground on navigation unit connector B (14P) terminals No. 6 and No. 14 (see page 23-103). ■

Vehicle position icon constantly leaves road, moves erratically, or is very far from actual position

1. Check the GPS icon on the navigation picture.

Is the GPS icon white?

YES—Do the troubleshooting for GPS icon does not indicate (see page 23-133). ■

NO—Go to step 2.

2. Go into the Diagnostic Menu and use the "Yaw Rate" test (see page 23-117) to check the yaw rate sensor.
3. Go into the Diagnostic Menu and use the "Car Status" test (see page 23-115) to check the vehicle speed pulse.

Are the yaw rate sensor and vehicle speed pulse OK?

YES—The problem may be normal. Check to see if the problem occurs in the same driving location. If it does, the problem could be in the database. Go to step 4.

NO—If the problem is the yaw rate sensor, replace the navigation unit (see page 23-145). If the problem is the vehicle speed pulse, troubleshoot the vehicle speed signal circuit (see page 23-98). ■

4. Substitute a known-good navigation unit (see page 23-145) and check to see if the problem occurs in the same driving location.

Does the problem occur in the same driving location?

YES—The problem is in the database. Report the problem according to the Navigation System owner's manual under "Reporting Errors." ■

NO—Replace the original navigation unit (see page 23-145). ■



DVD screen error messages

NOTE:

- Check the Navigation System owner's manual for a list of common DVD screen error messages and the probable cause.
- Go into the Diagnostic Menu and use the "Car Status" test (see page 23-115) to check the status of the DVD lid.

1. Check the DVD-ROM reading surface for scratches.

Are there scratches?

YES—Replace the DVD-ROM (see page 23-144). ■

NO—If the problem occurs occasionally when the system is cold, this is normal. If the problem occurs frequently when driving, replace the navigation unit (see page 23-145). ■

Trip computer-no distance

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- If the Previous button on the Trip Computer screen is not active, make sure to answer OK to the Disclaimer screen.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic Menu and use "Version" (see page 23-122).

1. Go into the Diagnostic Menu and use the "Car Status" test (see page 23-115) to check for a vehicle speed pulse (VSP).

Is there a VSP when the vehicle is moving?

YES—Check the CAN system for DTCs. If OK, replace the navigation unit (see page 23-145). ■

NO—Check the VSP wire for an open or short to power or ground (see page 23-98). ■



Navigation System

Symptom Troubleshooting (cont'd)

Trip computer-no fuel information

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- If the Previous button on the Trip Computer screen is not active, make sure to answer OK to the Disclaimer screen.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic Menu and use "Version" (see page 23-122).

Do the "Navi System Link" test (see page 23-109) to check the communication line between the PCM (FI-ECU) and the navigation unit.

1. Go into the Diagnostic Menu and use "Trip Information" test under Functional Setup (see page 23-118) with the engine running.

Are the values greater than zero?

YES—The system is OK. ■

NO—Check the CAN system for DTCs. If OK, replace the navigation unit (see page 23-145). ■

Navigation cannot control A/C

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- Verify that the correct navigation unit is installed for this model. Go into the Diagnostic Menu and use "Version" (see page 23-122).

1. Go into the Diagnostic Menu and use the "Navi System Link" test (see page 23-109).

Is "Air-con" icon red?

YES—Do the climate control system troubleshooting (see page 21-10). ■

NO—Check for an open or short to ground between display unit connector A (5P) terminals No. 2, No. 3, No. 4 and climate control unit connector A (16P) terminals No. 16, No. 15, No. 8. If OK, check the climate control system for normal operation. If the climate control system works properly, substitute a known-good display unit (see page 23-71) and recheck. ■



Display day/night mode does not work

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft codes.
- After troubleshooting, enter the navigation system anti-theft codes.
- Full brightness on the instrument panel brightness control causes the system to stay in the day mode, even when the lights are on.

1. Make sure the set/reset knob is not on full brightness.
2. Change the day/night mode to AUTO under Set-up and recheck.

Does the display change to day and night modes using the headlights?

YES—The system is OK at this time. ■

NO—Go to step 3.

3. Go into the Diagnostic Menu and use the “Car Status” test to check for an ILL signal (see page 23-115).

Is “ILL” signal OK?

YES—The system is OK. ■

NO—Check the ILL+ circuit between the navigation unit and relay module (see page 23-95). ■

System locks up constantly

1. Start the engine and turn the ignition switch OFF, then turn the ignition switch ON (II).

Does the system reboot?

YES—The system is OK at this time. ■

NO—Check the DVD for scratches or damage and the navigation unit for water damage. If OK, go into the Diagnostic Menu and do all of the “Unit Check” tests (see page 23-113). ■

Navigation System

Symptom Troubleshooting (cont'd)

Vehicle icon wanders across the map when driving (does not follow a displayed road) or map or vehicle ICON spins

NOTE: This symptom is caused by a defective yaw rate sensor. Perform this diagnostic when the vehicle is cold and warm.

1. Go into the Diagnostic Menu and use the "Yaw Rate" test (see page 23-117).

Are the values correct?

YES—The system is OK. ■

NO—Replace the navigation unit (see page 23-145).
■

Navigation drives by itself when parked

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.

1. Start the engine.
2. From the main menu, select Places, then select Any Destination, and begin the trip.
3. With the vehicle parked, watch the vehicle icon on the display.

Does the vehicle position icon move by itself?

YES—Go to step 4.

NO—The system is OK at this time. ■

4. Go into the Diagnostic Menu and select "Demonstration" test under Functional Setup.

Is "Demonstration Mode" set to "YES"?

YES—Set the Demonstration mode to "NO". ■

NO—Replace the navigation unit (see page 23-145).
■



Navigation stays on with ignition switch off

NOTE:

- Always check the connectors for poor connections or loose terminals.
- Before troubleshooting, get the navigation system anti-theft code.
- After troubleshooting, re-enter the anti-theft code, and re-initialize the navigation system.

1. Remove the key from the ignition switch.

Does the navigation screen stay on?

YES—Go to step 2.

NO—The system is OK at this time. ■

2. The vehicle may have been used as a demonstration vehicle at an event like an auto show. In these events, power is often jumpered to the navigation system so that the ignition key is not needed in the vehicle. At the end of the show, the jumper wire may not have been removed. Check the navigation unit connector C (8P) for a "non-factory" jumper wire in series with the factory cable.

Is there a jumper wire?

YES—Remove the jumper wire, and re-test. ■

NO—Go to step 3.

3. The display or audio unit may have a jumper wire installed behind the dash to allow the navigation system to run without the ignition key.

Does the radio function with the ignition switch off?

YES—Go to step 4.

NO—Go to step 5.

4. Remove the display unit (see page 23-71) and check to see if the audio 20P connector has a non-factory jumper wire in series with the factory connector.

Is there a jumper wire?

YES—Remove the jumper wire, and re-test. ■

NO—Go to step 5.

5. Check the interior lights with the ignition switch off.

Can you turn on the interior lights with the ignition switch off?

YES—Troubleshooting the ACC circuit. ■

NO—Replace the navigation unit (see page 23-145).

■

Navigation System

Symptom Troubleshooting (cont'd)

Navigation cannot control audio/disc

1. Make sure the anti-theft code for the audio system is entered.
2. Go into the Diagnostic Menu and use the "Navi System Link" test (see page 23-109).

Is the "Radio" icon red?

YES—Do the troubleshooting for Voice guidance cannot be heard (see page 23-133). ■

NO—Go to step 3.

3. Substitute a known-good navigation unit (see page 23-145), and recheck.

Can the navigation control audio/disc?

YES—Replace the original navigation unit (see page 23-145). ■

NO—Do the audio system troubleshooting (see page 23-19). ■

Navigation cannot control XM radio

1. Go into the Diagnostic Menu and use the "Navi System Link" test (see page 23-109).

Is the "XM" icon red?

YES—Check the connector at the XM receiver (see page 23-76). ■

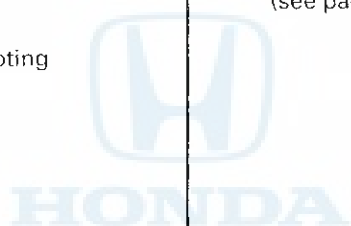
NO—Go to step 2.

2. Substitute a known-good navigation unit (see page 23-145), and recheck.

Can the navigation control the XM radio?

YES—Replace the original navigation unit (see page 23-145). ■

NO—Do the audio system troubleshooting (see page 23-19). ■





Audio-HVAC subdisplay not working properly

1. Check the clock. Reset if necessary.

Does the clock reset?

YES—The system is OK at this time. ■

NO—Go to step 2.

2. Check for an open or short to body ground between subdisplay unit 10P connector terminal No. 4, No. 5, No. 6, No. 7 and navigation unit connector A (10P) terminal No. 4, No. 5, No. 6, No. 7.

Are the circuits OK?

YES—Replace the navigation unit (see page 23-145).

■

NO—Repair the circuits. ■

Navigation frequently asks for code and needs GPS initialization

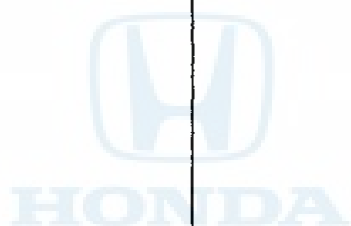
1. Check for an open on navigation unit connector C (8P) terminals No. 1 and No. 2 (see page 23-98).

Are the circuits OK?

YES—Replace the navigation unit (see page 23-145).

■

NO—Repair the circuits. ■



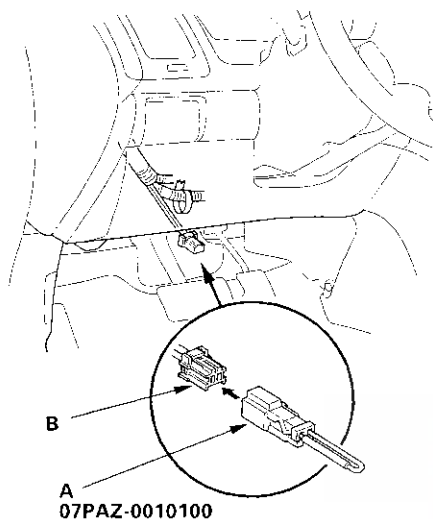
Navigation System

Forced Starting of Display

Special Tools Required

SCS service connector 07PAZ-0010100

1. Connect the SCS service connector (A) to the navigation service check connector (B) located under the driver's side dash.



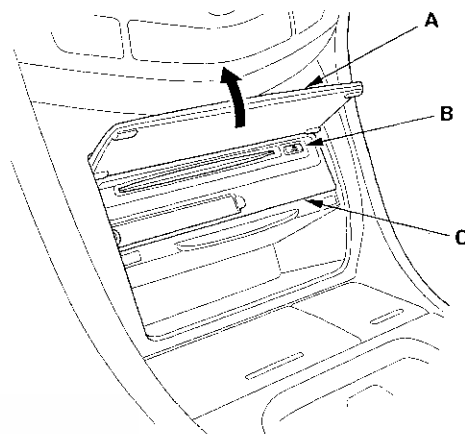
2. Turn the ignition switch ON (II).
3. Check that the system starts up and then changes to the "Navi System Link" screen.

NOTE: If the system fails to display the "Navi System Link" screen, refer to No picture is displayed (see page 23-109).

DVD-ROM Replacement

NOTE: When the DVD-ROM is re-inserted or replaced, a map match must be done (see page 23-82).

1. Turn the ignition switch ON (II).
2. Open the front cover (A) located center console.



3. Press the EJECT button (B) on the navigation unit (C).
4. Remove the DVD-ROM.
5. Insert the new DVD-ROM.
6. Close the front cover. Do not turn the ignition switch OFF until the data is downloaded to the navigation unit.

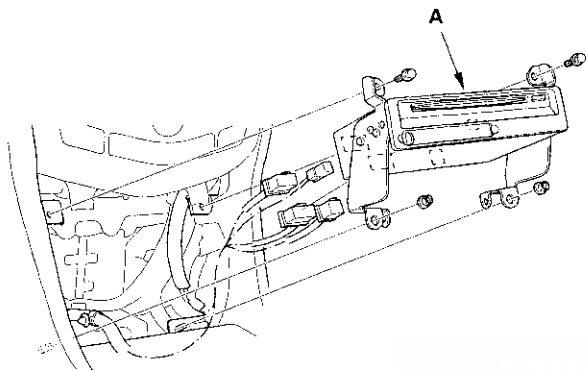
NOTE: After servicing, the front cover must be closed. If you start up the navigation system with the front cover open, the display will indicate "Navigation unit door is open or No DVD Disk installed. Please check system."



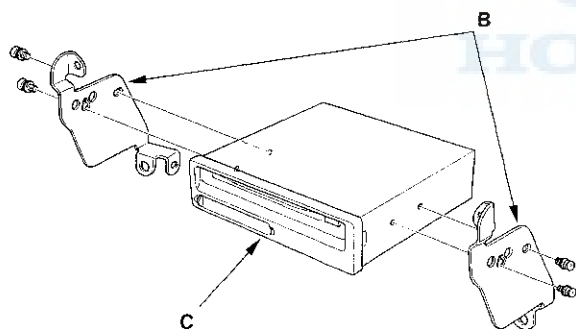
Navigation Unit Removal/Installation

NOTE: If the navigation unit is replaced or disconnected, a map match must be done (see page 23-82).

1. Remove the center lower console (see page 20-65).
2. Remove the navigation unit with the bracket (A).



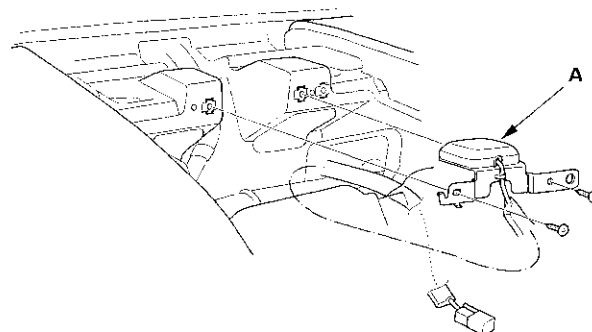
3. Remove the brackets (B) from the navigation unit (C).



4. Install the unit in the reverse order of removal.

GPS Antenna Removal/Installation

1. Remove the upper panel (see page 20-68).
2. Remove the GPS antenna (A).

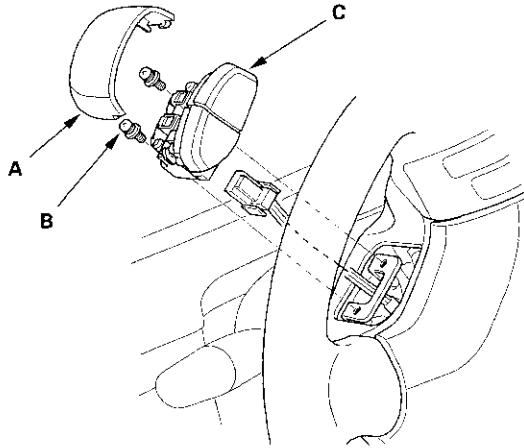


3. Install the antenna in the reverse order of removal.

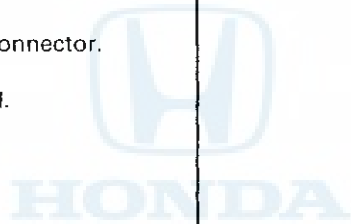
Navigation System

Voice Control Switch Removal/Installation

1. Remove the voice control switch cover (A) from the left side of steering wheel.



2. Remove the two screws (B) from the voice control switch (C), then remove the voice control switch.
3. Disconnect the voice control switch connector.
4. Install in the reverse order of removal.



Navigation Tools: Click on the “Table of Contents”
below, or use the Bookmarks to the left.

Restraints

Restraints

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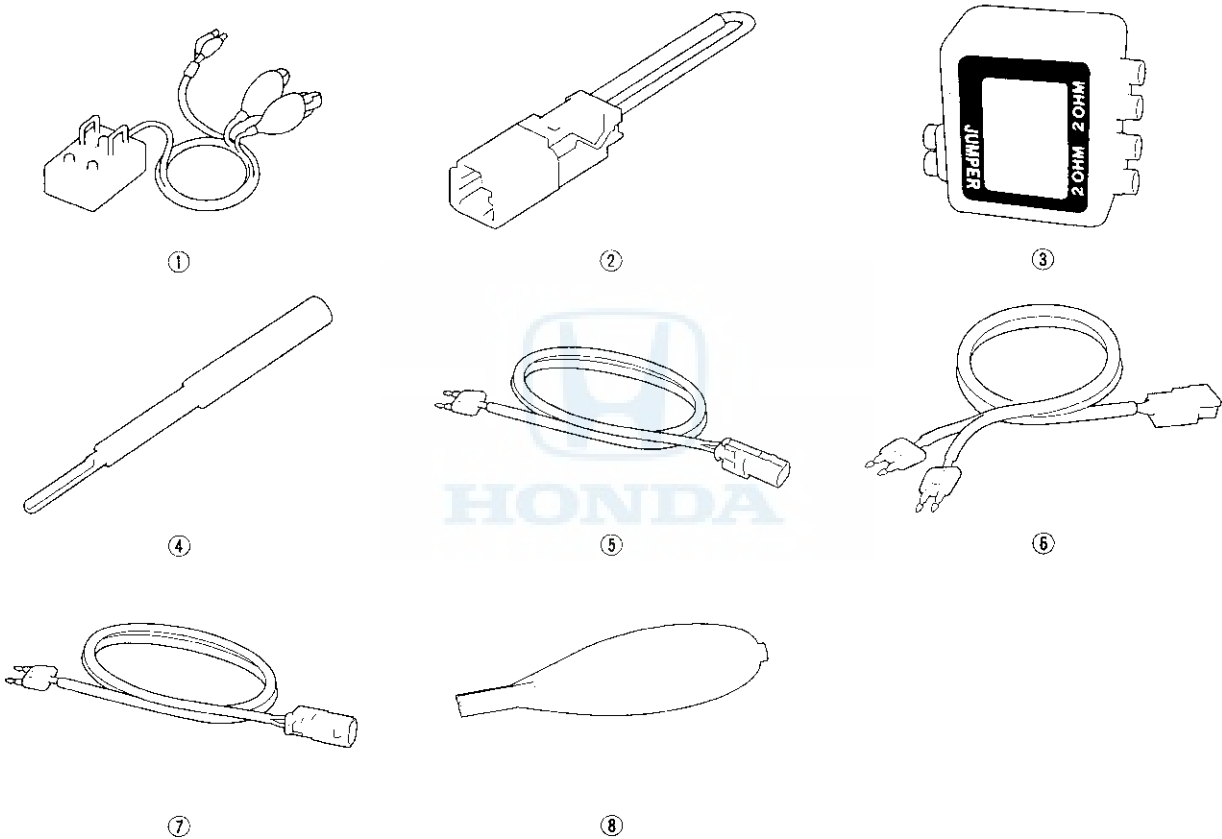
Restraints

Special Tools

Ref. No.	Tool Number	Description	Qty
① *1	07HAZ-SG00500	Deployment Tool	1
②	07PAZ-0010100	SCS Service Connector	1
③	07SAZ-TB4011A	SRS Inflator Simulator	1
④ *2	07TAZ-001020A	Backprobe Adapter, 17 mm	2
⑤	07XAZ-S1A0200	SRS Simulator Lead E	1
⑥	07XAZ-SZ30100	SRS Simulator Lead F	1
⑦	07YAZ-S3AA100	SRS Simulator Lead H	1
⑧	070AZ-SAA0100	SRS Short Cancellor	2

* 1: Included in SRS Tool Set 07MAZ-SM5000B

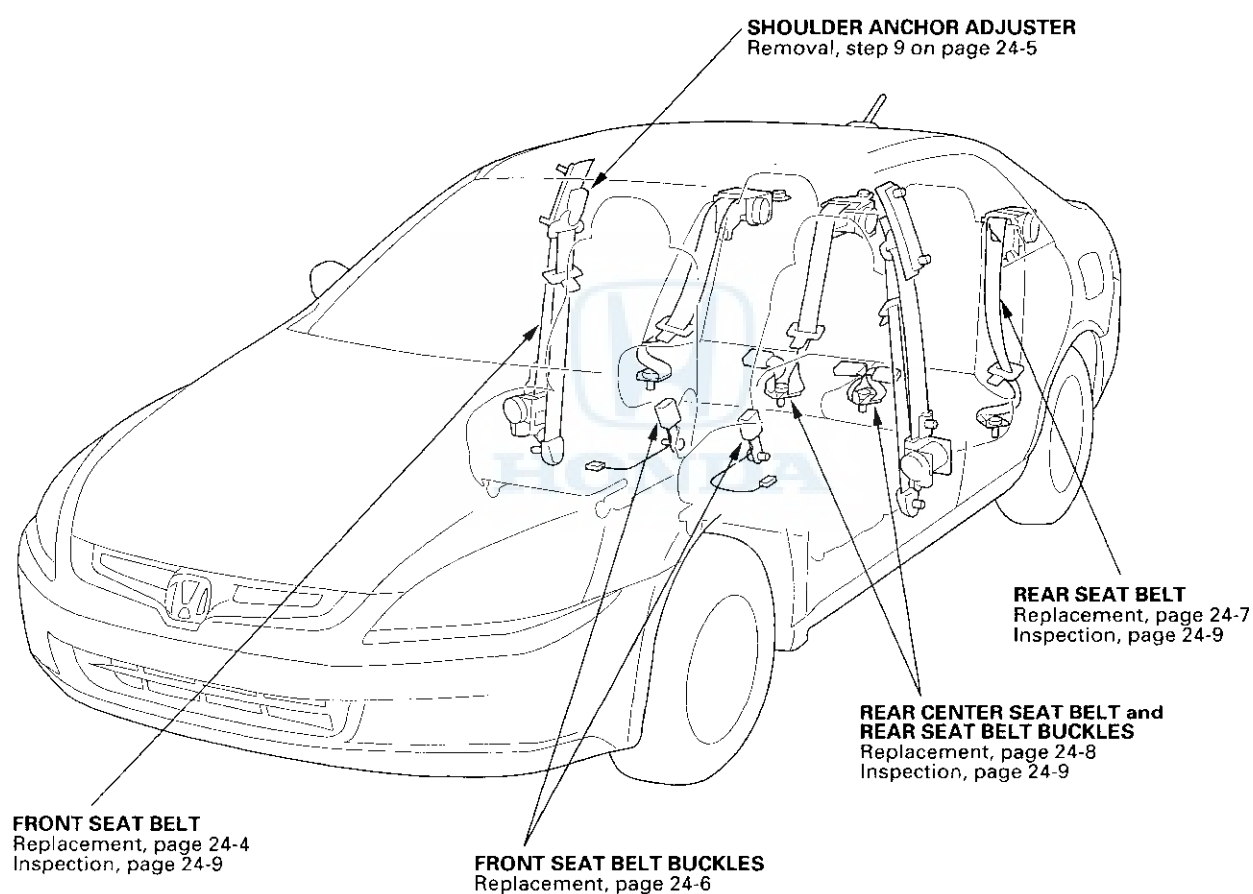
* 2: Use with the stacking patch cords from T/N 07SAZ-001000A, Backprobe Set.



Seat Belts



Component Location Index



Seat Belts

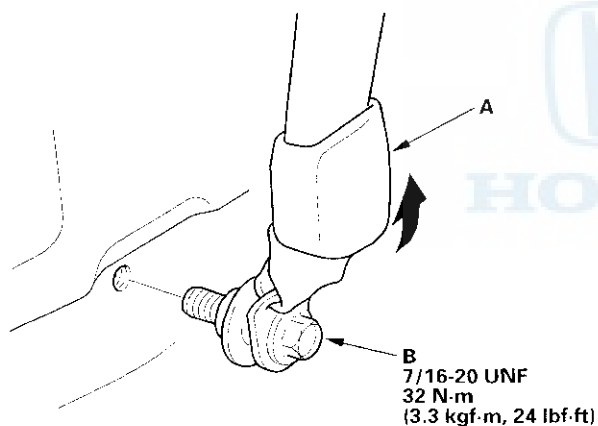
Front Seat Belt Replacement

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

NOTE: Check the front seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

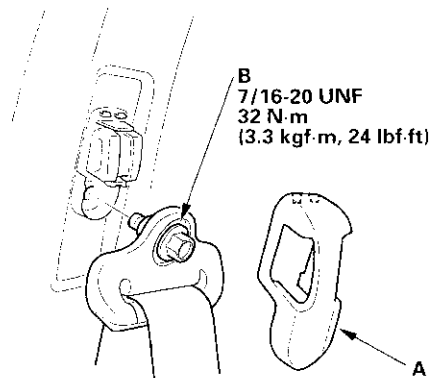
Front Seat Belt

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the audio presets.
2. Slide the front seat forward fully.
3. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
4. Remove the lower anchor cap (A), and remove the lower anchor bolt (B).

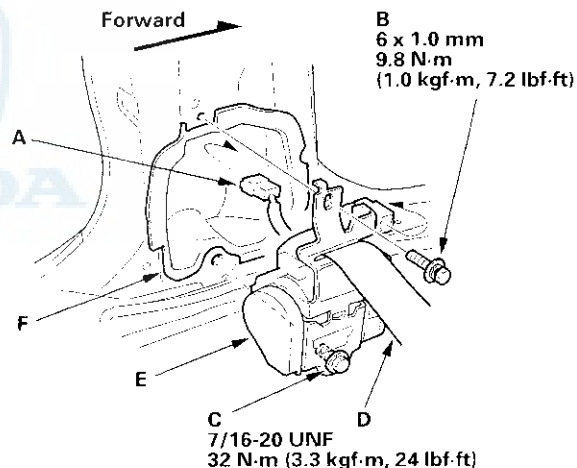


5. Remove the B-pillar lower trim (see page 20-48).

6. Remove the upper anchor cover (A), and remove the upper anchor bolt (B).



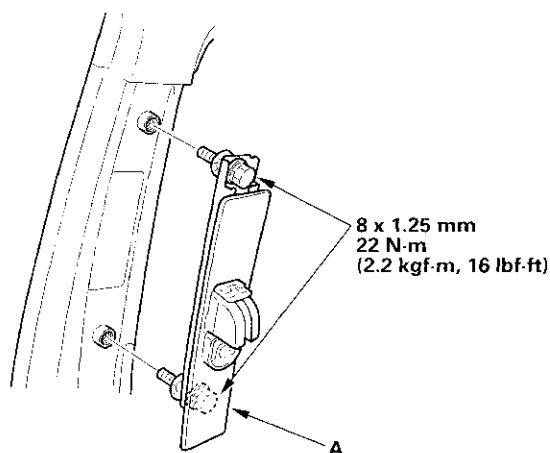
7. Disconnect the seat belt tensioner connector (A). Remove the upper retractor mounting bolt (B) and the lower retractor bolt (C), then remove the front seat belt (D) and retractor (E).



8. If necessary, remove the front seat belt protector (F).
9. Remove the B-pillar upper trim (see page 20-48).



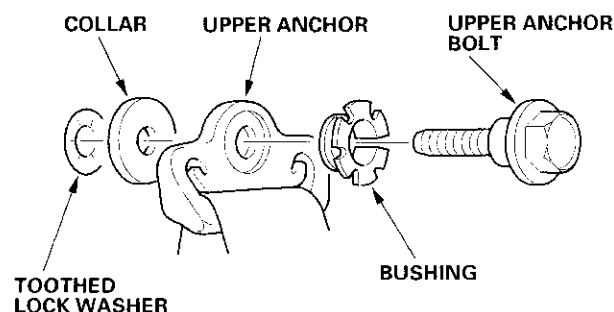
10. Remove the shoulder anchor adjuster (A).



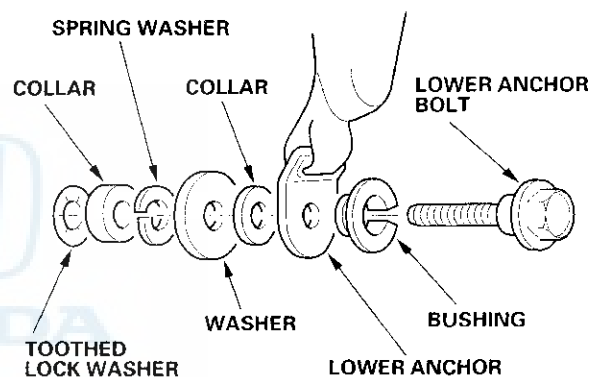
11. Install the seat belt in the reverse order of removal, and note these items:

- Apply liquid thread lock to the anchor bolts before reinstallation.
- Check that the retractor locking mechanism functions (see page 24-9).
- Assemble the washers, collars, and bushings on the upper and lower anchor bolts as shown.
- If the seat belt tensioner has been deployed, replace the front seat belt protector.
- Before installing the anchor bolts, make sure there are no twists or kinks in the front seat belt.
- Make sure the seat belt tensioner connector is plugged in properly.
- Reconnect the negative cable to the battery.
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or Neutral) until the BAT displays at least three segments.
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
- Set the clock.

Upper anchor bolt installation



Lower anchor bolt installation



(cont'd)

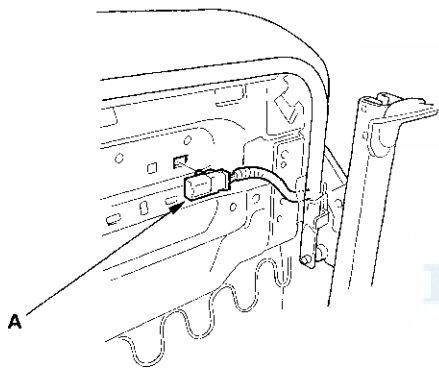
Seat Belts

Front Seat Belt Replacement (cont'd)

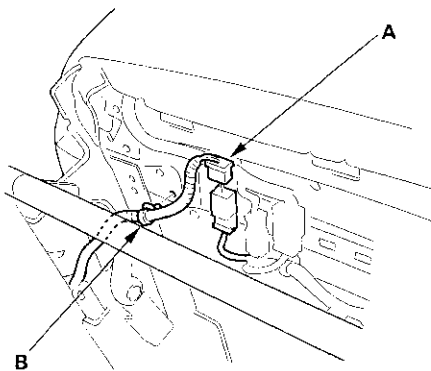
Seat Belt Buckle

1. Make sure you have the anti-theft codes for the radio and the navigation system, then write down the audio presets.
2. Disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
3. Remove the front seat (see page 20-80).
4. Manual seat: Remove the center cover (see page 20-82).
5. Detach the seat belt switch connector (A) and harness clip (B).

Manual seat

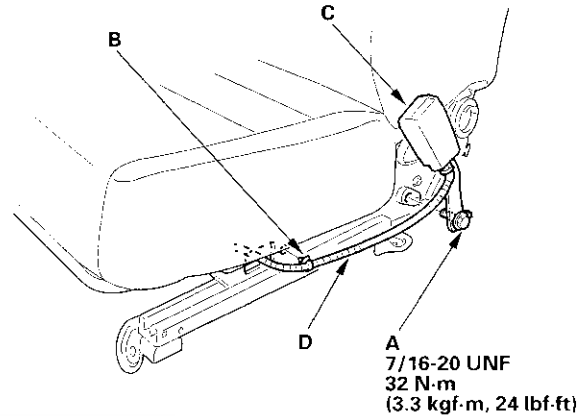


8-way power seat

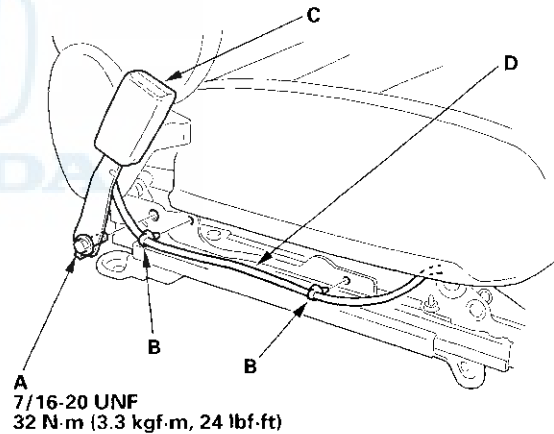


6. Remove the center anchor bolt (A) and detach the harness clip (B), then remove the seat belt buckle (C).

Manual seat



8-way power seat



7. Pull the seat belt switch harness (D) out through the space between the seat cushion and the seat linkage (8-way power seat), or through the hole in the seat track (manual seat).

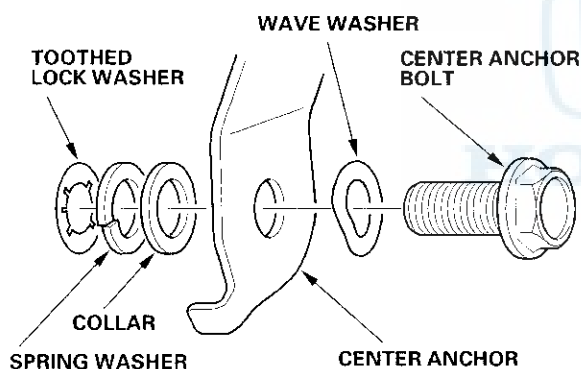


Rear Seat Belt Replacement

8. Install the buckle in the reverse order of removal, and note these items:

- Apply liquid thread lock to the center anchor bolt before reinstallation.
- Assemble the washers and collar on the center anchor bolt as shown.
- Reconnect the negative cable to the battery.
- Move the seat all the way forward and backward and confirm that the seat belt buckle harness is routed properly.
- If the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or Neutral) until the BAT displays at least three segments.
- Enter the anti-theft codes for the radio and the navigation system, then enter the customer's audio presets.
- Set the clock.

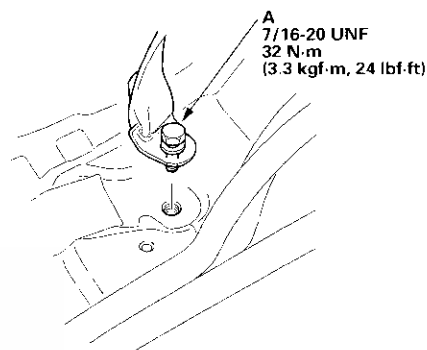
Center anchor bolt installation



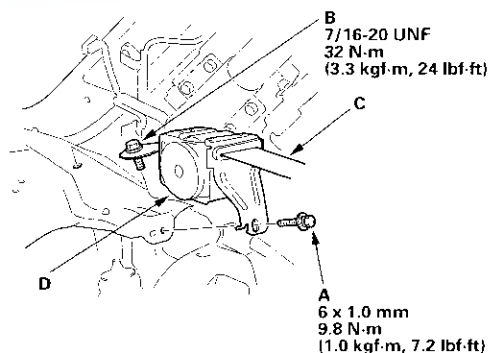
NOTE: Check the rear seat belts for damage, and replace them if necessary. Be careful not to damage them during removal and installation.

Rear Seat Belt

1. Remove the rear seat-back and rear seat cushion (see page 20-95).
2. Remove the center anchor bolt (A).



3. Remove the rear shelf (see page 20-51).
4. Remove the retractor mounting bolt (A) and the retractor bolt (B), then remove the rear seat belt (C) and retractor (D).



5. Install the seat belt in the reverse order of removal, and note these items:
- Apply liquid thread lock to the anchor bolt before reinstallation.
 - Check that the retractor locking mechanism functions as described (see page 24-9).
 - Before installing the anchor bolt, make sure there are no twists or kinks in the rear seat belt.

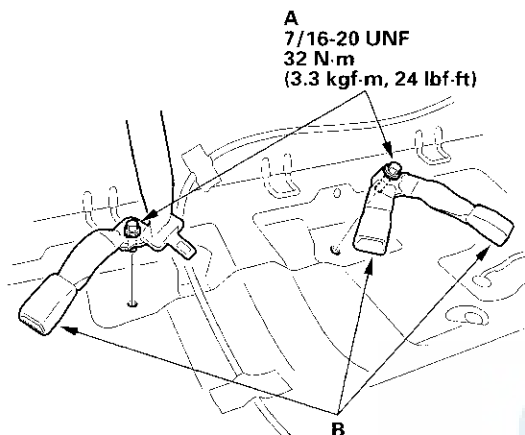
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Seat Belts

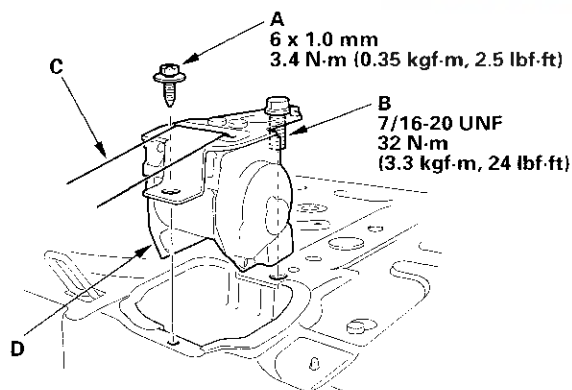
Rear Seat Belt Replacement (cont'd)

Center Belt and Seat Belt Buckles

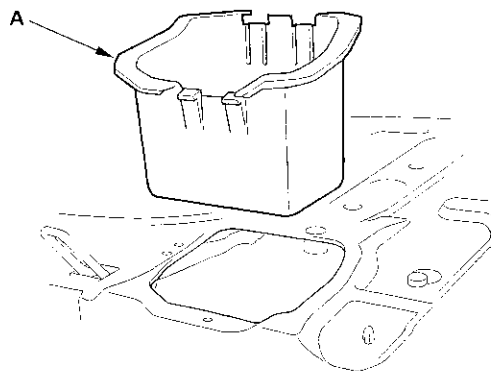
1. Remove the rear seat-back and rear seat cushion (see page 20-95).
2. Remove the center anchor bolts (A), and remove the seat belt buckles (B).



3. Remove the rear shelf (see page 20-51).
4. Remove the retractor mounting self-tapping ET screw (A) and the retractor bolt (B), then remove the center belt (C) and retractor (D).



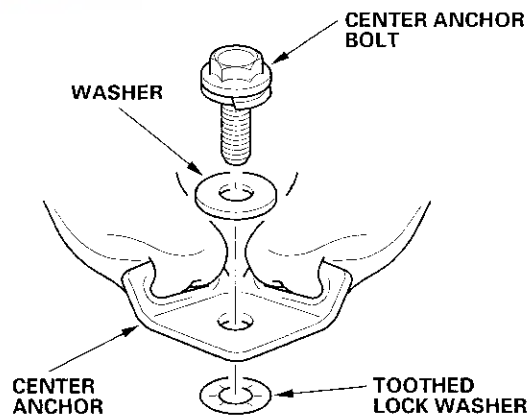
5. Remove the protector (A).



6. Install the seat belt and seat buckles in the reverse order of removal, and note these items:

- Apply liquid thread lock to the anchor bolts before reinstallation.
- Check that the retractor locking mechanism functions as described (see page 24-9).
- Assemble the washers on the center anchor bolt as shown.
- Before installing the center anchor bolt, make sure there are no twists or kinks in the center belt.

Center anchor bolt installation





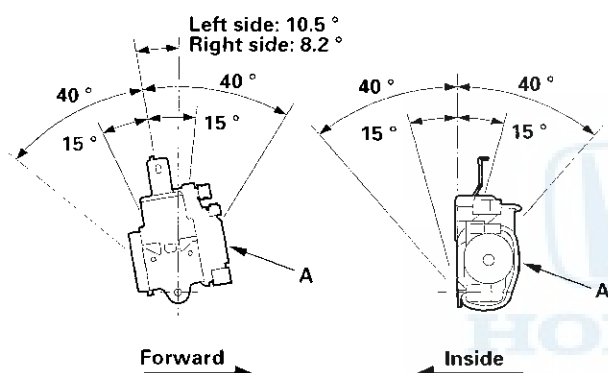
Inspection

SRS components are located in this area. Review the SRS component locations (see page 24-11) and the precautions and procedures (see page 24-13) before performing repairs or service.

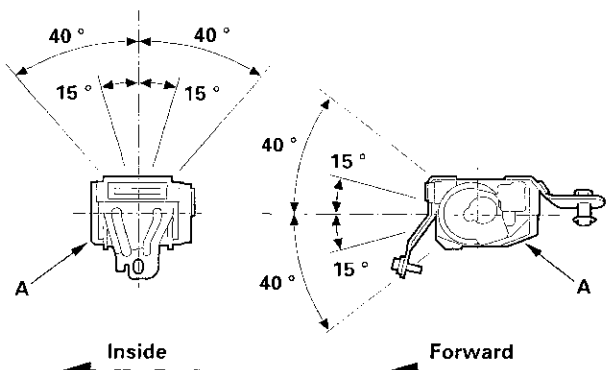
Retractor

1. Before installing the retractor, check that the seat belt can be pulled out freely.
2. Make sure that the seat belt does not lock when the retractor (A) is leaned slowly up to 15° from the mounted position. The seat belt should lock when the retractor is leaned over 40° . Do not attempt to disassemble the retractor.

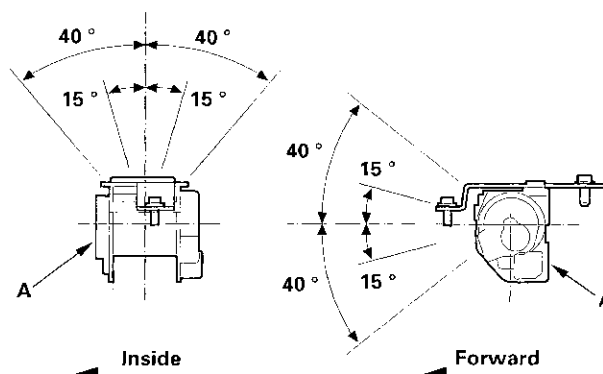
Front



Rear



Rear center



3. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

(cont'd)

Seat Belts

Inspection (cont'd)

In-vehicle

1. Check that the seat belt is not twisted or caught on anything.
2. After installing the anchors, check for free movement on the anchor bolts. If necessary, remove the anchor bolts and check that the washers and other parts are not damaged or improperly installed.

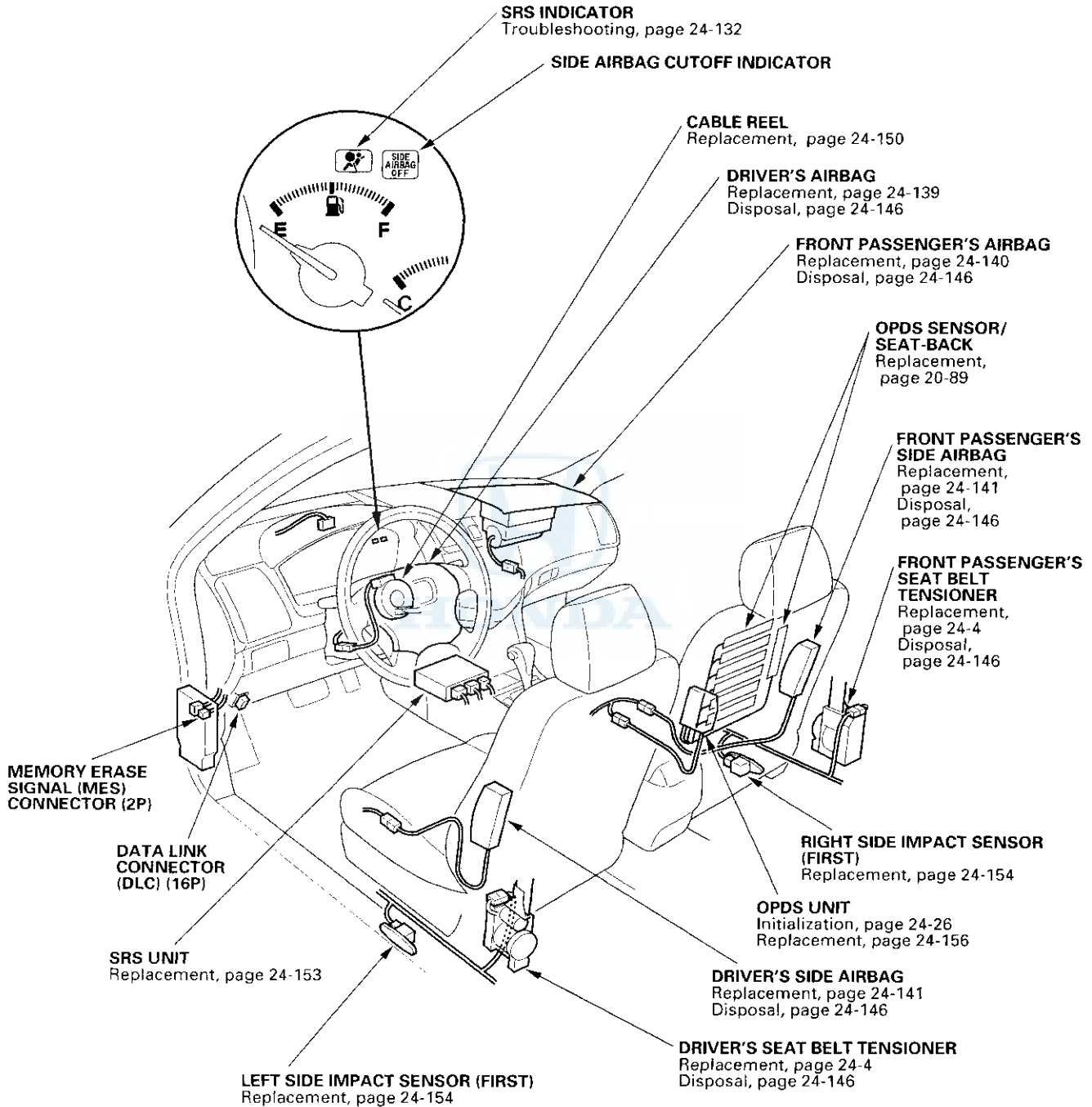
3. Check the seat belts for damage or discoloration. Clean with a shop towel if necessary. Use only soap and water to clean.

NOTE: Dirt buildup in the loops of the upper anchors can cause the seat belts to retract slowly. Wipe the inside of the loops with a clean cloth dampened in isopropyl alcohol.

4. Check that the seat belt does not lock when pulled out slowly. The seat belt is designed to lock only during a sudden stop or impact.
5. Make sure that the seat belt will retract automatically when released.
6. For each passenger's seat belt, check the seat belt retractor locking mechanism ALR (automatic locking retractor). This function is for securing child seats.
 - 1 Pull the seat belt all the way out to engage the ALR. The seat belt should retract with a ratcheting sound, but not extend. This is normal.
 - 2 To disengage the ALR, release the seat belt and allow it to fully retract, then pull the seat belt out part-way. The seat belt should retract and extend normally.
7. Replace the seat belt with a new assembly if there is any abnormality. Do not disassemble any part of the seat belt for any reason.

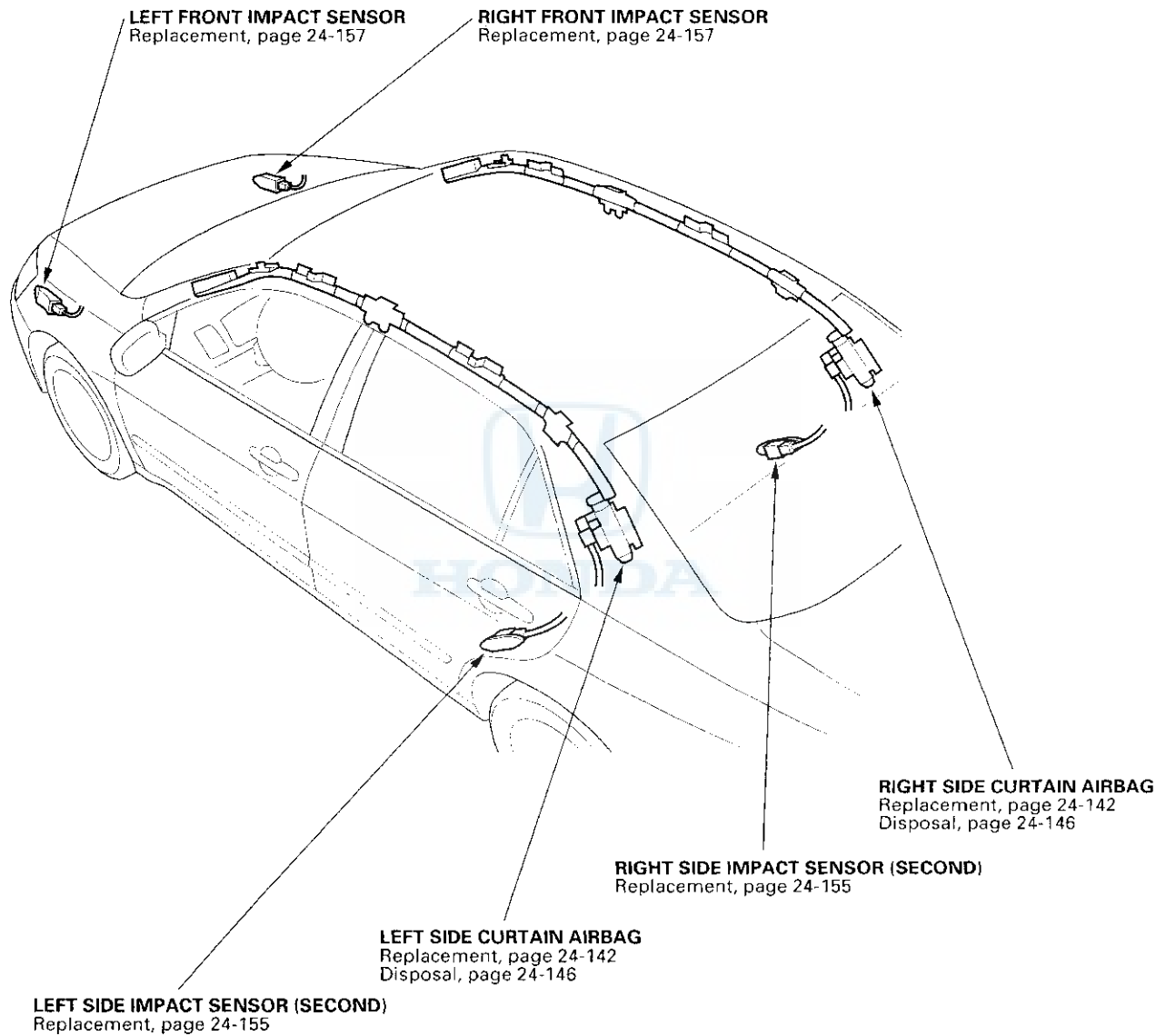


Component Location Index



(cont'd)

Component Location Index (cont'd)



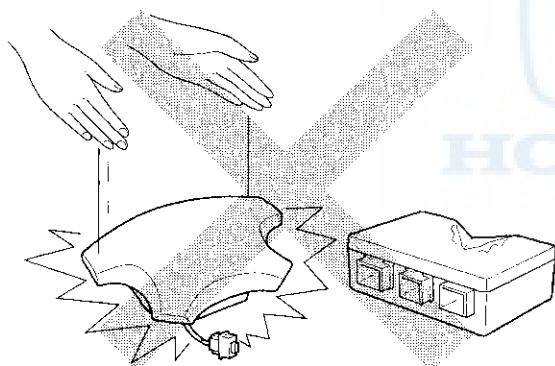


Precautions and Procedures

General Precautions

Please read the following precautions carefully before performing the airbag system service. Observe the instructions described in this manual, or the airbags could accidentally deploy and cause damage or injuries.

- Except when performing electrical inspections, always turn the ignition switch OFF, ground the SCS line with the HDS to take the PCM out of active status, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning work.
NOTE: The SRS memory is not erased even if the ignition switch is turned OFF or the battery cables are disconnected from the battery.
- Use replacement parts which are manufactured to the same standards and quality as the original parts. Do not install used SRS parts. Use only new parts when making SRS repairs.
- Carefully inspect any SRS part before you install it. Do not install any part that shows signs of being dropped or improperly handled, such as dents, cracks or deformation.



- Before removing any of the SRS parts (including the disconnection of the connectors), always disconnect the SRS connector.
- Use only a digital multimeter to check the system. If it is not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the lowest value in the ohmmeter range. A tester with a higher output could cause accidental deployment and possible injury.
- Do not put objects on the front passenger's airbag.
- The original radio and navigation system have a coded theft protection circuit. Be sure to get the customer's anti-theft codes and write down the radio stations and XM channel presets before disconnecting the battery negative cable.

- Before returning the vehicle to the customer, enter the radio code, the navigation code, then enter the customer's radio stations and XM channel presets, and set the clock.
- After reconnecting the battery negative cable, if the IMA battery level gauge (BAT) displays no segments, start the engine, and hold it between 3,500 rpm and 4,000 rpm without load (in Park or Neutral) until the BAT displays at least three segments.

Steering-related Precautions

Cable Reel Alignment

- Misalignment of the cable reel could cause an open in the wiring, make the SRS system, remote steering wheel controls, and the horn inoperative. Center the cable reel whenever the following is performed (see step 6 on page 24-152).
 - Installation of the steering wheel
 - Installation of the cable reel
 - Installation of the steering column
 - Other steering-related adjustment or installation
- Do not disassemble the cable reel.
- Do not apply grease to the cable reel.
- If the cable reel shows any signs of damage, replace it with a new one. For example, if it does not rotate smoothly, replace the cable reel.

(cont'd)

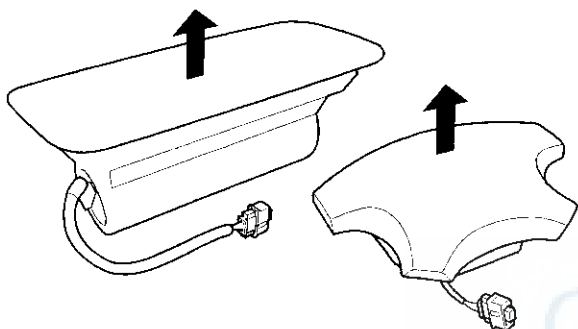
Precautions and Procedures (cont'd)

Airbag Handling and Storage

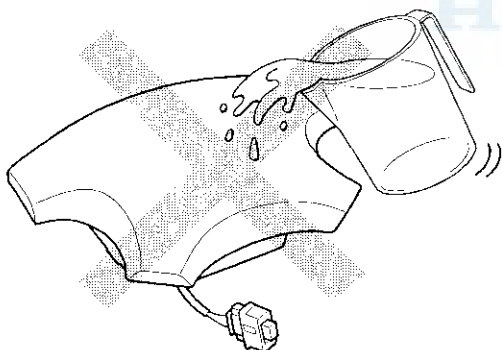
Do not disassemble an airbag. It has no serviceable parts. Once an airbag has been deployed, it cannot be repaired or reused.

For temporary storage of an airbag during service, observe the following precautions.

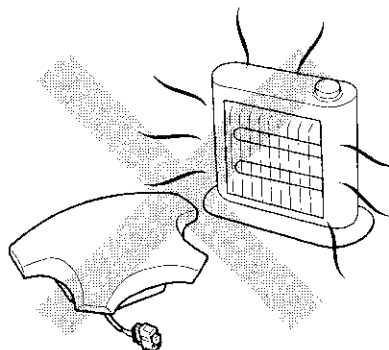
- Store the removed airbag with the pad surface up. Never put anything on the airbag.



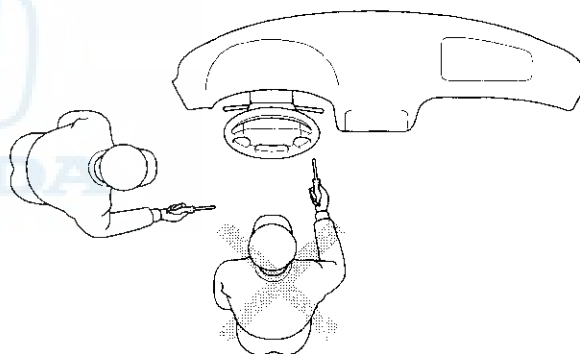
- To prevent damage to the airbag, keep it away from any oil, grease, detergent, or water.



- Store the removed airbag on a secure, flat surface away from any high heat source (exceeding 200 °F/ 93 °C).



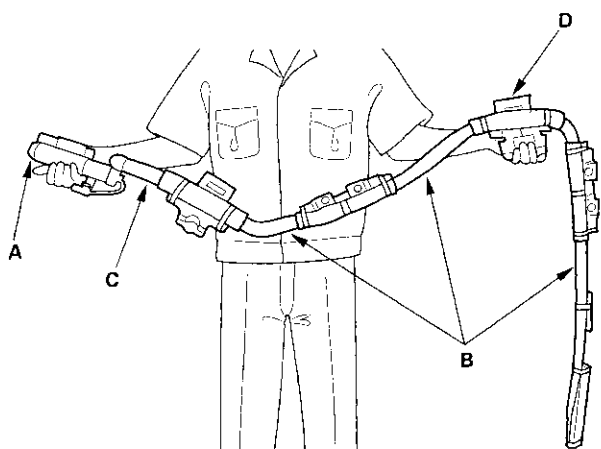
- Never perform electrical inspections to the airbags, such as measuring resistance.
- Do not position yourself in front of the airbag during removal, inspection, or replacement.



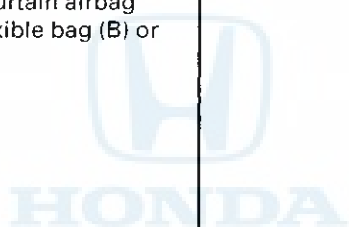
- For proper disposal of a damaged airbag, refer to airbag disposal (see page 24-146).



- The side curtain airbag inflator assembly is a long, jointed part containing an inflator (A), a flexible bag (B), an adapter pipe (C), and a center bracket (D).



- When removing or installing the side curtain airbag inflator assembly, never handle the flexible bag (B) or the adapter pipe (C).

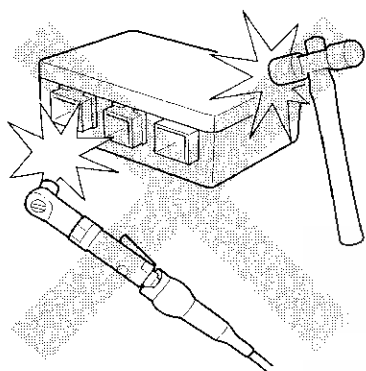


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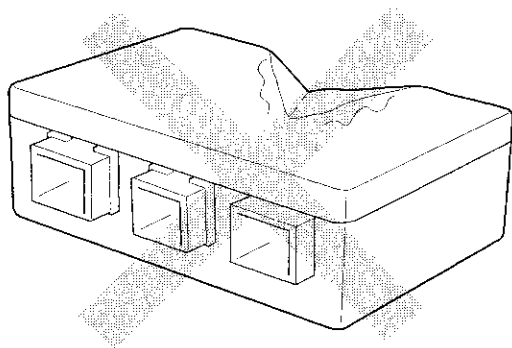
Precautions and Procedures (cont'd)

SRS Unit, Front Impact Sensors, and Side Impact Sensors

- Be careful not to bump or impact the SRS unit, front impact sensors, or side impact sensors when the ignition switch is ON (II), or for at least 3 minutes after the ignition switch is turned OFF.
- During installation or replacement, be careful not to bump (by impact wrench, hammer, etc.) the area around the SRS unit, front impact sensors, or side impact sensors. The airbags could accidentally deploy and cause damage or injury.



- After a collision that caused any airbag to deploy, the SRS unit and many other components must be replaced (see page 24-136). After a collision in which the airbags, or the side airbags and/or seat belt tensioners did not deploy, inspect for any damage or any deformation on the SRS unit, front impact sensors, and side impact sensors. Replace all damaged parts.



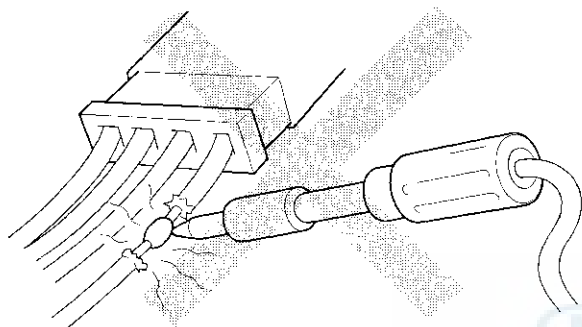
- Do not disassemble the SRS unit, front impact sensors, or side impact sensors.
- Turn the ignition switch OFF, disconnect the battery negative cable, and wait at least 3 minutes before beginning installation or replacement of the SRS unit or disconnecting the connectors from the SRS unit.
- Be sure the SRS unit, front impact sensors, and side impact sensors are installed securely with the mounting bolts torqued to 9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)
- Do not spill water or oil on the SRS unit or the side impact sensors, and keep them away from dust.
- Store the SRS unit, front impact sensors, and side impact sensors in a cool (less than 104 °F/40 °C) and dry (less than 80 % relative humidity, no moisture) area.



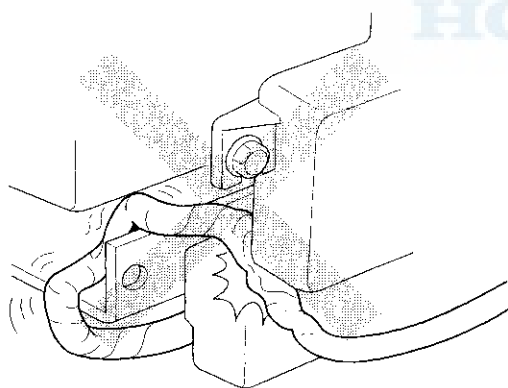
Wiring Precautions

Some of the SRS wiring can be identified by special yellow outer covering, and the SRS connectors can be identified by their yellow color. Observe the instructions.

- Never attempt to modify, splice, or repair SRS wiring. If there is an open or damage in SRS wiring or terminals, replace the harness.



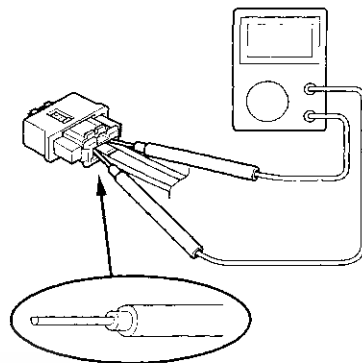
- Be sure to install the harness wires so they do not get pinched or interfere with other parts.



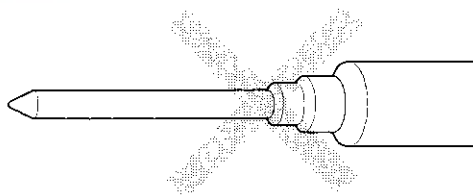
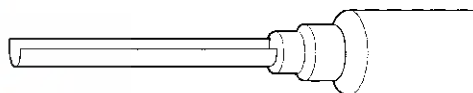
- Make sure all SRS ground locations are clean and securely fastened for optimum metal-to-metal contact. Poor grounding can cause intermittent problems that are difficult to diagnose.

Precautions for Electrical Inspections

- When using electrical test equipment, insert the probe of the tester into the wire side of the connector. Do not insert the probe of the tester into the terminal side of the connector, and do not tamper with the connector.



- Use a U-shaped probe. Do not insert the probe forcibly.



- Use specified service connectors in troubleshooting. Using improper tools could cause an error in inspection due to poor metal-to-metal contact.

(cont'd)

Precautions and Procedures (cont'd)

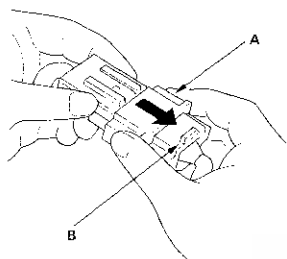
Spring-loaded Lock Connector

Some SRS system connectors have a spring-loaded lock.

Front Airbag Connectors

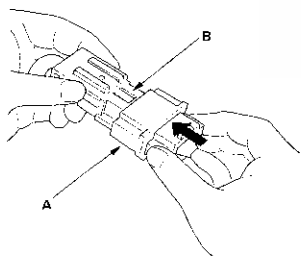
Disconnecting

To release the lock, pull the spring-loaded sleeve (A) toward the stop (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector.

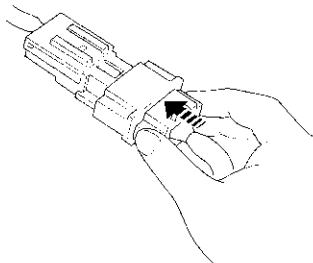


Connecting

1. To reconnect, hold the pawl-side connector, and press on the back of the sleeve-side connector in the direction shown. As the two connector halves are pressed together, the sleeve (A) is pushed back by the pawl (B). Do not touch the sleeve.



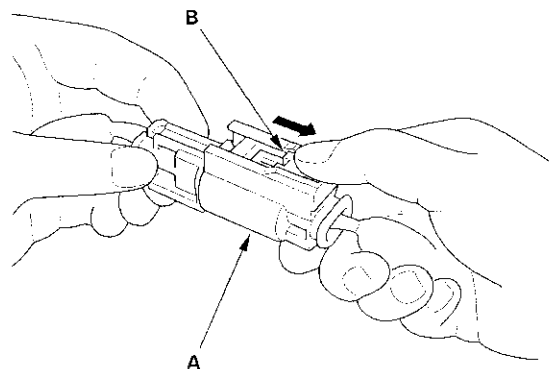
2. When the connector halves are completely connected, the pawl is released, and the spring-loaded sleeve locks the connector.



Side Airbag Connector

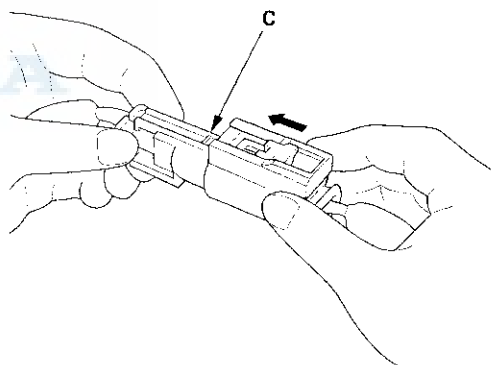
Disconnecting

To release the lock, pull the spring-loaded sleeve (A) and the slider (B) while holding the opposite half of the connector. Then pull the connector halves apart. Be sure to pull on the sleeve and not on the connector half.



Connecting

Hold both connector halves, and press them firmly together until the projection (C) of the sleeve-side connector clicks.





Reopening the SRS Unit Circuit For Diagnosis

Special Tools Required

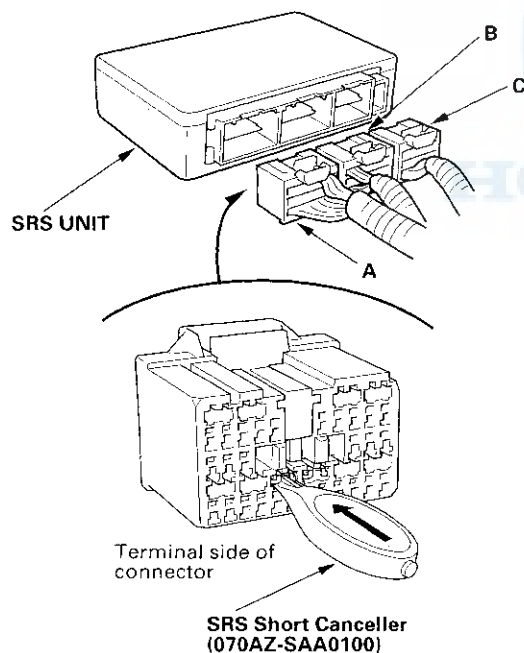
SRS short canceller 070AZ-SAA0100

NOTE:

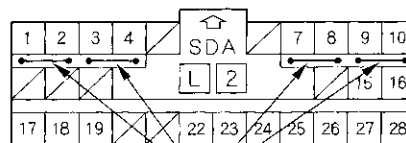
- To prevent damage of the connector cavity, insert the short canceller straight into the cavity from the terminal side.
- Do not use the short canceller if it is damaged.
- Make sure to remove the short canceller before re-connecting the connector.

When SRS unit connectors A, B, or C are disconnected, a short circuit is created in the connector by its own function to prevent airbag deployment. The circuit may need to be opened when diagnosis is performed on the circuit.

Insert the short canceller (No. 070AZ-SAA0100) in the specified cavities when it is necessary to keep the circuit open for diagnosis.



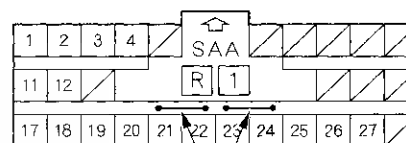
SRS UNIT CONNECTOR A (28P)



Insert special tool here

Wire side of female terminals

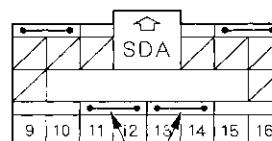
SRS UNIT CONNECTOR B (28P)



Insert special tool here

Wire side of female terminals

SRS UNIT CONNECTOR C (16P)



Insert special tool here

Wire side of female terminals

(cont'd)

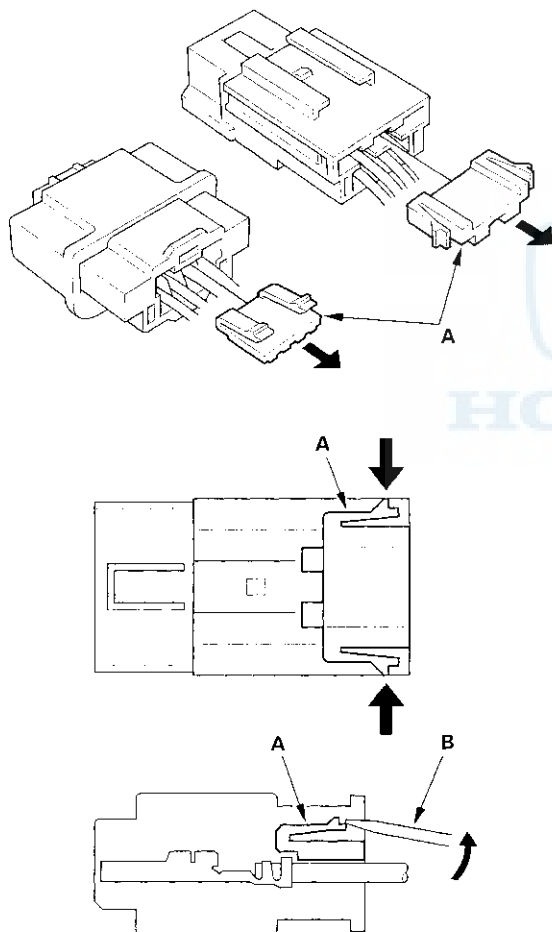
Precautions and Procedures (cont'd)

Backprobing Spring-loaded Lock Connectors

When checking voltage or resistance on this type of connector for the first time, you must remove the retainer to insert the tester probe from the wire side.

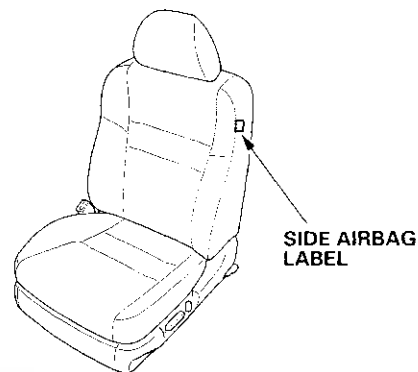
NOTE: It is not necessary to reinstall the removed retainer; the terminals will stay locked in the connector housing.

To remove the retainer (A), insert a flat-tip screwdriver (B) between the connector body and the retainer, then carefully pry out the retainer. Take care not to break the connector.



Seats with Side Airbags

Seats with side airbags have a "SIDE AIRBAG" label on the seat-back. Because the component parts (seat-back cover, cushion, etc.) of seats with and without airbags are different, make sure you install only the correct replacement parts.



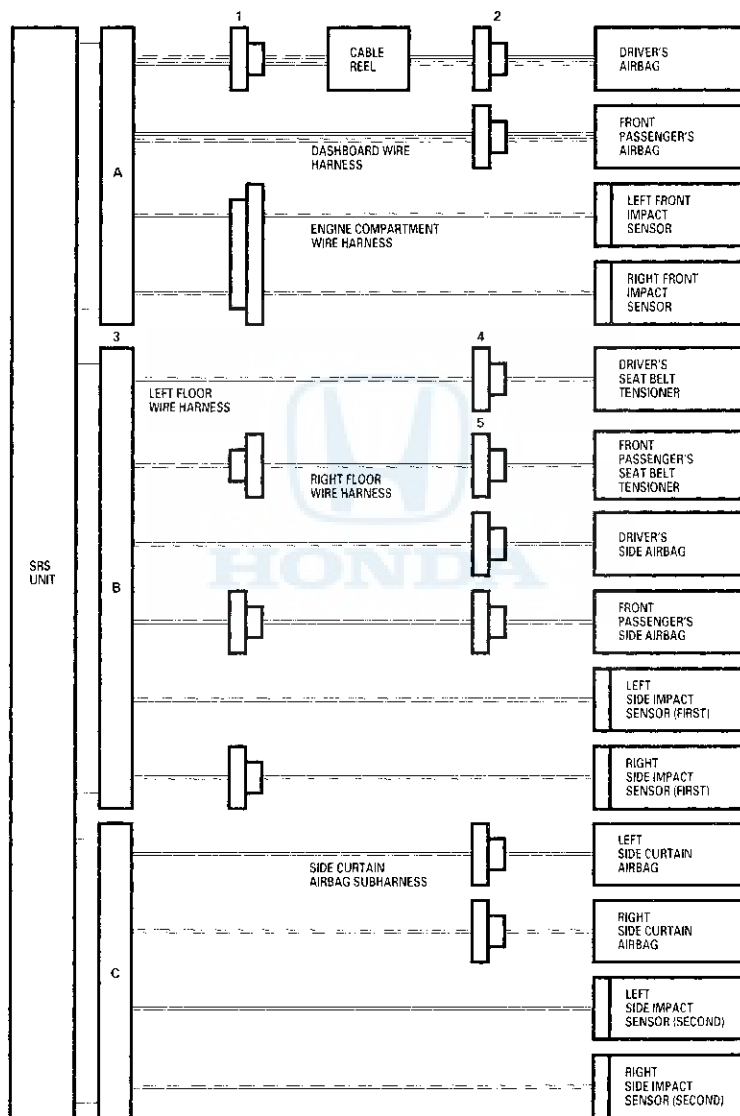
- When cleaning, do not saturate the seat with liquid, and do not spray steam on the seat.
- Do not repair a torn or frayed seat-back cover. Replace the seat-back cover.
- After a collision in which the side airbag was deployed, replace the side airbag with new parts. If the seat-back cushion is split, it must be replaced. If the seat-back frame is deformed, it must be replaced.
- Never put aftermarket accessories on the seat (covers, pads, seat heaters, lights, etc.).



Disconnecting System Connectors

Turn the ignition switch OFF, disconnect the negative cable from the battery, and wait at least 3 minutes before beginning the following procedures.

- Before disconnecting the cable reel 4P connector (1), disconnect the driver's airbag 4P connector (2).
- Before disconnecting SRS unit connector B (3) from the SRS unit, disconnect both seat belt tensioner 4P connectors (4, 5).



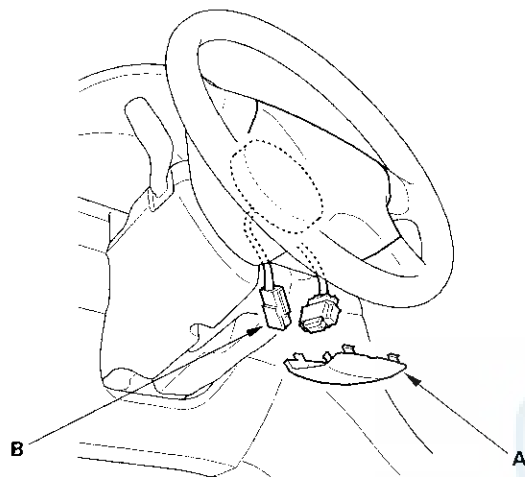
(cont'd)

Precautions and Procedures (cont'd)

1. Disconnect the battery negative cable, and wait at least 3 minutes.

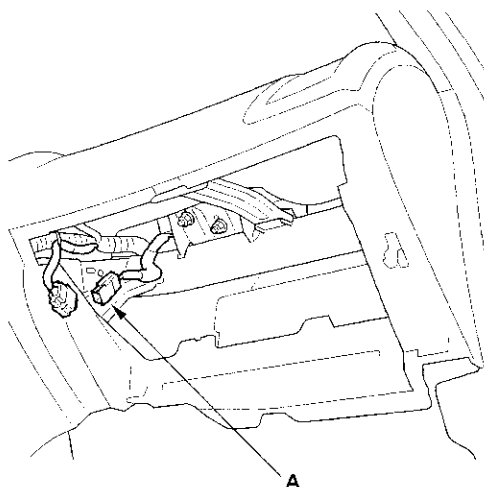
Driver's Airbag

2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



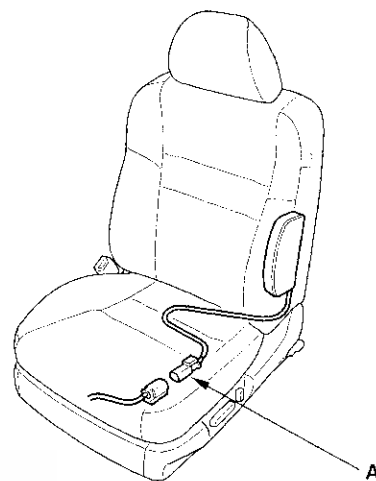
Front Passenger's Airbag

3. Remove the glove box (see page 20-70), then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



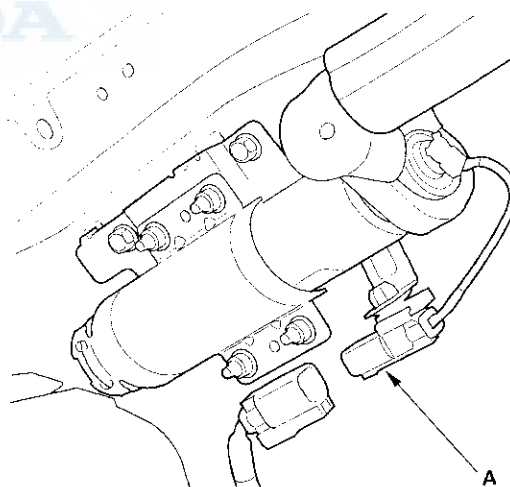
Side Airbag

4. Disconnect both side airbag 2P connectors (A) from the left or right floor wire harness.



Side Curtain Airbag

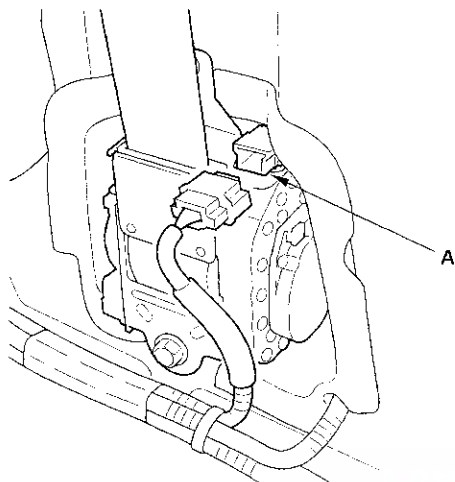
5. Remove the headliner (see page 20-56). Disconnect both side curtain airbag 2P connectors (A) from the side curtain airbag subharness.





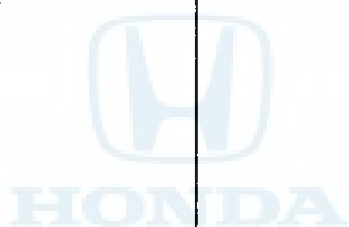
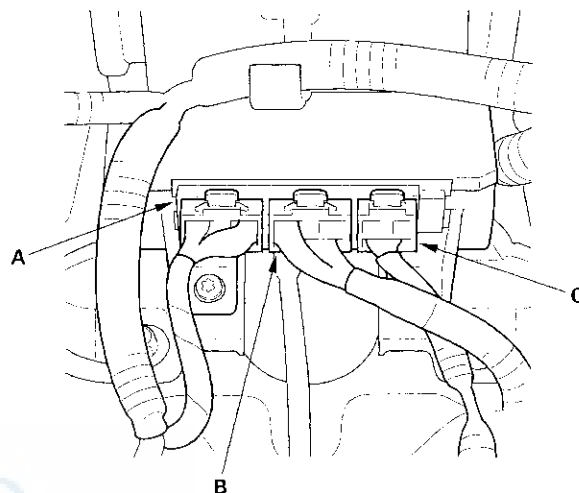
Seat Belt Tensioner

6. Disconnect both seat belt tensioner 4P connectors (A) from the left or right floor wire harness.



SRS Unit

7. Disconnect SRS unit connector A, and/or SRS unit connector B, and/or SRS unit connector C from the SRS unit.



General Troubleshooting Information

DTC (Diagnostic Trouble Codes)

The self-diagnostic function of the SRS system allows it to locate the causes of system problems and then store this information in memory. For easier troubleshooting, this data can be retrieved via a data link circuit.

- When you turn the ignition switch ON (II), the SRS indicator comes on. If it goes off after 6 seconds, the system is normal, and is not currently detecting any abnormality.
- If there is an abnormality, the system locates and defines the problem, stores this information in memory, and turns the SRS indicator on. The data will remain in memory even when the ignition switch is turned off or if the battery is disconnected.
- The data is stored in memory as a diagnostic trouble code (DTC).
- DTCs are either latching or resetting depending on the malfunction. With resetting DTCs, the SRS indicator will go off the next time the ignition switch is turned ON and the system is normal, but the DTC is still stored. With latching DTCs, the SRS indicator will not turn OFF until the malfunction is repaired and the DTC is cleared.
- When you connect the HDS to the 16P data link connector (DLC), you can retrieve the DTCs in the Honda Systems "SRS" menu.
- After reading and recording the DTC, proceed with the troubleshooting procedure for that code.

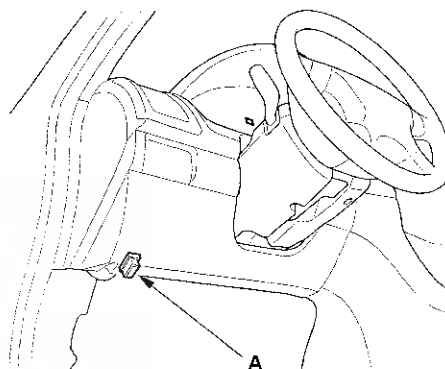
Precautions

- Use only a digital multimeter to check the system. If it's not a Honda multimeter, make sure its output is 10 mA (0.01 A) or less when switched to the smallest value in the ohmmeter range. A tester with a higher output could damage the airbag circuit or cause accidental airbag deployment and possible injury.
- Whenever the ignition switch is ON (II), or has been turned OFF for less than 3 minutes, be careful not to bump the SRS unit; the airbags could accidentally deploy and cause damage or injuries.
- Before you remove the SRS harness, disconnect the driver's airbag connector, the front passenger's airbag connector, both side airbag connectors, both side curtain airbag connectors, and both seat belt tensioner connectors.

- Make sure the battery is sufficiently charged. If the battery is dead or low, measured values may not be correct.
- Do not touch a tester probe to the terminals in the SRS unit or harness connectors, and do not connect the terminals with a jumper wire. Use only the backprobe set and the multimeter. Backprobe spring-loaded lock type connectors correctly.

Reading the DTC

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the DLC (A).

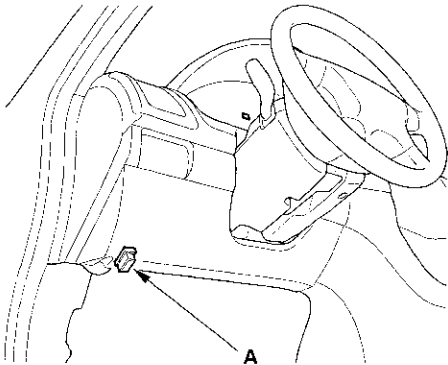


3. Turn the ignition switch ON (II).
4. Use the HDS to check for DTCs.
5. Read and record the DTC.
6. Turn the ignition switch OFF, and wait for 10 seconds.
7. Disconnect the HDS from the DLC.
8. Do the troubleshooting procedure for the DTC.



Erasing the DTC Memory with HDS

1. Make sure the ignition switch is OFF.
2. Connect the HDS to the DLC (A).



3. Turn the ignition switch ON (II).
4. In the TEST MODE MENU of the HDS, select DTC CLEAR. This erases the DTC(s).
5. Turn the ignition switch OFF, and wait for 10 seconds.
6. Disconnect the HDS from the DLC.

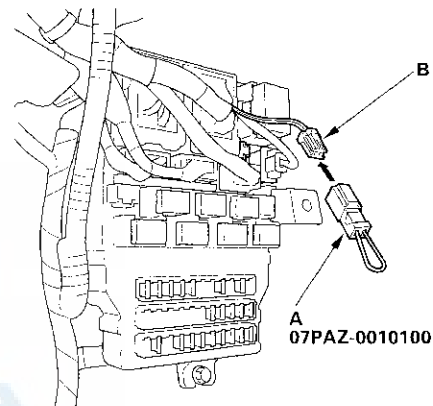
Erasing the DTC Memory with Manual Mode

Special Tools Required

SCS service connector 07PAZ-0010100

To erase the DTC(s) from the SRS unit, use the HDS or the following procedure.

1. Make sure the ignition switch is OFF.
2. Connect the SCS service connector (A) to the yellow MES 2P connector (B). Do not use a jumper wire.



3. Turn the ignition switch ON (II).
4. The SRS indicator comes on for about 6 seconds, and then goes off. Remove the SCS service connector from the MES connector (2P) within 4 seconds after the indicator goes off.
5. The SRS indicator comes on again. Reconnect the SCS service connector to the MES connector (2P) within 4 seconds after the indicator comes on.
6. When the SRS indicator goes off, remove the SCS service connector from the MES connector (2P) within 4 seconds.
7. The SRS indicator blinks two times, indicating that the memory has been erased.
8. Turn the ignition switch OFF, and wait for 10 seconds.
9. Turn the ignition switch ON (II) again. If the SRS indicator comes on for 6 seconds, and then goes off, the system is OK.

(cont'd)

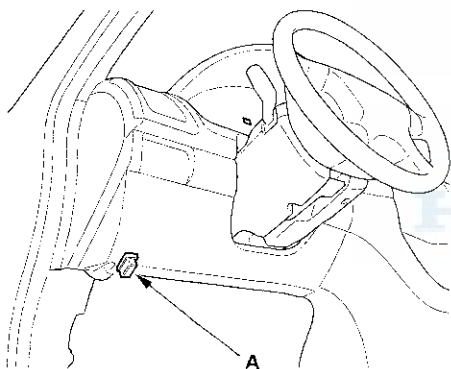
General Troubleshooting Information (cont'd)

Initializing the OPDS (Occupant Position Detection System) Unit

When a seat-back cover, seat-back cushion, and/or OPDS unit is replaced, initialize the OPDS by following the procedure.

NOTE: A new (uninitialized) OPDS unit installed with a faulty OPDS sensor can cause DTC 85-71.

1. Erase the DTC memory (see "Erasing the DTC Memory").
2. Make sure the front passenger's seat is dry. Set the seat-back in a normal position, and make sure there is nothing on the seat.
3. Make sure the ignition switch is OFF and the MES connector is not shorted.
4. Connect the HDS to the DLC (A).



5. Turn the ignition switch ON (II).
6. From the HDS Main Menu, select SRS, then Misc Test, then Adjustments. In the Adjustment Menu, select OPDS INIT. Follow the screen prompts to initialize the OPDS.
7. Turn the ignition switch OFF.
8. Disconnect the HDS from the DLC.

NOTE: If the OPDS system fails to initialize after several attempts, replace the OPDS sensor/seat-back (see page 20-89) and retry. If the OPDS system continues to fail to initialize, replace the OPDS unit (see page 24-156).

Troubleshooting Intermittent Failures

If there was a malfunction, but it doesn't recur, it will be stored in the memory as an intermittent failure, and the SRS indicator may come on depending on the malfunction detected.

After checking the DTC, troubleshoot as follows:

1. Read the DTC (see "Reading the DTC").
2. Erase the DTC memory (see "Erasing the DTC Memory").
3. Set the parking brake, then start the engine, and let it idle.
4. The SRS indicator comes on for about 6 seconds and then goes off.
5. Shake the wire harness and the connectors, take a test drive (quick acceleration, quick braking, cornering), turn the steering wheel fully left and right, and hold it there for 5 to 10 seconds. If the problem recurs, the SRS indicator will come on.
6. If you can't duplicate the intermittent failure, the system is OK at this time.



DTC Troubleshooting Index

DTC	Latch ^{*1}	Reset ^{*2}	Detection Item	Notes
11-10		X	Open or increased resistance in driver's airbag first inflator	(see page 24-36)
11-11		X	Short to another wire in driver's airbag first inflator	(see page 24-37)
11-30		X	Decreased resistance in driver's airbag first inflator	(see page 24-37)
11-40		X	Open or increased resistance in driver's airbag second inflator	(see page 24-36)
11-41		X	Short to another wire in driver's airbag second inflator	(see page 24-37)
11-60		X	Decreased resistance in driver's airbag second inflator	(see page 24-37)
11-80	X		Short to power in driver's airbag first inflator	(see page 24-39)
11-90	X		Short to ground in driver's airbag first inflator	(see page 24-40)
11-A0	X		Short to power in driver's airbag second inflator	(see page 24-39)
11-B0	X		Short to ground in driver's airbag second inflator	(see page 24-40)
12-10		X	Open or increased resistance in front passenger's airbag first inflator	(see page 24-42)
12-11		X	Short to another wire in front passenger's airbag first inflator	(see page 24-43)
12-30		X	Decreased resistance in front passenger's airbag first inflator	(see page 24-43)
12-40		X	Open or increased resistance in front passenger's airbag second inflator	(see page 24-42)
12-41		X	Short to another wire in front passenger's airbag second inflator	(see page 24-43)
12-60		X	Decreased resistance in front passenger's airbag second inflator	(see page 24-43)
12-80	X		Short to power in front passenger's airbag first inflator	(see page 24-44)
12-90	X		Short to ground in front passenger's airbag first inflator	(see page 24-45)
12-A0	X		Short to power in front passenger's airbag second inflator	(see page 24-44)
12-B0	X		Short to ground in front passenger's airbag second inflator	(see page 24-45)
21-10		X	Open or increased resistance in driver's seat belt tensioner	(see page 24-46)
21-11		X	Short to another wire in driver's seat belt tensioner	(see page 24-47)
21-30		X	Decreased resistance in driver's seat belt tensioner	(see page 24-47)
21-80	X		Short to power in driver's seat belt tensioner	(see page 24-48)
21-90	X		Short to ground in driver's seat belt tensioner	(see page 24-49)
22-10		X	Open or increased resistance in front passenger's seat belt tensioner	(see page 24-50)
22-11		X	Short to another wire in front passenger's seat belt tensioner	(see page 24-52)
22-30		X	Decreased resistance in front passenger's seat belt tensioner	(see page 24-52)
22-80	X		Short to power in front passenger's seat belt tensioner	(see page 24-54)
22-90	X		Short to ground in front passenger's seat belt tensioner	(see page 24-56)
31-10		X	Open or increased resistance in driver's side airbag inflator	(see page 24-58)
31-11		X	Short to another wire in driver's side airbag inflator	(see page 24-59)
31-30		X	Decreased resistance in driver's side airbag inflator	(see page 24-59)
31-80	X		Short to power in driver's side airbag inflator	(see page 24-60)
31-90	X		Short to ground in driver's side airbag inflator	(see page 24-61)
32-10		X	Open or increased resistance in front passenger's side airbag inflator	(see page 24-62)
32-11		X	Short to another wire in front passenger's side airbag inflator	(see page 24-64)
32-30		X	Decreased resistance in front passenger's side airbag inflator	(see page 24-64)
32-80	X		Short to power in front passenger's side airbag inflator	(see page 24-66)
32-90	X		Short to ground in front passenger's side airbag inflator	(see page 24-68)
33-10		X	Open or increased resistance in left side curtain airbag inflator	(see page 24-70)
33-11		X	Short to another wire in left side curtain airbag inflator	(see page 24-71)
33-30		X	Decreased resistance in left side curtain airbag inflator	(see page 24-71)
33-80	X		Short to power in left side curtain airbag inflator	(see page 24-72)
33-90	X		Short to ground in left side curtain airbag inflator	(see page 24-73)
34-10		X	Open or increased resistance in right side curtain airbag inflator	(see page 24-74)
34-11		X	Short to another wire in right side curtain airbag inflator	(see page 24-75)
34-30		X	Decreased resistance in right side curtain airbag inflator	(see page 24-75)
34-80	X		Short to power in right side curtain airbag inflator	(see page 24-76)
34-90	X		Short to ground in right side curtain airbag inflator	(see page 24-77)

* 1: The SRS indicator turns on and stays on whenever the ignition switch is in the ON (II) position, or until the DTC is cleared.

* 2: The SRS indicator turns on when the DTC is set. The SRS indicator will not turn on after the ignition switch is cycled from ON (II) to OFF (0) (if the circuit returns to normal), but the DTC will be stored in the SRS unit.

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC	Latch ¹	Reset ²	Detection Item	Notes
41-11		×	No signal from the left front impact sensor	(see page 24-78)
41-12		×	Short to ground or short to power/open in left front impact sensor	(see page 24-78)
41-20			Internal failure of the left front impact sensor	(see page 24-84)
41-30				
41-A0	×			
41-B0				
42-11		×	No signal from the right front impact sensor	(see page 24-81)
42-12		×	Short to ground or short to power/open in right front impact sensor	(see page 24-81)
42-20			Internal failure of the right front impact sensor	(see page 24-85)
42-30				
42-A0	×			
42-B0				
43-11		×	No signal from the left side impact sensor (first)	(see page 24-86)
43-12		×	Short to ground or short to power/open in left side impact sensor (first)	(see page 24-86)
43-20			Internal failure of the left side impact sensor (first)	(see page 24-92)
43-30				
43-A0	×			
43-B0				
44-11		×	No signal from the right side impact sensor (first)	(see page 24-89)
44-12		×	Short to ground or short to power/open in right side impact sensor (first)	(see page 24-89)
44-20			Internal failure of the right side impact sensor (first)	(see page 24-92)
44-30				
44-A0	×			
44-B0				
45-11		×	No signal from the left side impact sensor (second)	(see page 24-93)
45-12		×	Short to ground or short to power/open in left side impact sensor (second)	(see page 24-93)
45-20			Internal failure of the left side impact sensor (second)	(see page 24-99)
45-30				
45-A0	×			
45-B0				
46-11		×	No signal from the right side impact sensor (second)	(see page 24-96)
46-12		×	Short to ground or short to power/open in right side impact sensor (second)	(see page 24-96)
46-20			Internal failure of the right side impact sensor (second)	(see page 24-99)
46-30				
46-A0	×			
46-B0				
51-10		×	Internal failure of SRS unit	(see page 24-100)
51-11				
51-20				
51-21				
51-22				
51-23				
51-42				
51-50				
52-A0	×			(see page 24-101)
52-B0				
52-E0				
52-F0				
53-20		×		
53-21				
53-22				
53-30				
53-31				(see page 24-102)
53-32				
53-33				
53-34				
53-35				
53-36				
53-37				
53-38				
53-39				(see page 24-103)
53-40				
53-42				
53-43				
53-44				



DTC	Latch ^{*1}	Reset ^{*2}	Detection Item	Notes
53-80	×		Internal failure of the SRS unit	(see page 24-103)
53-81				
53-82				
53-83				
53-85				(see page 24-104)
53-86				
53-87				
53-88				
53-89				
53-8A				
53-8B				
54-10		×		(see page 24-105)
54-11				
54-30				
54-31				
61-10		×	Open in driver's seat belt buckle switch	(see page 24-106)
61-20			Short to ground in driver's seat belt buckle switch	(see page 24-109)
62-10			Open in front passenger's seat belt buckle switch	(see page 24-112)
62-20			Short to ground in front passenger's seat belt buckle switch	(see page 24-115)
85-4x			Internal failure of the OPDS unit	(see page 24-118)
85-5x				
85-61			No signal from OPDS unit	(see page 24-119)
85-62			Non-stipulated response data	
85-63			Model ID code or variation code inconsistent	(see page 24-118)
85-64			ECU serial ID code inconsistent	
85-71			OPDS unit not initialized	
85-78				
85-79			OPDS sensor drift check failure	
86-1x		×	Faulty OPDS seat-back sensor	(see page 24-123)
86-2x			Faulty OPDS seat support sensor	
87-31			Internal failure of the OPDS unit	(see page 24-124)
87-32			Side airbag cutoff indicator stays on or off	
91-10			Internal failure of the SRS unit	(see page 24-126)
91-20			Short to ground in SRS indicator circuit	(see page 24-126)
A1-10	×		Faulty power supply (VA line)	(see page 24-128)
A2-10			Faulty power supply (VB line)	(see page 24-130)
E4-11			Front passenger's side airbag does not deploy by OPDS operation	(see page 24-105)
F1-11			Driver's airbag and/or driver's seat belt tensioner deployed	
F2-11			Front passenger's airbag and/or front passenger's seat belt tensioner deployed	
F3-11			Driver's side airbag, left side curtain airbag, and/or driver's seat belt tensioner deployed	
F4-11			Front passenger's side airbag, right side curtain airbag, and/or front passenger's seat belt tensioner deployed	

NOTE: The "x" at the end of each DTC denotes a numeric character (0 thru 9) or an alpha character (A thru F) that you will see on the HDS display. The character is unrelated to your troubleshooting; it designates the SRS unit manufacturer and other details used for product analysis.

* 1: The SRS indicator turns on and stays on whenever the ignition switch is in the ON (II) position, or until the DTC is cleared.

* 2: The SRS indicator turns on when the DTC is set. The SRS indicator will not turn on after the ignition switch is cycled from ON (II) to OFF (0) (if the circuit returns to normal), but the DTC will be stored in the SRS unit.

Symptom Troubleshooting Index

Symptom	Diagnostic procedure	Also check for
SRS indicator does not come on	Symptom Troubleshooting (see page 24-132)	
SRS indicator stays on, but no DTCs are stored	Symptom Troubleshooting (see page 24-134)	
Side airbag cutoff indicator stays on after bulb check, and no DTCs are stored, or side airbag cutoff indicator is flashing	<ul style="list-style-type: none">• Make sure nothing is on the front passenger's seat.• If the side airbag cutoff indicator stays on after the ignition switch is turned ON (II), initialize the OPDS unit (see page 24-26).<ul style="list-style-type: none">– If the side airbag cutoff indicator operates normally, the system is OK.– If the side airbag cutoff indicator stays on, replace the OPDS sensor/seat-back (see page 20-89). The sensor is part of the seat-back pad.	DTC 87-32 troubleshooting (see page 24-124).



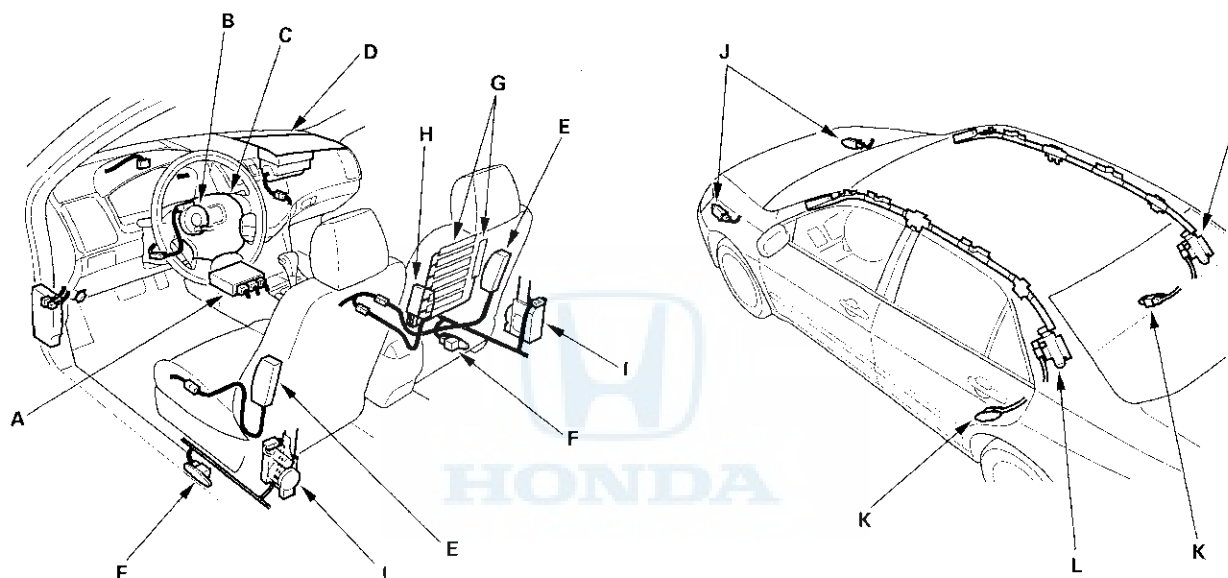


System Description

SRS Components

Airbags

The SRS is a safety device which, when used with the seat belt, is designed to help protect the driver and front passenger in a frontal impact exceeding a certain set limit. The system consists of the SRS unit, including safing sensor and impact sensor (A), the cable reel (B), the driver's airbag (C), the front passenger's airbag (D), seat belt tensioners (I), and front impact sensors (J). Since the driver's and front passenger's airbags use the same sensors, both normally inflate at the same time. However, it is possible for only one airbag to inflate. This can occur when the severity of a collision is at the margin, or threshold, that determines whether or not the airbags will deploy. In such cases, the seat belt will provide sufficient protection, and the supplemental protection offered by the airbag would be minimal.



Side Airbags

The side airbags (E) are in each front seat-back. They help protect the upper torso of the driver or front seat passenger during a moderate to severe side impact. Side impact sensors (first) (F) in each door sill and in the SRS unit detect such an impact and instantly inflate the driver's or the passenger's side airbag. Only one side airbag will deploy during a side impact. If the impact is on the passenger's side, the passenger's side airbag will deploy even if there is no passenger.

Side Curtain Airbag

The side curtain airbags (L) are in each side of the roof. They help protect the head of the driver or door side passenger during a moderate to severe side or impact. Side impact sensors (first) (F) in each front door sill, side impact sensors (second) (K) in each rear door sill, and the SRS unit detect such an impact and instantly inflate the driver's or the passenger's side curtain airbag. A side impact at the front to middle of the vehicle causes the side curtain airbag and the side airbag on the impacted side to deploy. A side impact towards the rear of the vehicle causes only the side curtain airbag on the impacted side to deploy.

(cont'd)

SRS

System Description (cont'd)

Seat Belt Tensioners

The seat belt tensioners are linked with the SRS airbags to further increase the effectiveness of the seat belt. In a front-end collision, the tensioners instantly retract the belt firmly to secure the occupants in their seats.

OPDS

The side airbag system also includes an occupant position detection system (OPDS). This system consists of sensors (G) and a OPDS unit (H) in the front passenger's seat-back. The OPDS unit sends the signal to the SRS unit. If the OPDS unit determines that the front passenger is of small stature (for example, a child) and the front passenger is leaning into the side airbag deployment path, the SRS unit will automatically disable the passenger's side airbag. The SRS unit will also disable the airbag when the OPDS detects certain objects on the seat. When the side airbag is disabled, the side airbag cutoff indicator on the instrument panel alerts the driver that the passenger's side airbag will not deploy in a side impact. When the object is removed, or the passenger sits upright, the side airbag cutoff indicator will go off after a few seconds, alerting the driver that the passenger's side airbag will deploy in a side impact.

SRS Operation

The main circuit in the SRS unit senses and judges the force of impact and, if necessary, ignites the inflator charges. If battery voltage is too low or power is disconnected due to the impact, the voltage regulator and the back-up power circuit will keep voltage at a constant level.

For the SRS to operate

Seat Belt Tensioners

- (1) A front impact sensor must activate and send electric signals to the microprocessor.
- (2) The microprocessor must compute the signals and send them to the tensioners.
- (3) The charges must ignite and deploy the tensioners.

Driver's and Front Passenger's Airbag(s)

- (1) A front impact sensor must activate, and send electric signals to the microprocessor.
- (2) The microprocessor must compute the signals, and depending on the severity of the collision and whether the seat belt buckle switch is on or off, it sends the appropriate signals to the airbag inflator(s).
- (3) The inflators that received signals must ignite and deploy the airbags.

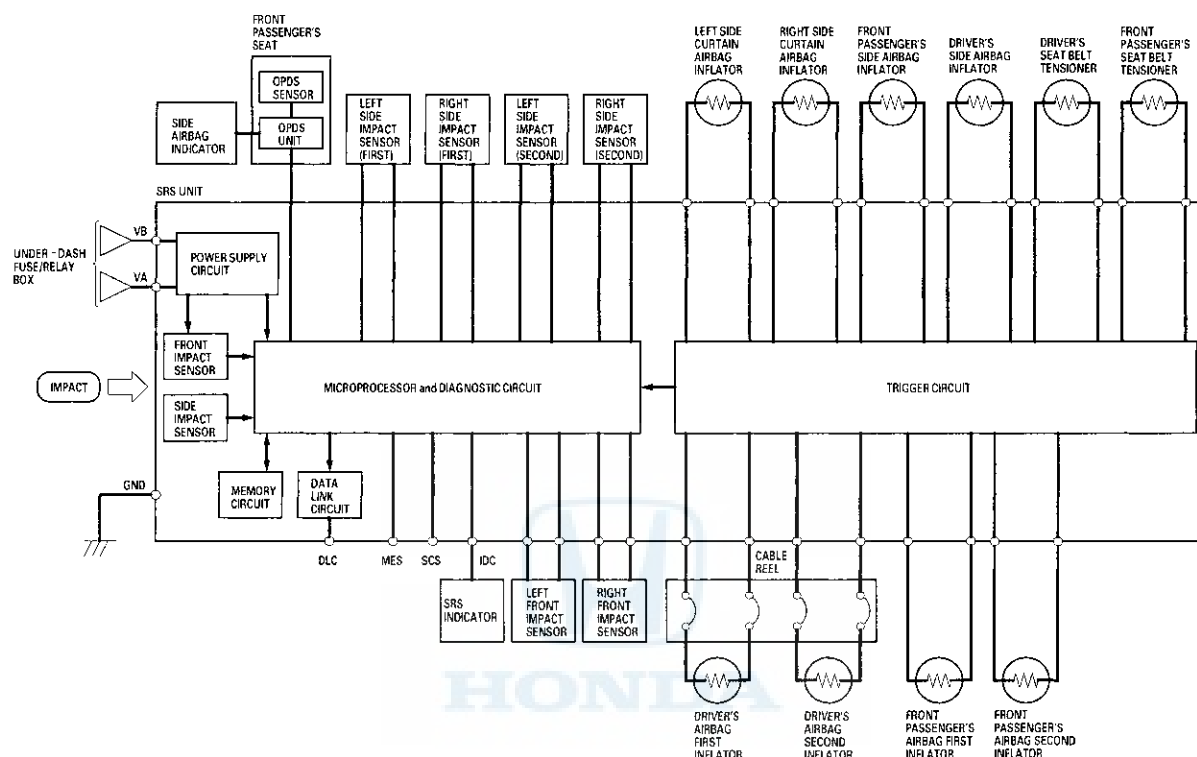
Side Airbag(s)

- (1) A side impact sensor must activate, and send electric signals to the microprocessor.
- (2) The microprocessor must compute the signals and send them to the side airbag inflator(s). However, the microprocessor turns off the signals to the front passenger's side airbag if the OPDS unit determines that the front passenger's head is in the deployment path of the side airbag.
- (3) The inflator that received the signal must ignite and deploy the side airbag.



Side Curtain Airbag(s)

- (1) A side impact sensor must activate, and send electrical signals to the microprocessor.
- (2) The microprocessor must compute the signals and send them to the side curtain airbag inflator(s).
- (3) The inflator that received the signal must ignite and deploy the side curtain airbag.



Self-diagnostic System

A self-diagnostic circuit is built into the SRS unit; when the ignition switch is turned ON (II), the SRS indicator comes on and goes off after about 6 seconds if the system is operating normally.

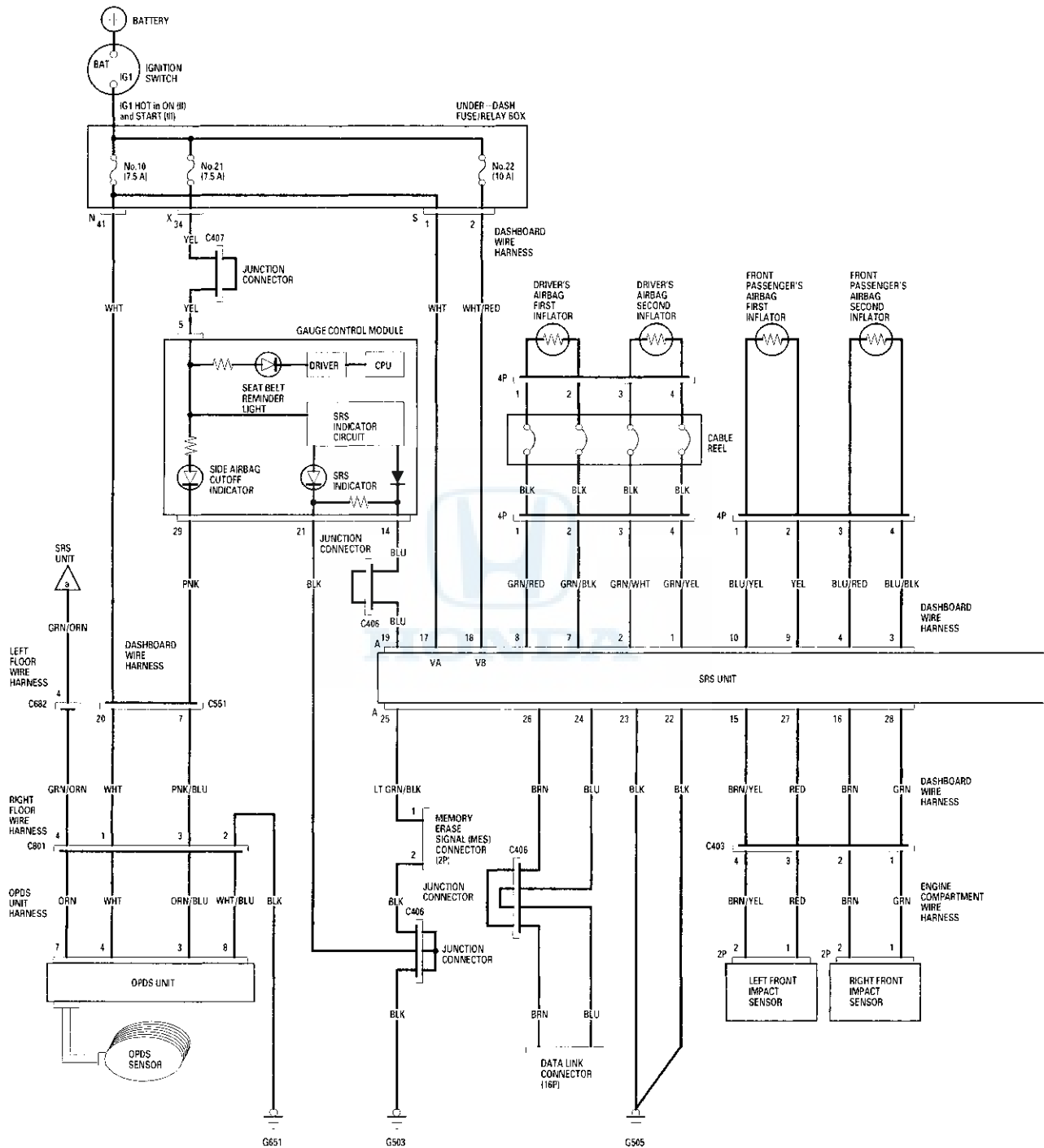
If the indicator does not come on, or does not go off after 6 seconds, or if it comes on while driving, it indicates an abnormality in the system. The system must be inspected and repaired as soon as possible.

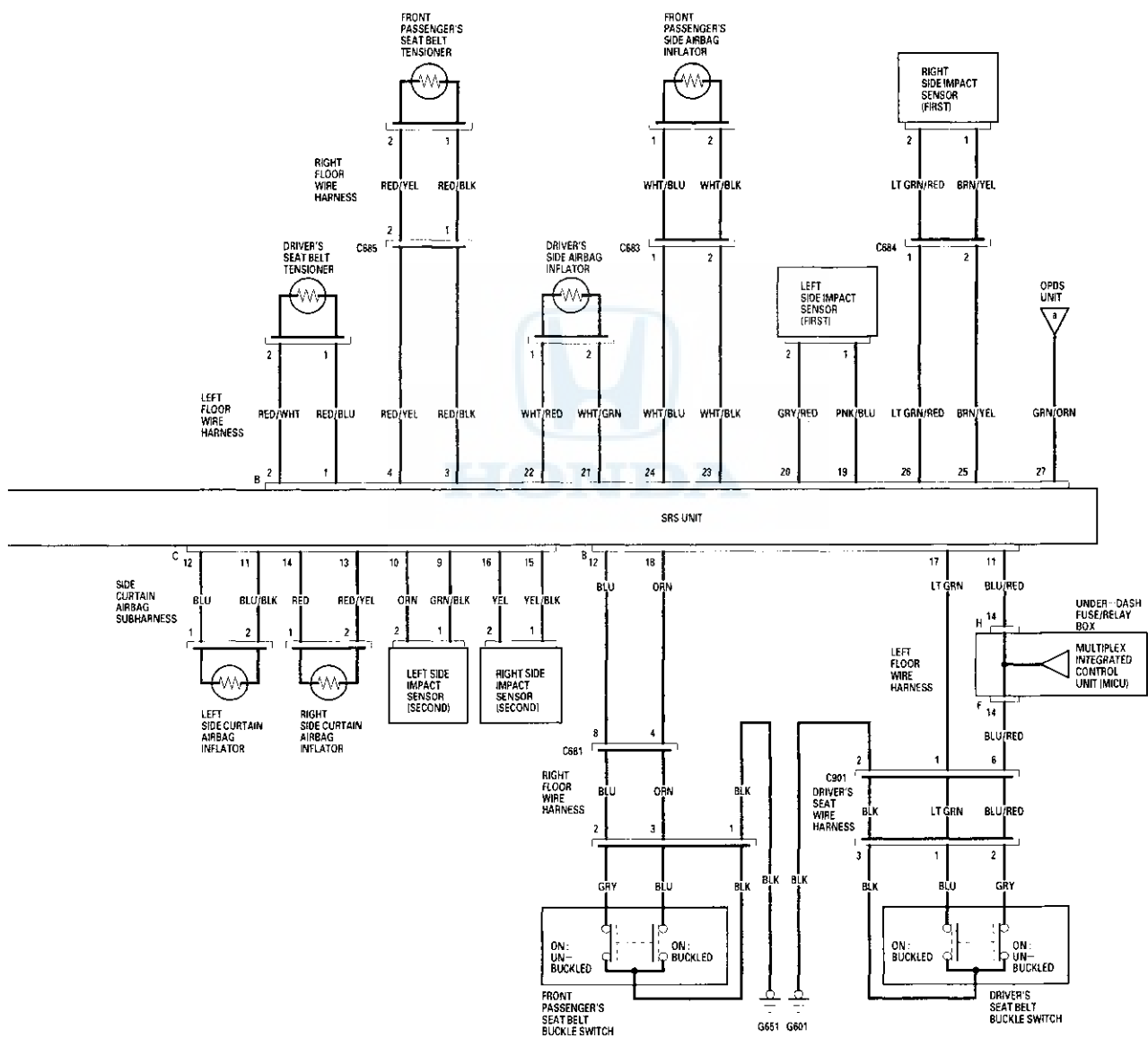
For better serviceability, the SRS unit memory stores a DTC that relates to the cause of the malfunction, and the unit is connected to the data link circuit. This information can be read with the HDS when it is connected to the data link connector (DLC).

NOTE: Before disconnecting the battery for troubleshooting, make sure you have the anti-theft code for the radio and navigation system, then write down the audio presets.

SRS

Circuit Diagram





DTC Troubleshooting

DTC 11-10: Open or Increased Resistance in Driver's Airbag First Inflator

DTC 11-40: Open or Increased Resistance in Driver's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

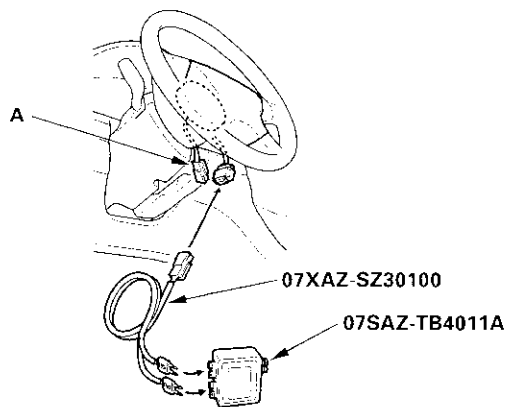
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 11-10 or 11-40 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

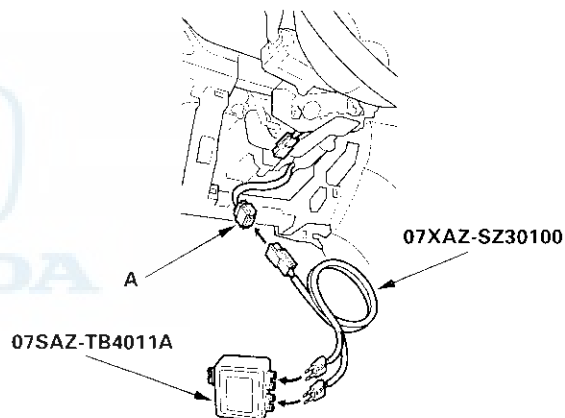
8. Read the DTC (see page 24-24).

Is DTC 11-10 or 11-40 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-139). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.



14. Read the DTC.

Is DTC 11-10 or 11-40 indicated?

YES—Go to step 15.

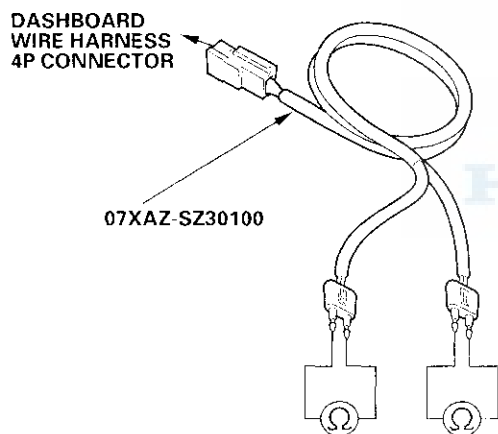
NO—Open or increased resistance in the cable reel; replace the cable reel (see page 24-150). ■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23). Do not disconnect the simulator lead from dashboard wire harness 4P connector.

17. Disconnect the SRS inflator simulator from the SRS simulator lead.

18. Check the resistance between the terminals of the SRS simulator lead. There should be 1 Ω or less.



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Open or increased resistance in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 11-11: Short to Another Wire in Driver's Airbag First Inflator

DTC 11-30: Decreased Resistance in Driver's Airbag First Inflator

DTC 11-41: Short to Another Wire in Driver's Airbag Second Inflator

DTC 11-60: Decreased Resistance in Driver's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

1. Erase the DTC memory (see page 24-25).

2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

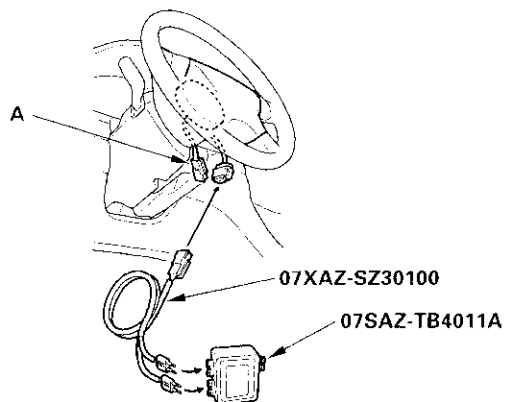
Does the SRS indicator stay on, and is DTC 11-11, 11-30, 11-41, or 11-60 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.

(cont'd)

DTC Troubleshooting (cont'd)

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

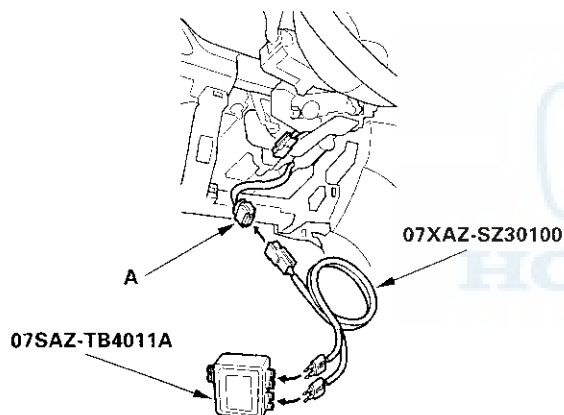
Is DTC 11-11, 11-30, 11-41, or 11-60 indicated?

YES—Go to step 9.

NO—Short in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-139). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.

12. Reconnect the battery negative cable.

13. Erase the DTC memory.

14. Read the DTC.

Is DTC 11-11, 11-30, 11-41, or 11-60 indicated?

YES—Go to step 15.

NO—Short in the cable reel; replace the cable reel (see page 24-150). ■

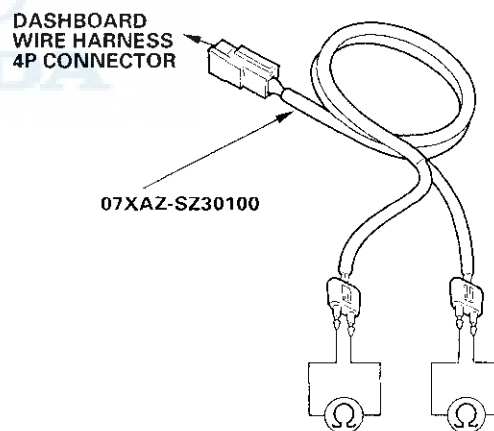
15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.

16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).

17. Disconnect the SRS inflator simulator from the SRS simulator lead.

18. Connect SRS short cancellers (070AZ-SAA0100) to No. 7 and No. 8 terminals or No. 1 and No. 2 terminals of the SRS unit connector A (28P) (see page 24-19).

19. Check resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short in the dashboard wire harness; replace the dashboard wire harness. ■



DTC 11-80: Short to Power in Driver's Airbag First Inflator

DTC 11-A0: Short to Power in Driver's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

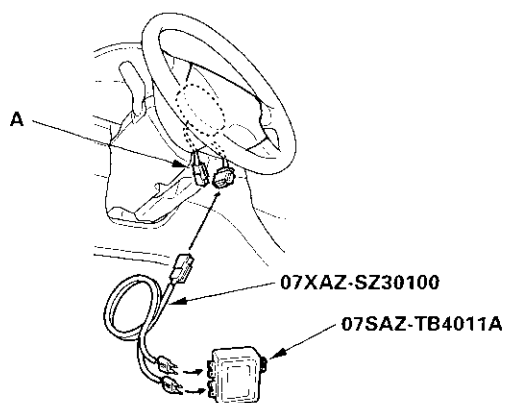
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 11-80 or 11-A0 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

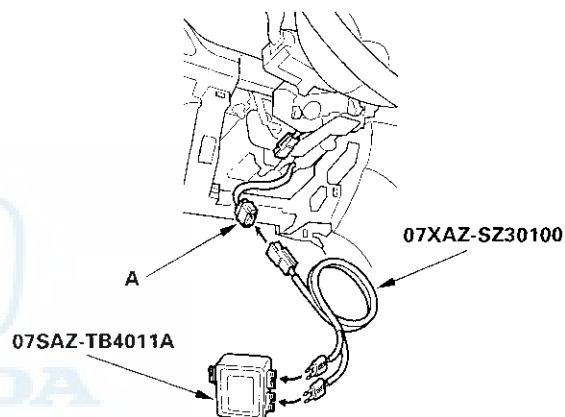
8. Read the DTC (see page 24-24).

Is DTC 11-80 or 11-A0 indicated?

YES—Go to step 9.

NO—Short to power in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-139). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.

(cont'd)

DTC Troubleshooting (cont'd)

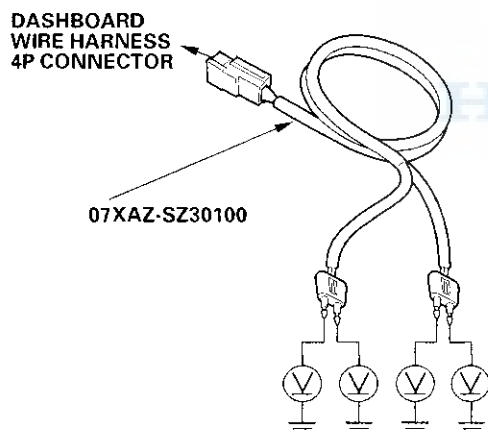
14. Read the DTC.

Is DTC 11-80 or 11-A0 indicated?

YES—Go to step 15.

NO—Short to power in the cable reel; replace the cable reel (see page 24-150). ■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
17. Disconnect the SRS inflator simulator from the SRS simulator lead.
18. Reconnect the battery negative cable.
19. Turn the ignition switch ON (II).
20. Check for voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness. ■

DTC 11-90: Short to Ground in Driver's Airbag First Inflator

DTC 11-B0: Short to Ground in Driver's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

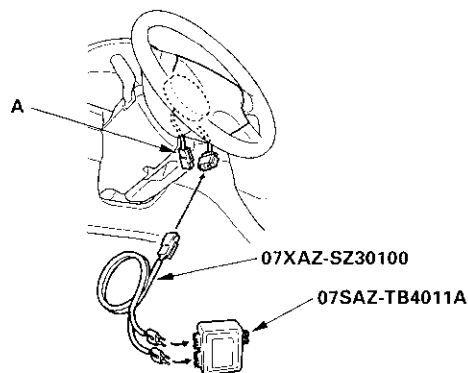
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 11-90 or 11-B0 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's airbag 4P connector (A) from the cable reel.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the cable reel.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.



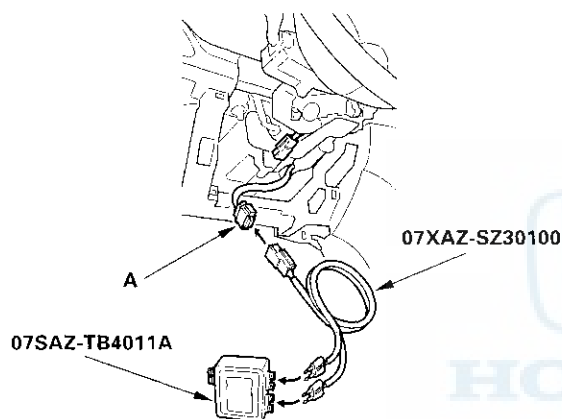
8. Read the DTC (see page 24-24).

Is DTC 11-90 or 11-B0 indicated?

YES—Go to step 9.

NO—Short to ground in the driver's airbag first or second inflator; replace the driver's airbag (see page 24-139). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the dashboard wire harness 4P connector (A) from the cable reel.



11. Connect the SRS inflator simulator (2 Ω connectors) and the simulator lead to the dashboard wire harness.
12. Reconnect the battery negative cable.
13. Erase the DTC memory.

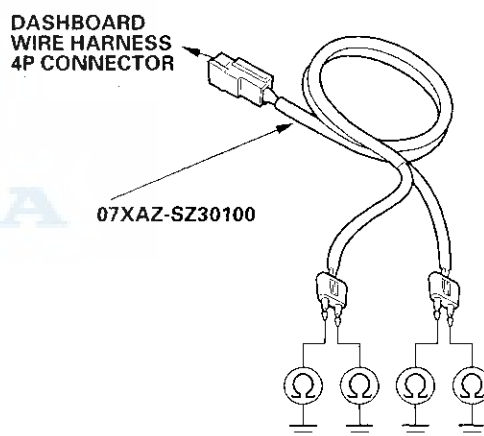
14. Read the DTC.

Is DTC 11-90 or 11-B0 indicated?

YES—Go to step 15.

NO—Short to ground in the cable reel; replace the cable reel (see page 24-150). ■

15. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
16. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
17. Disconnect the SRS inflator simulator from the SRS simulator lead.
18. Check resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 12-10: Open or Increased Resistance in Front Passenger's Airbag First Inflator

DTC 12-40: Open or Increased Resistance in Front Passenger's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

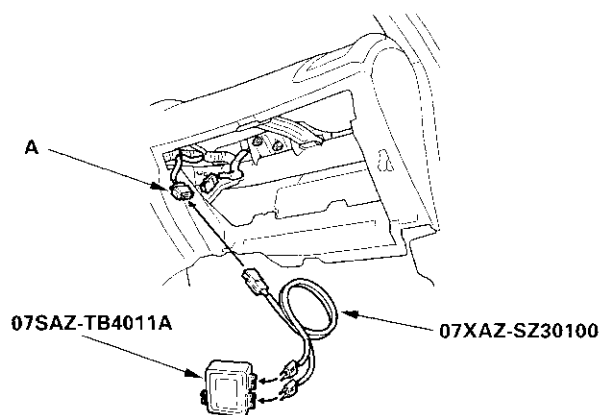
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-10 or 12-40 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.

6. Reconnect the battery negative cable.

7. Erase the DTC memory.

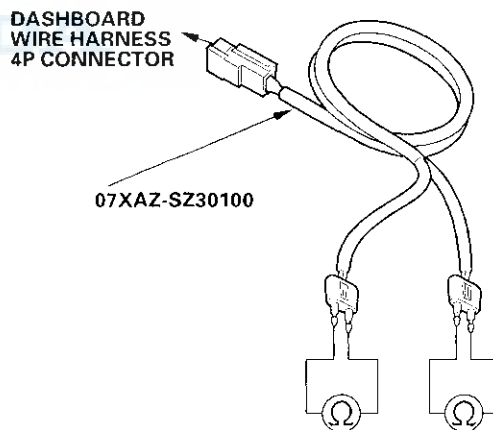
8. Read the DTC (see page 24-24).

Is DTC 12-10 or 12-40 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-140). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23). Do not disconnect the simulator lead from the dashboard wire harness 4P connector.
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Check resistance between the terminals of the SRS simulator lead. There should be 1 Ω or less.



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P). Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Open or increased resistance in the dashboard wire harness; replace the dashboard wire harness. ■



DTC 12-11: Short to Another Wire in Front Passenger's Airbag First Inflator

DTC 12-30: Decreased Resistance in Front Passenger's Airbag First Inflator

DTC 12-41: Short to Another Wire in Front Passenger's Airbag Second Inflator

DTC 12-60: Decreased Resistance in Front Passenger's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100
- SRS short canceller 070AZ-SAA0100

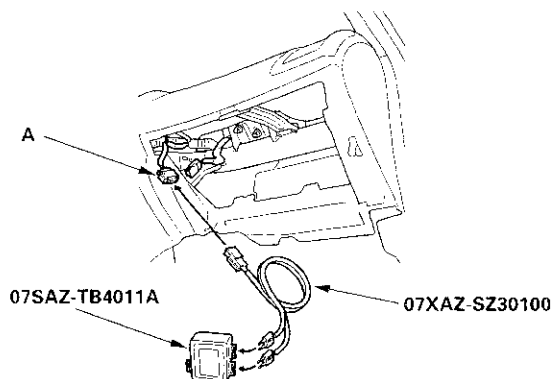
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-11, 12-30, 12-41, or 12-60 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.
6. Reconnect the battery negative cable.

7. Erase the DTC memory.

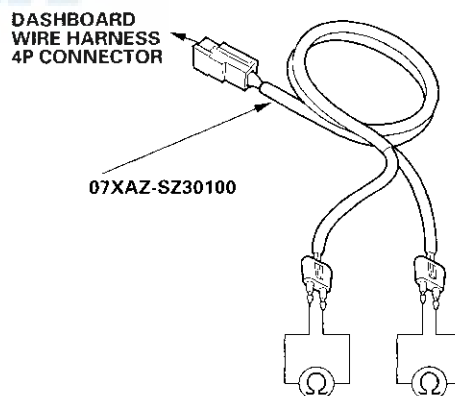
8. Read the DTC (see page 24-24).

Is DTC 12-11, 12-30, 12-41, or 12-60 indicated?

YES—Go to step 9.

NO—Short in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-140). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Connect SRS short cancellers (070AZ-SAA0100) to No. 9 and No. 10 terminals and the No. 3 and No. 4 terminal of the SRS unit connector A (28P) (see page 24-19).
13. Check resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 12-80: Short to Power in Front Passenger's Airbag First Inflator

DTC 12-A0: Short to Power in Front Passenger's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

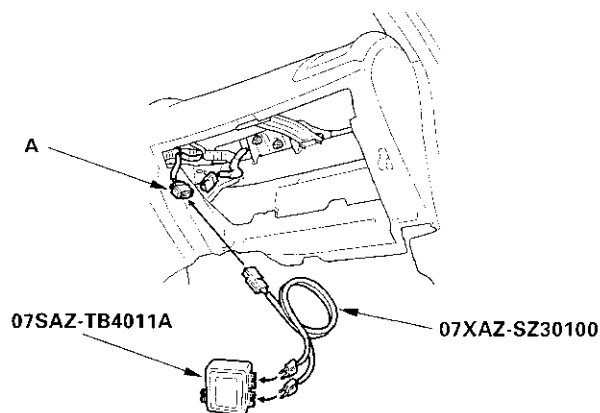
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-80 or 12-A0 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.
6. Reconnect the battery negative cable.

7. Erase the DTC memory.

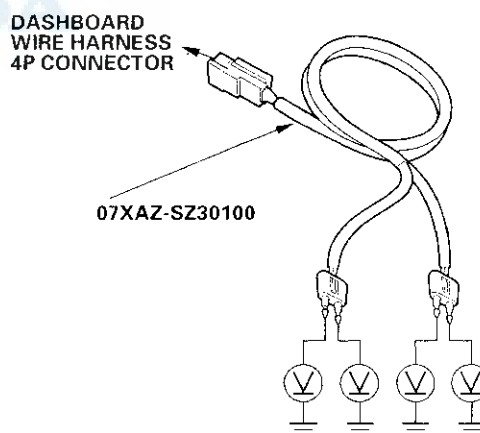
8. Read the DTC (see page 24-24).

Is DTC 12-80 or 12-A0 indicated?

YES—Go to step 9.

NO—Short to power in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-140). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Reconnect the battery negative cable.
13. Turn the ignition switch ON (II).
14. Check for voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to power in the dashboard wire harness; replace the dashboard wire harness. ■



DTC 12-90: Short to Ground in Front Passenger's Airbag First Inflator

DTC 12-B0: Short to Ground in Front Passenger's Airbag Second Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

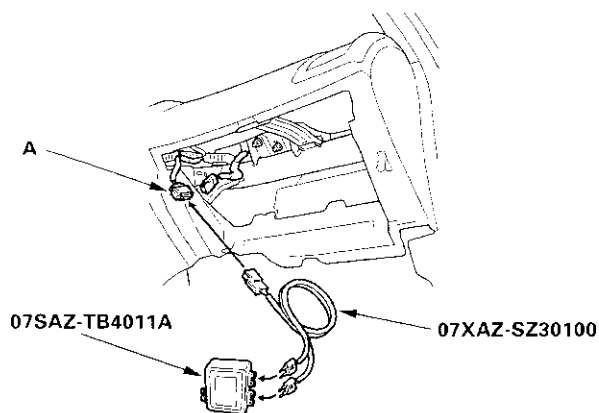
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 12-90 or 12-B0 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the dashboard wire harness.
6. Reconnect the battery negative cable.

7. Erase the DTC memory.

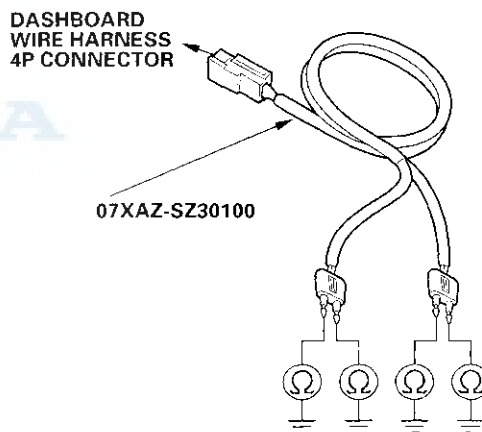
8. Read the DTC (see page 24-24).

Is DTC 12-90 or 12-B0 indicated?

YES—Go to step 9.

NO—Short to ground in the front passenger's airbag first or second inflator; replace the front passenger's airbag (see page 24-140). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Check resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit. Check the connection between the connector and the SRS unit. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC 21-10: Open or Increased Resistance in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

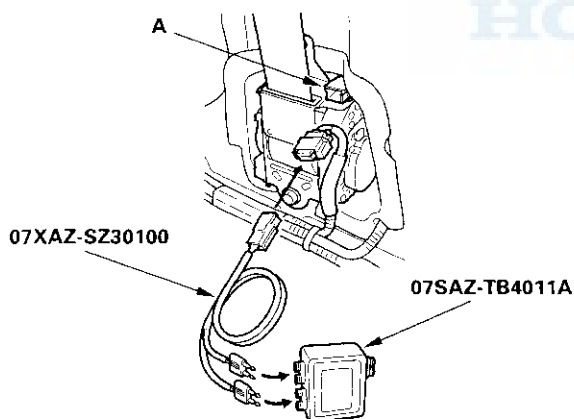
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 21-10 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 4P connector (A) from the left floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the left floor wire harness.

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC (see page 24-24).

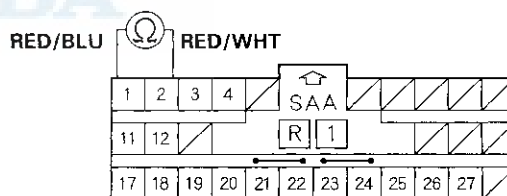
Is DTC 21-10 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Check resistance between the No. 1 and the No. 2 terminals of SRS unit connector B (28P). There should be 2.0—3.0 Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Open or increased resistance in the left floor wire harness; replace the left floor wire harness. ■



DTC 21-11: Short to Another Wire in Driver's Seat Belt Tensioner

DTC 21-30: Decreased Resistance in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

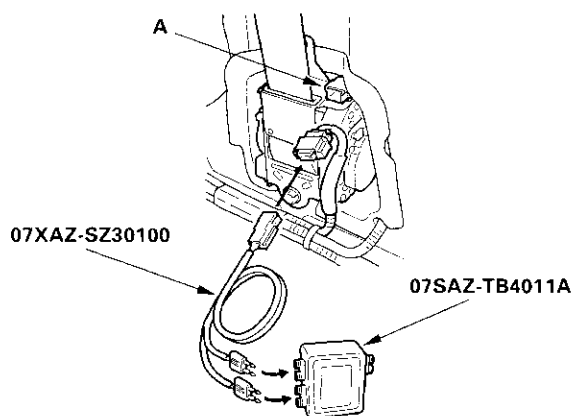
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 21-11 or 21-30 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 4P connector (A) from the left floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the left floor wire harness.

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC (see page 24-24).

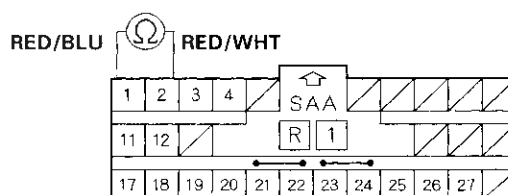
Is DTC 21-11 or 21-30 indicated?

YES—Go to step 9.

NO—Short in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the simulator lead from the left floor wire harness.
13. Check resistance between the No. 1 and the No. 2 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short in the left floor wire harness; replace the left floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 21-80: Short to Power in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

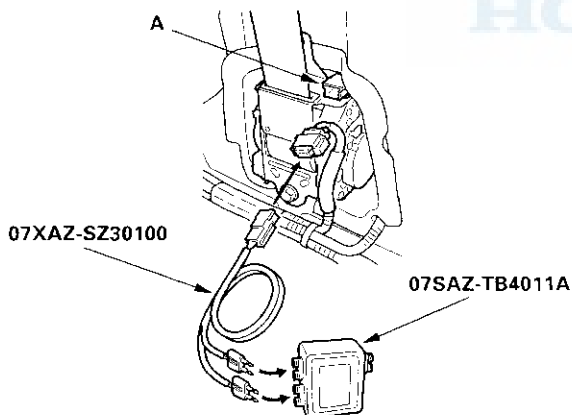
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 21-80 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 4P connector (A) from the left floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the left floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

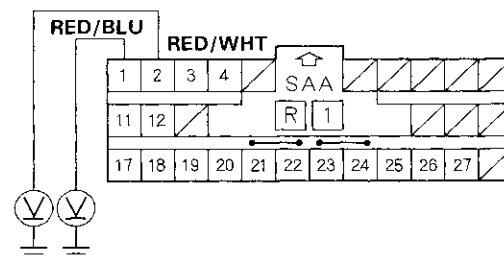
Is DTC 21-80 indicated?

YES—Go to step 9.

NO—Short to power in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the simulator lead from the left floor wire harness.
13. Reconnect the battery negative cable.
14. Turn the ignition switch ON (II).
15. Check for voltage between the No. 1 terminal of SRS unit connector B (28P) and body ground, and between the No. 2 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to power in the left floor wire harness; replace the left floor wire harness. ■



DTC 21-90: Short to Ground in Driver's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

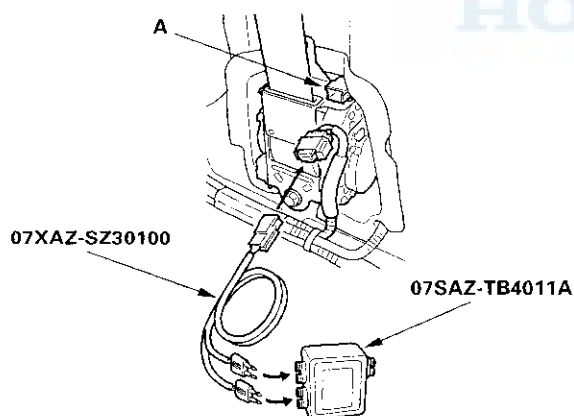
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 21-90 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the driver's seat belt tensioner 4P connector (A) from the left floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the left floor wire harness.
6. Reconnect the battery negative cable.

7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

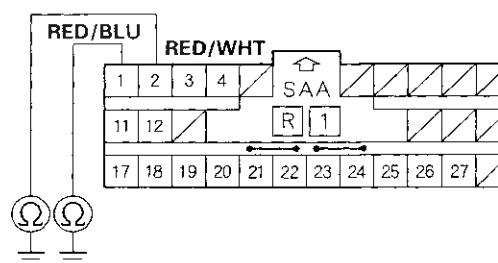
Is DTC 21-90 indicated?

YES—Go to step 9.

NO—Short to ground in the driver's seat belt tensioner; replace the driver's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the front passenger's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the simulator lead from the left floor wire harness.
13. Check resistance between the No. 1 terminals of SRS unit connector B (28P) and body ground, and between the No. 2 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to ground in the left floor wire harness; replace the left floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 22-10: Open or Increased Resistance in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

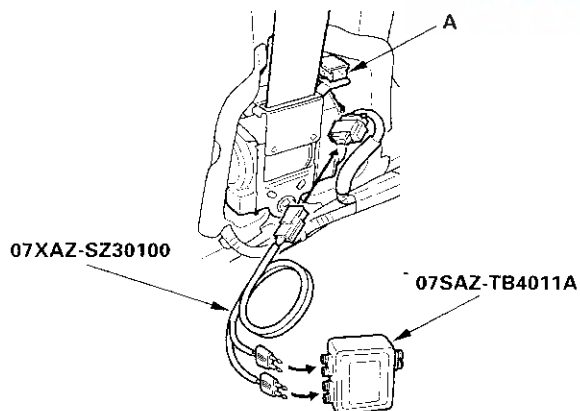
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-10 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 4P connector (A) from the right floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the right floor wire harness.

6. Reconnect the battery negative cable.
7. Erase the DTC memory.
8. Read the DTC (see page 24-24).

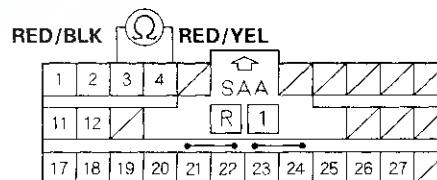
Is DTC 22-10 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Check resistance between the No. 3 and the No. 4 terminal of SRS unit connector B (28P). There should be 2.0—3.0 Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

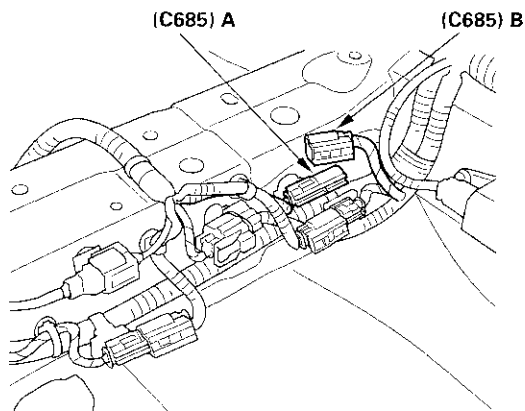
Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 13.

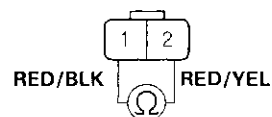


13. Disconnect left floor wire harness 2P connector C685 (A) from the right floor wire harness connector C685 (B).



14. Check resistance between the No. 1 and No. 2 terminals of right floor wire harness 2P connector C685. There should be 2.0—3.0 Ω .

RIGHT FLOOR WIRE HARNESS 2P CONNECTOR C685

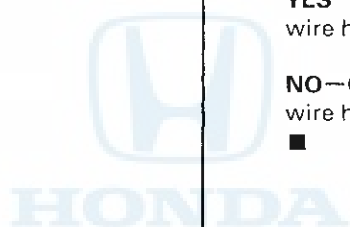


Wire side of female terminals

Is the resistance as specified?

YES—Open or increased resistance in the left floor wire harness; replace the left floor wire harness. ■

NO—Open or increased resistance in the right floor wire harness; replace the right floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 22-11: Short to Another Wire in Front Passenger's Seat Belt Tensioner

DTC 22-30: Decreased Resistance in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

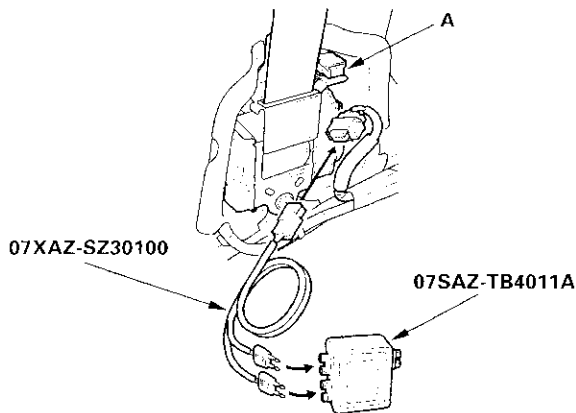
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-11 or 22-30 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 4P connector (A) from the right floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the right floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

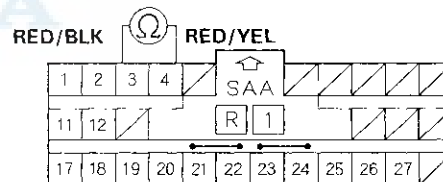
Is DTC 22-11 or 22-30 indicated?

YES—Go to step 9.

NO—Short in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the simulator lead from the right floor wire harness.
13. Check resistance between the No. 3 and the No. 4 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

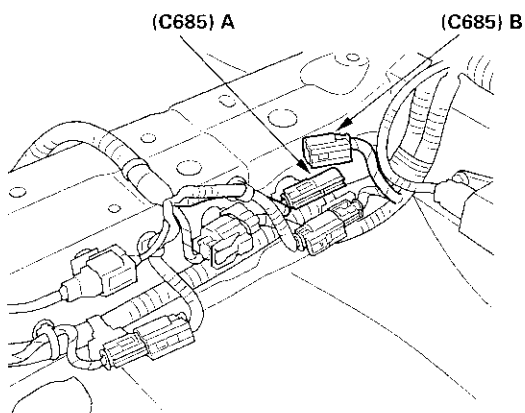
Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 14.

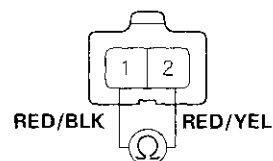


14. Disconnect left floor wire harness 2P connector C685 (A) from the right floor wire harness connector C685 (B).



15. Check resistance between the No. 1 and No. 2 terminals of left floor wire harness 2P connector C685. There should be an open circuit or at least $1\text{ M}\Omega$.

LEFT FLOOR WIRE HARNESS 2P CONNECTOR C685

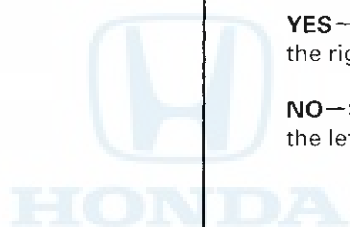


Terminal side of male terminals

Is the resistance as specified?

YES—Short in the right floor wire harness; replace the right floor wire harness. ■

NO—Short in the left floor wire harness; replace the left floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 22-80: Short to Power in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

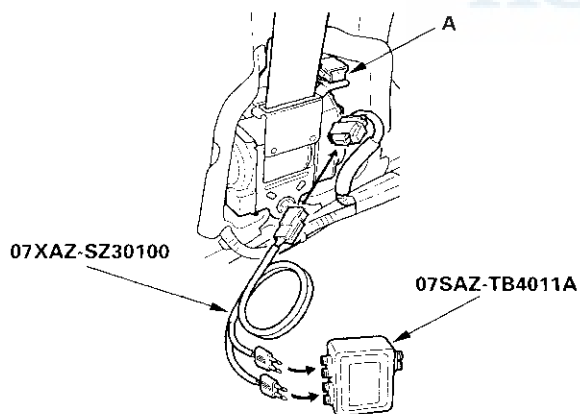
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-80 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 4P connector (A) from the right floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the right floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

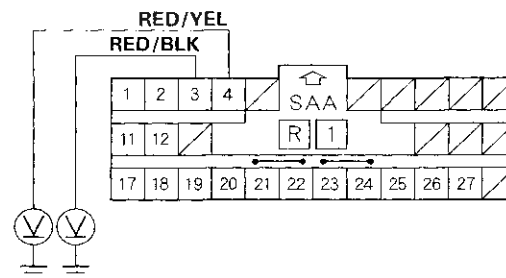
Is DTC 22-80 indicated?

YES—Go to step 9.

NO—Short to power in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the simulator lead from the right floor wire harness.
13. Reconnect the battery negative cable.
14. Turn the ignition switch ON (II).
15. Check for voltage between the No. 3 terminal of SRS unit connector B (28P) and body ground, and between the No. 4 terminal and body ground. There should be 0.5 V or less.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

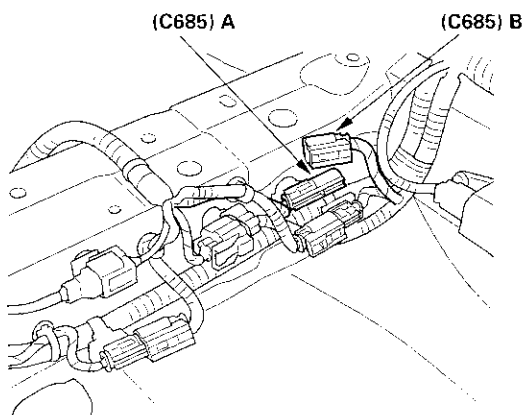
Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 16.

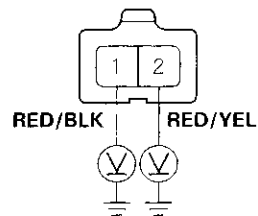


16. Disconnect left floor wire harness 2P connector C685 (A) from the right floor wire harness connector C685 (B).



17. Check for voltage between the No. 1 terminal of the left floor wire harness 2P connector C685 and body ground, and between the No. 2 terminal and body ground. There should be 0.5 V or less.

LEFT FLOOR WIRE HARNESS 2P CONNECTOR C685



Terminal side of male terminals

Is the voltage as specified?

YES—Short to power in the right floor wire harness; replace the right floor wire harness. ■

NO—Short to power in the left floor wire harness; replace the left floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 22-90: Short to Ground in Front Passenger's Seat Belt Tensioner

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead F 07XAZ-SZ30100

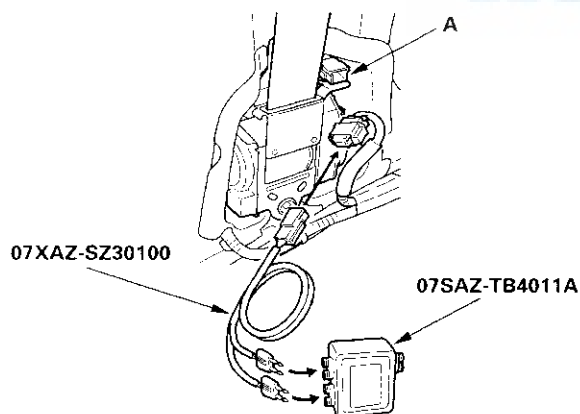
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 22-90 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the front passenger's seat belt tensioner 4P connector (A) from the right floor wire harness.



5. Connect the SRS inflator simulator (2 Ω connectors) and simulator lead F to the right floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

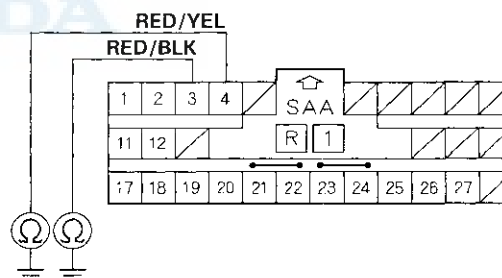
Is DTC 22-90 indicated?

YES—Go to step 9.

NO—Short to ground in the front passenger's seat belt tensioner; replace the front passenger's seat belt (see page 24-4). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the driver's seat belt tensioner connector (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the simulator lead from the right floor wire harness.
13. Check resistance between the No. 3 terminal of SRS unit connector B (28P) and body ground, and between the No. 4 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

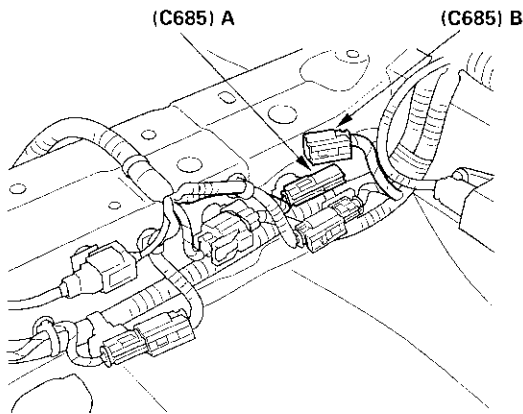
Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 14.

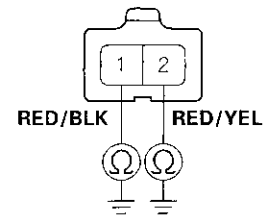


14. Disconnect left floor wire harness 2P connector C685 (A) from the right floor wire harness connector C685 (B).



15. Check resistance between the No. 1 terminal of the left floor wire harness 2P connector C685 and body ground, and between the No. 2 terminal and body ground. There should be an open circuit or at least 1 M Ω .

LEFT FLOOR WIRE HARNESS 2P CONNECTOR C685



Terminal side of male terminals

Is the resistance as specified?

YES—Short to ground in the right floor wire harness; replace the right floor wire harness. ■

NO—Short to ground in the left floor wire harness; replace the left floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 31-10: Open or Increased Resistance in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

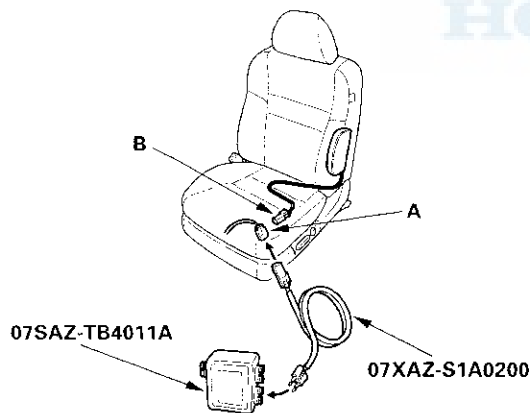
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-10 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the left floor wire harness.
6. Reconnect the battery negative cable.

7. Erase the DTC memory.

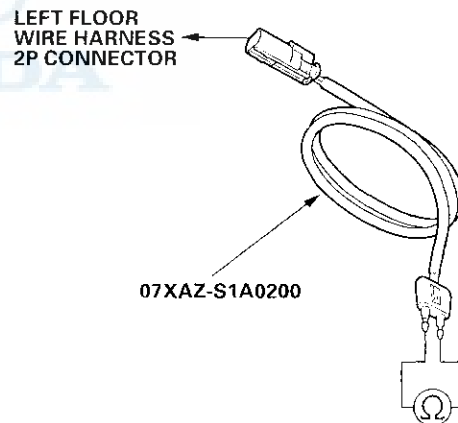
8. Read the DTC (see page 24-24).

Is DTC 31-10 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the driver's side airbag inflator; replace the driver's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Check resistance between the terminals of the SRS simulator lead. There should be 1.0 Ω or less.



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Open or increased resistance in the left floor wire harness; replace the left floor wire harness. ■



DTC 31-11: Short to Another Wire in Driver's Side Airbag Inflator

DTC 31-30: Decreased Resistance in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

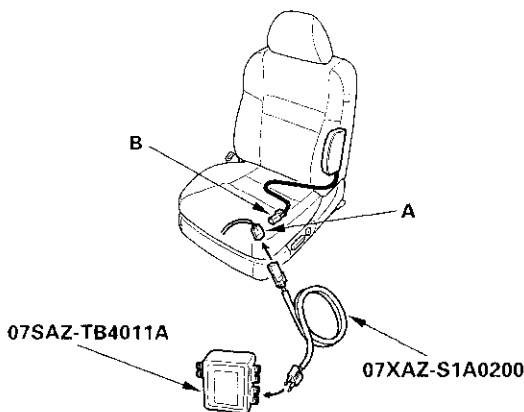
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-11 or 31-30 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the left floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

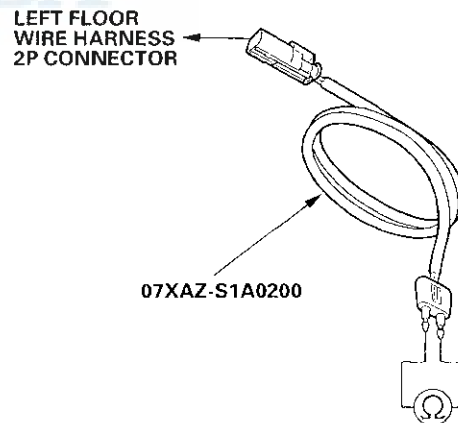
8. Read the DTC (see page 24-24).

Is DTC 31-11 or 31-30 indicated?

YES—Go to step 9.

NO—Short to another wire in the driver's side airbag inflator; replace the driver's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Connect SRS short canceller (070AZ-SAA0100) to the No. 21 and No. 22 terminals of SRS unit connector B (28P) (see page 24-19).
14. Check resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short in the left floor wire harness; replace the left floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 31-80: Short to Power in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

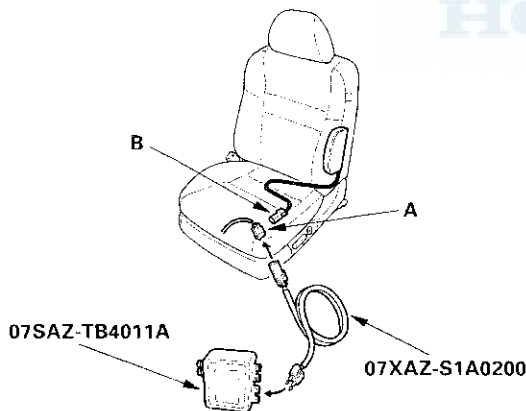
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-80 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the left floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

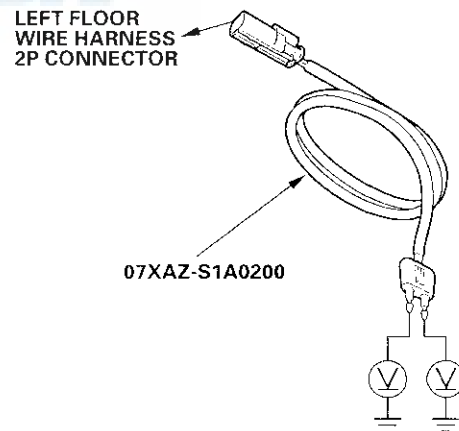
8. Read the DTC (see page 24-24).

Is DTC 31-80 indicated?

YES—Go to step 9.

NO—Short to power in the driver's side airbag inflator; replace the driver's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Reconnect the battery negative cable.
14. Turn the ignition switch ON (II).
15. Check for voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to power in the left floor wire harness; replace the left floor wire harness. ■



DTC 31-90: Short to Ground in Driver's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

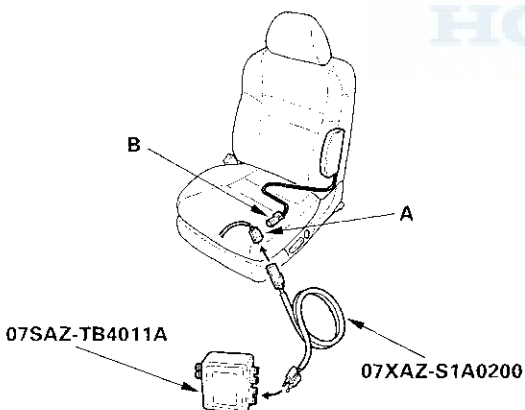
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 31-90 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left floor wire harness 2P connector (A) from the driver's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the left floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

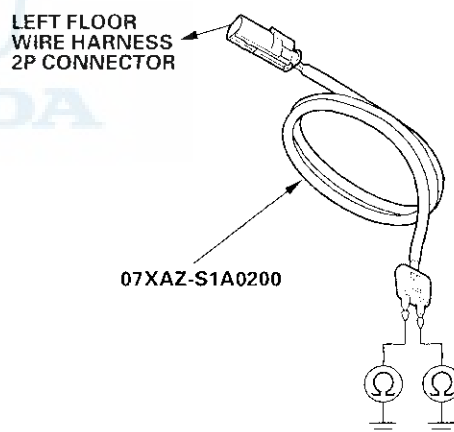
8. Read the DTC (see page 24-24).

Is DTC 31-90 indicated?

YES—Go to step 9.

NO—Short to ground in the driver's side airbag inflator; replace the driver's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Check resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to ground in the left floor wire harness; replace the left floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 32-10: Open or Increased Resistance in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

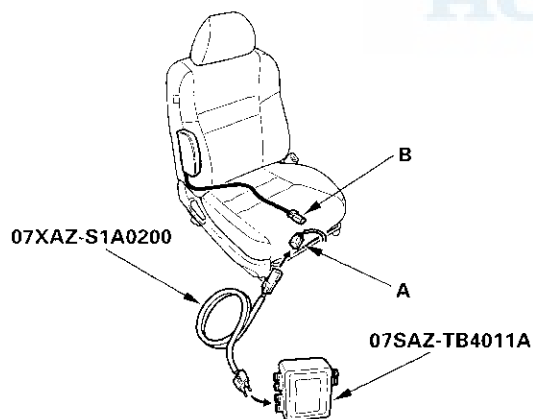
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-10 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the right floor wire harness.
6. Reconnect the battery negative cable.

7. Erase the DTC memory.
8. Read the DTC (see page 24-24).

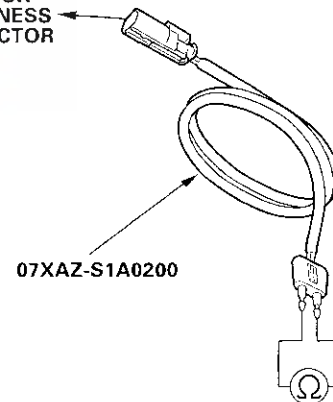
Is DTC 32-10 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Check resistance between the terminals of the SRS simulator lead. There should be 1.0 Ω or less.

**RIGHT FLOOR
WIRE HARNESS
2P CONNECTOR**



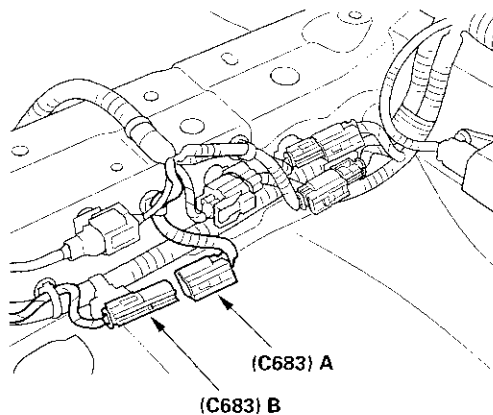
Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 14.

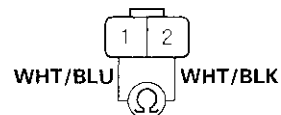


14. Disconnect left floor wire harness 2P connector C683 (A) from the right floor wire harness connector C683 (B).



15. Check resistance between the No. 1 and No. 2 terminals of left floor wire harness 2P connector C683. There should be 1.0 Ω or less.

LEFT FLOOR WIRE HARNESS 2P CONNECTOR C683



Wire side of female terminals

Is the resistance as specified?

YES—Open or increased resistance in the right floor wire harness; replace the right floor wire harness. ■

NO—Open or increased resistance in the left floor wire harness; replace the left floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 32-11: Short to Another Wire in Front Passenger's Side Airbag Inflator

DTC 32-30: Decreased Resistance in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

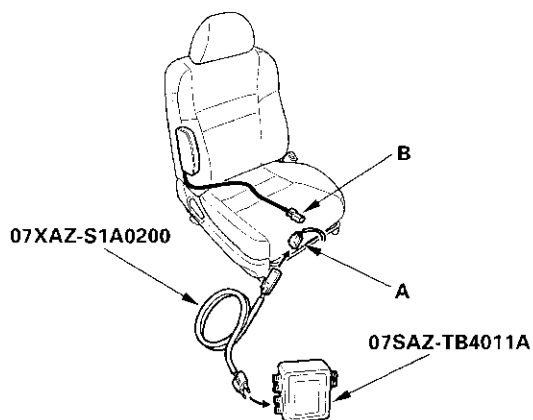
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-11 or 32-30 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the right floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

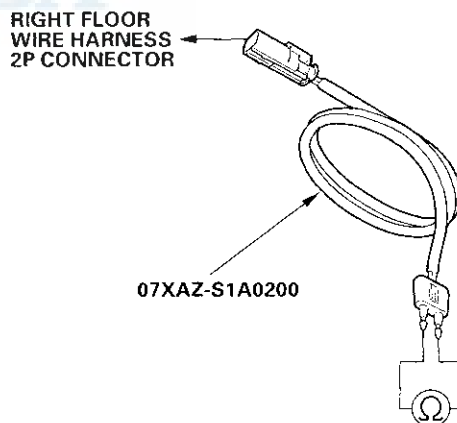
8. Read the DTC (see page 24-24).

Is DTC 32-11 or 32-30 indicated?

YES—Go to step 9.

NO—Short to another wire in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Connect SRS short canceller (070AZ-SAA0100) to the No. 23 and No. 24 terminals of SRS unit connector B (28P) (see page 24-19).
14. Check resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 M Ω .



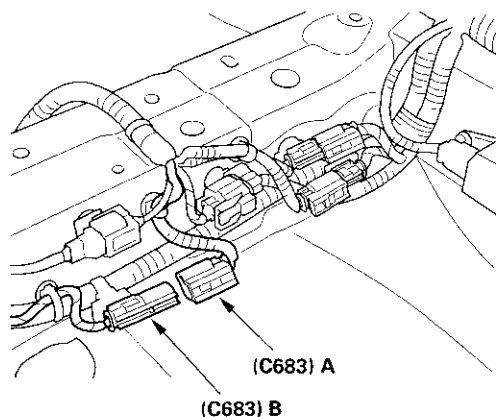
Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

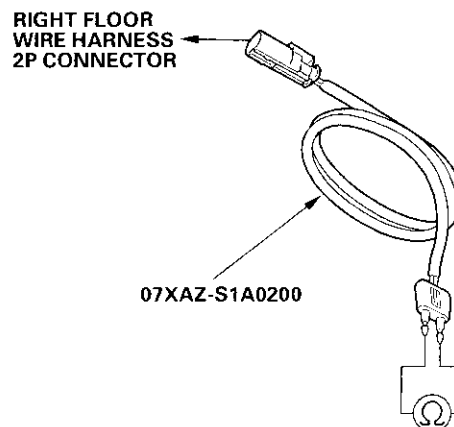
NO—Go to step 15.



15. Disconnect left floor wire harness 2P connector C683 (A) from the right floor wire harness connector C683 (B).



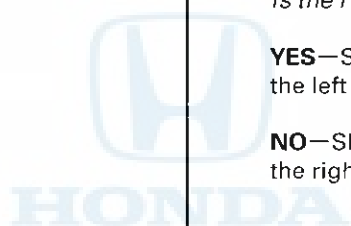
16. Check resistance between the terminals of SRS simulator lead. There should be an open circuit or at least 1 M Ω .



Is the resistance as specified?

YES—Short in the left floor wire harness; replace the left floor wire harness. ■

NO—Short in the right floor wire harness; replace the right floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 32-80: Short to Power in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

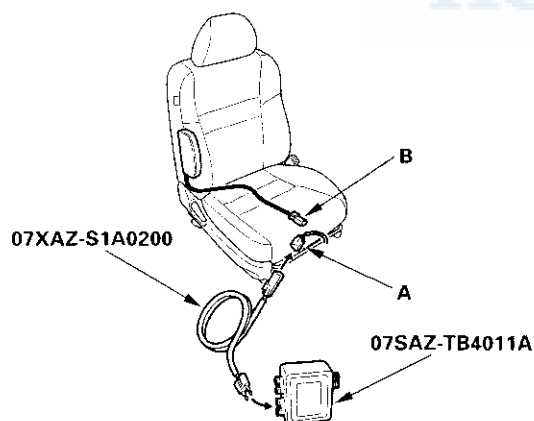
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-80 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the right floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

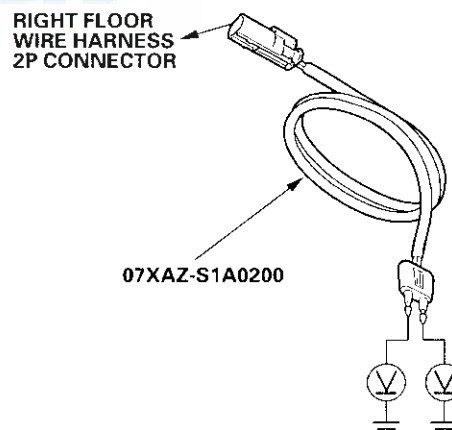
8. Read the DTC (see page 24-24).

Is DTC 32-80 indicated?

YES—Go to step 9.

NO—Short to power in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Reconnect the battery negative cable.
14. Turn the ignition switch ON (II).
15. Check for voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.



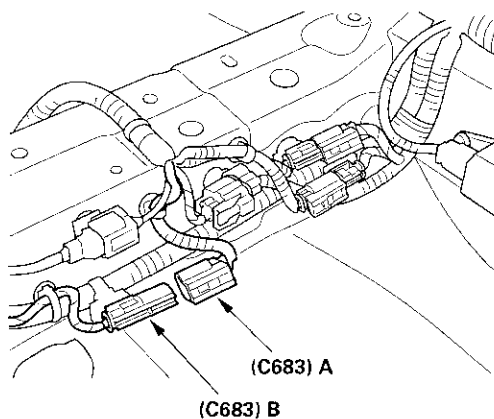
Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

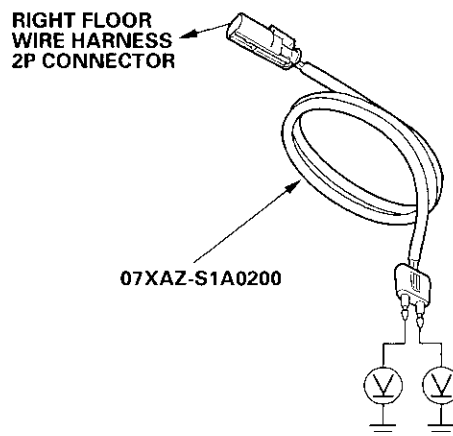
NO—Go to step 16.



16. Disconnect left floor wire harness 2P connector C683 (A) from the right floor wire harness connector C683 (B).



17. Check for voltage between each terminal of SRS simulator lead and body ground. There should be 0.5 V or less.



Is the voltage as specified?

YES—Short to power in the left floor wire harness; replace the left floor wire harness. ■

NO—Short to power in the right floor wire harness; replace the right floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 32-90: Short to Ground in Front Passenger's Side Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

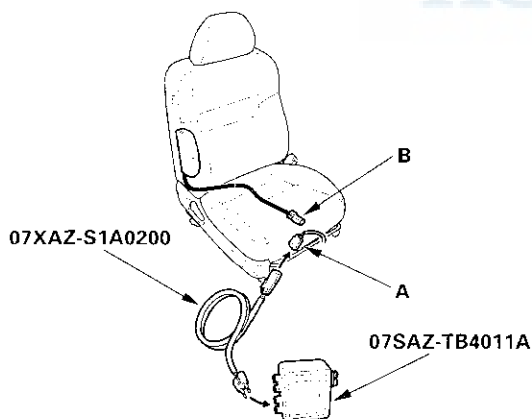
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 32-90 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right floor wire harness 2P connector (A) from the front passenger's side airbag (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the right floor wire harness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

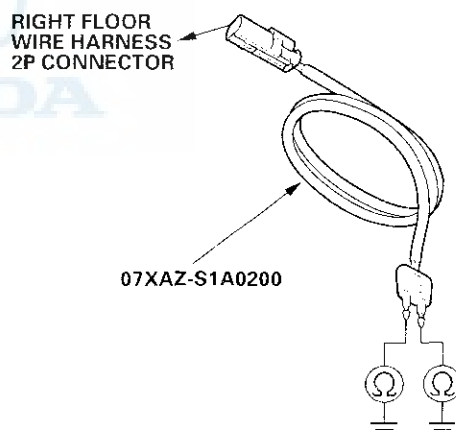
8. Read the DTC (see page 24-24).

Is DTC 32-90 indicated?

YES—Go to step 9.

NO—Short to ground in the front passenger's side airbag inflator; replace the front passenger's side airbag (see page 24-141). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
12. Disconnect the SRS inflator simulator from the SRS simulator lead.
13. Check resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .



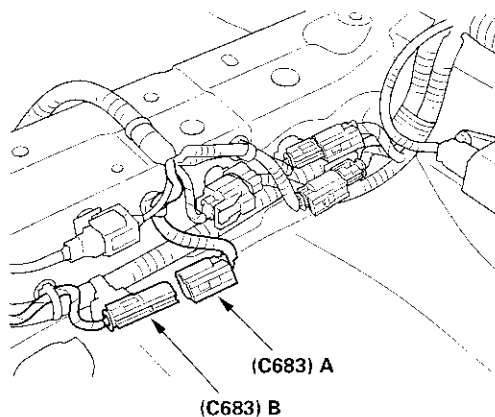
Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector B (28P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

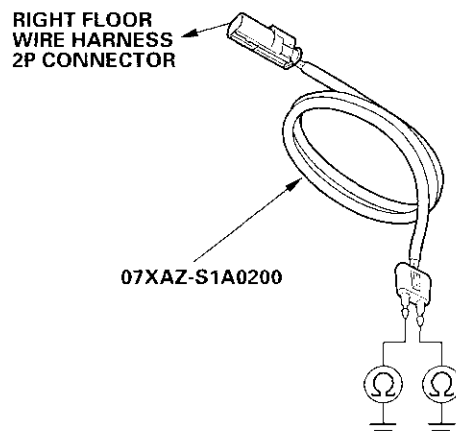
NO—Go to step 14.



14. Disconnect left floor wire harness 2P connector C683 (A) from the right floor wire harness connector C683 (B).



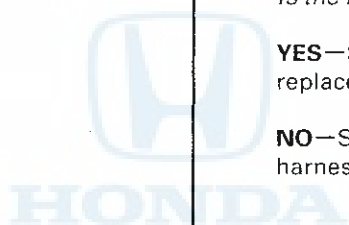
15. Check resistance between each terminal of SRS simulator lead and body ground. There should be an open circuit or at least $1\text{ M}\Omega$.



Is the resistance as specified?

YES—Short to ground in the left floor wire harness; replace the left floor wire harness. ■

NO—Short to ground in the right floor wire harness; replace the right floor wire harness. ■



DTC Troubleshooting (cont'd)

DTC 33-10: Open or Increased Resistance in Left Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

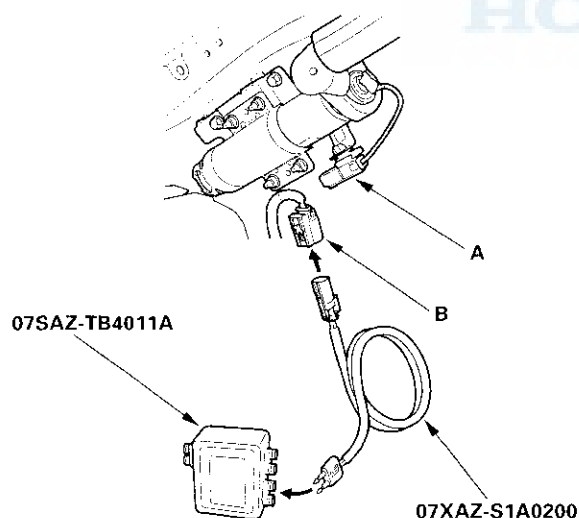
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-10 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

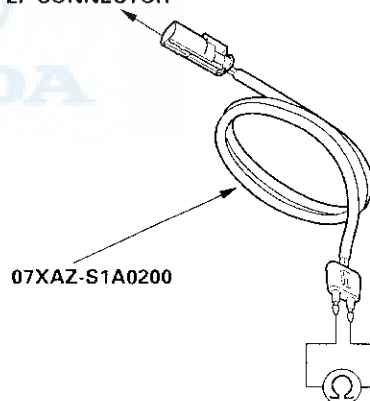
Is DTC 33-10 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23). Do not disconnect the simulator lead from the side curtain airbag subharness.
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Check resistance between the terminals of the SRS simulator lead. There should be 1.0 Ω or less.

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at the SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Open or increased resistance in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



DTC 33-11: Short to Another Wire in Left Side Curtain Airbag Inflator

DTC 33-30: Decreased Resistance in Left Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

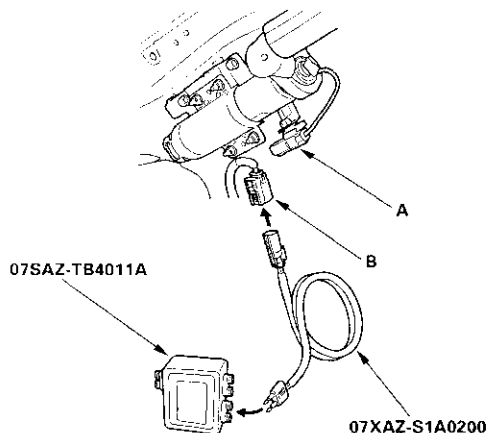
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-11 or 33-30 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

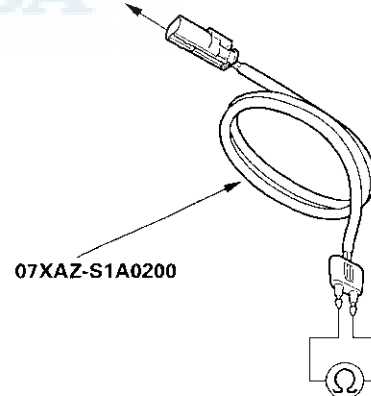
Is DTC 33-11 or 33-30 indicated?

YES—Go to step 9.

NO—Short to another wire in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Connect SRS short canceller (070AZ-SAA0100) to the No. 11 and No. 12 terminals of SRS unit connector C (16P) (see page 24-19).
13. Check resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 M Ω .

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to another wire in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

DTC Troubleshooting (cont'd)

DTC 33-80: Short to Power in Left Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

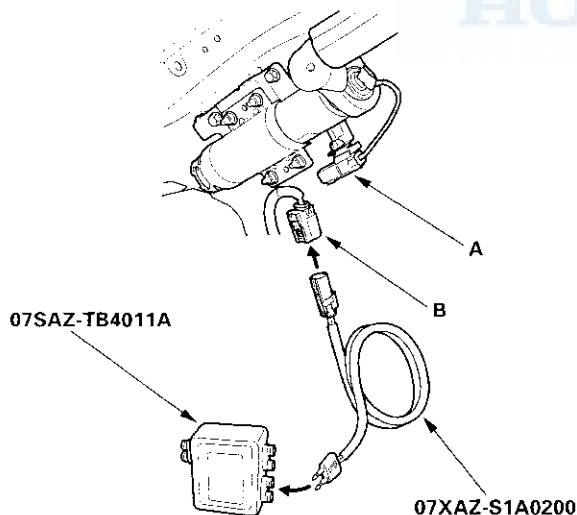
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-80 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

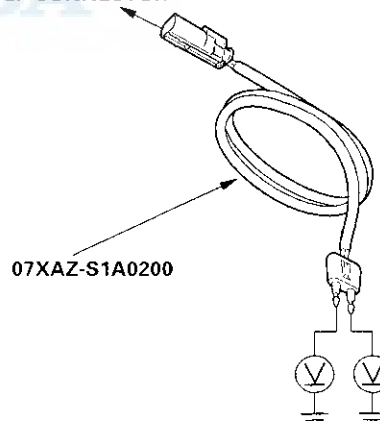
Is DTC 33-80 indicated?

YES—Go to step 9.

NO—Short to power in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect the SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
11. Reconnect the battery negative cable.
12. Turn the ignition switch ON (II).
13. Disconnect the SRS inflator simulator from the SRS simulator lead.
14. Check for voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to power in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



DTC 33-90: Short to Ground in Left Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

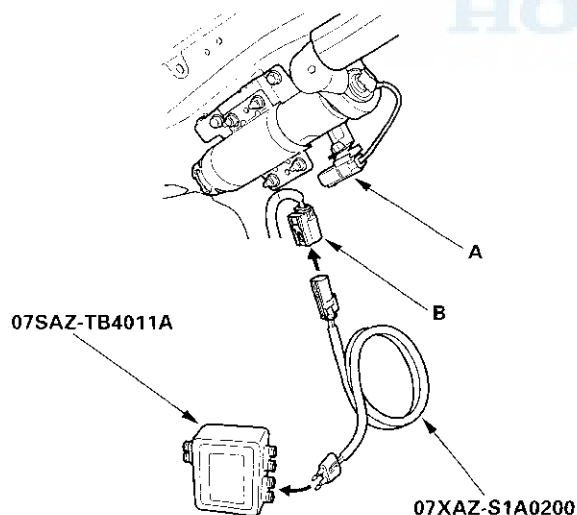
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 33-90 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the left side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

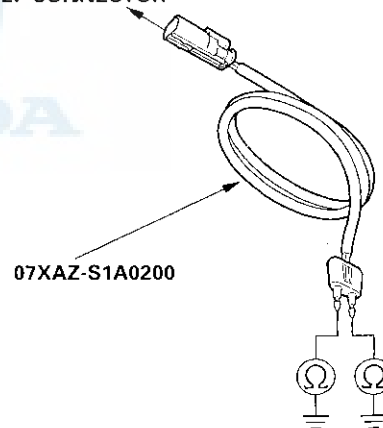
Is DTC 33-90 indicated?

YES—Go to step 9.

NO—Short to ground in the left side curtain airbag inflator; replace the left side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Check resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .

SIDE CURTAIN AIRBAG SUBHARNESSES 2P CONNECTOR



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to ground in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

DTC Troubleshooting (cont'd)

DTC 34-10: Open or Increased Resistance in Right Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

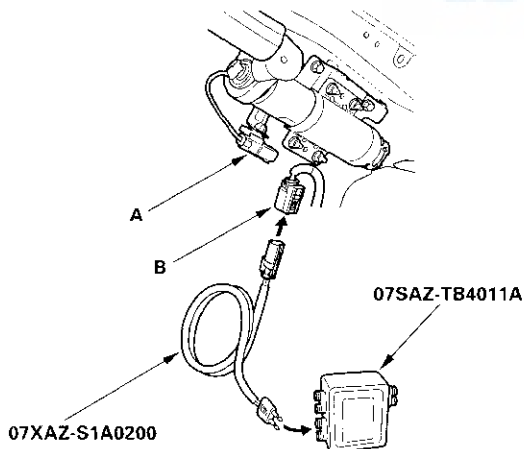
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-10 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

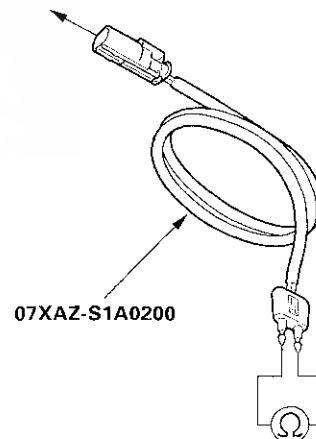
Is DTC 34-10 indicated?

YES—Go to step 9.

NO—Open or increased resistance in the right side curtain airbag inflator, replace the right side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23). Do not disconnect the simulator lead from the side curtain airbag subharness.
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Check resistance between the terminals of the SRS simulator lead. There should be 1.0 Ω or less.

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Open or increased resistance in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



DTC 34-11: Short to Another Wire in Right Side Curtain Airbag Inflator

DTC 34-30: Decreased Resistance in Right Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200
- SRS short canceller 070AZ-SAA0100

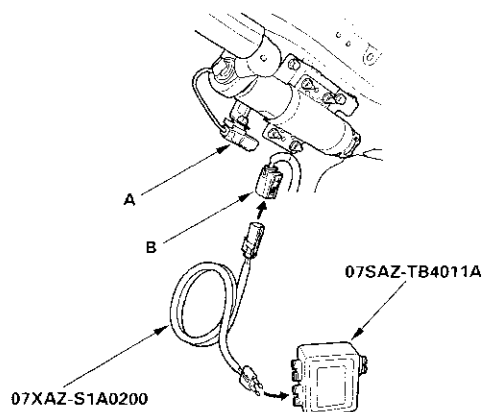
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-11 or 34-30 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

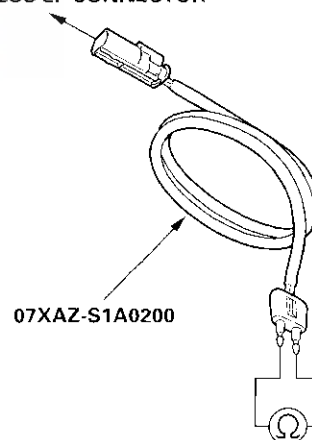
Is DTC 34-11 or 34-30 indicated?

YES—Go to step 9.

NO—Short to another wire in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Connect SRS short canceller (070AZ-SAA0100) to the No. 13 and No. 14 terminals of SRS unit connector C (16P) (see page 24-19).
13. Check resistance between the terminals of the SRS simulator lead. There should be an open circuit or at least 1 M Ω .

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

DTC Troubleshooting (cont'd)

DTC 34-80: Short to Power in Right Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

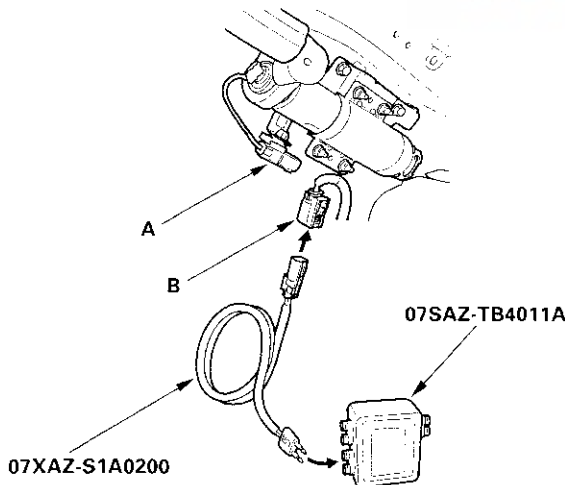
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-80 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

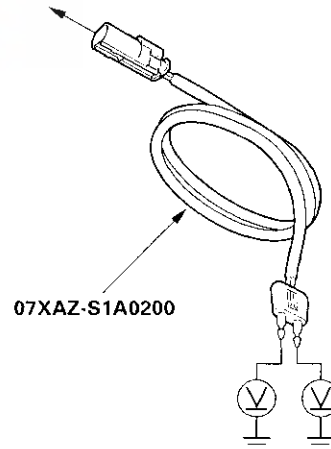
Is DTC 34-80 indicated?

YES—Go to step 9.

NO—Short to power in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
11. Reconnect the battery negative cable.
12. Turn the ignition switch ON (II).
13. Disconnect the SRS inflator simulator from the SRS simulator lead.
14. Check for voltage between each terminal of the SRS simulator lead and body ground. There should be 0.5 V or less.

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the voltage as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to power in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



DTC 34-90: Short to Ground in Right Side Curtain Airbag Inflator

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead E 07XAZ-S1A0200

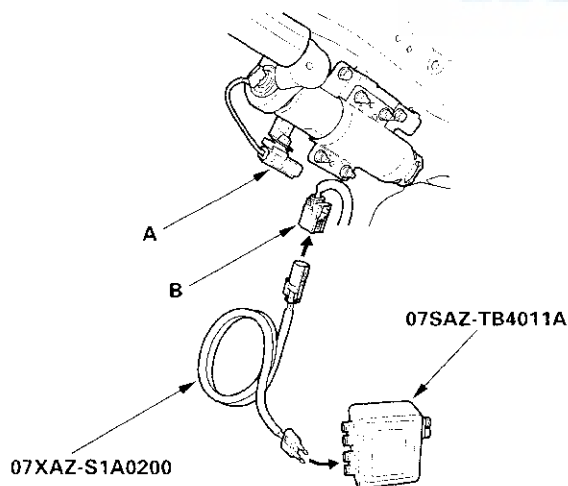
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 34-90 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect the right side curtain airbag 2P connector (A) from the side curtain airbag subharness (B).



5. Connect the SRS inflator simulator (2 Ω connector) and simulator lead E to the side curtain airbag subharness.
6. Reconnect the battery negative cable.
7. Erase the DTC memory.

8. Read the DTC (see page 24-24).

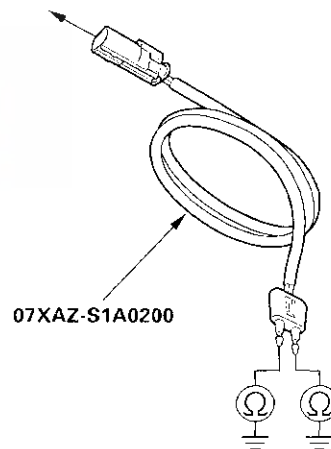
Is DTC 34-90 indicated?

YES—Go to step 9.

NO—Short to ground in the right side curtain airbag inflator; replace the right side curtain airbag (see page 24-142). ■

9. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
10. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
11. Disconnect the SRS inflator simulator from the SRS simulator lead.
12. Check resistance between each terminal of the SRS simulator lead and body ground. There should be an open circuit or at least 1 M Ω .

SIDE CURTAIN AIRBAG SUBHARNESS 2P CONNECTOR



Is the resistance as specified?

YES—Faulty SRS unit or poor contact at SRS unit connector C (16P) and the SRS unit. Check the connection; if the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Short to ground in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

DTC Troubleshooting (cont'd)

DTC 41-11: No signal from the Left Front Impact Sensor

DTC 41-12: Short to Ground or Short to Power/Open in Left Front Impact Sensor

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 41-11 or 41-12 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (28P) and the SRS unit, between the engine compartment wire harness 2P connector and the left front impact sensor (see page 24-157), and at connector C403 (see page 22-30).

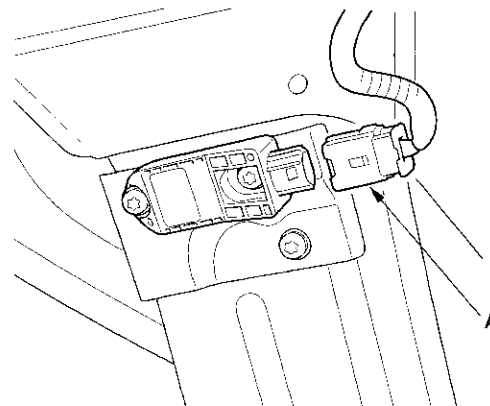
Are the connections OK?

YES—Go to step 4.

NO—Repair the poor connections and retest. If DTC 41-11 or 41-12 is still present, go to step 4.

4. Disconnect the battery negative cable, and wait for 3 minutes.

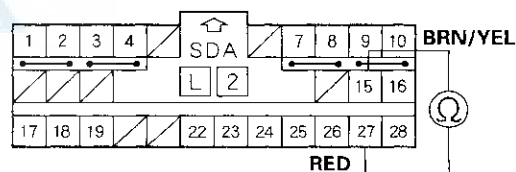
5. Disconnect the engine compartment wire harness 2P connector (A) from the left front impact sensor.



6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).

7. Check resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

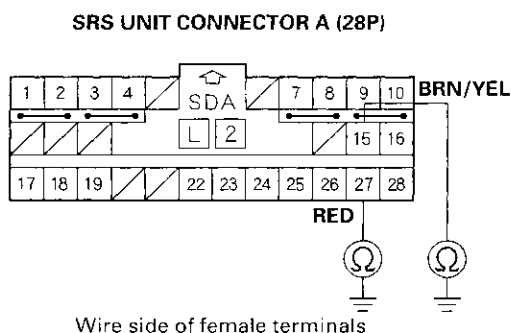
Is the resistance as specified?

YES—Go to step 8.

NO—Short in the engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■



8. Check resistance between the No. 15 terminal of SRS unit connector A (28P) and body ground, and between the No. 27 terminal and body ground. There should be an open circuit or at least 1 M Ω .



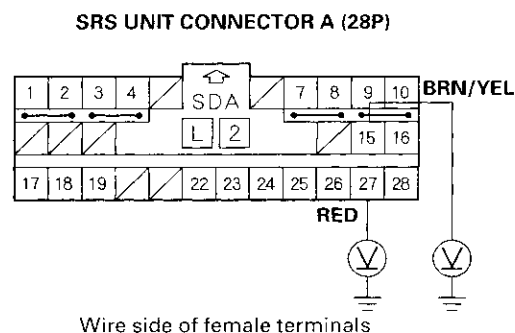
Is the resistance as specified?

YES—Go to step 9.

NO—Short to ground in the dashboard wire harness or engine compartment wire harness; replace the faulty harness. ■

9. Reconnect the battery negative cable.
10. Turn the ignition switch ON (II).

11. Check for voltage between the No. 15 terminal of SRS unit connector A (28P) and body ground, and between the No. 27 terminal and body ground. There should be 1 V or less.

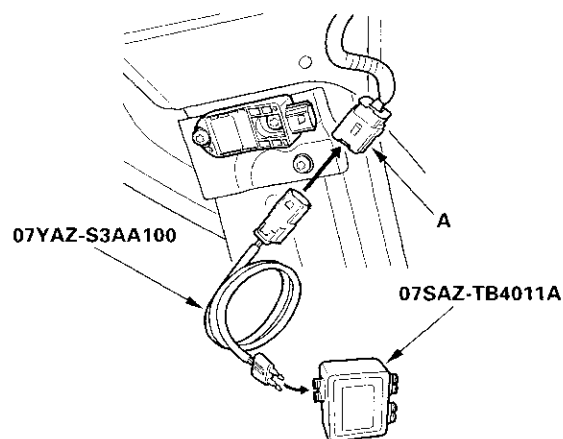


Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the engine compartment wire harness or the dashboard wire harness; replace the faulty harness. ■

12. Turn the ignition switch OFF.
13. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the engine compartment wire harness 2P connector (A).



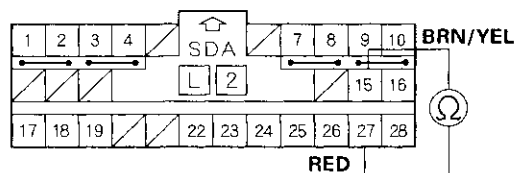
(cont'd)

SRS

DTC Troubleshooting (cont'd)

14. Check resistance between the No. 15 and No. 27 terminals of SRS unit connector A (28P). There should be 0—1.0 Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left front impact sensor or SRS unit; replace the left front impact sensor (see page 24-157). If the problem is still present, replace the SRS unit (see page 24-153). ■

NO—Poor connection at C403, faulty engine compartment wire harness, or faulty dashboard wire harness. Inspect C403 (see page 22-30). If it is OK, replace the faulty harness. ■



DTC 42-11: No Signal from the Right Front Impact Sensor

DTC 42-12: Short to Ground or Short to Power/Open in Right Front Impact Sensor

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 42-11 or 42-12 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Check the connections between SRS unit connector A (28P) and the SRS unit, between the engine compartment wire harness 2P connector and the right front impact sensor (see page 24-157), and at connector C403 (see page 22-30).

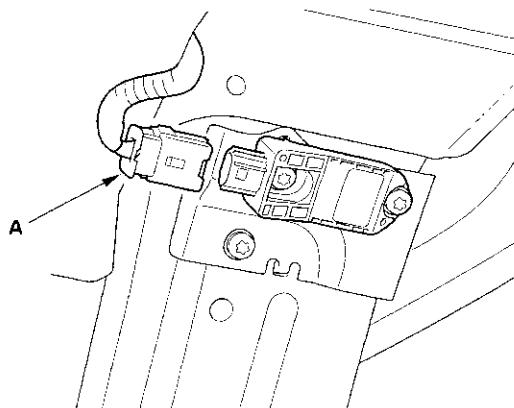
Are the connections OK?

YES—Go to step 4.

NO—Repair the poor connections and retest. If DTC 42-11 or 42-12 is still present, go to step 4.

4. Disconnect the battery negative cable, and wait for 3 minutes.

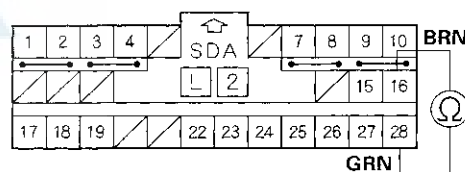
5. Disconnect the engine compartment wire harness 2P connector (A) from the right front impact sensor.



6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).

7. Check resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

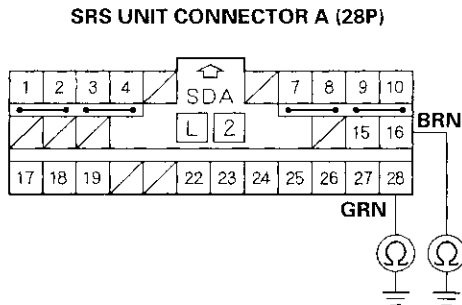
YES—Go to step 8.

NO—Short in the engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■

(cont'd)

DTC Troubleshooting (cont'd)

8. Check resistance between the No. 16 terminal of SRS unit connector A (28P) and body ground, and between the No. 28 terminal and body ground. There should be an open circuit or at least 1 M Ω .



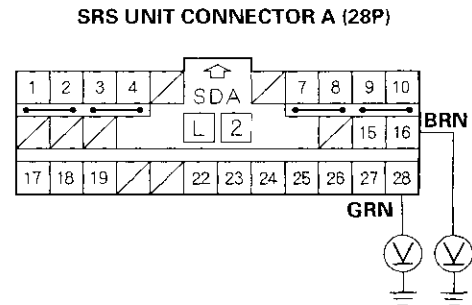
Is the resistance as specified?

YES—Go to step 9.

NO—Short to ground in the dashboard wire harness or engine compartment wire harness; replace the faulty harness. ■

9. Reconnect the battery negative cable.
10. Turn the ignition switch ON (II).

11. Check for voltage between the No. 16 terminal of SRS unit connector A (28P) and body ground, and between the No. 28 terminal and body ground. There should be 1 V or less.

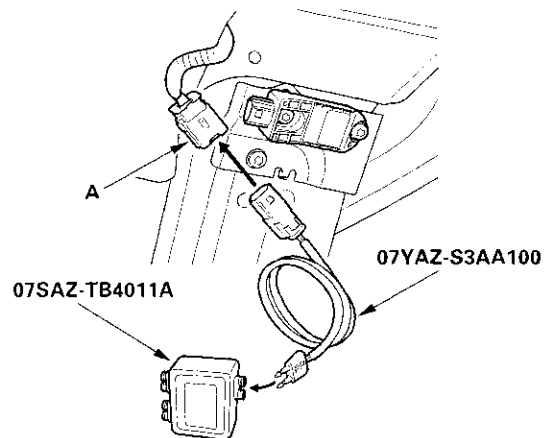


Is the voltage as specified?

YES—Go to step 12.

NO—Short to power in the engine compartment wire harness or dashboard wire harness; replace the faulty harness. ■

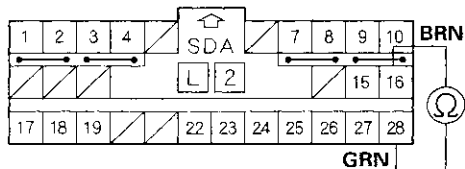
12. Turn the ignition switch OFF.
13. Connect the SRS inflator simulator (jumper connector) and the simulator lead H to the engine compartment wire harness 2P connector (A).





14. Check resistance between the No. 16 and No. 28 terminals of SRS unit connector A (28P). There should be 0—1.0 Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right front impact sensor or SRS unit; replace the right front impact sensor (see page 24-157). If the problem is still present, replace the SRS unit (see page 24-153). ■

NO—Poor connection at C403, faulty engine compartment wire harness, or faulty dashboard wire harness. Inspect C403 (see page 22-30). If it is OK, replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 41-20, 41-30: Internal Failure of the Left Front Impact Sensor

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 41-20 or 41-30 indicated?

YES—Replace the left front impact sensor (see page 24-157). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

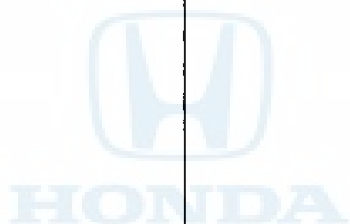
DTC 41-A0, 41-B0: Internal Failure of the Left Front Impact Sensor

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 41-A0 or 41-B0 indicated?

YES—Replace the left front impact sensor (see page 24-157). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.





DTC 42-20, 42-30: Internal Failure of the Right Front Impact Sensor

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 42-20 or 42-30 indicated?

YES—Replace the right front impact sensor (see page 24-157). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

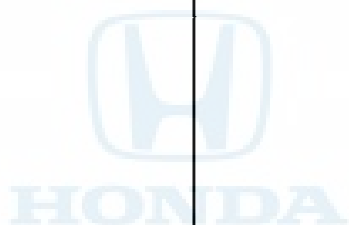
DTC 42-A0, 42-B0: Internal Failure of the Right Front Impact Sensor

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 42-A0 or 42-B0 indicated?

YES—Replace the right front impact sensor (see page 24-157). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.



DTC Troubleshooting (cont'd)

DTC 43-11: No Signal from the Left Side Impact Sensor (first)

DTC 43-12: Short to Ground or Short to Power/Open in Left Side Impact Sensor (first)

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 43-11 or 43-12 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Check the connection between the left floor wire harness 2P connector and the left side impact sensor (first).

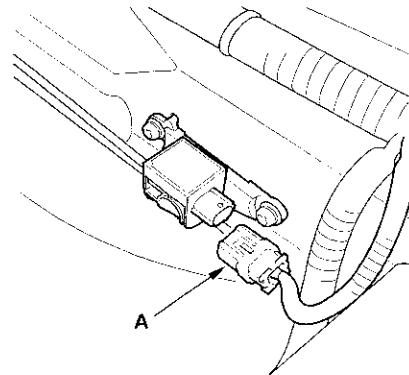
Is the connection OK?

YES—Go to step 5.

NO—Repair the poor connection and retest. If the DTC 43-11 or 43-12 is still present, go to step 5.

5. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).

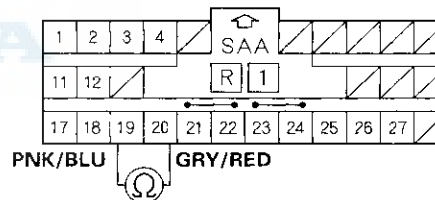
6. Disconnect the left floor wire harness 2P connector (A) from the left side impact sensor (first).



7. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).

8. Check resistance between the No. 19 and No. 20 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

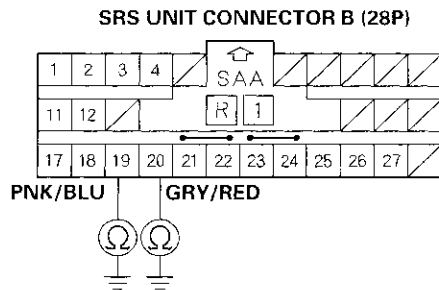
Is the resistance as specified?

YES—Go to step 9.

NO—Short in the left floor wire harness; replace the left floor wire harness. ■



9. Check resistance between the No. 19 terminal of SRS unit connector B (28P) and body ground, and between the No. 20 terminal and body ground. There should be an open circuit or at least 1 M Ω .



Wire side of female terminals

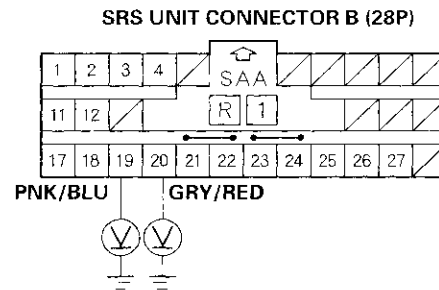
Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the left floor wire harness; replace the left floor wire harness. ■

10. Reconnect the battery negative cable.
11. Turn the ignition switch ON (II).

12. Check for voltage between the No. 19 terminal of SRS unit connector B (28P) and body ground, and between the No. 20 terminal and body ground. There should be 1 V or less.



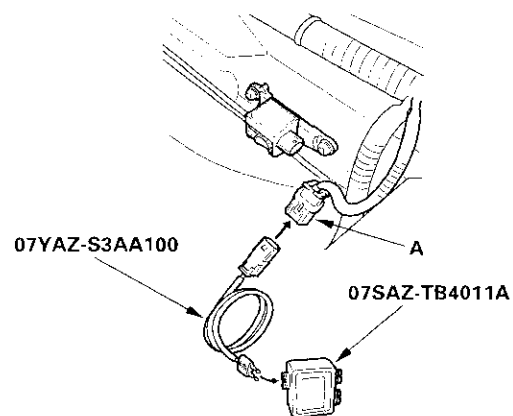
Wire side of female terminals

Is the voltage as specified?

YES—Go to step 13.

NO—Short to power in the left floor wire harness; replace the left floor wire harness. ■

13. Turn the ignition switch OFF.
14. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the left floor wire harness 2P connector (A).



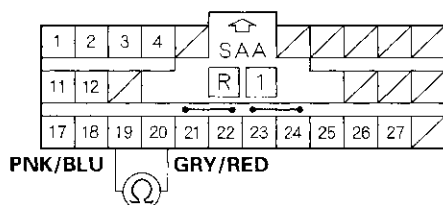
(cont'd)

SRS

DTC Troubleshooting (cont'd)

15. Check resistance between the No. 19 and No. 20 terminals of SRS unit connector B (28P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (first) or SRS unit; replace the left side impact sensor (first) (see page 24-154). If the problem is still present, replace the SRS unit (see page 24-153). ■

NO—Open in the left floor wire harness; replace the left floor wire harness. ■



DTC 44-11: No Signal from the Right Side Impact Sensor (first)

DTC 44-12: Short to Ground or Short to Power/Open in Right Side Impact Sensor (first)

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 44-11 or 44-12 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Check the connection between the right floor wire harness 2P connector and the right side impact sensor (first).

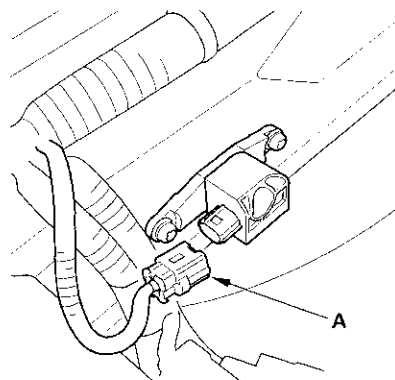
Is the connection OK?

YES—Go to step 5.

NO—Repair the poor connection and retest. If the DTC 44-11 or 44-12 is still present, go to step 5.

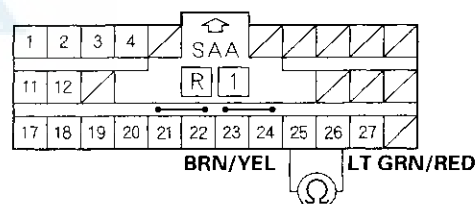
5. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).

6. Disconnect the right floor wire harness 2P connector (A) from the right side impact sensor (first).



7. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
8. Check resistance between the No. 25 and No. 26 terminals of SRS unit connector B (28P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

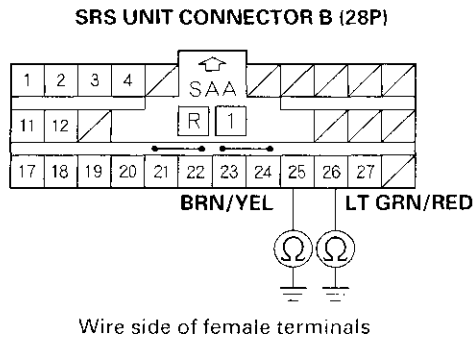
NO—Short in the left floor wire harness or right floor wire harness; replace the faulty harness. ■

(cont'd)

SRS

DTC Troubleshooting (cont'd)

9. Check resistance between the No. 25 terminal of SRS unit connector B (28P) and body ground, and between the No. 26 terminal and body ground. There should be an open circuit or at least 1 M Ω .



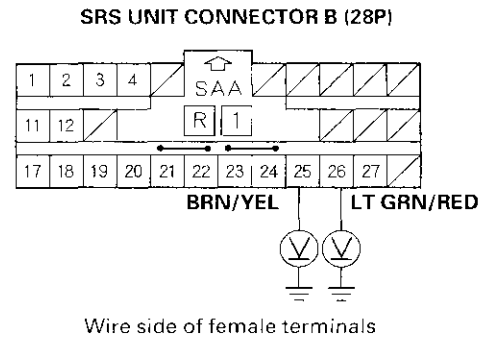
Is the resistance as specified?

YES—Go to step 10.

NO—Short to ground in the left floor wire harness or right floor wire harness; replace the faulty harness. ■

10. Reconnect the battery negative cable.
11. Turn the ignition switch ON (II).

12. Check for voltage between the No. 25 terminal of SRS unit connector B (28P) and body ground, and between the No. 26 terminal and body ground. There should be 1 V or less.

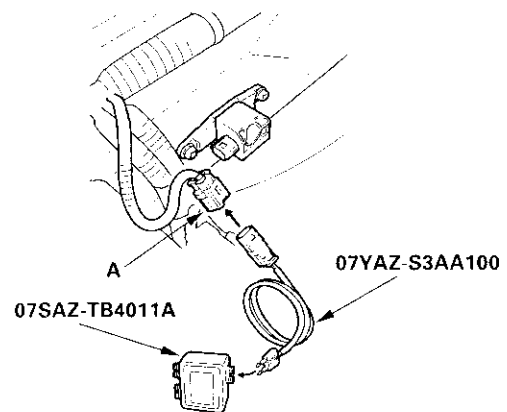


Is the voltage as specified?

YES—Go to step 13.

NO—Short to power in the left floor wire harness or right floor wire harness; replace the faulty harness. ■

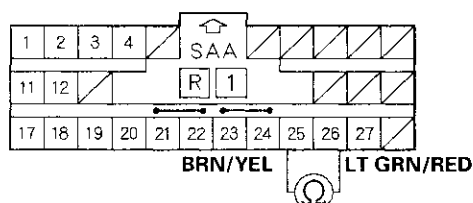
13. Turn the ignition switch OFF.
14. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the right floor wire harness 2P connector (A).





15. Check resistance between the No. 25 and No. 26 terminals of SRS unit connector B (28P). There should be $1.0\ \Omega$ or less.

SRS UNIT CONNECTOR B (28P)



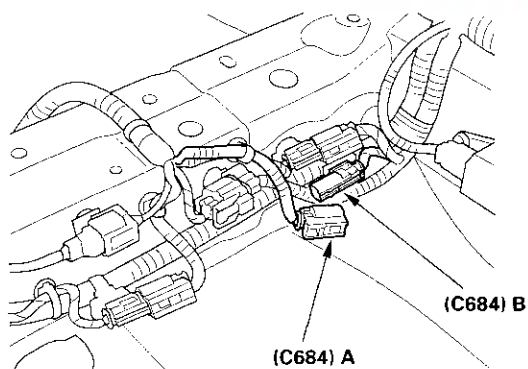
Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (first) or SRS unit; replace the right side impact sensor (first) (see page 24-154). If the problem is still present, replace the SRS unit (see page 24-153). ■

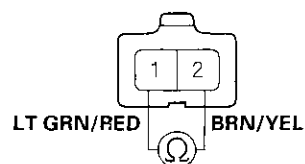
NO—Go to step 16.

16. Disconnect the left floor wire harness 2P connector C684 (A) from the right floor wire harness connector C684 (B).



17. Check resistance between the No. 1 and No. 2 terminals of right floor wire harness 2P connector C684. There should be $1.0\ \Omega$ or less.

RIGHT FLOOR WIRE HARNESS CONNECTOR C684



Terminal side of male terminals

Is the resistance as specified?

YES—Open in the left floor wire harness; replace the left floor wire harness. ■

NO—Open in the right floor wire harness; replace the right floor wire harness. ■

DTC Troubleshooting (cont'd)

DTC 43-20, 43-30, 43-A0, 43-B0: Internal Failure of the Left Side Impact Sensor (first)

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 43-20, 43-30, 43-A0, or 43-B0 indicated?

YES—Replace the left side impact sensor (first) (see page 24-154). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

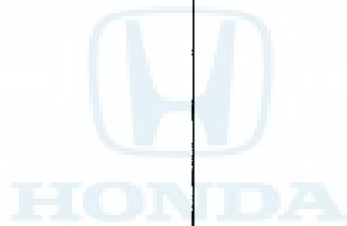
DTC 44-20, 44-30, 44-A0, 44-B0: Internal Failure of the Right Side Impact Sensor (first)

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 44-20, 44-30, 44-A0, or 44-B0 indicated?

YES—Replace the right side impact sensor (first) (see page 24-154). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.





DTC 45-11: No Signal from the Left Side Impact Sensor (second)

DTC 45-12: Short to Ground or Short to Power/Open in Left Side Impact Sensor (second)

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 45-11 or 45-12 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Check the connection between the side curtain airbag subharness 2P connector and the left side impact sensor (second).

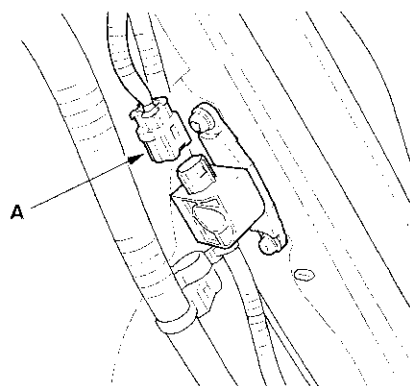
Is the connection OK?

YES—Go to step 5.

NO—Repair the poor connection and retest. If the DTC 45-11 or 45-12 is still present, go to step 5.

5. Disconnect the left side curtain airbag 2P connector and side curtain airbag subharness (see step 5 on page 24-22).

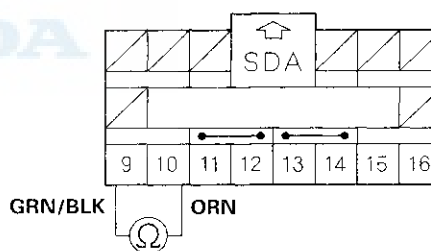
6. Disconnect the side curtain airbag subharness 2P connector (A) from the left side impact sensor (second).



7. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).

8. Check resistance between the No. 9 and No. 10 terminals of SRS unit connector C (16P). There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (16P)



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Short in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

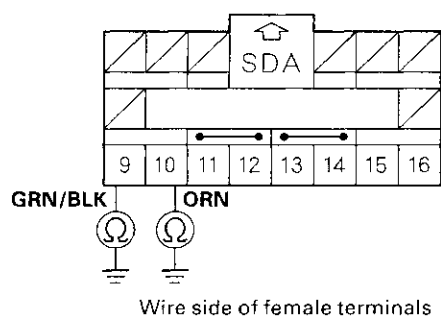
(cont'd)

SRS

DTC Troubleshooting (cont'd)

9. Check resistance between the No. 9 terminal of SRS unit connector C (16P) and body ground, and between the No. 10 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (16P)



Is the resistance as specified?

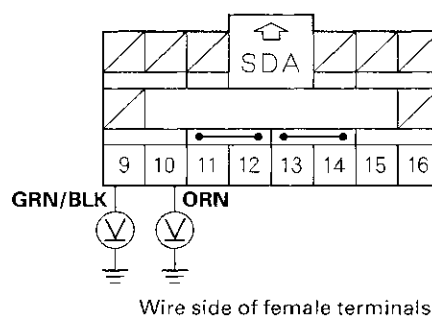
YES—Go to step 10.

NO—Short to ground in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

10. Reconnect the battery negative cable.
11. Turn the ignition switch ON (II).

12. Check for voltage between the No. 9 terminal of SRS unit connector C (16P) and body ground, and between the No. 10 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (16P)

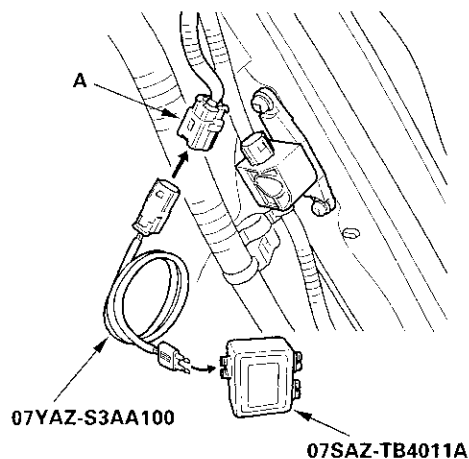


Is the voltage as specified?

YES—Go to step 13.

NO—Short to power in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

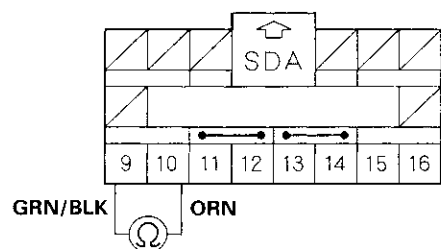
13. Turn the ignition switch OFF.
14. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the side curtain airbag subharness 2P connector (A).





15. Check resistance between the No. 9 and No. 10 terminals of SRS unit connector C (16P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR C (16P)

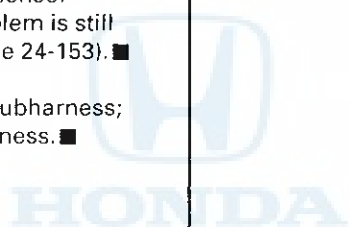


Wire side of female terminals

Is the resistance as specified?

YES—Faulty left side impact sensor (second) or SRS unit; replace the left side impact sensor (second) (see page 24-155). If the problem is still present, replace the SRS unit (see page 24-153). ■

NO—Open in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



DTC Troubleshooting (cont'd)

DTC 46-11: No Signal from the Right Side Impact Sensor (second)

DTC 46-12: Short to Ground or Short to Power/Open in Right Side Impact Sensor (second)

Special Tools Required

- SRS inflator simulator 07SAZ-TB4011A
- SRS simulator lead H 07YAZ-S3AA100

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 46-11 or 46-12 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Check the connection between the side curtain airbag subharness 2P connector and the right side impact sensor (second).

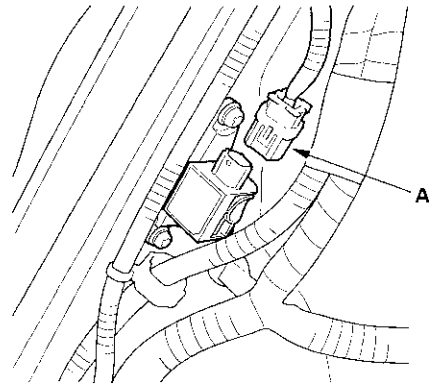
Is the connection OK?

YES—Go to step 5.

NO—Repair the poor connection and retest. If the DTC 46-11 or 46-12 is still present, go to step 5.

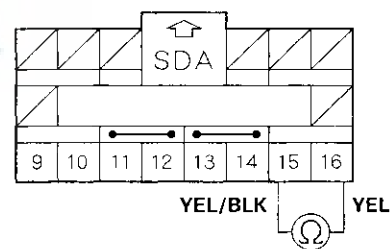
5. Disconnect the right side curtain airbag 2P connector and side curtain airbag subharness (see step 5 on page 24-22).

6. Disconnect the side curtain airbag subharness 2P connector (A) from the right side impact sensor (second).



7. Disconnect SRS unit connector C (16P) from the SRS unit (see step 7 on page 24-23).
8. Check resistance between the No. 15 and No. 16 terminals of SRS unit connector C (16P). There should be an open circuit or at least 1 MΩ.

SRS UNIT CONNECTOR C (16P)



Wire side of female terminals

Is the resistance as specified?

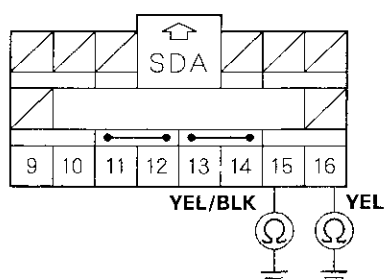
YES—Go to step 9.

NO—Short in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



9. Check resistance between the No. 15 terminal of SRS unit connector C (16P) and body ground, and between the No. 16 terminal and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR C (16P)



Wire side of female terminals

Is the resistance as specified?

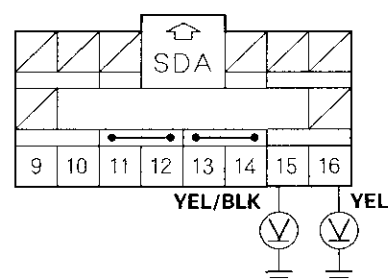
YES—Go to step 10.

NO—Short to ground in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

10. Reconnect the battery negative cable.
11. Turn the ignition switch ON (II).

12. Check for voltage between the No. 15 terminal of SRS unit connector C (16P) and body ground, and between the No. 16 terminal and body ground. There should be 1 V or less.

SRS UNIT CONNECTOR C (16P)



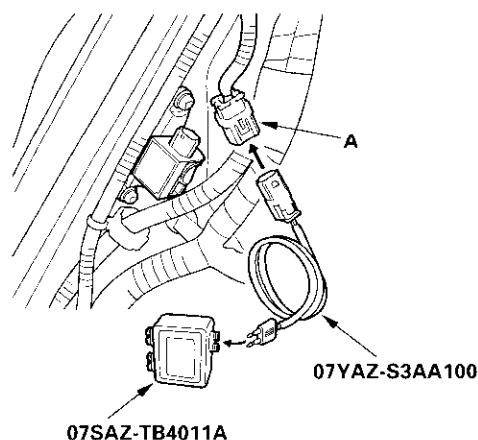
Wire side of female terminals

Is the voltage as specified?

YES—Go to step 13.

NO—Short to power in the side curtain airbag subharness; replace the side curtain airbag subharness. ■

13. Turn the ignition switch OFF.
14. Connect the SRS inflator simulator (jumper connector) and simulator lead H to the side curtain airbag subharness 2P connector (A).

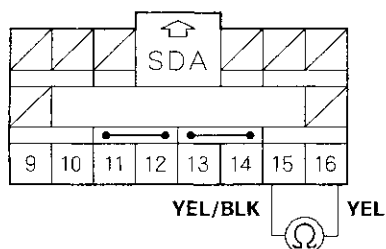


(cont'd)

DTC Troubleshooting (cont'd)

15. Check resistance between the No. 15 and No. 16 terminals of SRS unit connector C (16P). There should be 1.0 Ω or less.

SRS UNIT CONNECTOR C (16P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty right side impact sensor (second) or SRS unit; replace the right side impact sensor (second) (see page 24-155). If the problem is still present, replace the SRS unit (see page 24-153). ■

NO—Open in the side curtain airbag subharness; replace the side curtain airbag subharness. ■



DTC 45-20, 45-30, 45-A0, 45-B0: Internal Failure of the Left Side Impact Sensor (second)

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 45-20, 45-30, 45-A0, or 45-B0 indicated?

YES—Replace the left side impact sensor (second) (see page 24-155). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

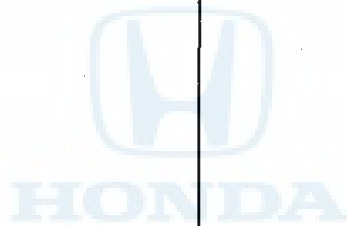
DTC 46-20, 46-30, 46-A0, 46-B0: Internal Failure of the Right Side Impact Sensor (second)

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 46-20, 46-30, 46-A0, or 46-B0 indicated?

YES—Replace the right side impact sensor (second) (see page 24-155). If the DTC returns, replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.



DTC Troubleshooting (cont'd)

DTC 51-10, 51-11, 51-20, 51-21: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 51-10, 51-11, 51-20, or 51-21 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 51-22, 51-23, 51-42, 51-50: Internal Failure of the SRS Unit

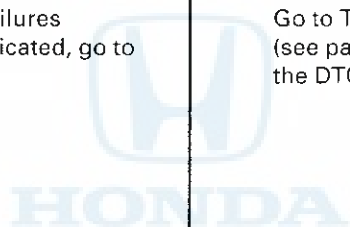
NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 51-22, 51-23, 51-42, or 51-50 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.





DTC 52-A0, 52-B0, 52-E0, 52-F0: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 52-A0, 52-B0, 52-E0, or 52-F0 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 53-20, 53-21, 53-22, 53-30: Internal Failure of the SRS Unit

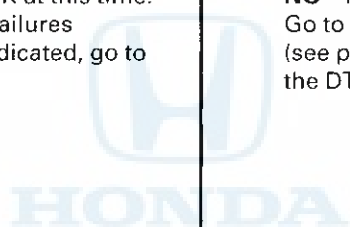
NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-20, 53-21, 53-22, or 53-30 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.



DTC Troubleshooting (cont'd)

DTC 53-31, 53-32, 53-33, 53-34: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-31, 53-32, 53-33, or 53-34 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 53-35, 53-36, 53-37, 53-38: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-35, 53-36, 53-37, or 53-38 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.





DTC 53-39, 53-40, 53-42, 53-43, 53-44: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-39, 53-40, 53-42, 53-43, or 53-44 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 53-80, 53-81, 53-82, 53-83: Internal Failure of the SRS Unit

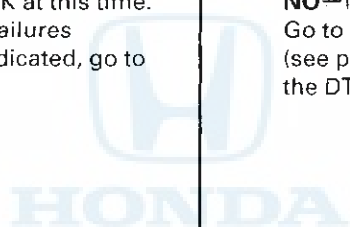
NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-80, 53-81, 53-82, or 53-83 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.



DTC Troubleshooting (cont'd)

DTC 53-85, 53-86, 53-87, 53-88: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-85, 53-86, 53-87, or 53-88 indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 53-89, 53-8A, 53-8B: Internal Failure of the SRS Unit

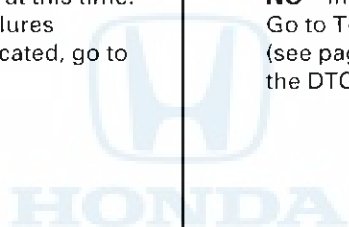
NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 53-89, 53-8A, or 53-8B indicated?

YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.





DTC 54-10, 54-11, 54-30, 54-31: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger one of these DTCs.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 54-10, 54-11, 54-30, or 54-31 indicated?

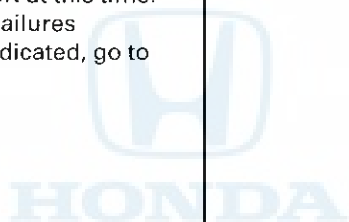
YES—Replace the SRS unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC E4-11, F1-11, F2-11, F3-11, F4-11: Airbags, Side Airbags, Side Curtain Airbags, and/or Seat Belt Tensioners Deployed

The SRS unit must be replaced after any airbags and/or tensioners have deployed (see page 24-146). ■

NOTE: DTC E4-11 is set if the system triggered a passenger's side airbag deployment but the airbag was prevented from deploying by the OPDS. Replace the right side impact sensor (first) (see page 24-154).



DTC Troubleshooting (cont'd)

DTC 61-10: Open in Driver's Seat Belt Buckle Switch

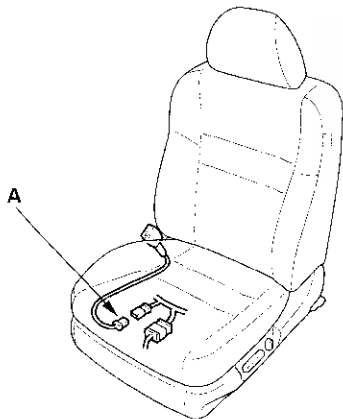
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC (see page 24-24).

Is DTC 61-10 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

4. Turn the ignition switch OFF.
5. Disconnect the driver's seat wire harness 3P connector from the driver's seat belt buckle switch 3P connector (A).

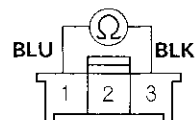


6. Buckle the driver's seat belt.

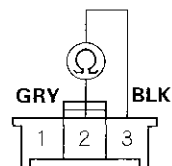
Check resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 2 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Wire side of female terminals



Wire side of female terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

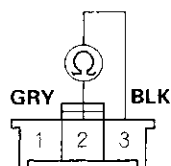


7. Unbuckle the driver's seat belt.

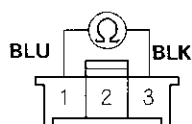
Check resistance between the No. 2 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

**DRIVER'S SEAT BELT BUCKLE SWITCH
3P CONNECTOR**



Wire side of female terminals



Wire side of female terminals

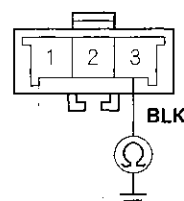
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Check resistance between the No. 3 terminal of the driver's seat wire harness 3P connector and body ground. There should be 0—1 Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR



Terminal side of male terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Open in the driver's seat wire harness or left floor wire harness, or poor ground connection at G601 (see page 22-38). If G601 is OK, replace the faulty harness. ■

9. Disconnect the negative cable from the battery.

10. Disconnect both seat belt tensioner 4P connectors from the left and right floor wire harnesses (see page 24-23).

11. Disconnect SRS unit connector B (28P) from the SRS unit (see page 24-23).

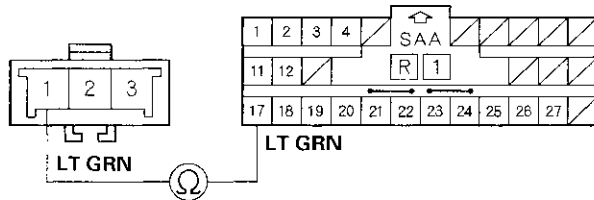
(cont'd)

DTC Troubleshooting (cont'd)

12. Check resistance between the No. 17 terminal of SRS unit connector B (28P) and the No. 1 terminal of the driver's seat wire harness 3P connector. There should be 0—1 Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR

SRS UNIT CONNECTOR B (28P)



Terminal side of male terminals

Wire side of female terminals

Is the resistance as specified?

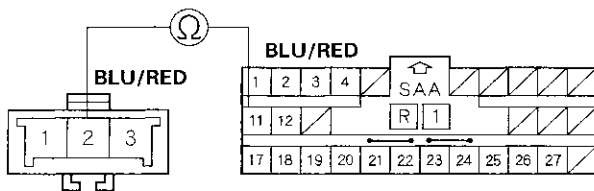
YES—Go to step 13.

NO—Open in the driver's seat wire harness or left floor wire harness; replace the faulty harness. ■

13. Check resistance between the No. 11 terminal of SRS unit connector B (28P) and the No. 2 terminal of the driver's seat wire harness 3P connector. There should be 0—1 Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR

SRS UNIT CONNECTOR B (28P)



Terminal side of male terminals

Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 24-153). ■

NO—Open in the driver's seat wire harness, or left floor wire harness, or poor connection at the left floor wire harness. Check the connection at the left floor wire harness and the MICU/under-dash fuse/relay box. If the connection is OK, replace the faulty harness or part. ■



DTC 61-20: Short to Ground in Driver's Seat Belt Buckle Switch

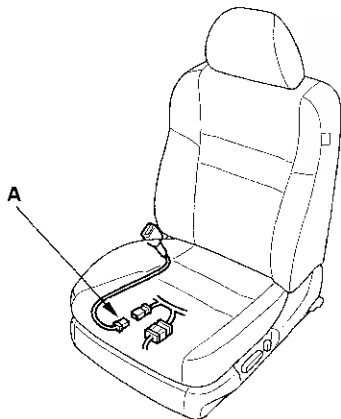
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), then buckle and unbuckle the driver's seat belt several times.
3. Read the DTC (see page 24-24).

Is DTC 61-20 indicated?

YES—Go to step 4.

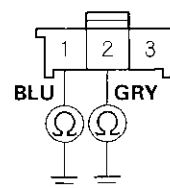
NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

4. Turn the ignition switch OFF.
5. Disconnect the driver's seat harness 3P connector from the driver's seat belt buckle switch 3P connector (A).



6. Check for continuity between the No. 1 terminal of the driver's seat belt buckle switch 3P connector and body ground, and between the No. 2 terminal and body ground. There should be no continuity.

DRIVER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the driver's seat belt buckle assembly (see page 24-6). ■

NO—Go to step 7.

(cont'd)

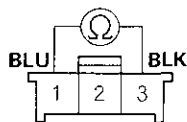
DTC Troubleshooting (cont'd)

7. Buckle the driver's seat belt.

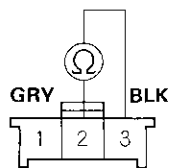
Check resistance between the No. 1 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 2 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

**DRIVER'S SEAT BELT BUCKLE SWITCH
3P CONNECTOR**



Wire side of female terminals



Wire side of female terminals

Are the resistances as specified?

YES—Go to step 8.

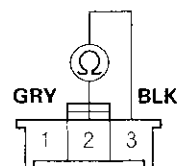
NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Unbuckle the driver's seat belt.

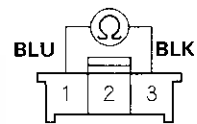
Check resistance between the No. 2 and No. 3 terminals of the driver's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

**DRIVER'S SEAT BELT BUCKLE SWITCH
3P CONNECTOR**



Wire side of female terminals



Wire side of female terminals

Are the resistances as specified?

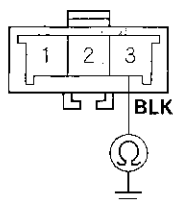
YES—Go to step 9.

NO—Replace the driver's seat belt buckle assembly (see page 24-6), then clear the DTC. ■



9. Check resistance between the No. 3 terminal of the driver's seat wire harness 3P connector and body ground. There should be 0—1 Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR



Terminal side of male terminals

Is the resistance as specified?

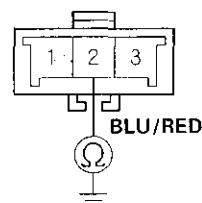
YES—Go to step 10.

NO—Open in the driver's seat wire harness or floor wire harness, or poor ground connection at G601 (see page 22-38). If G601 is OK, replace the faulty harness. ■

10. Disconnect the negative cable from the battery.
11. Disconnect both seat belt tensioner 4P connectors from the left or right floor wire harness (see page 24-23).
12. Disconnect SRS unit connector B (28P) from the SRS unit (see page 24-23).

13. Check resistance between the No. 2 terminal of the driver's seat wire harness 3P connector and body ground. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR



Terminal side of male terminals

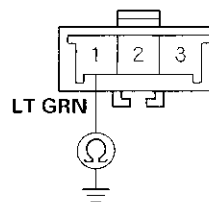
Is the resistance as specified?

YES—Go to step 14.

NO—Short to ground in the driver's seat wire harness, left floor wire harness, or MICU/under-dash fuse/relay box. Replace the faulty harness or part. ■

14. Check resistance between the No. 1 terminal of the driver's seat wire harness 3P connector and body ground. There should be an open circuit or at least 1 M Ω .

DRIVER'S SEAT WIRE HARNESS 3P CONNECTOR



Terminal side of male terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 24-153). ■

NO—Short to ground in the driver's seat wire harness or left floor wire harness; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 62-10: Open in Front Passenger's Seat Belt Buckle Switch

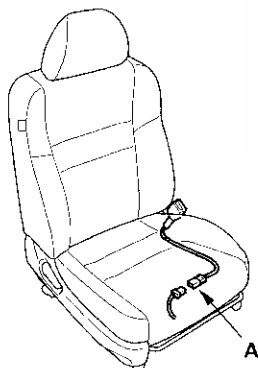
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Read the DTC (see page 24-24).

Is DTC 62-10 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat belt buckle switch 3P connector (A) from the right floor wire harness.

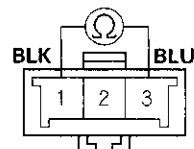


6. Buckle the front passenger's seat belt.

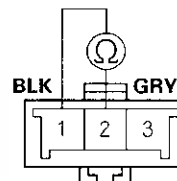
Check resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 7.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

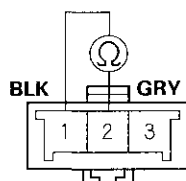


7. Unbuckle the front passenger's seat belt.

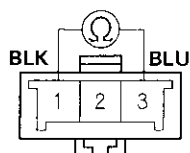
Check resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

**FRONT PASSENGER'S SEAT BELT
BUCKLE SWITCH 3P CONNECTOR**



Terminal side of male terminals



Terminal side of male terminals

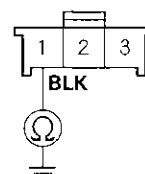
Are the resistances as specified?

YES—Go to step 8.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Check resistance between the No. 1 terminal of the right floor wire harness 3P connector and body ground. There should be 0—1 Ω .

RIGHT FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 9.

NO—Open in the right floor wire harness or poor ground connection at G651 (see page 22-40). If G651 is OK, replace the right floor wire harness. ■

9. Disconnect the negative cable from the battery.
10. Disconnect both seat belt tensioner 4P connectors from the left or right floor wire harness (see page 24-23).
11. Disconnect SRS unit connector B (28P) from the SRS unit (see page 24-23).

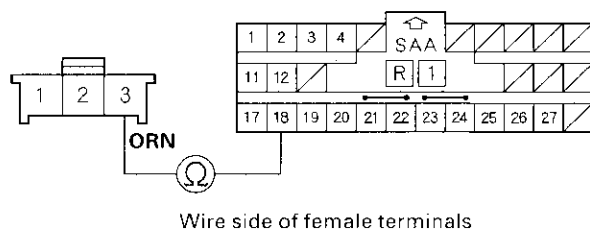
(cont'd)

DTC Troubleshooting (cont'd)

12. Check resistance between the No. 18 terminal of SRS unit connector B (28P) and the No. 3 terminal of the right floor wire harness 3P connector. There should be 0—1 Ω .

**RIGHT FLOOR
WIRE HARNESS
3P CONNECTOR**

SRS UNIT CONNECTOR B (28P)



Is the resistance as specified?

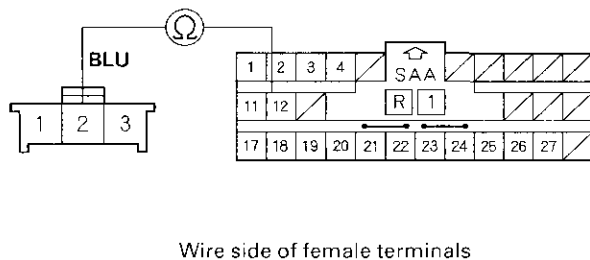
YES—Go to step 13.

NO—Open in the left or right floor wire harness; replace the faulty harness. ■

13. Check resistance between the No. 12 terminal of SRS unit connector B (28P) and the No. 2 terminal of the right floor wire harness 3P connector. There should be 0—1 Ω .

**RIGHT FLOOR
WIRE HARNESS
3P CONNECTOR**

SRS UNIT CONNECTOR B (28P)



Is the resistance as specified?

YES—Replace the SRS unit (see page 24-153). ■

NO—Open in the left or right floor wire harness; replace the faulty harness. ■



DTC 62-20: Short to Ground in Front Passenger's Seat Belt Buckle Switch

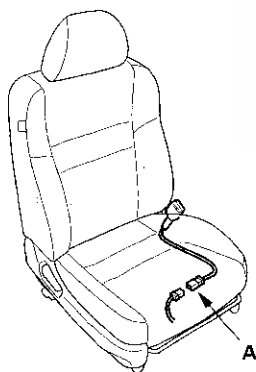
1. Erase the DTC memory. (see page 24-25).
2. Turn the ignition switch ON (II), then buckle and unbuckle the front passenger's seat belt several times.
3. Read the DTC (see page 24-24).

Is DTC 62-20 indicated?

YES—Go to step 4.

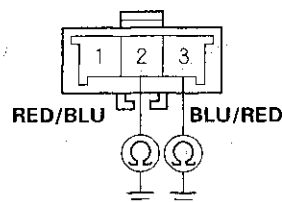
NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

4. Turn the ignition switch OFF.
5. Disconnect the front passenger's seat belt buckle switch 3P connector (A) from the right floor wire harness.



6. Check for continuity between the No. 2 terminal of the front passenger's seat belt buckle switch 3P connector and body ground, and between the No. 3 terminal and body ground. There should be no continuity.

FRONT PASSENGER'S SEAT BELT BUCKLE SWITCH 3P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Replace the front passenger's seat belt buckle assembly (see page 24-6). ■

NO—Go to step 7.

(cont'd)

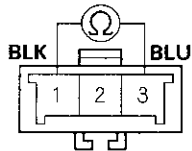
DTC Troubleshooting (cont'd)

7. Buckle the front passenger's seat belt.

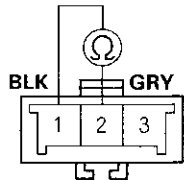
Check resistance between the No. 1 and No. 3 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 1 and No. 2 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

**FRONT PASSENGER'S SEAT BELT
BUCKLE SWITCH 3P CONNECTOR**



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

YES—Go to step 8.

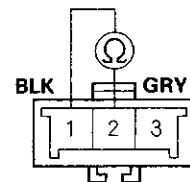
NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■

8. Unbuckle the front passenger's seat belt.

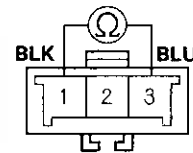
Check resistance between the No. 1 and No. 2 terminals of the front passenger's seat belt buckle switch 3P connector. There should be 0—1 Ω .

Check resistance between the No. 1 and No. 3 terminals of the same connector. There should be an open circuit or at least 1 M Ω .

**FRONT PASSENGER'S SEAT BELT
BUCKLE SWITCH 3P CONNECTOR**



Terminal side of male terminals



Terminal side of male terminals

Are the resistances as specified?

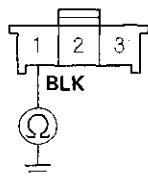
YES—Go to step 9.

NO—Replace the front passenger's seat belt buckle assembly (see page 24-6), then clear the DTC. ■



9. Check resistance between the No. 1 terminal of the right floor wire harness 3P connector and body ground. There should be 0–1 Ω .

RIGHT FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

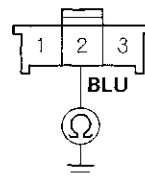
YES—Go to step 10.

NO—Open in the right floor wire harness or poor ground connection at G651 (see page 22-40). If G651 is OK, replace the right floor wire harness. ■

10. Disconnect the negative cable from the battery.
11. Disconnect both seat belt tensioner 4P connectors from the left or right floor wire harness (see page 24-23).
12. Disconnect SRS unit connector B (28P) from the SRS unit (see page 24-23).

13. Check resistance between the No. 2 terminal of the right floor wire harness 3P connector and body ground. There should be an open circuit or at least 1 M Ω .

RIGHT FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

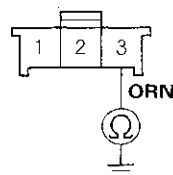
Is the resistance as specified?

YES—Go to step 14.

NO—Short to ground in the left or right floor wire harness; replace the faulty harness. ■

14. Check resistance between the No. 3 terminal of the right floor wire harness 3P connector and body ground. There should be an open circuit or at least 1 M Ω .

RIGHT FLOOR WIRE HARNESS 3P CONNECTOR



Wire side of female terminals

Is the resistance as specified?

YES—Replace the SRS unit (see page 24-153). ■

NO—Short to ground in the left or right floor wire harness; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 85-4x (85-40 to 85-49, 85-4A to 85-4F), 85-5x (85-50 to 85-59, 85-5A to 85-5F), 85-63, 85-64, 85-71, 85-78: Internal Failure of the OPDS Unit or OPDS Unit Not Initialized

NOTE:

- An incorrect OPDS unit can cause DTC 85-63.
- A new (uninitialized) OPDS unit installed with a faulty OPDS sensor can cause DTC 85-71.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 85-4x, 85-5x, 85-63, 85-64, 85-71, or 85-78 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Initialize the OPDS unit (see page 24-26).
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Replace the OPDS unit (see page 24-156). ■

DTC 85-79: OPDS Sensor Drift Check Failure

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 85-79 indicated?

YES—Turn the ignition switch OFF, and go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Make sure nothing is on the front passenger's seat.
4. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Go to step 5.

5. Initialize the OPDS unit (see page 24-26).
6. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator go off?

YES—The system is OK. ■

NO—Replace the OPDS unit (see page 24-156), and retest. If the problem is still present, replace the OPDS sensor/seat-back (see page 20-89). ■



DTC 85-61: No Signal from the OPDS Unit

DTC 85-62: Non-stipulated Response Data

NOTE:

- An incorrect OPDS unit can cause DTC 85-63.
- A new (uninitialized) OPDS unit installed with a faulty sensor can also cause DTC 85-71.

1. Make sure nothing is on the front passenger's seat.
2. Erase the DTC memory (see page 24-25).
3. Read the DTC (see page 24-24).

Is DTC 85-61 or 85-62 indicated?

YES—Go to step 4.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

4. Check the connection between the OPDS unit harness 8P connector D and the OPDS unit.

Is the connection OK?

YES—Go to step 5.

NO—Repair the poor connection and retest. If DTC 85-61 or 85-62 is still present, go to step 5.

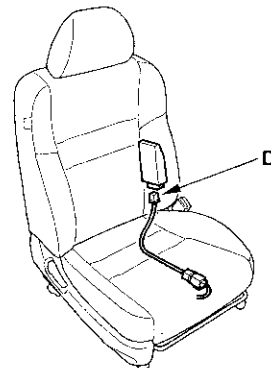
5. Turn the ignition switch OFF.
6. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 7.

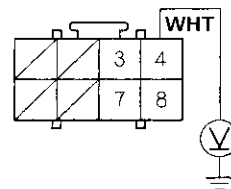
NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 10 (7.5 A) fuse circuit (dashboard wire harness, floor wire harness, or OPDS unit harness). ■

7. Disconnect the OPDS unit 8P connector D from the OPDS unit.



8. Turn the ignition switch ON (II).
9. Check for voltage between the No. 4 terminal of the OPDS unit 8P connector D and body ground. There should be battery voltage.

OPDS UNIT 8P CONNECTOR D



Wire side of female terminals

Is there battery voltage?

YES—Go to step 14.

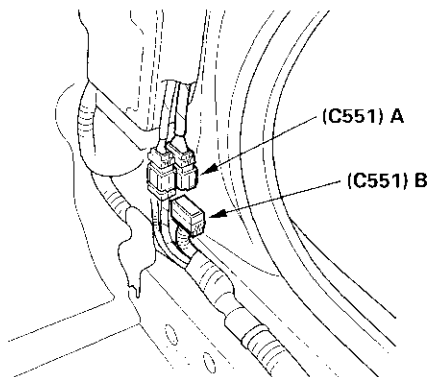
NO—Go to step 10.

10. Turn the ignition switch OFF.

(cont'd)

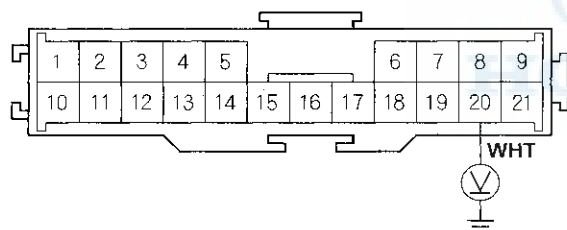
DTC Troubleshooting (cont'd)

11. Disconnect dashboard wire harness 21P connector C551 (A) from the right floor wire harness C551 (B).



12. Turn the ignition switch ON (II).
13. Check for voltage between the No. 20 terminal of dashboard wire harness 21P connector C551 and body ground. There should be battery voltage.

DASHBOARD WIRE HARNESS 21P CONNECTOR C551



Terminal side of male terminals

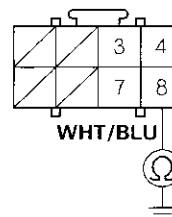
Is there battery voltage?

YES—Open in the WHT wire of the right floor wire harness or OPDS unit harness; replace the faulty harness. ■

NO—Open in the WHT wire of the dashboard wire harness; replace the dashboard wire harness. ■

14. Turn the ignition switch OFF.
15. Check resistance between the No. 8 terminal of the OPDS unit 8P connector D and body ground. There should be 0—1.0 Ω .

OPDS UNIT 8P CONNECTOR D



Wire side of female terminals

Is the resistance as specified?

YES—Go to step 16.

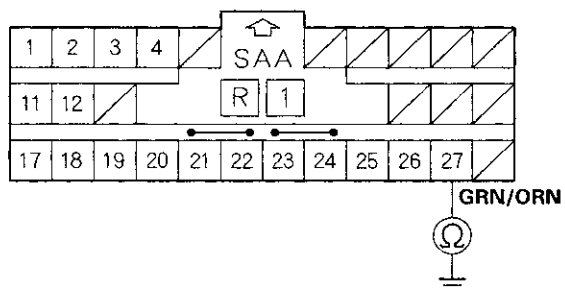
NO—Open in the OPDS unit harness or right floor wire harness; check the connection at G651 (see page 22-40). If the connection is OK, replace the faulty harness. ■

16. Disconnect the battery negative cable, and wait for 3 minutes.
17. Disconnect both seat belt tensioner 4P connectors (see step 6 on page 24-23).



18. Disconnect SRS unit connector B (28P) from the SRS unit (see step 7 on page 24-23).
19. Check resistance between the No. 27 terminal of SRS unit connector B (28P) and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

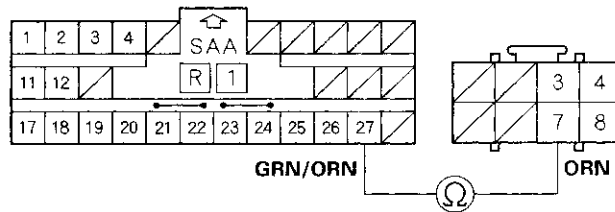
YES—Go to step 20.

NO—Go to step 23.

20. Check resistance between the No. 27 terminal of SRS unit connector B (28P) and the No. 7 terminal of the OPDS unit 8P connector D. There should be 0—1.0 Ω .

SRS UNIT CONNECTOR B (28P)

**OPDS UNIT
8P CONNECTOR D**



Wire side of female terminals

Is the resistance as specified?

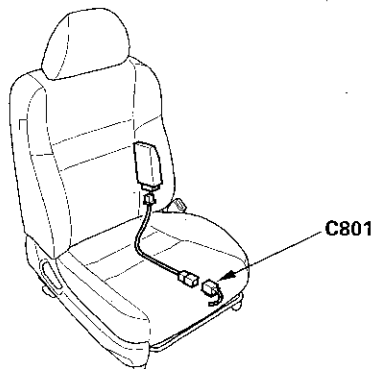
YES—Faulty OPDS unit or SRS unit; replace the OPDS unit (see page 24-156). If the problem is still present, replace the OPDS sensor/seat-back (see page 20-89). If the problem is still present, replace the SRS unit (see page 24-153). ■

NO—Go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

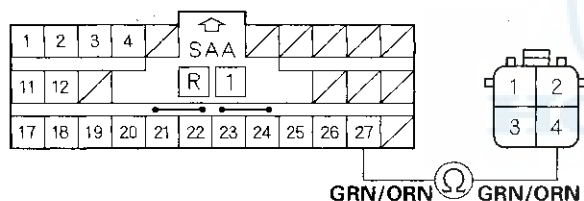
21. Disconnect the right floor wire harness 4P connector C801 from the OPDS unit harness.



22. Check resistance between the No. 27 terminal of SRS unit connector B (28P) and the No. 4 terminal of right floor wire harness 4P connector C801. There should be 0—1.0 Ω .

SRS UNIT CONNECTOR B (28P)

RIGHT FLOOR WIRE HARNESS 4P CONNECTOR C801



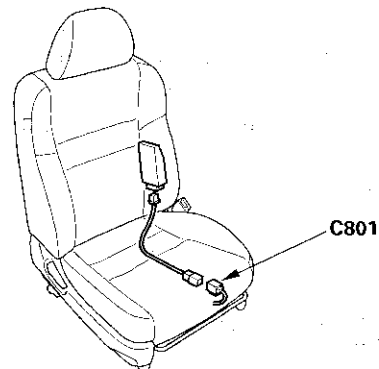
Wire side of female terminals

Is the resistance as specified?

YES—Open in the OPDS unit harness; replace the OPDS unit harness. ■

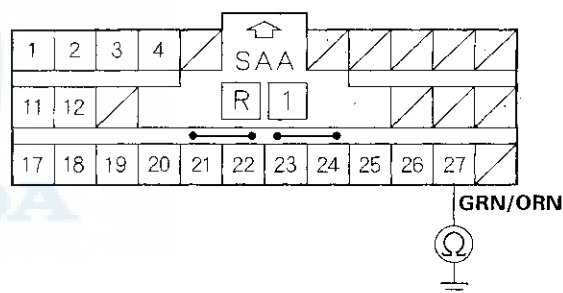
NO—Open in the GRN/ORN wire of the dashboard wire harness or right floor wire harness; replace the faulty harness. ■

23. Disconnect right floor wire harness 4P connector C801 from the OPDS unit harness.



24. Check resistance between the No. 27 terminal of SRS unit connector B (28P) and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR B (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Short to ground in the OPDS unit harness; replace the OPDS unit harness. ■

NO—Short to ground in the dashboard wire harness or right floor wire harness; replace the faulty harness. ■



DTC 86-1x (86-10 to 86-19, 86-1A to 86-1F):
Faulty OPDS Seat-back Sensor

DTC 86-2x (86-20 to 86-29, 86-2A to 86-2F):
Faulty OPDS Seat Support Sensor

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

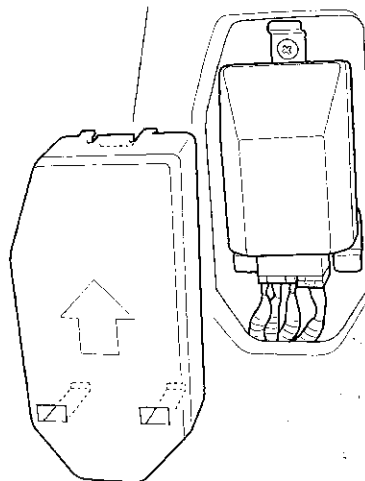
Does the SRS indicator stay on, and is DTC 86-1x or 86-2x indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

NOTE: Aftermarket devices (fluorescent lights, laptop computers, etc.) used near the front passenger's seat-back can interfere with the seat-back sensors and cause a false DTC 86-1x or 86-2x. If one of these devices was used, erase the DTC, operate the device near the seat-back, and recheck for DTCs. If DTC 86-1x or 86-2x is reset, erase it, and do not use the device near the seat-back.

3. Check the connection at the OPDS sensor harness connector and the OPDS unit connector.



Are the connections OK?

YES—Go to step 4.

NO—Reconnect the OPDS sensor harness connector, and clear the DTC. ■

4. Replace the OPDS sensor/seat-back foam (see page 20-89), and initialize the OPDS (see page 24-26).
5. Erase the DTC memory, then check for DTC 86-1x or 86-2x.

Is DTC 86-1x or 86-2x indicated?

YES—Replace the OPDS unit (see page 24-156). ■

NO—The system is OK. ■

DTC Troubleshooting (cont'd)

DTC 87-31: Internal Failure of the OPDS Unit

NOTE: Make sure the battery is sufficiently charged and in good condition.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 87-31 indicated?

YES—Replace the OPDS unit (see page 24-156). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 87-32: Side Airbag Cutoff Indicator Stays ON or OFF

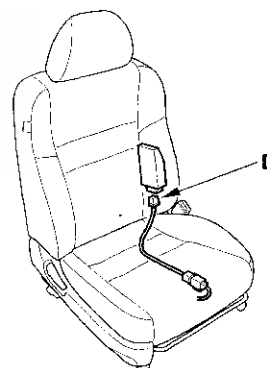
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 87-32 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

3. Turn the ignition switch OFF. Make sure nothing is on the front passenger's seat.
4. Disconnect the OPDS unit 8P connector D from the OPDS unit.

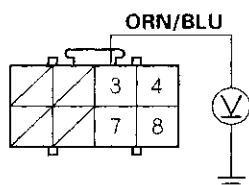


5. Turn the ignition switch ON (II).



6. Check for voltage between the No. 3 terminal of the OPDS unit harness 8P connector D and body ground. There should be battery voltage.

OPDS UNIT HARNESS 8P CONNECTOR D



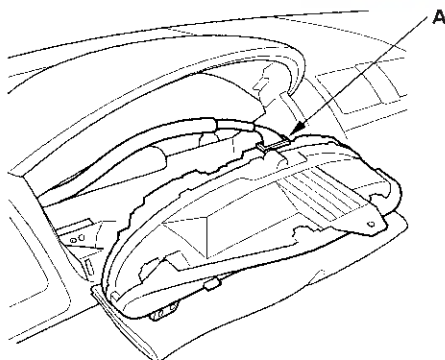
Wire side of female terminals

Is there battery voltage?

YES—Faulty OPDS unit; replace the OPDS unit (see page 24-156). ■

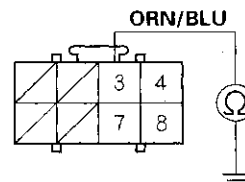
NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Remove the gauge control module (see page 22-235). Disconnect gauge control module connector (30P) (A) from the gauge control module.



9. Check resistance between the No. 3 terminal of the OPDS unit harness 8P connector D and body ground. There should be an open circuit or at least 1 M Ω .

OPDS UNIT HARNESS 8P CONNECTOR D



Wire side of female terminals

Is the resistance as specified?

YES—Replace the gauge control module. ■

NO—Short to ground in the OPDS unit harness, right floor wire harness or dashboard wire harness; replace the faulty harness. ■

DTC Troubleshooting (cont'd)

DTC 91-10: Internal Failure of the SRS Unit

NOTE: Before troubleshooting any of these DTCs, check the battery/system voltage. If the voltage is low, repair the charging system or replace the battery before troubleshooting the SRS. If the battery/system voltage is now OK, ask the customer if the battery ever went dead. A dead battery may trigger this DTC.

1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 91-10 indicated?

YES—Replace the SRS Unit (see page 24-153). ■

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

DTC 91-20: Short to Ground in SRS Indicator Circuit

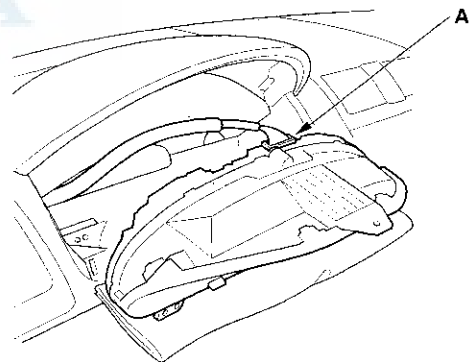
1. Erase the DTC memory (see page 24-25).
2. Turn the ignition switch ON (II), and check that the SRS indicator comes on for about 6 seconds and then goes off.

Does the SRS indicator stay on, and is DTC 91-20 indicated?

YES—Go to step 3.

NO—Intermittent failure, system is OK at this time. Go to Troubleshooting Intermittent Failures (see page 24-26). If another DTC is indicated, go to the DTC Troubleshooting Index.

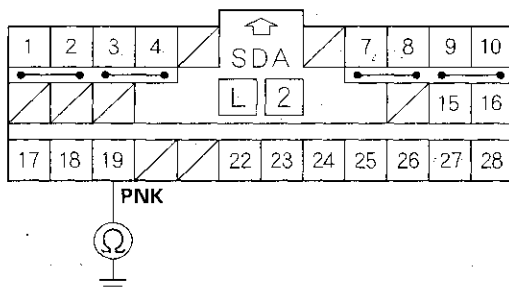
3. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
4. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
5. Remove the gauge control module (see page 22-235). Disconnect the gauge control module connector (30P) (A) from the gauge control module.





6. Check resistance between the No. 19 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



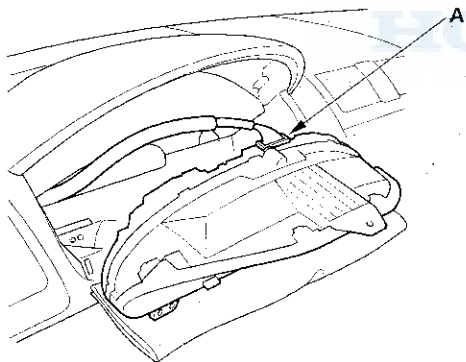
Wire side of female terminals

Is the resistance as specified?

YES—Go to step 7.

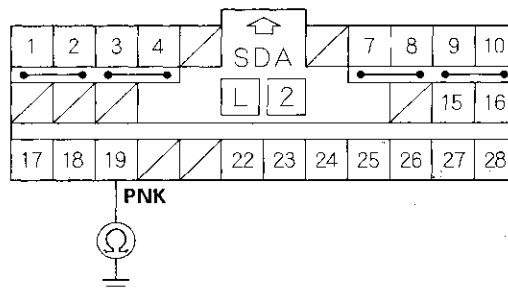
NO—Short to ground in the dashboard wire harness; replace the dashboard wire harness. ■

7. Reconnect the gauge control module connector (30P) (A).



8. Check resistance between the No. 19 terminal of SRS unit connector A (28P) and body ground. There should be an open circuit or at least 1 M Ω .

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-153). ■

NO—Short to ground in the SRS indicator circuit of the gauge control module; replace the gauge control module (see page 22-235). ■

DTC Troubleshooting (cont'd)

DTC A1-10: Faulty Power Supply (VA Line)

1. Check the No. 10 (7.5 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 2.

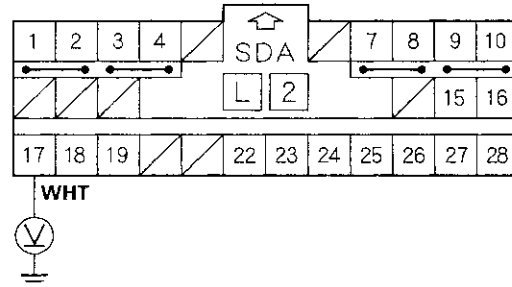
NO—Replace the fuse, then turn the ignition switch ON (II). If the fuse blows again, check for a short in the No. 10 (7.5 A) fuse circuit (dashboard wire harness, right floor wire harness, or OPDS unit harness). ■

2. Disconnect the battery negative cable, and wait for 3 minutes.
3. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).

4. Reconnect the battery negative cable.

5. Connect a voltmeter between the No. 17 terminal of SRS unit connector A (28P) and body ground. Turn the ignition switch ON (II), and measure voltage. There should be battery voltage.

SRS UNIT CONNECTOR A (28P)

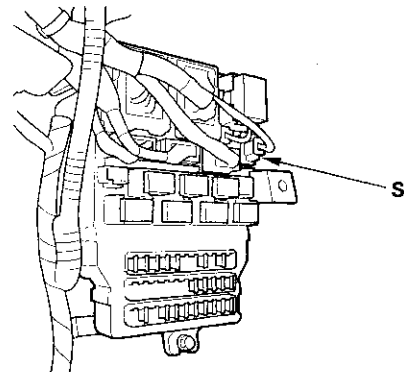


Is there battery voltage?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 6.

6. Turn the ignition switch OFF.
7. Disconnect under-dash fuse/relay box connector S (2P).

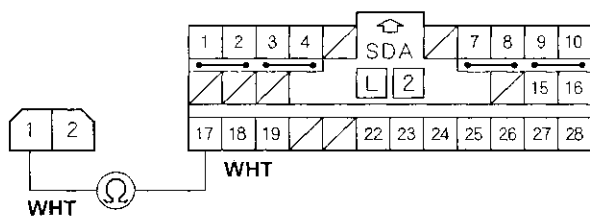




8. Check resistance between the No. 1 terminal of under-dash fuse/relay box connector S (2P) and the No. 17 terminal of SRS unit connector A (28P). There should be 0—1.0 Ω .

UNDER-DASH
FUSE/RELAY BOX
CONNECTOR S (2P)

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor contact between connector S (2P) and the under-dash fuse/relay box; check the connection. If the connection is OK, replace the under-dash fuse/relay box (see page 22-68). ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

DTC Troubleshooting (cont'd)

DTC A2-10: Faulty Power Supply (VB Line)

1. Check the No. 22 (10 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 11.

NO—Go to step 2.

2. Replace the No. 22 (10 A) fuse.
3. Turn the ignition switch ON (II) and wait for 30 seconds. Then turn the ignition switch OFF.
4. Check the No. 22 (10 A) fuse.

Is the fuse OK?

YES—The system is OK at this time. ■

NO—Go to step 5.

5. Replace the No. 22 (10 A) fuse.
6. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
7. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).

8. Reconnect the battery negative cable.

9. Turn the ignition switch ON (II), and wait for 30 seconds. Then turn the ignition switch OFF.

10. Check the No. 22 (10 A) fuse.

Is the fuse OK?

YES—Short to ground in the SRS unit; replace the SRS unit (see page 24-153). ■

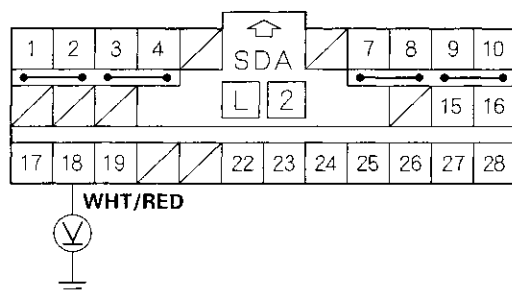
NO—Short to ground in the dashboard wire harness or in the under-dash fuse/relay box No. 22 (10 A) fuse line; replace the dashboard wire harness. If the problem is still there, replace the under-dash fuse/relay box. (see page 22-68). ■

11. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.
12. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).



13. Reconnect the battery negative cable.
14. Connect a voltmeter between the No. 18 terminal of SRS unit connector A (28P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

SRS UNIT CONNECTOR A (28P)



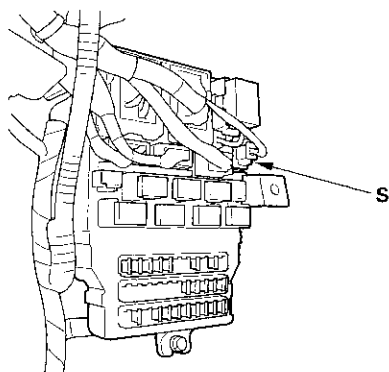
Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Go to step 15.

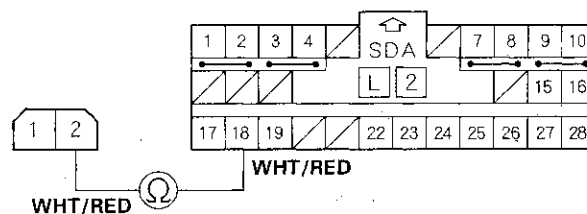
15. Turn the ignition switch OFF.
16. Disconnect under-dash fuse/relay box connector S (2P).



17. Check resistance between the No. 2 terminal of the under-dash fuse/relay box connector S (2P) and the No. 18 terminal of SRS unit connector A (28P). There should be 0—1.0 Ω .

UNDER-DASH FUSE/RELAY BOX CONNECTOR S (2P)

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is the resistance as specified?

YES—Open in the under-dash fuse/relay box or poor contact between connector S (2P) and the under-dash fuse/relay box; check the connection. If the connection is OK, replace the under-dash fuse/relay box (see page 22-68). ■

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

Symptom Troubleshooting

SRS indicator does not come on

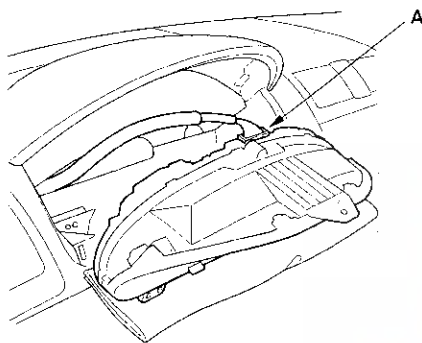
1. Turn the ignition switch ON (II), and see if the other indicators come on (brake system; etc).

Do the other indicators come on?

YES—Go to step 2.

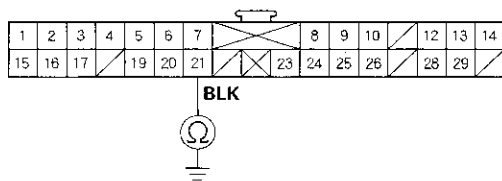
NO—Go to step 9.

2. Turn the ignition switch OFF, then remove the gauge control module (see page 22-235). Disconnect the gauge control module connector (30P) (A) from the gauge control module.



3. Check resistance between the No. 21 terminal of gauge control module connector (30P) and body ground. There should be 0—1.0 Ω .

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

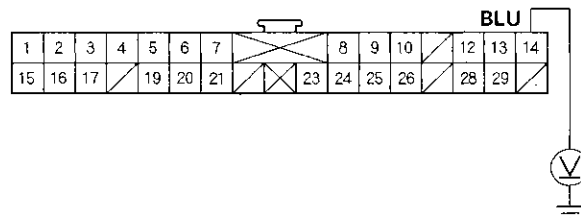
Is the resistance as specified?

YES—Go to step 4.

NO—Open in the BLK wire of the dashboard wire harness, junction connector or faulty body ground terminal (G503) (see page 22-34). If the body ground terminal is OK, replace the dashboard wire harness. ■

4. Check for voltage between the No. 14 terminal of the gauge control module connector (30P) and body ground within the first 6 seconds after turning the ignition switch ON (II). There should be about 1.0 V for 6 seconds and then about 11 V.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS indicator circuit in the gauge control module; replace the gauge control module. ■

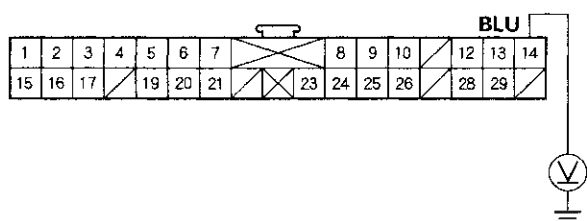
NO—Go to step 5.

5. Turn the ignition switch OFF. Disconnect the battery negative cable, and wait for 3 minutes.



6. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
7. Reconnect the battery negative cable.
8. Connect a voltmeter between the No. 14 terminal of gauge control module connector (30P) and body ground. Turn the ignition switch ON (II), and measure voltage. There should be 0.5 V or less.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

Is the voltage as specified?

YES—Faulty SRS unit; replace the SRS unit (see page 24-153). ■

NO—Short to power in the BLU wire of the dashboard wire harness or junction connector; replace the dashboard wire harness. ■

9. Turn the ignition switch OFF. Check the No. 21 (7.5 A) fuse in the under-dash fuse/relay box.

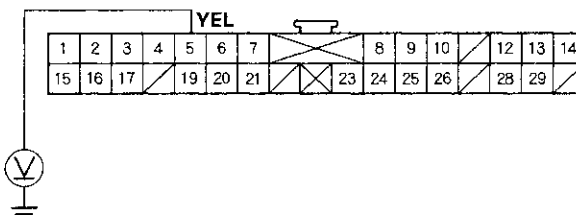
Is the fuse blown?

YES—Go to step 11.

NO—Go to step 10.

10. Connect a voltmeter between the No. 5 terminal of the gauge control module connector (30P) and body ground. Turn the ignition switch ON (II), and measure the voltage. There should be battery voltage.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

Is there battery voltage?

YES—Faulty SRS indicator circuit in the gauge control module or poor contact at the gauge control module connector (30P) and the gauge control module; if the connection is OK, replace the gauge control module. ■

NO—Open in the under-dash fuse/relay box No. 21 (7.5 A) fuse circuit, or open in the YEL wire of the dashboard wire harness or junction connector. If the under-dash fuse/relay box is OK, replace the dashboard wire harness. ■

11. Replace the No. 21 (7.5 A) fuse, then check to see if the indicators come on.

Do the indicators come on?

YES—The system is OK at this time. ■

NO—Repair the short to ground in the under-dash fuse/relay box No. 21 (7.5 A) fuse circuit. ■

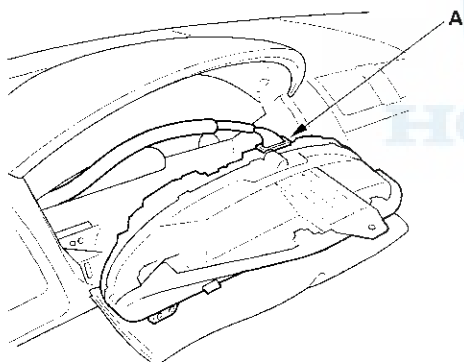
Symptom Troubleshooting (cont'd)

SRS indicator stays on, but no DTCs are stored

NOTE:

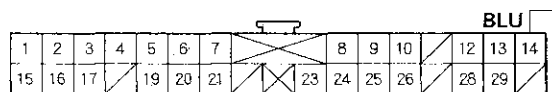
- If you cannot retrieve DTCs with the HDS using the SRS menu method, retrieve flash codes with the HDS in SCS mode.
- A new SRS unit must sense the entire system is OK before completing its initial self-test. The most common cause of an incomplete self-test is the failure to replace all deployed parts after a collision, in particular seat belt tensioners (see page 24-136).
- A battery/system voltage above 15.2 V can cause the SRS indicator to come on without storing any DTCs.

1. Disconnect the battery negative cable, and wait for 3 minutes.
2. Disconnect SRS unit connector A (28P) from the SRS unit (see step 7 on page 24-23).
3. Remove the gauge control module (see page 22-235). Disconnect gauge control module connector (30P) (A) from the gauge control module.



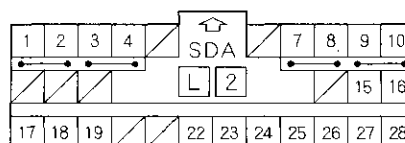
4. Check resistance between the No. 14 terminal of gauge control module connector (30P) and the No. 19 terminal of SRS unit connector A (28P). There should be 1 Ω or less.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

SRS UNIT CONNECTOR A (28P)



BLU

Wire side of female terminals

Is the resistance as specified?

YES—Go to step 5.

NO—Open in the dashboard wire harness; replace the dashboard wire harness. ■

5. Reconnect the battery negative cable.



6. Reconnect gauge control module connector (30P) to the gauge control module.
7. Turn the ignition switch ON (II).
8. Install a jumper wire between the No. 5 terminal and the No. 14 terminal of the gauge control module connector (30P). The SRS indicator should go off.

GAUGE CONTROL MODULE CONNECTOR (30P)



Wire side of female terminals

Does the SRS indicator go off?

YES—Faulty SRS unit or poor contact at SRS unit connector A (28P) and the SRS unit; check the connection. If the connection is OK, replace the SRS unit (see page 24-153). ■

NO—Faulty SRS indicator circuit in the gauge control module or poor contact at gauge control module connector (30P); check the connection. If the connection is OK, replace the gauge control module. ■

Component Replacement/Inspection After Deployment

NOTE: Before doing any SRS repairs, use the HDS SRS menu method to check for DTCs; read the DTC for the less obvious deployed parts (seat belt tensioners, front impact sensors, side airbag sensors, etc.)

After a collision where the seat belt tensioners deployed, replace these items:

- SRS unit
- Seat belt tensioners
- Front impact sensors

After a collision where the front airbag(s) deployed, replace these items:

- SRS unit
- Deployed airbag(s)
- Seat belt tensioners
- Front impact sensors

After a collision where the side airbag(s) deployed, replace these items:

- SRS unit
- Deployed side airbag(s)
- Side impact sensor(s) (first) for the side(s) that deployed
- Side impact sensor(s) (second) for the side(s) that deployed

After a collision where the side curtain airbag(s) deployed, replace these items:

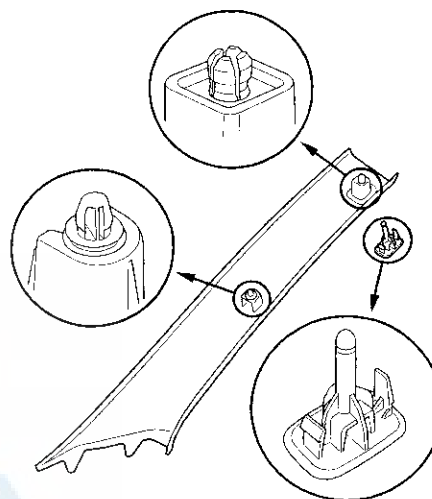
- SRS unit
- Deployed side curtain airbag(s)
- Seat belt tensioner(s) for the side(s) that deployed
- Side impact sensor(s) (first) for the side(s) that deployed
- Side impact sensor(s) (second) for the side(s) that deployed
- Roof trim
- Front grab handle
- Any related trim clips

After a moderate to severe side or rear collision, inspect for any damage on the side curtain airbag or other related components. According to the degree of damage, replace the components as needed.

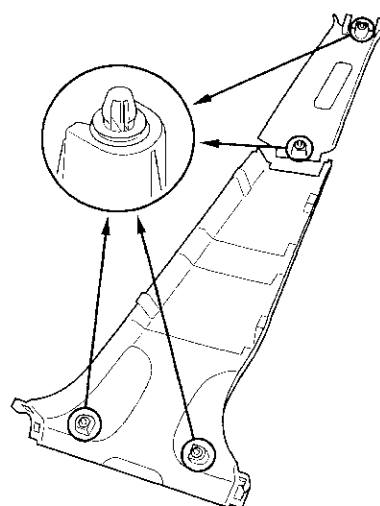
After a collision, where a side curtain airbag has deployed, replace all trim clips on that side, even if they appear to be undamaged. Replace the clips on these parts:

- A-pillar trim
- B-pillar trim
- C-pillar trim
- Front grab handle
- Sunvisor

A-pillar Trim

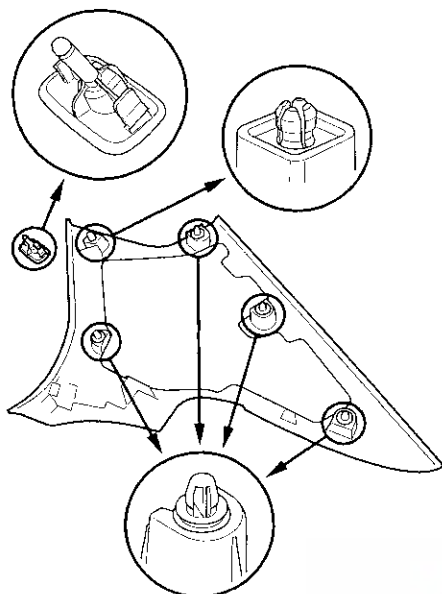


B-pillar Trim





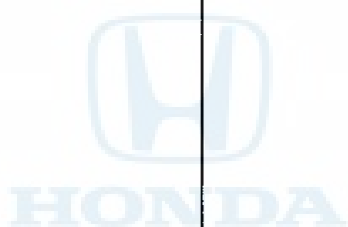
C-pillar Trim



During the repair process, inspect these areas:

- Inspect all the SRS wire harnesses. Replace, do not repair, any damaged harnesses.
- Inspect the cable reel for heat damage. If there is any damage, replace the cable reel.

After the vehicle is completely repaired, turn the ignition switch ON (II). If the SRS indicator comes on for about 6 seconds and then goes off, the SRS is OK. If the indicator does not function properly, use the HDS SRS Menu Method to read the DTC (see page 24-24). If you cannot retrieve a code, go to SRS Symptom Troubleshooting. (see page 24-132).



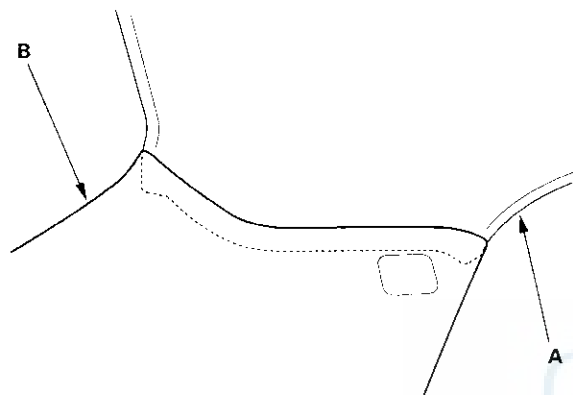
(cont'd)

Component Replacement/Inspection After Deployment (cont'd)

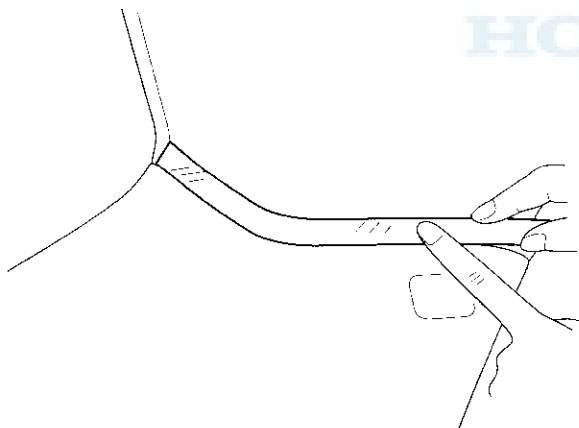
Checking and Adjusting the Headliner/Pillar Trim Overlap

To prevent the side curtain airbag from deploying and damaging the pillar trim, the overlap between the headliner and pillar trim must be less than 15 mm. To check the overlap, do this:

1. Install the headliner (A) and the pillar trim (B).

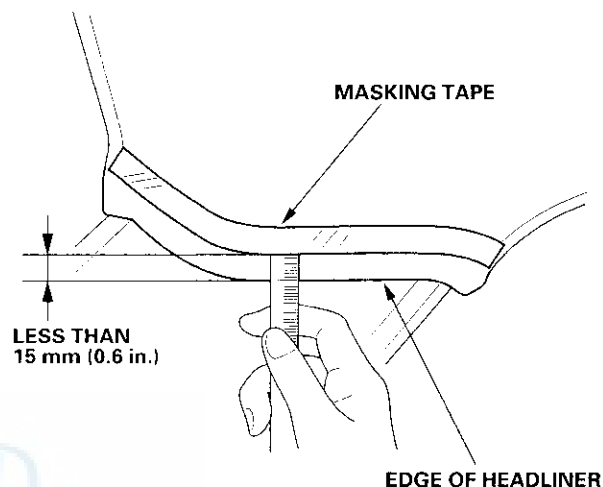


2. Using masking tape on the headliner, mark the upper edge of each pillar trim.

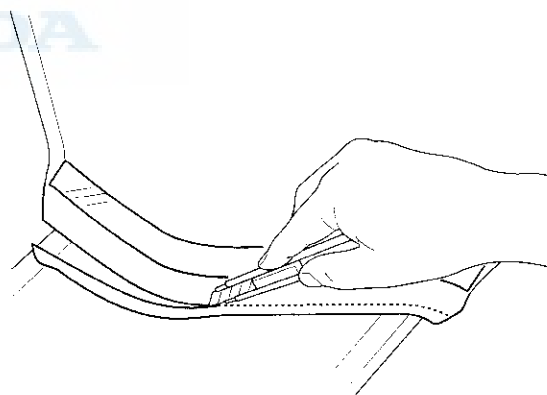


3. Remove the pillar trim, and measure the headliner overlap.

- If the overlap is less than 15 mm, remove the tape, and install the pillar trims.
- If the overlap is more than 15 mm, go to step 4.



4. Carefully trim the headliner with a utility knife, reducing the overlap to less than 15 mm.



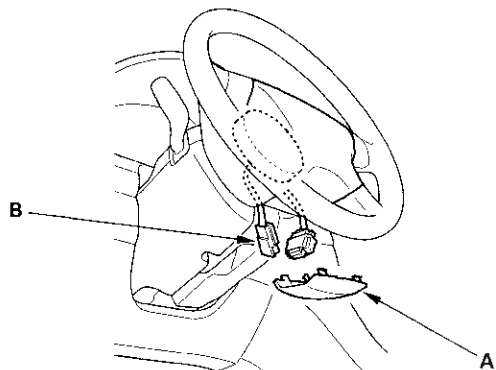
5. Remove the tape, and install the pillar trim.



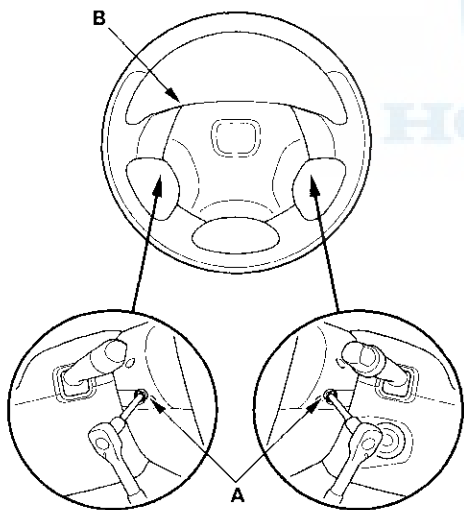
Driver's Airbag Replacement

Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



3. Using a Torx T30 bit, remove the two Torx bolts (A).

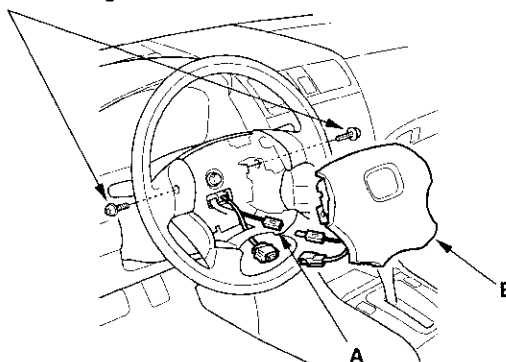


4. Disconnect the horn switch connector (1P), then remove the driver's airbag (B).

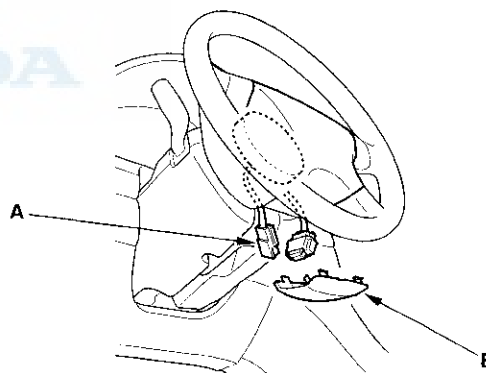
Installation

1. Connect the horn switch connector (1P) (A) to the driver's airbag.

C
9.8 N·m (1.0 kgf·m, 7.2 lbf·ft)



2. Place the new driver's airbag (B) in the steering wheel, and secure it with new Torx bolts (C).
3. Connect the cable reel to the driver's airbag 4P connector (A), then install the access panel (B) on the steering wheel.

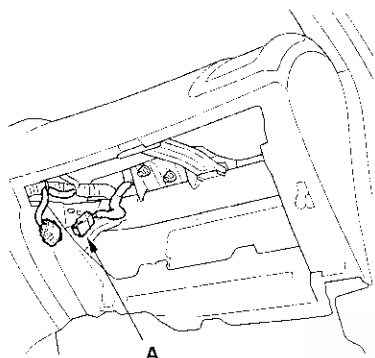


4. Connect the battery negative cable.
5. After installing the airbag, confirm proper system operation:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - Make sure the horn button works.

Front Passenger's Airbag Replacement

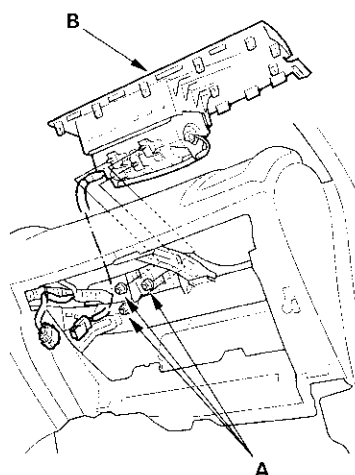
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Remove the glove box (see page 20-70).
3. Disconnect the front passenger's airbag 4P connector (A) from dashboard wire harness.



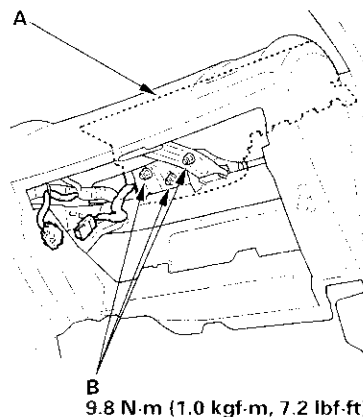
4. Disconnect the passenger's A-pillar trim (see page 20-47).
5. Remove the three mounting nuts (A) from the bracket. Cover the lid and dashboard with a cloth, and pry carefully with a flat-tip screwdriver to lift the front passenger's airbag (B) out of the dashboard.

NOTE: The airbag lid has pawls on each side which attach it to the dashboard.

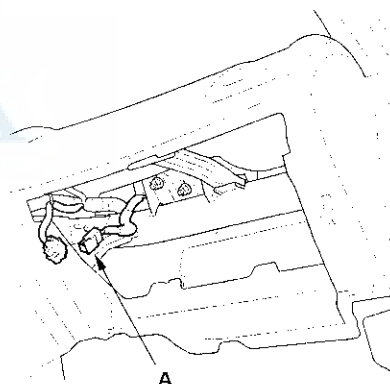


Installation

1. Place the new front passenger's airbag (A) into the dashboard. Tighten the front passenger's airbag mounting nuts (B).



2. Connect the front passenger's airbag 4P connector (A) to dashboard wire harness, then reinstall the glove box and passenger's front pillar trim.



3. Reconnect the battery negative cable.
4. After installing the airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

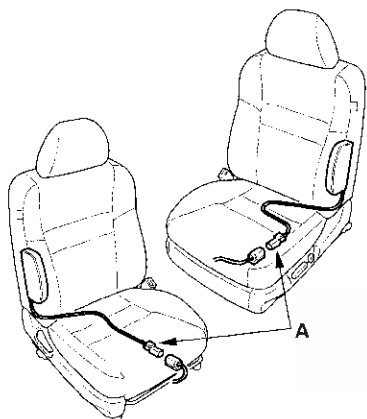


Side Airbag Replacement

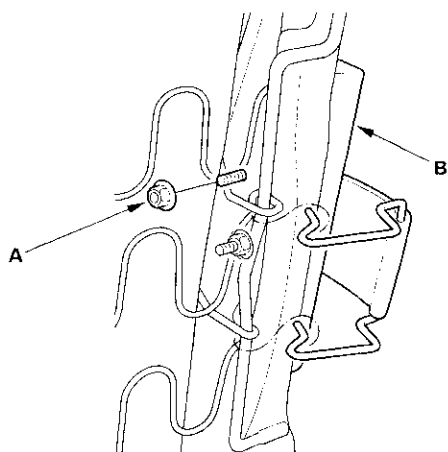
NOTE: Review the seat replacement procedure before performing repairs or service (see page 20-80).

Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the side airbag harness 2P connectors (A).



3. Remove the seat assembly (see page 20-80) and seat-back cover (see page 20-89).
4. Remove the mounting nut (A) and the side airbag (B).

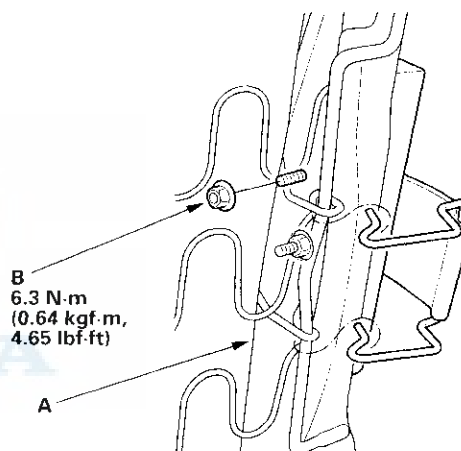


Installation

NOTE:

- If the side airbag lid is secured by tape, remove the tape.
- Do not open the lid of the side airbag cover.
- Use a new mounting nut tightened to the specified torque.
- Make sure that the seat-back cover is installed properly. Improper installation may prevent proper deployment.
- Be sure to install the harness wires so that they are not pinched or interfering with other parts.

1. Place the new side airbag on the seat-back frame (A). Tighten the side airbag mounting nuts (B).



2. Install the seat-back cover in the reverse order of removal (see page 20-89).
3. Install the seat assembly (see page 20-80), then connect the side airbag harness 2P connector.
4. Reconnect the battery negative cable.
5. Move the front seat and the seat-back through their full ranges of movement, making sure the harness wires are not pinched or interfering with other parts.
6. Connect the HDS, and clear the DTCs (see page 24-25).
7. After installing the side airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

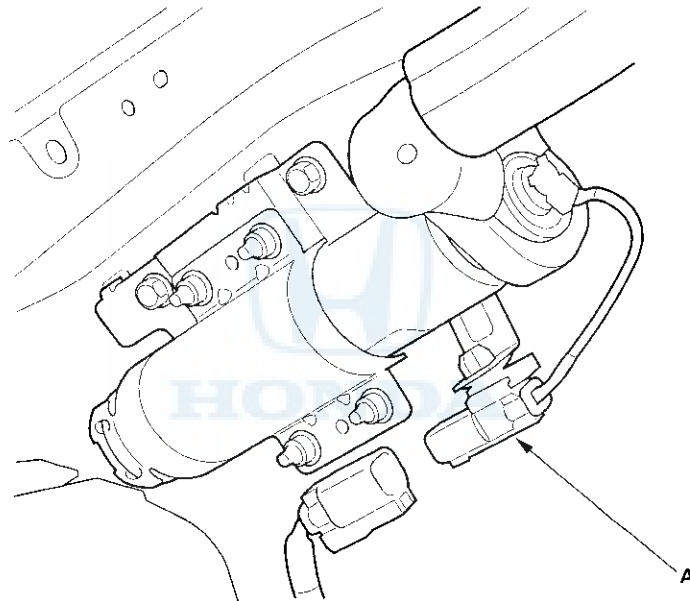
Side Curtain Airbag Replacement

Removal

NOTE:

- Review the interior trim replacement procedure before performing repair or service.
- Removal of the side curtain airbag must be performed according to the precautions/procedures described at the beginning of the SRS (see page 24-13).
- The side curtain airbag system consists of the side curtain airbag module, including the roof trim and front grab handle. When the side curtain airbag has been deployed, these parts should be replaced.

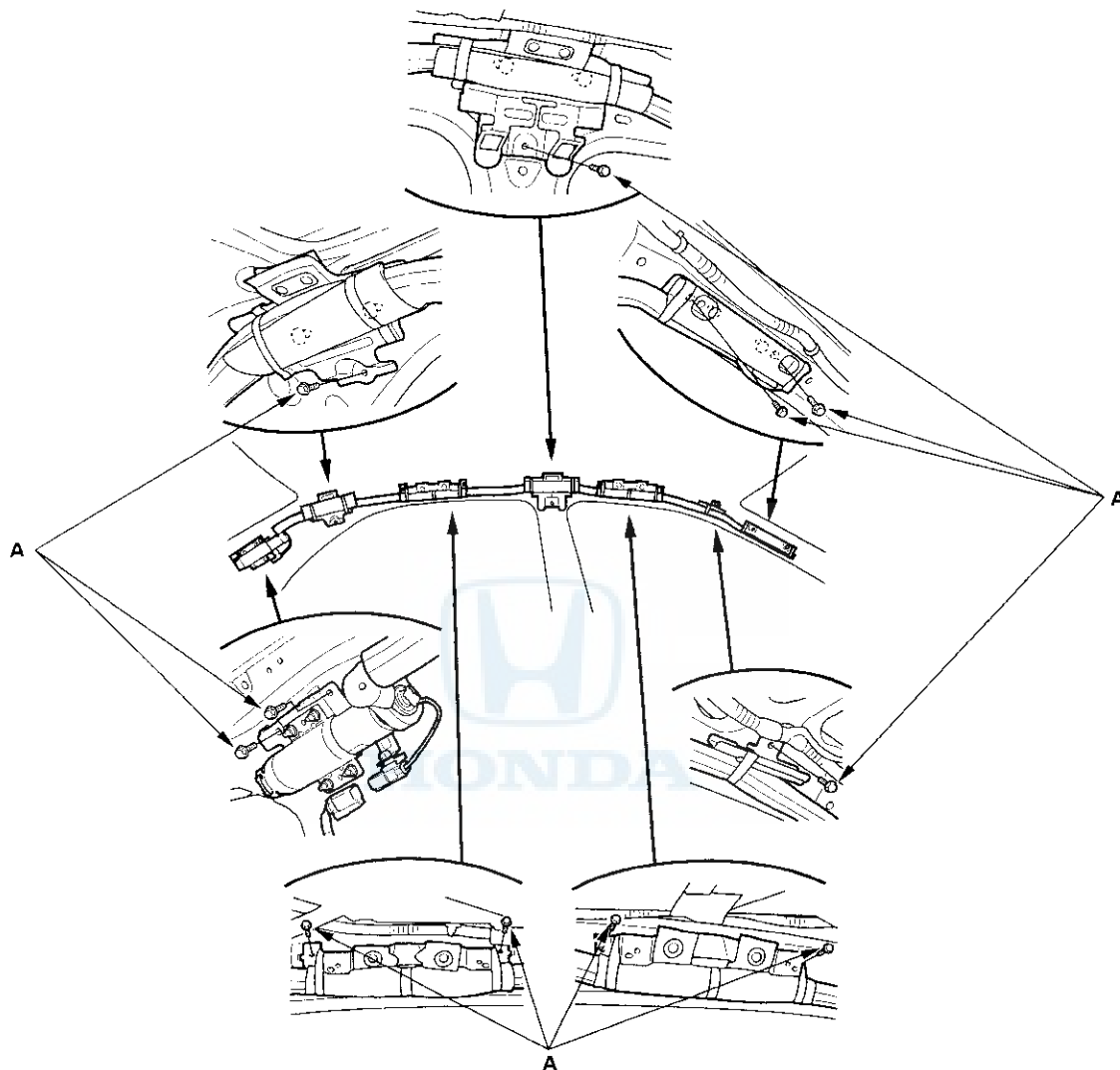
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Remove the headliner (see page 20-56).
3. Disconnect the side curtain airbag 2P connector (A) from the side curtain airbag subharness.



Left side shown; right side is similar.



4. Remove the mounting bolts (A) from the bracket.



Left side shown; right side is similar.

(cont'd)

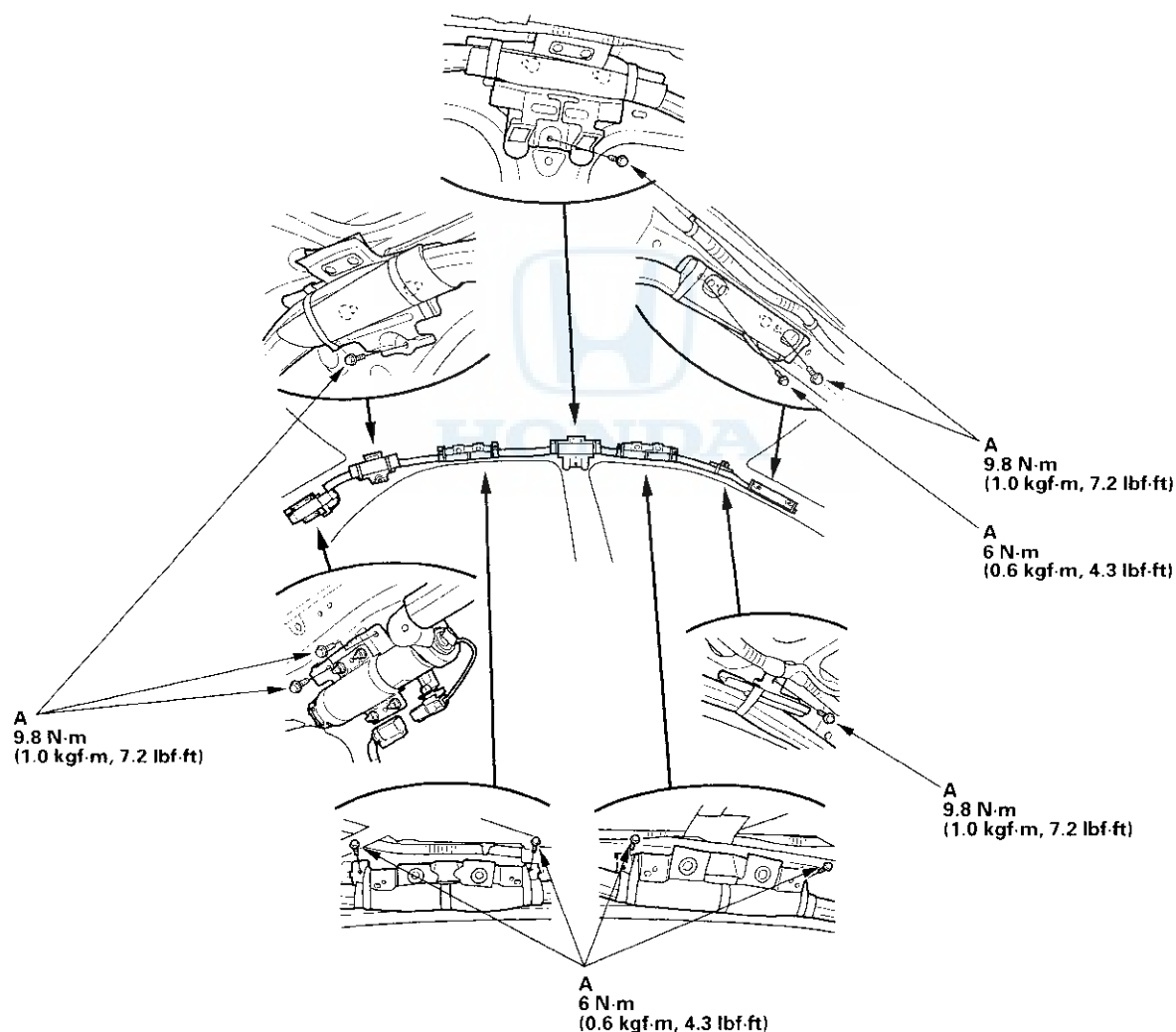
Side Curtain Airbag Replacement (cont'd)

Installation

NOTE:

- Installation of the side curtain airbag must be performed according to the precautions/procedures described at the beginning of the SRS (see page 24-13).
- If the airbag is frayed, or has only other visible damage, replace it. Do not attempt to repair an airbag.
- When you install the airbag, make sure it is not twisted, and not caught between the inflator brackets by the bracket bolts.
- Make sure that the side curtain airbag inflator retainer is installed properly, otherwise the airbag could accidentally deploy and cause damage or injuries.

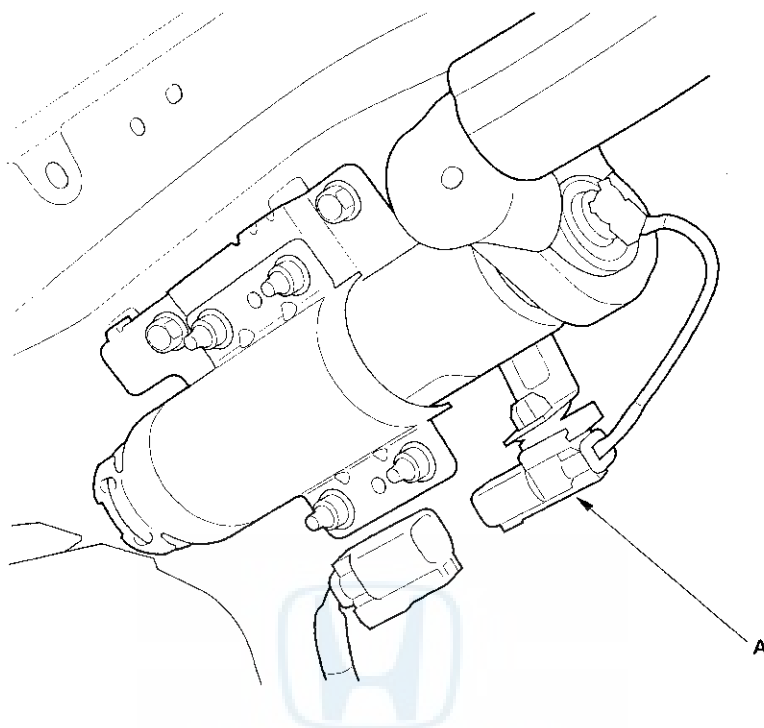
1. Place the new side curtain airbag assembly on the side of the roof. Tighten the side curtain airbag mounting bolts (A).



Left side shown; right side is similar.



2. Connect the side curtain airbag 2P connector (A) to the side curtain airbag subharness.



Left side shown; right side is similar.

3. Reconnect the battery negative cable.
4. Connect the HDS, and clear the DTCs (see page 24-25).
5. After installing the side curtain airbag, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
6. Install all removed parts.
7. Confirm proper headliner/pillar trim overlap (see page 24-138).

Airbag Disposal

Special Tools Required

Deployment tool 07HAZ-SG00500

Before scrapping any airbags, side airbags, side curtain airbags, or seat belt tensioners (including those in a whole vehicle to be scrapped), the part(s) must be deployed. If the vehicle is still within the warranty period, the Honda District Manager must give approval and/or special instruction before deploying the part(s). Only after the part(s) have been deployed (as the result of vehicle collision, for example), can they be scrapped. If the parts appear intact (not deployed), treat them with extreme caution. Follow this procedure.

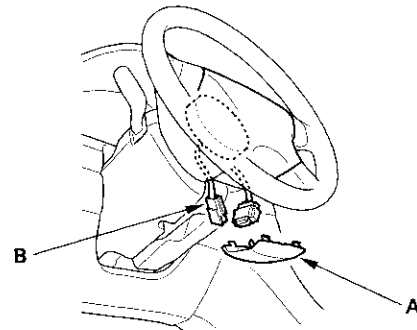
Deploying Airbags in the Vehicle

If an SRS equipped vehicle is to be entirely scrapped, its airbags, side airbags, side curtain airbags, and seat belt tensioners should be deployed while still in the vehicle. These parts should not be considered as salvageable parts and should never be installed in another vehicle.

1. Turn the ignition switch OFF, then disconnect the battery negative cable, and wait at least 3 minutes.
2. Confirm that each airbag, side airbag, side curtain airbag, or seat belt tensioner is securely mounted.
3. Confirm that the deployment tool is functioning properly by following the check procedure on the tool label.

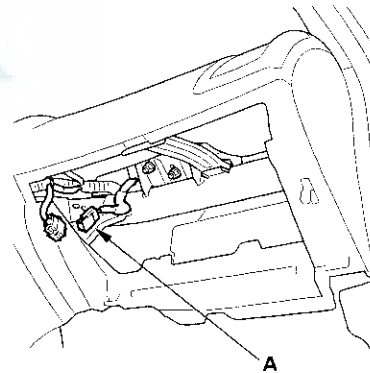
Driver's Airbag

4. Remove the access panel (A) from the steering wheel, then disconnect the driver's airbag 4P connector (B) from the cable reel.



Front Passenger's Airbag

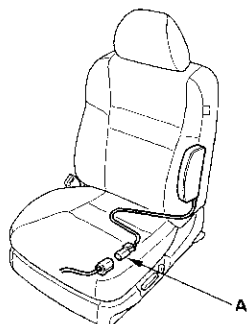
5. Remove the glove box, then disconnect the front passenger's airbag 4P connector (A) from the dashboard wire harness.





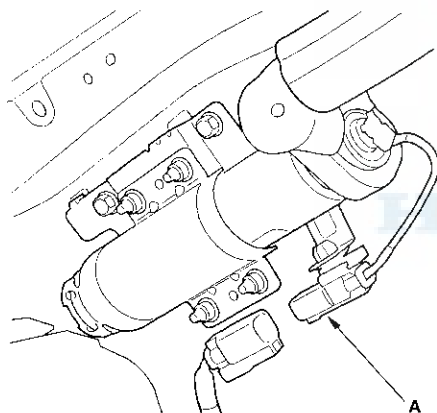
Side Airbag

6. Disconnect the side airbag 2P connector (A) from the floor wire harness.



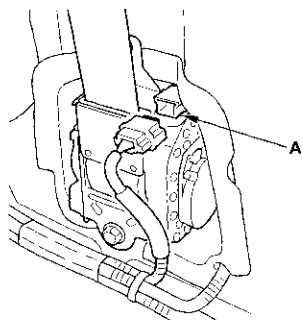
Side curtain airbag

7. Disconnect the side curtain airbag 2P connector (A) from the side curtain airbag subharness.



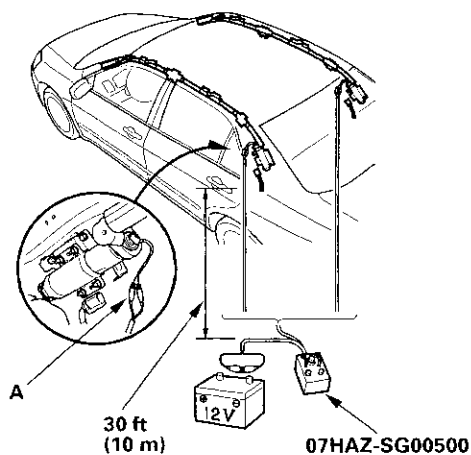
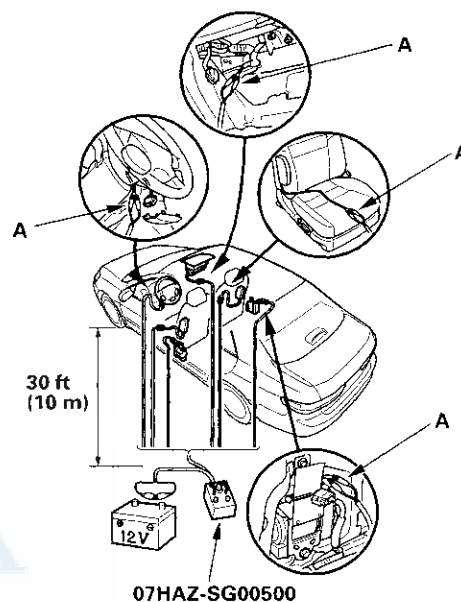
Seat belt tensioner

8. Disconnect the seat belt tensioner 4P connector (A) from the floor wire harness. Pull the seat belt out all the way and cut it.



9. Cut off each connector, strip the ends of the wires, and connect the deployment tool alligator clips (A) to the wires. Place the deployment tool at least 30 feet (10 meters) away from the vehicle.

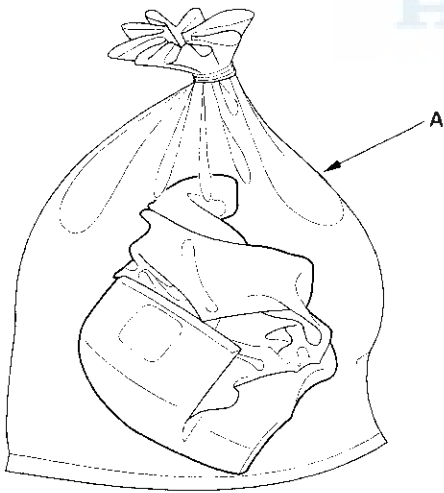
NOTE: The driver's and front passenger's airbags have dual inflators. Twist each pair of unlike colored wires together, and clip an alligator clip to each pair.



(cont'd)

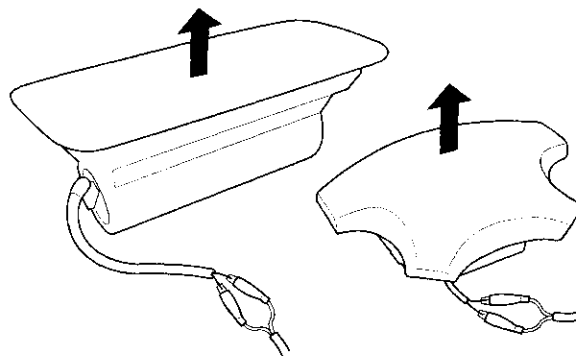
Airbag Disposal (cont'd)

10. Connect a 12 volt battery to the deployment tool.
 - If the green light on the tool comes on, the igniter circuit is defective and cannot deploy the component. Go to Disposal of Damaged Components.
 - If the red light on the tool comes on, the component is ready to be deployed.
11. Push the tool's deployment switch. The airbags and tensioners should deploy (deployment is both highly audible and visible: a loud noise and rapid inflation of the bag, followed by slow deflation).
 - If the components deploy and the green light on the tool comes on, continue with this procedure.
 - If a component does not deploy, yet the green light comes ON, its igniter is defective. Go to Disposal of Damaged Components.
 - During deployment, the airbags can become hot enough to burn you. Wait 30 minutes after deployment before touching the airbags.
12. Dispose of the complete airbag. No part of it can be reused. Place it in a sturdy plastic bag (A), and seal it securely. Dispose of the deployed airbag according to your local regulations.



Deploying Components Out of the Vehicle

If an intact airbag or tensioner has been removed from a scrapped vehicle, or has been found defective or damaged during transit, storage, or service, it should be deployed as follows:



1. Confirm that the deployment tool is functioning properly by following the check procedure on the tool label.
2. Position the airbag face up, outdoors, on flat ground, at least 30 feet (10 meters) from any obstacles or people.
3. Follow steps 9 through 12 of the Deploying Airbags in the Vehicle.

NOTE: The driver's and front passenger's airbags have dual inflators. Twist each pair of unlike colored wires together, and clip an alligator clip to each pair.



Disposal of Damaged Components

1. If installed in a vehicle, follow the removal procedure for the driver's airbag (see page 24-139), front passenger's airbag (see page 24-140), side airbag (see page 24-141), side curtain airbag (see page 24-142), and seat belt tensioner (see page 24-4).
2. In all cases, make a short circuit by cutting, stripping, and twisting together the two inflator wires.

NOTE: The driver's and front passenger's airbags have dual inflators. The like color wires go to the individual inflators.

3. Package the component in exactly the same packaging that the new replacement part came in.
4. Mark the outside of the box "DAMAGED AIRBAG NOT DEPLOYED," "DAMAGED SIDE AIRBAG NOT DEPLOYED," "DAMAGED SIDE CURTAIN AIRBAG NOT DEPLOYED," "DAMAGED SEAT BELT TENSIONER NOT DEPLOYED" so it does not get confused with your parts stock.
5. Contact your Honda District Service Manager for how and where to return it for disposal.

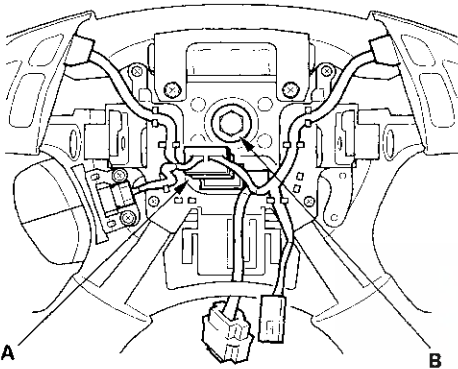
Deployment Tool Check

1. Connect the yellow clips to both switch protector handles on the tool; connect the tool to a battery.
2. Push the operation switch; green light means the tool is OK; a red light means the tool is faulty.
3. Disconnect the yellow clips from the battery.

Cable Reel Replacement

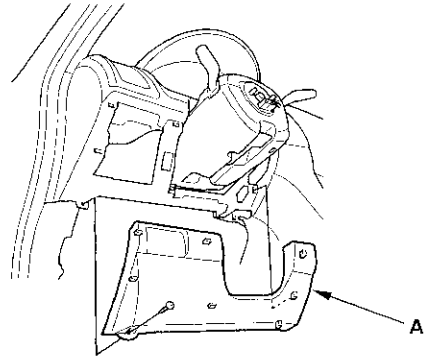
Removal

1. Make sure the wheels are aligned straight ahead.
2. Disconnect the battery negative cable, and wait at least 3 minutes.
3. Remove the driver's airbag (see page 24-139).
4. Disconnect the connector (A) from the cable reel, then remove the steering wheel bolt (B).

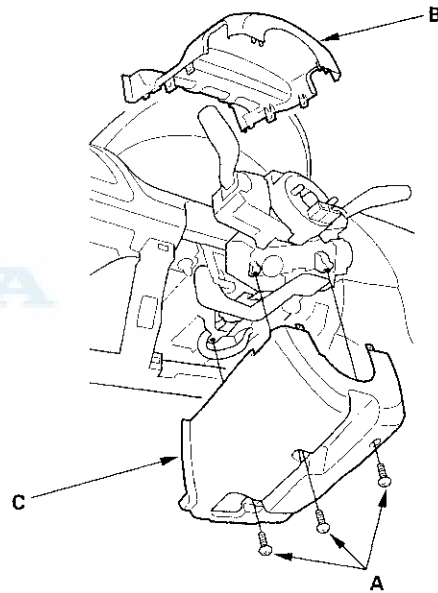


5. Align the front wheels straight ahead, then remove the steering wheel with a steering wheel puller (see step 6 on page 17-6). Do not tap on the steering wheel or the steering column shaft when removing the steering wheel.

6. Remove the dashboard lower cover (A).

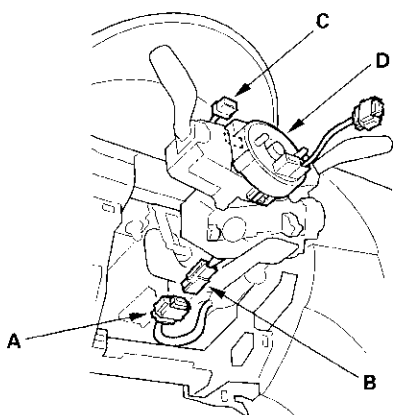


7. Remove the column cover screws (A), then remove the column covers (B, C).

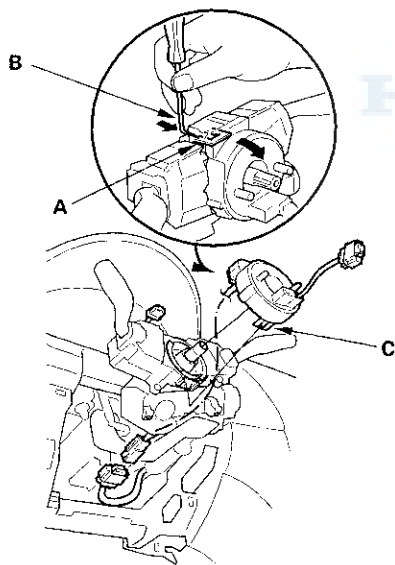




8. Disconnect the dashboard wire harness 4P connector (A) from the cable reel 4P connector (B), then disconnect the dashboard wire harness 13P connector (C) from the cable reel (D).

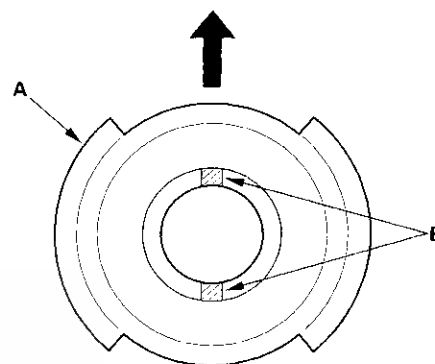


9. Release the lock tab (A) under the cable reel connector with a 90° hook shaped tool (B). Slide the tool below the cable reel connector just above the lock tab. Release the lower lock tab (C), and slide the cable reel off the column.

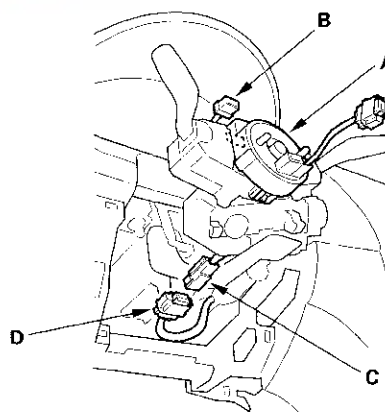


Installation

1. Before installing the steering wheel, align the front wheels straight ahead.
2. Disconnect the battery negative cable, and wait at least 3 minutes.
3. Set the cancel sleeve (A) so that the projections (B) are aligned vertically.



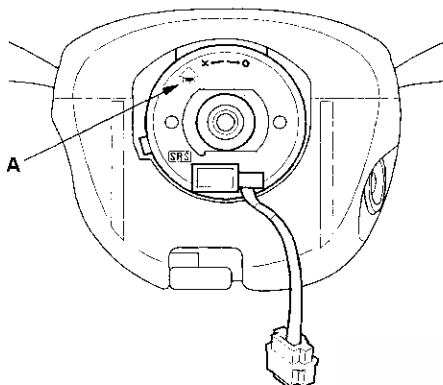
4. Carefully install the cable reel (A) on the steering column shaft. Then connect the dashboard wire harness 13P connector (B) to the cable reel, and connect the 4P connector (C) to the dashboard wire harness 4P connector (D).



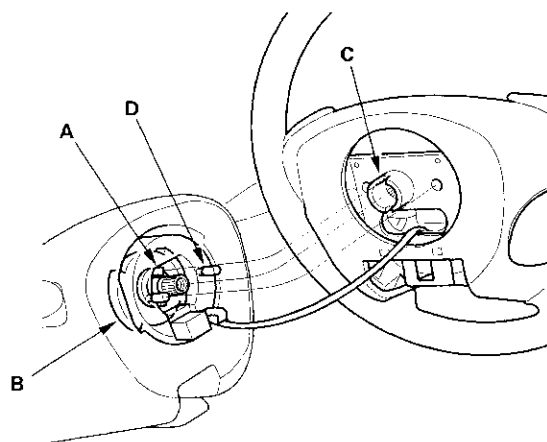
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Cable Reel Replacement (cont'd)

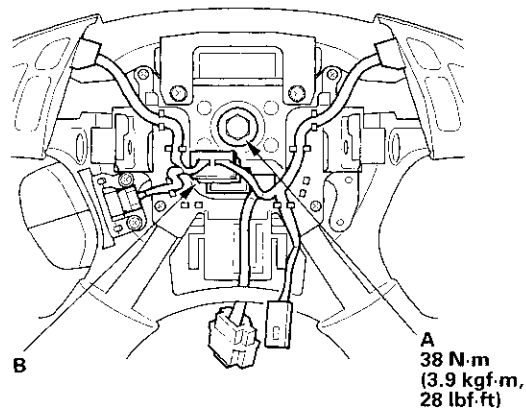
5. Install the steering column covers.
6. If necessary, center the cable reel. (New replacement cable reels come centered.) Do this by first rotating the cable reel clockwise until it stops. Then rotate it counterclockwise (three full turns) until the arrow mark (A) on the cable reel label points straight up.



7. Position the two tabs (A) of the turn signal canceling sleeve (B) as shown. Install the steering wheel on to the steering column shaft, making sure the steering wheel hub (C) engages the pins (D) of the cable reel and tabs of the canceling sleeve. Do not tap on the steering wheel or steering column shaft when installing the steering wheel.



8. Install the steering wheel with a new steering wheel bolt (A), then connect connector (B).



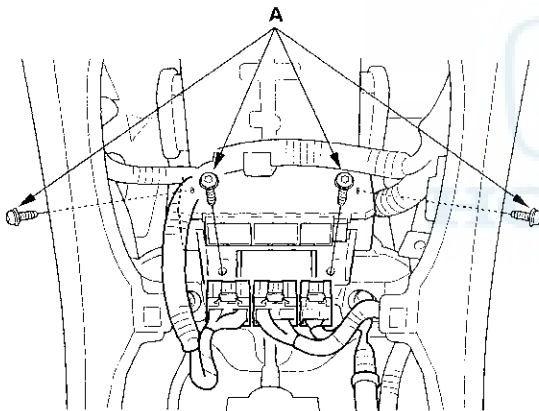
9. Install the driver's airbag (see page 24-139).
10. Reconnect the battery negative cable.
11. After installing the cable reel, confirm proper system operation:
 - Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
 - After the SRS indicator has turned off, turn the steering wheel fully left and right to confirm the indicator does not come on.
 - Make sure the horn works.
 - Make sure the cruise control works.



SRS Unit Replacement

Removal

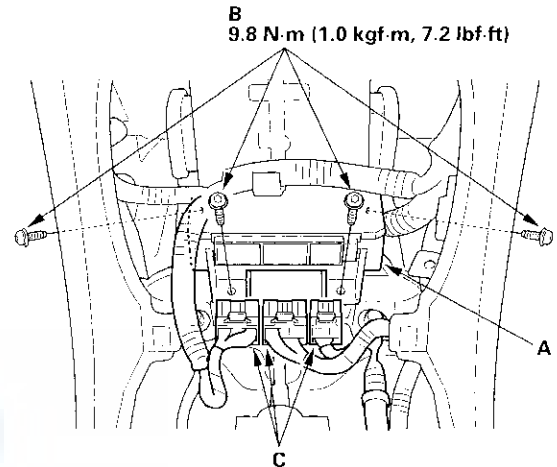
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect both seat belt tensioner connectors (see step 6 on page 24-23).
3. Remove the center console and front panel (see page 20-62).
4. Remove the center pocket (see page 20-69).
5. Remove the driver's and passenger's center lower cover (see step 4 on page 20-74).
6. Remove the heater vent ducts (see step 5 on page 20-74).
7. Disconnect the connectors and remove the Torx bolts (A), then pull out the SRS unit.



Installation

1. Install the new SRS unit (A) with Torx bolts (B), then connect the connectors (C) to the SRS unit; push them into position until they click.

NOTE: Be sure the SRS unit is sitting squarely against its bracket before torquing the Torx bolts.



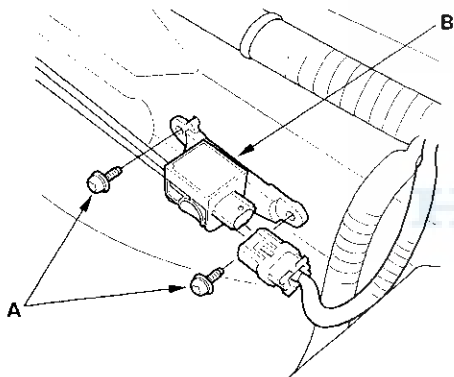
2. Reconnect both seat belt tensioner connectors (see step 6 on page 24-23).
3. Reconnect the battery negative cable.
4. After installing the SRS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
5. Install all removed parts.

Side Impact Sensor (First) Replacement

NOTE: Review the seat replacement procedure before doing repairs or service.

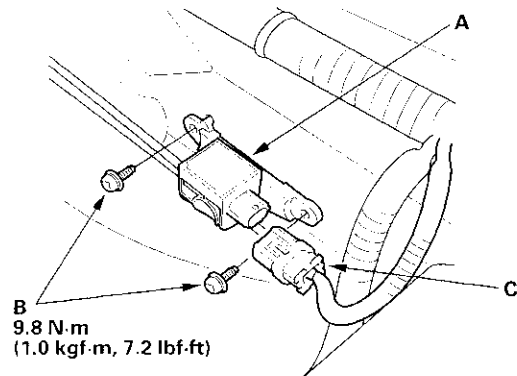
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the appropriate side airbag 2P connector (see step 4 on page 24-22).
3. Remove the front seat assembly (see page 20-80).
4. Remove the front door sill trim (see page 20-45) and the B-pillar lower trim panel (see page 20-48).
5. Disconnect the left or right floor wire harness 2P connector from the side impact sensor (first).
6. Using a Torx T30 bit, remove the Torx bolts (A), then remove the side impact sensor (first) (B).



Installation

1. Install the new side impact sensor (first) (A) with the Torx bolts (B), then connect the left or right floor wire harness 2P connector (C) to the side impact sensor.



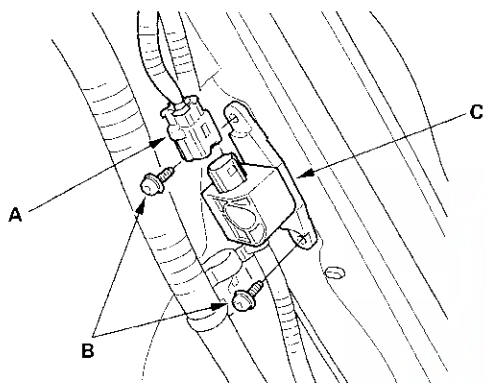
2. Reconnect the battery negative cable.
3. Install all removed parts.
4. After installing the side impact sensor (first), confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.



Side Impact Sensor (Second) Replacement

Removal

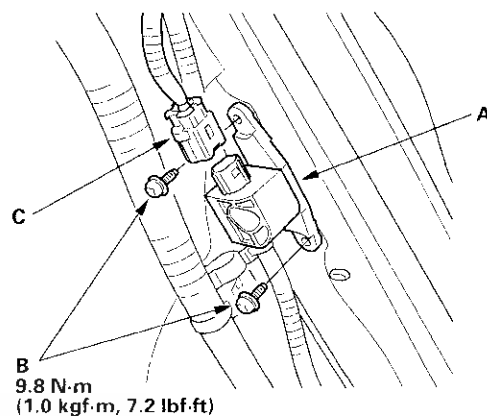
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the appropriate side curtain airbag 2P connector (see step 5 on page 24-22).
3. Remove the rear seat assembly (see page 20-95).
4. Remove the rear door sill trim (see page 20-46).
5. Disconnect the side curtain airbag subharness connector (A) from the side impact sensor (second).



6. Using a Torx T30 bit, remove the Torx bolts (B), then remove the side impact sensor (second) (C).

Installation

1. Install the new side impact sensor (second) (A) with the Torx bolts (B), then connect the side curtain airbag subharness 2P connector (C) to the side impact sensor (second).



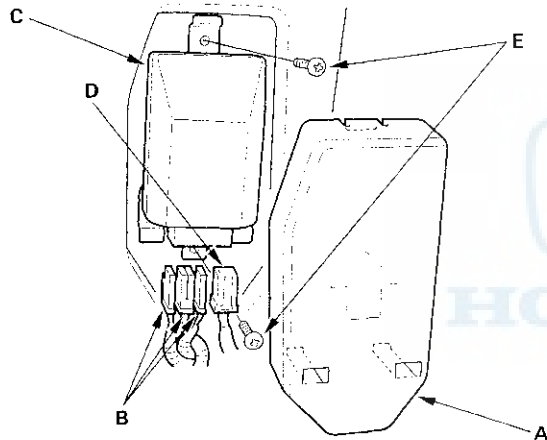
2. Reconnect the battery negative cable.
3. Install all removed parts.
4. After installing the side impact sensor (second), confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.

OPDS Unit Replacement

NOTE: Review the seat replacement procedure (see page 20-80) before doing repairs or service.

Removal

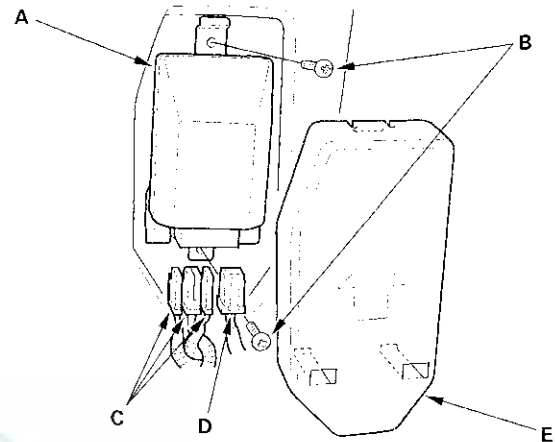
1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the passenger's side airbag harness 2P connector (see step 4 on page 24-22).
3. Remove the passenger's seat assembly (see page 20-80) and seat-back cover (see page 20-89).
4. Remove the cover (A), then disconnect the OPDS unit 8P connector D and sensor connectors (B) from the OPDS unit (C).



5. Remove the two screws (E) and the OPDS unit.

Installation

1. Place the new OPDS unit (A) on the seat-back frame. Tighten the two screws (B), and connect the OPDS unit harness 8P connector D and sensor connectors (C) to the OPDS unit. Reinstall the cover (E).



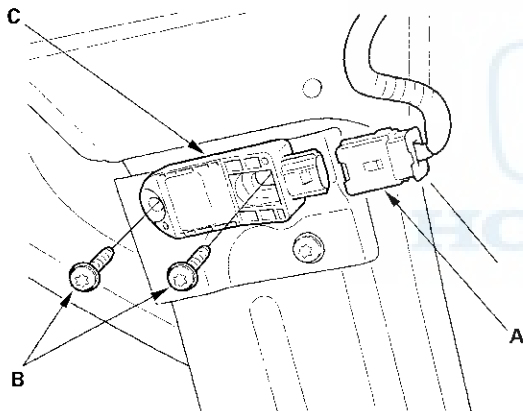
2. Install the seat-back cover in the reverse order of removal.
3. Install the seat assembly (see page 20-80), then connect the side airbag harness 2P connector.
4. Reconnect the battery negative cable.
5. Set the seat-back in the normal position, and make sure there is nothing on the front passenger's seat.
6. Initialize the OPDS unit (see page 24-26).
7. After installing the OPDS unit, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.



Front Impact Sensor Replacement

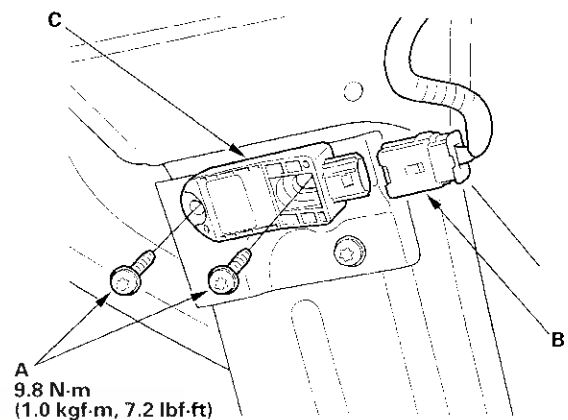
Removal

1. Disconnect the battery negative cable, and wait at least 3 minutes before beginning work.
2. Disconnect the driver's airbag 4P connector (see step 2 on page 24-22), the front passenger's airbag 4P connector (see step 3 on page 24-22), and both seat belt tensioner 4P connectors (see step 6 on page 24-23).
3. Remove the front bumper (see page 20-101).
4. Remove the intake air resonator for the left side sensor (see page 11-383).
5. Disconnect the engine compartment wire harness 2P connector (A), and using a Torx T30 bit, remove the two Torx bolts (B), then remove the front impact sensor (C).



Installation

1. Install the new front impact sensor with Torx bolts (A), then connect the engine compartment wire harness 2P connector (B) to the front impact sensor (C).



2. Reconnect the driver's airbag 4P connector (see page 24-22), the front passenger's airbag 4P connector (see page 24-22), and both seat belt tensioner 4P connectors (see page 24-23).
3. Reconnect the battery negative cable.
4. After installing the front impact sensor, confirm proper system operation: Turn the ignition switch ON (II); the SRS indicator should come on for about 6 seconds and then go off.
5. Install all removed parts.

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NOTE: Refer to the following list to look up DTCs, symptoms, fuses, connectors, wire harnesses, specifications, maintenance schedules, and general service information:

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