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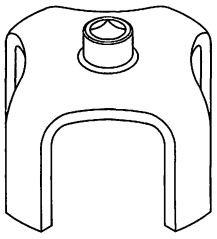
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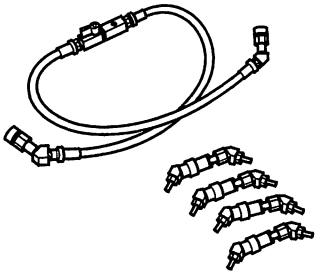
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Special Tools

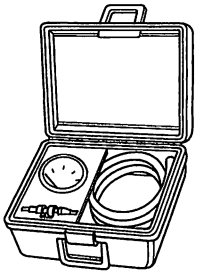
Ref. No.	Tool Number	Description	Qty
①	07AAA-S0XA100	Fuel Sender Wrench	1
②	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
③	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07ZAJ-S5AA200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	1
⑥-2	07406-0070301	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	07406-004000B	Fuel Pressure Gauge	1



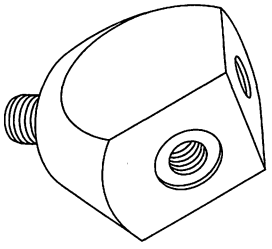
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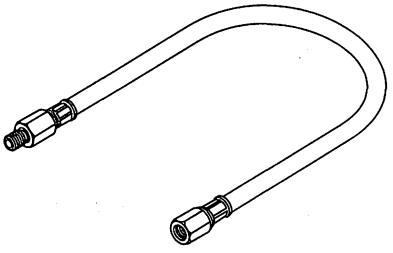
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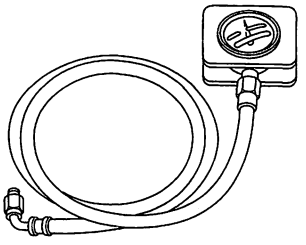
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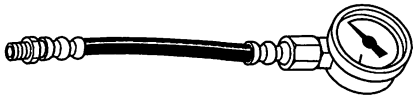
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⑤



⑥-1, ⑥-2, ⑥-3, ⑥-4



⑦

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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 intermittent.

Service Information

Some DTCs or symptoms can be caused by a combination of PCM software and specific driving habits. Periodically, new PCM software or new service procedures may become available. Always check online for the latest software or service information related to the DTCs or symptoms you are troubleshooting.

Opens and Shorts

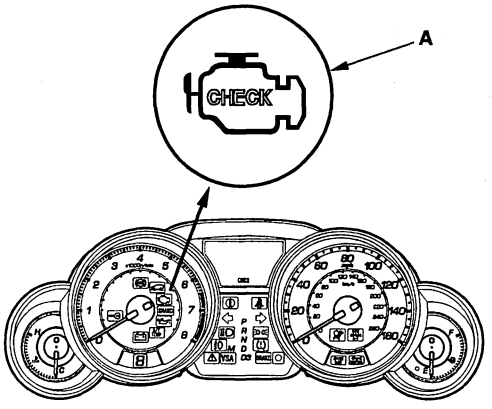
"Open" and "short" are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as PCMs) this can sometimes mean something works, but not the way it's supposed to.

How to Use the HDS (Honda Diagnostic System)

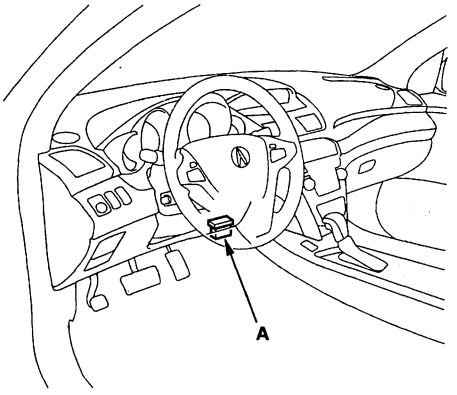
If the MIL (malfunction indicator lamp) has come on

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 stays on for 15—20 seconds (see page 11-66).



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. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to DLC Circuit Troubleshooting (see page 11-223).

5. Check the diagnostic trouble code (DTC) and note it. Also check the freeze data and/or on-board snapshot data, and download any data found. Then refer to the indicated DTC's 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 DTCs, freeze data, on-board snapshot, current data, and other powertrain control module (PCM) data.
   - For specific operations, refer to the user's manual that came with the HDS.

6. If no DTCs are found, go to MIL circuit troubleshooting (see page 11-222).

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)

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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 IGP (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, on-board snapshot, 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, on-board snapshot, 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.

Scan Tool Clear Command

If you are using a generic scan tool to clear commands, be aware that there is only one setting for clearing the PCM, and it clears all commands at the same time (CKP pattern learn, idle learn, readiness codes, freeze data, on-board snapshot, and DTCs). After you clear all commands, you then need to do these procedures, in this order: PCM idle learn procedure (see page 11-311); CKP pattern learn procedure;
Test-drive to set readiness codes to complete (see page 11-66).

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 for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.

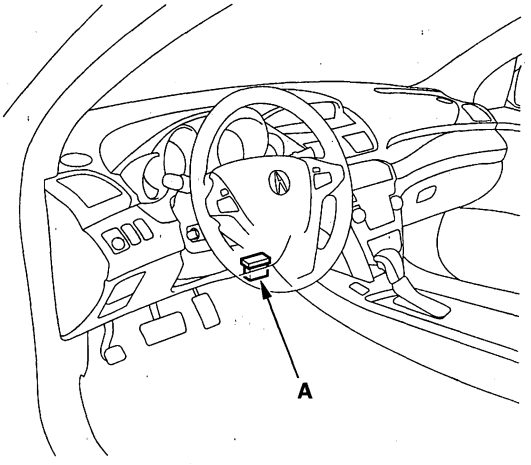
PCM Reset

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 for 30 seconds.
4. Turn the ignition switch OFF, and disconnect the HDS from the DLC.
5. Do the PCM idle learn procedure (see page 11-311).

Crank (CKP) Pattern Clear/Crank (CKP) Pattern Learn

Clear/Learn Procedure (with the HDS)

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. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).
4. Select CRANK PATTERN in the ADJUSTMENT MENU with the HDS.
5. Select CRANK PATTERN LEARNING with the HDS, and follow the screen prompts.

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Learn Procedure (without the HDS)

1. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.
2. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 2,500 rpm down to 1,000 rpm with the transmission in D position.
3. Test-drive the vehicle on a level road: Decelerate (with the throttle fully closed) from an engine speed of 5,000 rpm down to 3,000 rpm with the transmission in D position.
4. Repeat step 2 and 3 several times.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and wait for 30 seconds.

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 11-311).
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.

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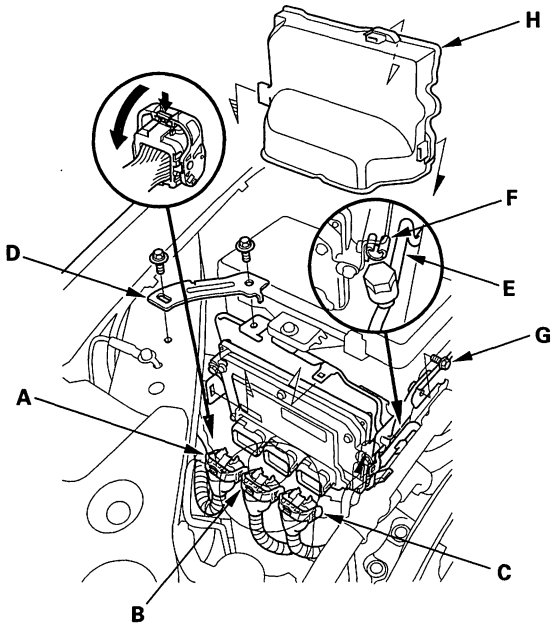
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the PCM Connectors

NOTE:
- The PCM overwrites data and monitors the EVAP system for up to 15 minutes after the ignition switch is turned OFF. Jumping the SCS line after turning the ignition switch OFF cancels this function. Disconnecting the PCM during this function, without jumping the SCS line first, can damage the PCM.
- PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embosed on them for identification.

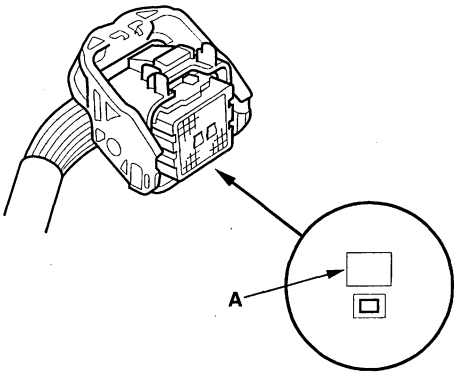
1. Jump the SCS line with the HDS.

2. Remove the bracket (D), then free the A/C discharge line (E) from the clip (F) and remove the A/C suction line mounting bracket bolt (G).

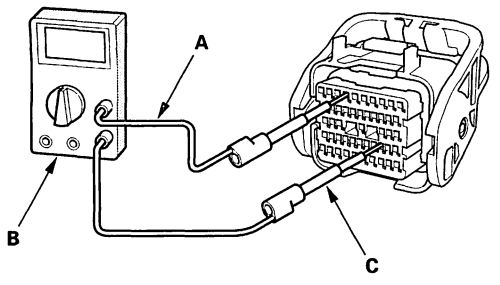


3. Remove the cover (H), then disconnect the PCM connector A, B, and C.

4. When diagnosis/troubleshooting is made at the PCM connector, use the measurement hole (A) above the terminal you need to check.



5. Connect one side of the patch cord (A) terminals to a commercially available digital multimeter (B), and connect the other side of the patch cord terminals to a commercially available banana jack (Pomona Electronics Tool No. 3563 or equivalent) (C).



6. Gently contact the pin probe (male) at the terminal test port from the terminal side. Do not force the tips into the terminals.

NOTICE
- For accurate results, always use the pin probe (male).
- To prevent damage to the connector terminals, do not insert test equipment probes, paper clips, or other substitutes as they can damage the terminals. Damaged terminals cause a poor connection and an incorrect measurement.
- Do not puncture the insulation on a wire. Punctures can cause poor or intermittent electrical connections.

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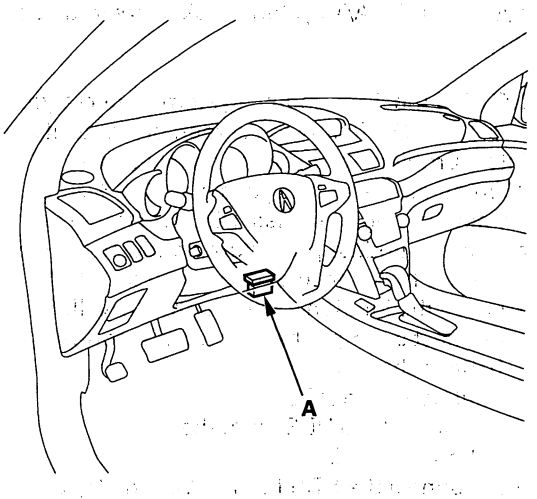
BACK

Updating the PCM

Special Tools Required
- Honda diagnostic system (HDS)
- Honda interface module (HIM)
- HDS pocket tester

NOTE:
- Use this procedure when you need to update the PCM during troubleshooting procedures.
- Make sure the HDS/HIM has the latest software version.
- Before you update the PCM, make sure the battery in the vehicle is fully charged.
- Never turn the ignition switch OFF during the update. If there is a problem with the update, leave the ignition switch ON.
- To prevent PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, door locks, etc.) during the update.
- To ensure the latest program is installed, do an PCM update whenever the PCM is substituted or replaced.
- You cannot update a PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the PCM to become too hot to run the update. If the engine has been running before this procedure, open the hood and cool the engine compartment.
- If you need to diagnose the Honda interface module (HIM) because the HIM's red (#3) lamp came on or was flashed 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), but do not start the engine.
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



3. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223). If you are returning from the DLC circuit troubleshooting, skip steps 4 and 5 and clean the throttle body after updating the PCM.
4. USA, Canada models: Select the INSPECTION MENU with the HDS.
5. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts with the HDS.

   NOTE: USA, Canada models: If the TP POSITION CHECK indicates FAILED, continue this procedure.
6. Exit the HDS diagnostic system (USA, Canada models), then select the update mode, and follow the screen prompts to update the PCM.

(cont'd)

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General Troubleshooting Information (cont'd)

7. If the software in the PCM is the latest, disconnect the HDS/HIM from the DLC, and go back to the procedure that you were doing. If the software in the PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system, make sure you update both.

   NOTE: If the PCM update system requires you to cool the PCM, follow the screen prompts. If you run into a problem (programming takes over 15 minutes, status bar goes over 100 %, D or immobilizer light flashes, HDS tablet freezes, etc.) during the update procedure, follow these steps to minimize the chance of damaging the PCM:
   - Leave the ignition switch in the "ON (II)" position.
   - Connect a jumper battery (do not connect a battery charger).
   - Shut down the HDS.
   - Disconnect the HDS from the DLC.
   - Reboot the HDS.
   - Reconnect the HDS to the DLC, and try the update procedure again.

8. USA, Canada models: If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-363).

9. Do the PCM idle learn procedure (see page 11-311).

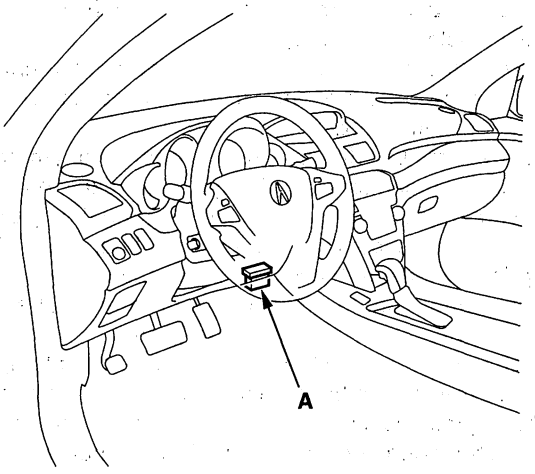
10. Do the CKP learn procedure.

Substituting the PCM

Special Tools Required
- Honda diagnostic system (HDS)
- Honda interface module (HIM)
- HDS pocket tester

NOTE: Use this procedure when you need to substitute a known-good PCM during troubleshooting procedures.

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. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223). If you are returning from DLC circuit troubleshooting, skip step 4 to 9, then clean the throttle body after substituting the PCM (see page 11-363).

4. USA, Canada models: Select the INSPECTION MENU with the HDS.

5. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: USA, Canada models: If the TP POSITION CHECK indicates FAILED, continue this procedure.

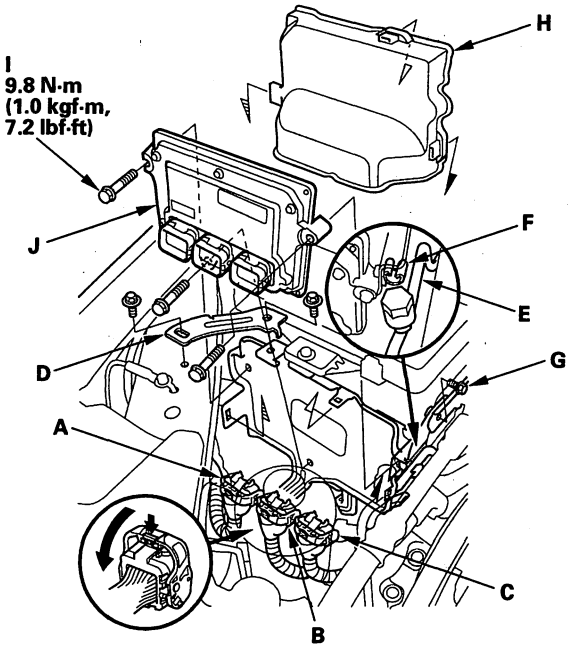
6. Turn the ignition switch OFF.

7. Jump the SCS line with the HDS.

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8. Remove the bracket (D), then free the A/C discharge line (E) from the clip (F) and remove the A/C suction line mounting bracket bolt (G).



9. Remove the cover (H), then disconnect the PCM connectors A, B, and C.

   NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embosed on them for identification.

10. Remove the bolts (I), then remove the PCM (J).

11. Install the parts in the reverse order of removal.

12. Open the SCS with the HDS.

13. Turn the ignition switch ON (II).

    NOTE: USA, Canada models: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

14. USA, Canada models: Manually input the VIN to the PCM with the HDS.

15. Update the PCM if it does not have the latest software.

16. Select the IMMOBI SYSTEM with the HDS.

17. Enter the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.

18. Reset the PCM with the HDS.

19. USA, Canada models: If the TP POSITION CHECK failed in step 6, clean the throttle body (see page 11-363).

20. Do the PCM idle learn procedure (see page 11-311).

21. 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 repair was successfully completed. The results of diagnostic tests for the DTC are displayed as:

- PASSED: The on board diagnosis is successfully finished.
- FAILED: The 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 for the DTC.

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DTC Troubleshooting Index

DTC (MIL indication*1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0101 (50)	○	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	(see page 11-71)
P0102 (50)	—	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see page 11-73)
P0103 (50)	—	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see page 11-76)
P0107 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-78)
P0108 (3)	—	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-80)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see page 11-83)
P0112 (10)	—	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-84)
P0113 (10)	—	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-86)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see page 11-89)
P0117 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-90)
P0118 (6)	—	Engine Coolant Temperature (ECT) Sensor 1 Circuit High Voltage	ON	(see page 11-92)
P0122 (7)	—	Throttle Position (TP) Sensor A Circuit Low Voltage	ON	(see page 11-247)
P0123 (7)	—	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-249)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Response	ON	(see page 11-95)
P0128 (87)	○	Cooling System Malfunction	ON	(see page 11-96)
P0133 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Slow Response	ON	(see page 11-98)
P0134 (151)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater System Malfunction	ON	(see page 11-99)
P0135 (151)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-102)
P0137 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Low Voltage	ON	(see page 11-106)
P0138 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit High Voltage	ON	(see page 11-108)
P0139 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Circuit Slow Response	ON	(see page 11-111)
P0141 (163)	—	Rear Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 1, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-112)
P0153 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Slow Response	ON	(see page 11-98)
P0154 (152)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater System Malfunction	ON	(see page 11-99)
P0155 (152)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Heater Circuit Malfunction	ON	(see page 11-102)
P0157 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Low Voltage	ON	(see page 11-106)
P0158 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit High Voltage	ON	(see page 11-108)
P0159 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Circuit Slow Response	ON	(see page 11-111)
P0161 (164)	—	Front Secondary Heated Oxygen Sensor (Secondary HO2S (Bank 2, Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-112)
P0171 (153)	○	Rear Bank (Bank 1) Fuel System Too Lean	ON	(see page 11-116)
P0172 (153)	○	Rear Bank (Bank 1) Fuel System Too Rich	ON	(see page 11-116)
P0174 (154)	○	Front Bank (Bank 2) Fuel System Too Lean	ON	(see page 11-116)
P0175 (154)	○	Front Bank (Bank 2) Fuel System Too Rich	ON	(see page 11-116)
P0222 (7)	—	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-252)
P0223 (7)	—	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-254)
P0300 (77) and any combination of P0301 (71) P0302 (72) P0303 (73) P0304 (74) P0305 (75) P0306 (76)	○	Random Misfire Detected	ON	(see page 11-118)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

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DTC (MIL indication*1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	(see page 11-121)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	(see page 11-121)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	(see page 11-121)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	(see page 11-121)
P0305 (75)	○	No. 5 Cylinder Misfire Detected	ON	(see page 11-121)
P0306 (76)	○	No. 6 Cylinder Misfire Detected	ON	(see page 11-121)
P0325 (23)	—	Knock Sensor Circuit Malfunction	ON	(see page 11-130)
P0335 (4)	—	Crankshaft Position (CKP) Sensor A No Signal	ON	(see page 11-133)
P0339 (4)	—	Crankshaft Position (CKP) Sensor A Circuit Intermittent Interruption	ON	(see page 11-136)
P0340 (9)	—	Camshaft Position (CMP) Sensor No Signal	ON	(see page 11-137)
P0344 (9)	—	Camshaft Position (CMP) Sensor Circuit Intermittent Interruption	ON	(see page 11-140)
P0385 (54)	—	Crankshaft Position (CKP) Sensor B No Signal	ON	(see page 11-133)
P0389 (54)	—	Crankshaft Position (CKP) Sensor B Circuit Intermittent Interruption	ON	(see page 11-136)
P0401 (80)	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-374)
P0404 (12)	○	Exhaust Gas Recirculation (EGR) Control Circuit Range/Performance Problem	ON	(see page 11-376)
P0406 (12)	—	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-379)
P0420 (165)	○	Rear Bank Catalyst System Efficiency Below Threshold (Bank 1)	ON	(see page 11-368)
P0430 (166)	○	Front Bank Catalyst System Efficiency Below Threshold (Bank 2)	ON	(see page 11-368)
P0443 (92)	—	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-393)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-397)
P0452 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-398)
P0453 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-401)
P0455 (90)	○	Evaporative Emission (EVAP) System Very Large Leak Detected	ON	(see page 11-404)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-404)
P0457 (90)	—	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	OFF	(see page 11-407)
P0461 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem	OFF	(see page 11-314)
P0462 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see page 11-315)
P0463 (121)	—	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see page 11-317)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow	ON	(see page 11-409)
P0497 (90)	○	Evaporative Emission (EVAP) System Low Purge Flow	ON	(see page 11-410)
P0498 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Control Circuit Low Voltage	ON	(see page 11-414)
P0499 (117)	—	Evaporative Emission (EVAP) Canister Vent Shut Valve Control Circuit High Voltage	ON	(see page 11-417)
P0506 (14)	○	Idle Control System RPM Lower than Expected	ON	(see page 11-301)
P0507 (14)	○	Idle Control System RPM Higher than Expected	ON	(see page 11-303)
P050A (167)	○	Cold Start Idle Air Control System Performance Problem	ON	(see page 11-141)
P050B (167)	○	Cold Start Ignition Timing Performance Problem	ON	(see page 11-143)
P0562 (34)	—	Charging System Low Voltage	OFF	(see page 11-146)
P0563 (34)	—	Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see page 11-147)
P0602 (196)	—	Powertrain Control Module (PCM) Programming Error	ON	(see page 11-150)
P060A (131)	—	Powertrain Control Module (PCM) (A/T System) Internal Control Module Malfunction	ON	(see page 11-150)
P0615 (198)	—	Starter Cut Relay STRLD Circuit Malfunction	OFF	(see page 11-151)
P0627 (165)	—	Fuel Pump Control Module System Malfunction	ON	(see page 11-320)
P062F (131)	—	Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-153)
P0630 (139)	—	VIN Not Programmed or Mismatch	ON	(see page 11-153)
P0685 (135)	○	Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	(see page 11-155)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 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 at the same time.

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DTC Troubleshooting Index (cont'd)

DTC (MIL indication *1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P1077 (106)	○	Intake Manifold Tuning (IMT) Valve Stuck in High RPM Position	ON	(see page 11-353)
P1078 (106)	○	Intake Manifold Tuning (IMT) Valve Stuck in Low RPM Position	ON	(see page 11-358)
P1109 (13)	—	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-155)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/Performance Problem	ON	(see page 11-156)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-158)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-159)
P1172 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Out of Range High	ON	(see page 11-161)
P1174 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Out of Range High	ON	(see page 11-161)
P1297 (20)	—	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-162)
P1298 (20)	—	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-164)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-418)
P145C (90)	○	EVAP System Purge Flow Malfunction	ON	(see page 11-420)
P1549 (34)	—	Charging System High Voltage	OFF	(see page 11-166)
P1658 (40)	—	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see page 11-257)
P1659 (40)	—	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see page 11-259)
P1683 (40)	—	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-263)
P1684 (40)	—	Throttle Valve Return Spring Performance Problem	ON	(see page 11-264)
P16BB (116)	—	Alternator B Terminal Circuit Low Voltage	OFF	(see page 11-167)
P16BC (116)	—	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see page 11-168)
P16BD (198)	—	Starter Cut Relay 2 Malfunction	OFF	(see page 11-171)
P16BE (198)	—	Starter Cut Relay 1 Malfunction	OFF	(see page 11-171)
P16BF (198)	—	Starter Cut Relay STRLY Circuit Malfunction	OFF	(see page 11-172)
P2101 (40)	—	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-265)
P2118 (40)	—	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-267)
P2122 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see page 11-269)
P2123 (37)	—	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see page 11-272)
P2127 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see page 11-274)
P2128 (37)	—	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see page 11-277)
P2135 (7)	—	Throttle Position (TP) Sensor A/B Voltage Incorrect Correlation	ON	(see page 11-279)
P2138 (37)	—	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-281)
P2176 (40)	—	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-283)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/Performance Problem	ON	(see page 11-173)
P2184 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-175)
P2185 (192)	—	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-177)
P2195 (155)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Signal Stuck Lean	ON	(see page 11-180)
P2197 (156)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Signal Stuck Lean	ON	(see page 11-180)
P2227 (13)	○	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see page 11-181)
P2228 (13)	—	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-183)
P2229 (13)	—	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-183)
P2237 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit High Voltage	ON	(see page 11-184)
P2238 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage	ON	(see page 11-186)
P2240 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit High Voltage	ON	(see page 11-184)
P2241 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage	ON	(see page 11-186)
P2243 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage	ON	(see page 11-188)
P2245 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage	ON	(see page 11-190)
P2247 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage	ON	(see page 11-188)
P2249 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage	ON	(see page 11-190)

NOTE: The above DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

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DTC (MIL indication *1)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2251 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit High Voltage	ON	(see page 11-192)
P2252 (155)	—	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage	ON	(see page 11-194)
P2254 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit High Voltage	ON	(see page 11-192)
P2255 (156)	—	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage	ON	(see page 11-194)
P2270 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 1, Sensor 2) Circuit Signal Stuck Lean	ON	(see page 11-196)
P2271 (161)	○	Rear Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 1, Sensor 2) Circuit Signal Stuck Rich	ON	(see page 11-196)
P2272 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 2, Sensor 2) Circuit Signal Stuck Lean	ON	(see page 11-196)
P2273 (162)	○	Front Secondary Heated Oxygen Sensor (Secondary HO2S) (Bank 2, Sensor 2) Circuit Signal Stuck Rich	ON	(see page 11-196)
P2279 (109)	○	Intake Air System Leak	ON	(see page 11-390)
P2413 (12)	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-381)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Close Malfunction	ON	(see page 11-418)
P2610 (132)	—	Powertrain Control Module (PCM) Internal Power Off Timer Malfunction	ON	(see page 11-197)
P2646 (22)	—	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	(see page 11-288)
P2647 (22)	—	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	(see page 11-291)
P2648 (21)	—	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	(see page 11-294)
P2649 (21)	—	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	(see page 11-296)
P2A00 (157)	○	Rear Air Fuel Ratio (A/F) Sensor (Bank 1, Sensor 1) Circuit Range/ Performance Problem	ON	(see page 11-198)
P2A03 (158)	○	Front Air Fuel Ratio (A/F) Sensor (Bank 2, Sensor 1) Circuit Range/ Performance Problem	ON	(see page 11-198)
U0028 (126)	—	F-CAN Malfunction (BUS-OFF)	ON	(see page 11-199)
U0114 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-SH-AWD Control Unit)	OFF	(see page 11-200)
U0122 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-VSA Modulator-Control Unit)	OFF	(see page 11-203)
U0155 (126)	—	F-CAN Malfunction (Powertrain Control Module (PCM)-Gauge Control Module)	ON	(see page 11-205)
U0300 (131)	—	PGM-FI System and A/T System Program Version Mismatch	ON	(see page 11-207)

NOTE: The above following DTCs are indicated when the PGM-FI system is selected in the HDS.
Some automatic transmission DTCs cause the MIL to come on. If the MIL is on and no DTCs are indicated in the PGM-FI system, select the A/T system, and check for automatic transmission DTCs.

* 1: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.

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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)	1. Test the battery (see page 22-76). 2. Test the starter (see page 4-9). 3. Check the fuel pressure (see page 11-333).	• 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)	Troubleshoot the MIL circuit (see page 11-222).	
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-222).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system.	• Jumped timing belt • Intake air leaks • Contaminated fuel • Weak spark
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-76). 2. Check the fuel pressure (see page 11-333). 3. Clean the throttle body (see page 11-363).	• Low compression • Intake air leaks • Contaminated fuel • Weak spark • Restricted exhaust
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-311). 2. Check the idle speed (see page 11-310). 3. Clean the throttle body (see page 11-363).	• Correct valve adjustment • Fuel contamination
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-311). 2. Check the idle speed (see page 11-310). 3. Do the throttle position learning check (see page 11-362).	Intake vacuum leaks
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-311). 2. Check the idle speed (see page 11-310). 3. Do the carbon accumulation check (see page 11-362).	Intake vacuum leaks
After warming up, idle speed is below specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-305). 2. Troubleshoot the A/C signal circuit (see page 11-304). 3. Do the carbon accumulation check (see page 11-362).	Correct valve adjustment
After warming up, idle speed is above specification without load (MIL works OK, no DTCs set)	1. Troubleshoot the alternator FR signal circuit (see page 11-305). 2. Inspect the APP sensor (see page 11-285). 3. Troubleshoot the alternator A/C signal circuit (see page 11-304). 4. Troubleshoot the power steering switch signal circuit (see page 11-306).	Intake vacuum leaks

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Symptom	Diagnostic procedure	Also check for
After warming up, idle speed drops when steering wheel is turning (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-311). 2. Troubleshoot the PSP switch signal circuit (see page 11-306). 3. Do the carbon accumulation check (see page 11-362).	Power steering system
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-333).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level • Restricted exhaust • Fuel contamination
Engine stalls (MIL works OK, no DTCs set)	1. Do the PCM idle learn procedure (see page 11-311). 2. Check the fuel pressure (see page 11-333). 3. Check the idle speed (see page 11-310). 4. Troubleshoot the brake pedal position switch signal circuit (see page 11-308).	• Intake air leaks • Faulty harness and sensor connections • Fuel contamination
Difficult to refuel (MIL works OK, no DTCs set)	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. Inspect the fuel filler neck for restrictions. 4. Replace the fuel tank (see page 11-347).	• Malfunctioning gas station filling nozzle. • Filler neck restriction • Fuel tank vapor control valve
Fuel overflows during refueling (No DTCs set)	1. Inspect the fuel filler neck for restrictions. 2. Replace the fuel tank (see page 11-347).	Malfunctioning gas station filling nozzle.
HDS does not communicate with the PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-223).	
Fuel cap warning message comes on and stays on (MIL works OK, no DTCs set)	Troubleshoot the fuel cap warning message system (see page 11-421).	

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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 signal failure from a sensor or from another control unit and stores a Temporary DTC or a DTC in erasable memory (RAM). Depending on the failure, a DTC is stored in either the first or the second drive cycle (for DTC P0457, the DTC is set in the beginning of the third drive cycle). When a DTC is stored, the PCM turns on the malfunction indicator lamp (MIL) by sending a command to the gauge control module.

- **One Drive Cycle Detection Method**
  When an abnormality occurs in the signal from a sensor or from another control unit, the PCM stores a DTC 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 for the failure. The MIL does not come on at this time. If the failure continues in the second drive cycle, the PCM stores a DTC in erasable memory 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 substitutes a pre-programmed value that allows the engine to continue running. This causes a DTC to be stored and the MIL to come on.

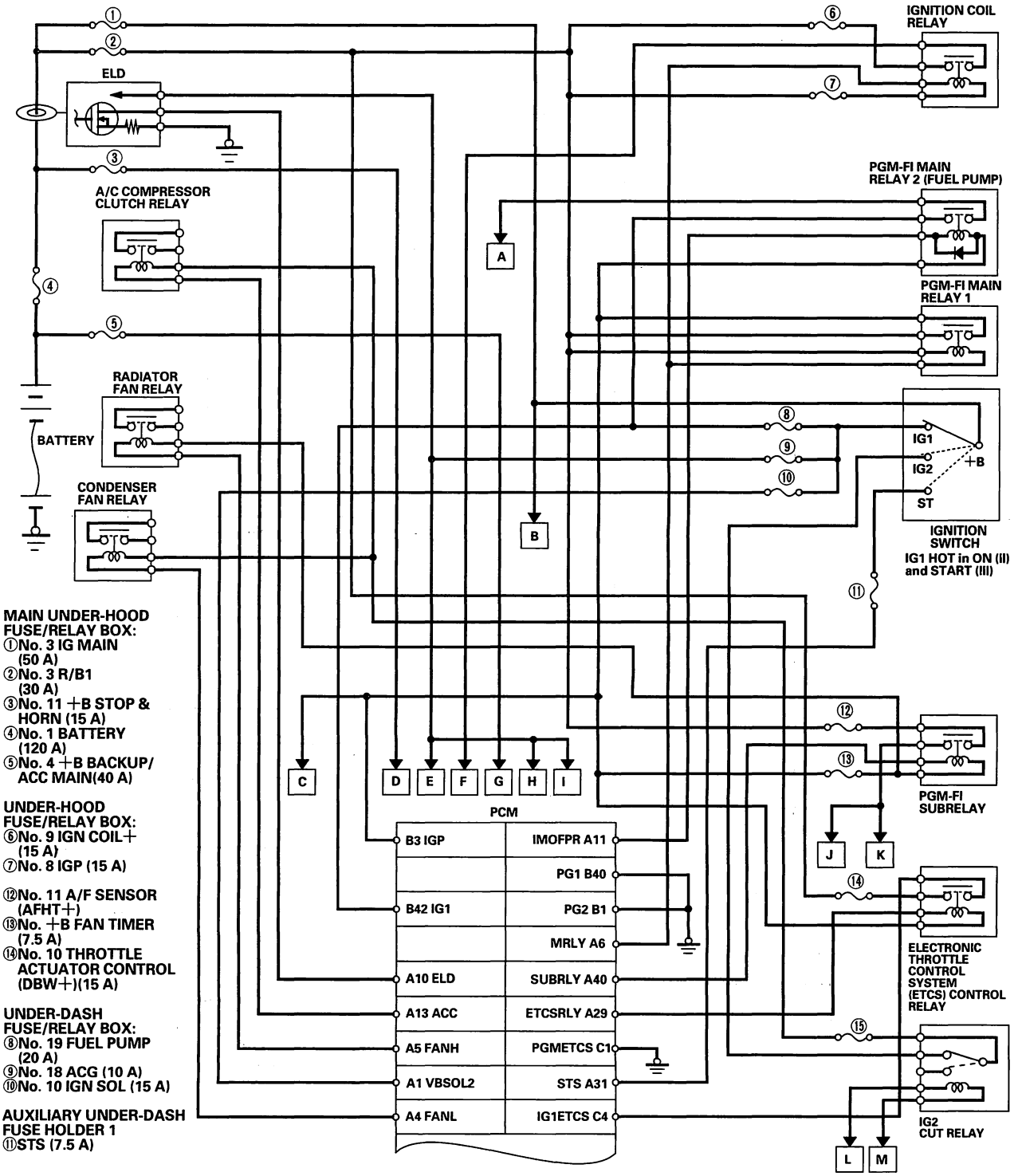
MIL Bulb Check and Readiness Code Condition
When the ignition switch is turned ON (II), the PCM turn on the MIL by sending a command to the gauge control module to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

Self Shut Down (SSD) Mode
After the ignition switch is turned OFF, the PCM stays on (up to 15 minutes). 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 the ignition switch is turned OFF.

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PCM Electrical Connections



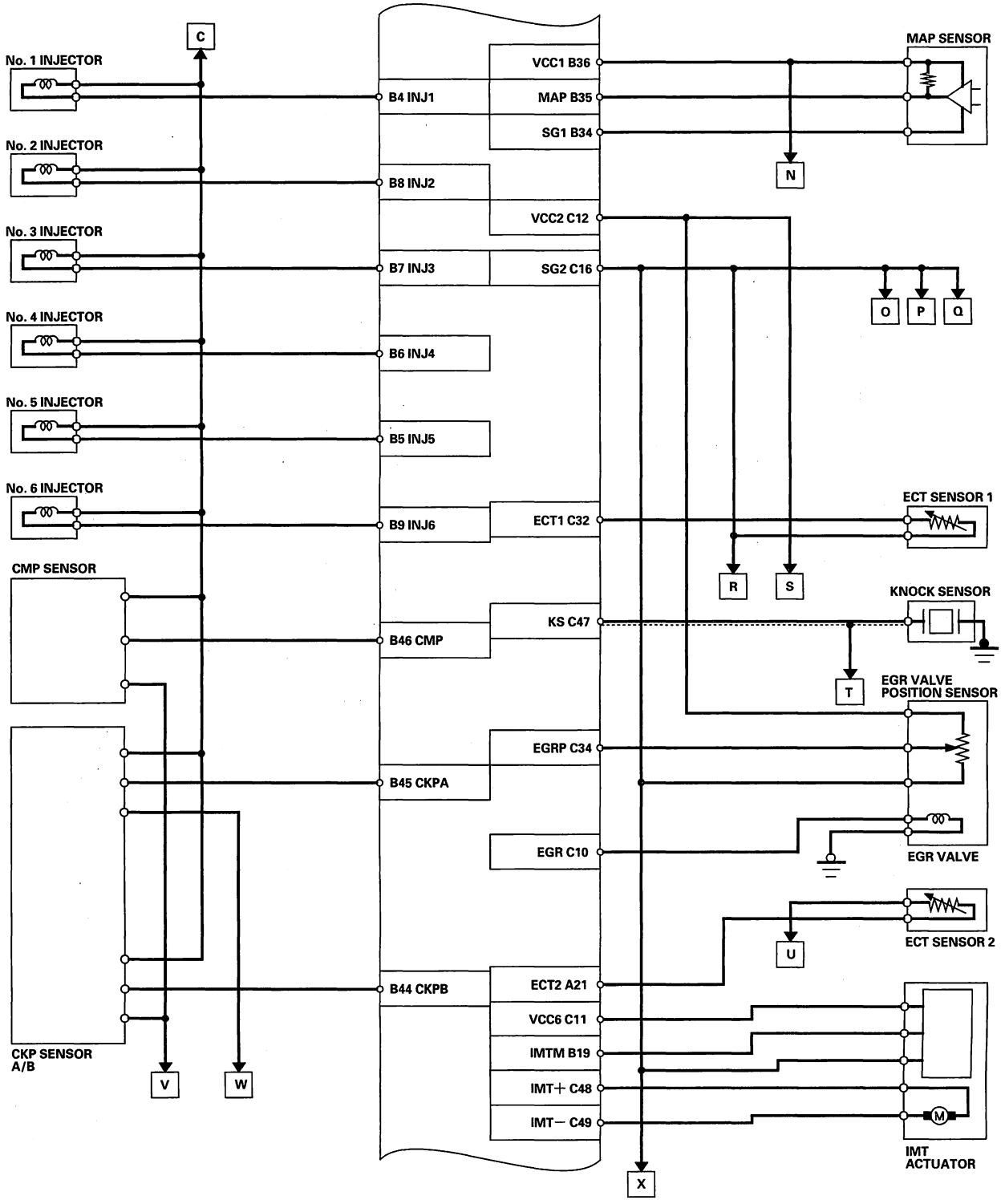
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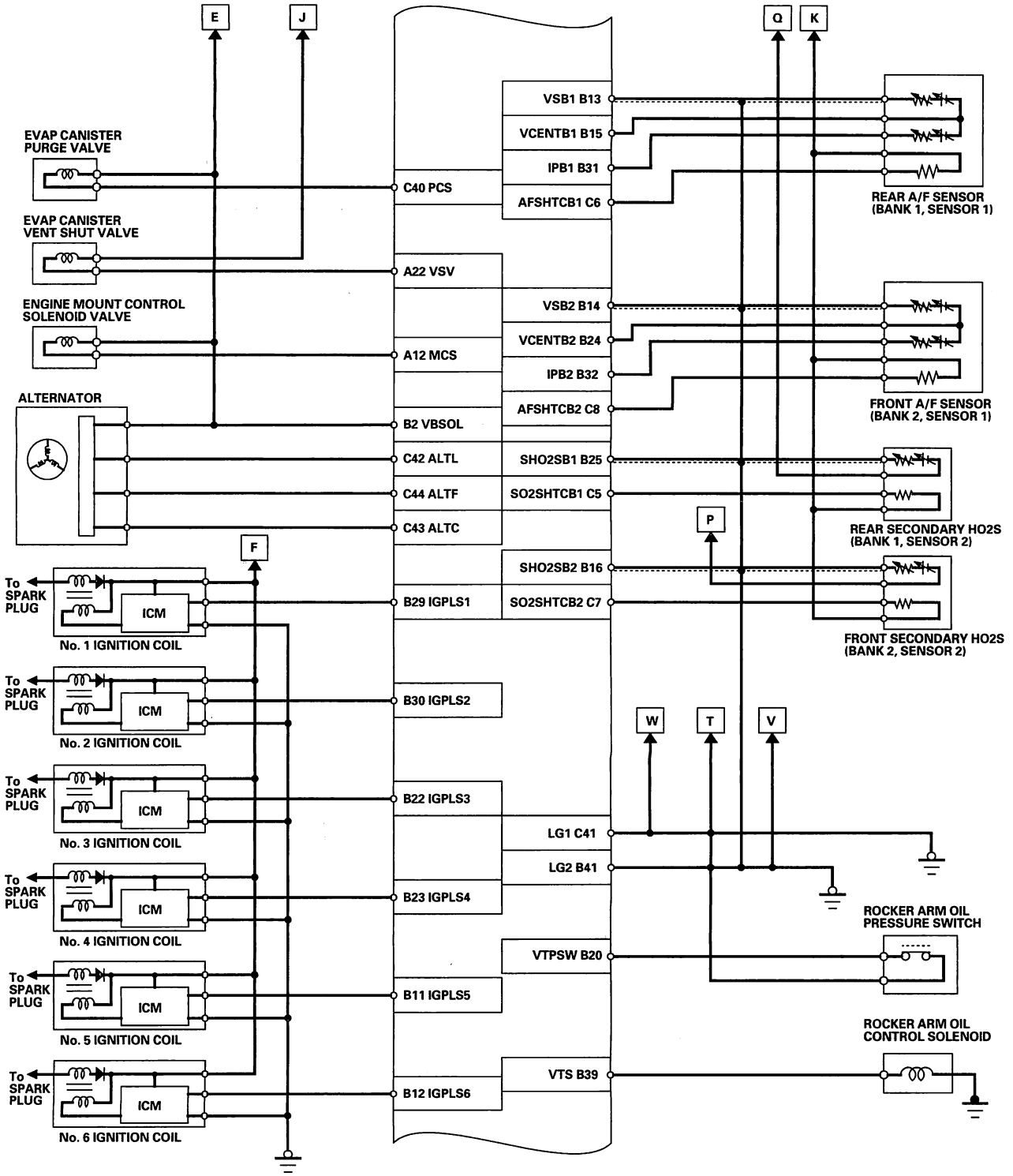
System Description (cont'd)

PCM Electrical Connections (cont'd)



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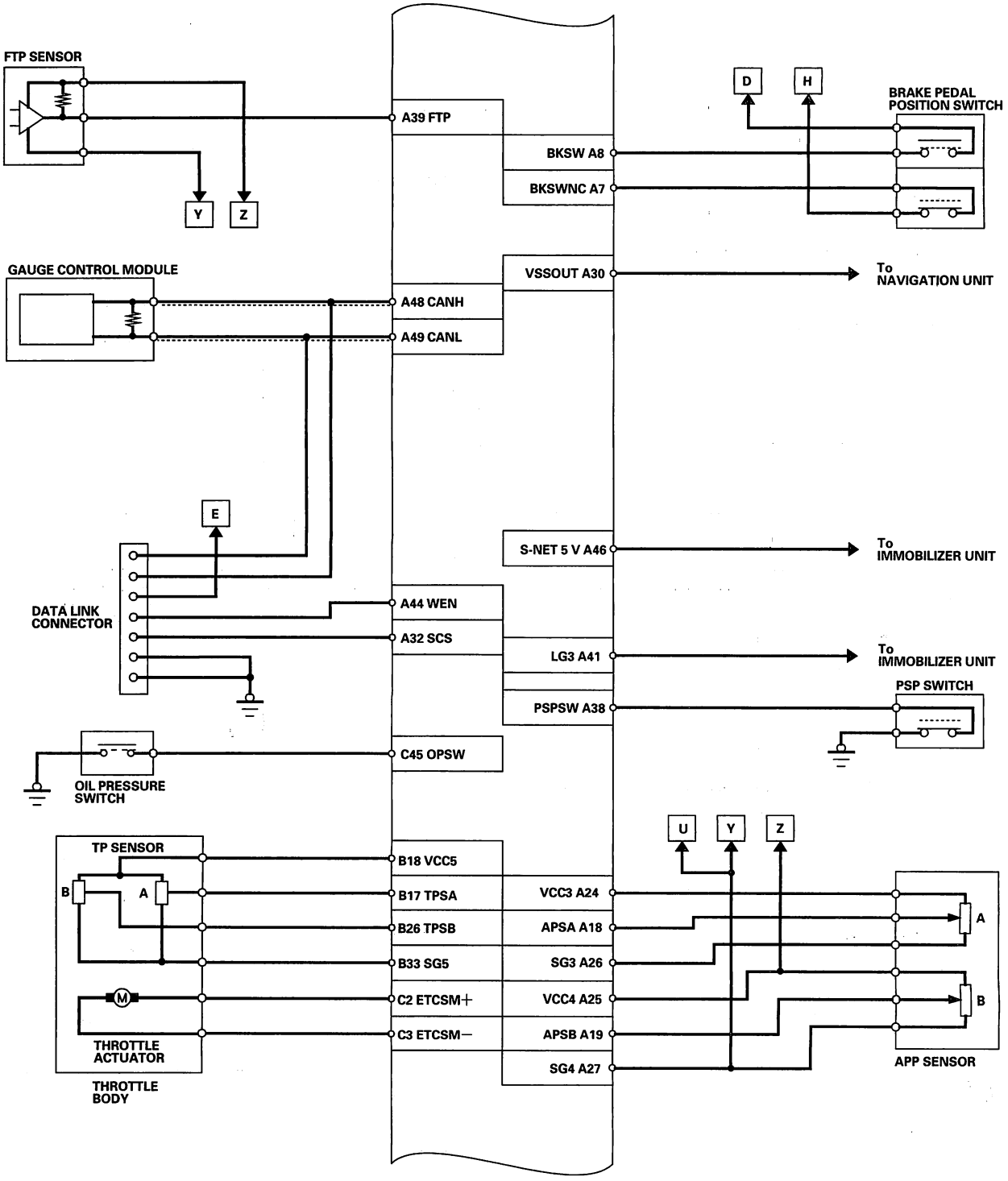
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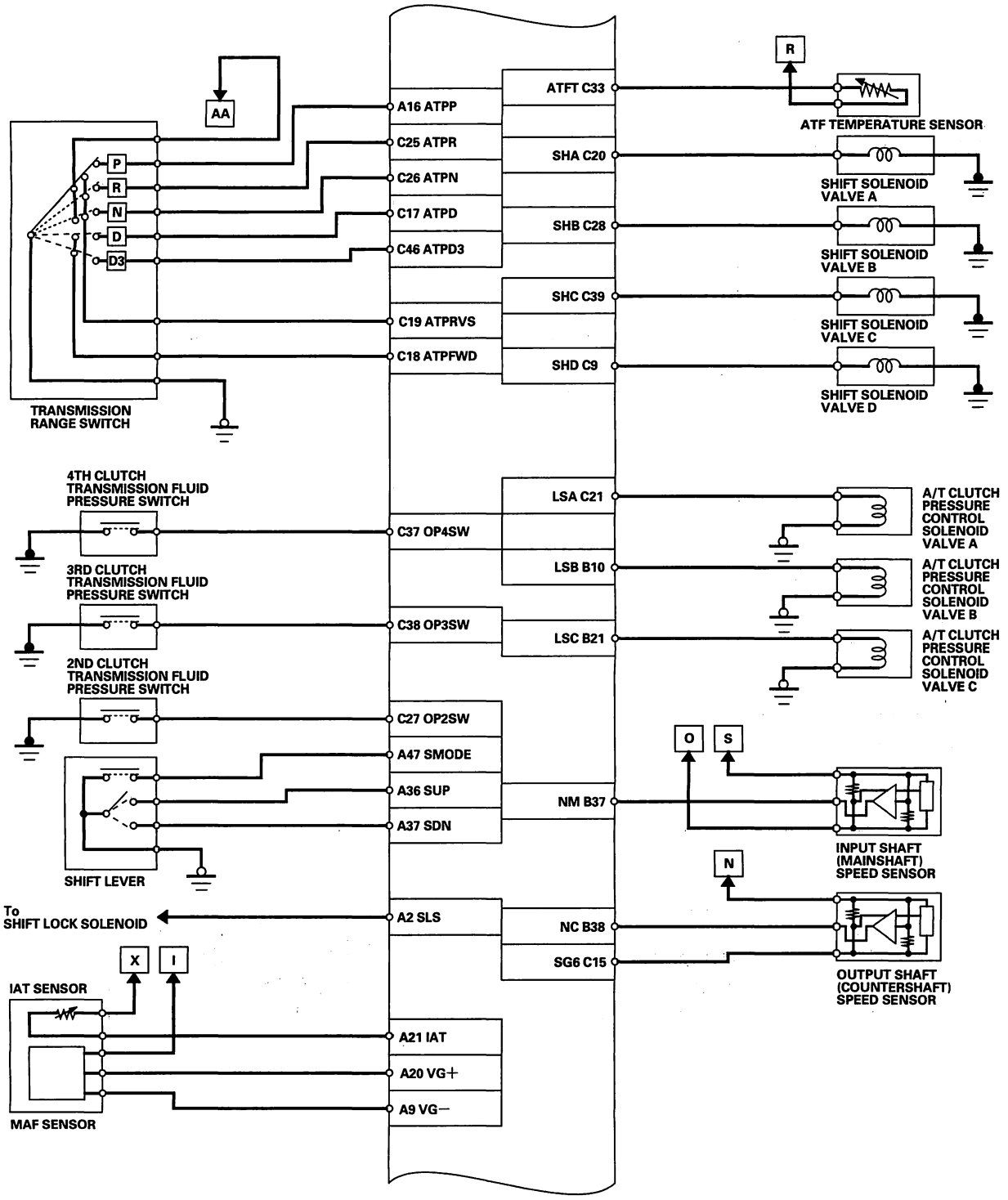
System Description (cont'd)

PCM Electrical Connections (cont'd)



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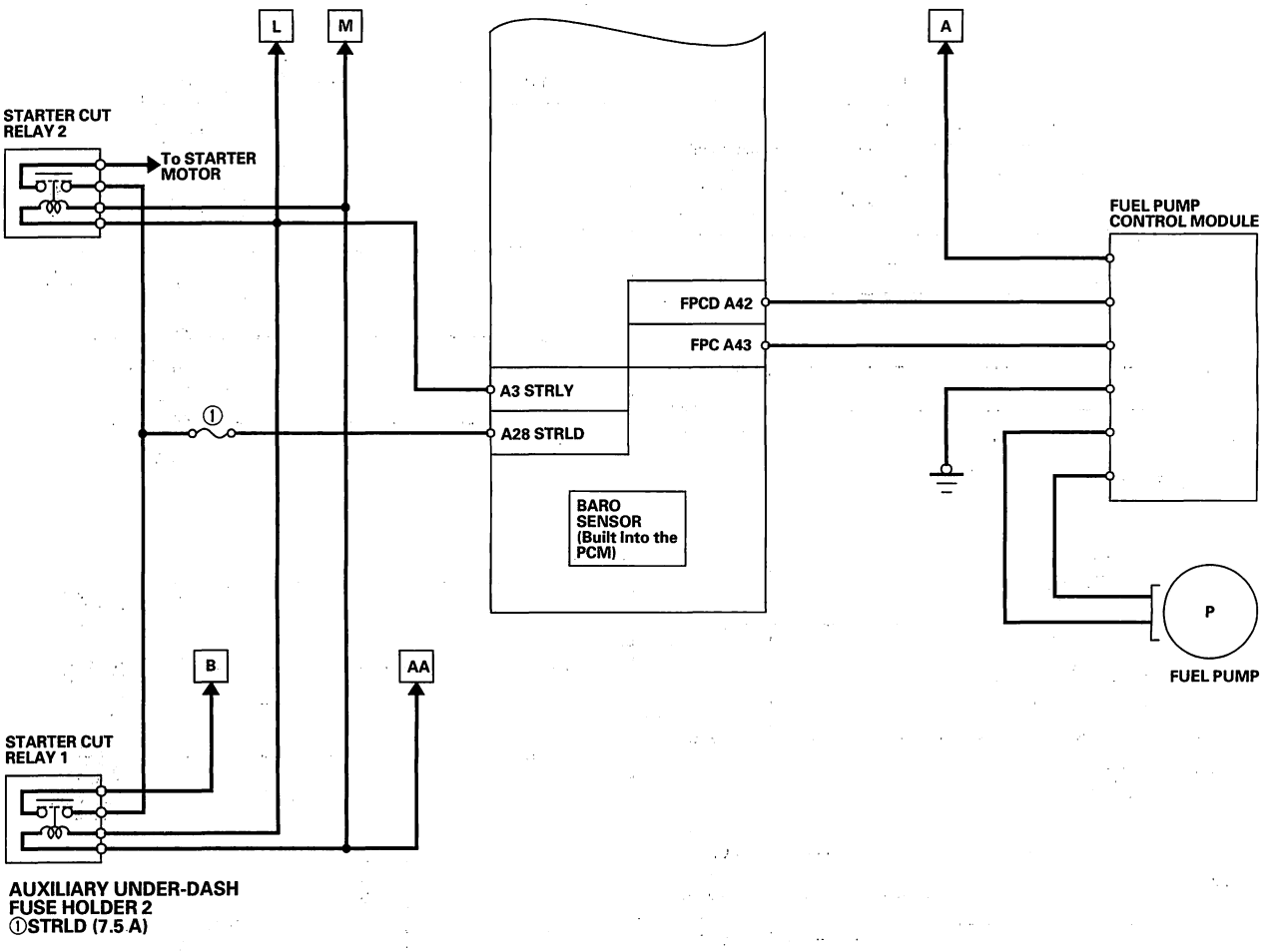


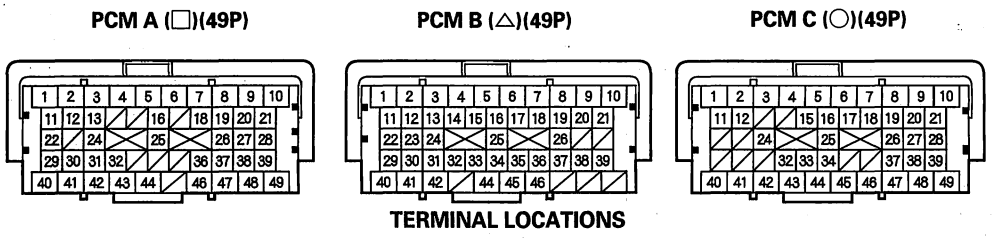
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System Description (cont'd)

PCM Electrical Connections (cont'd)

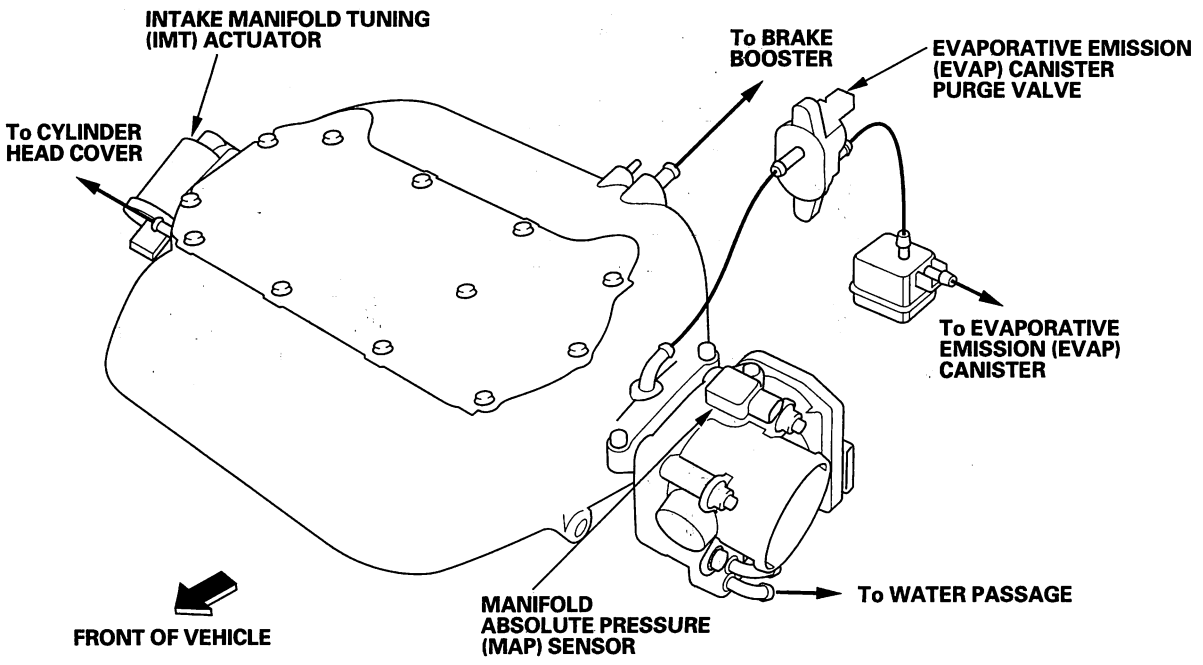




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Vacuum Hose Routing

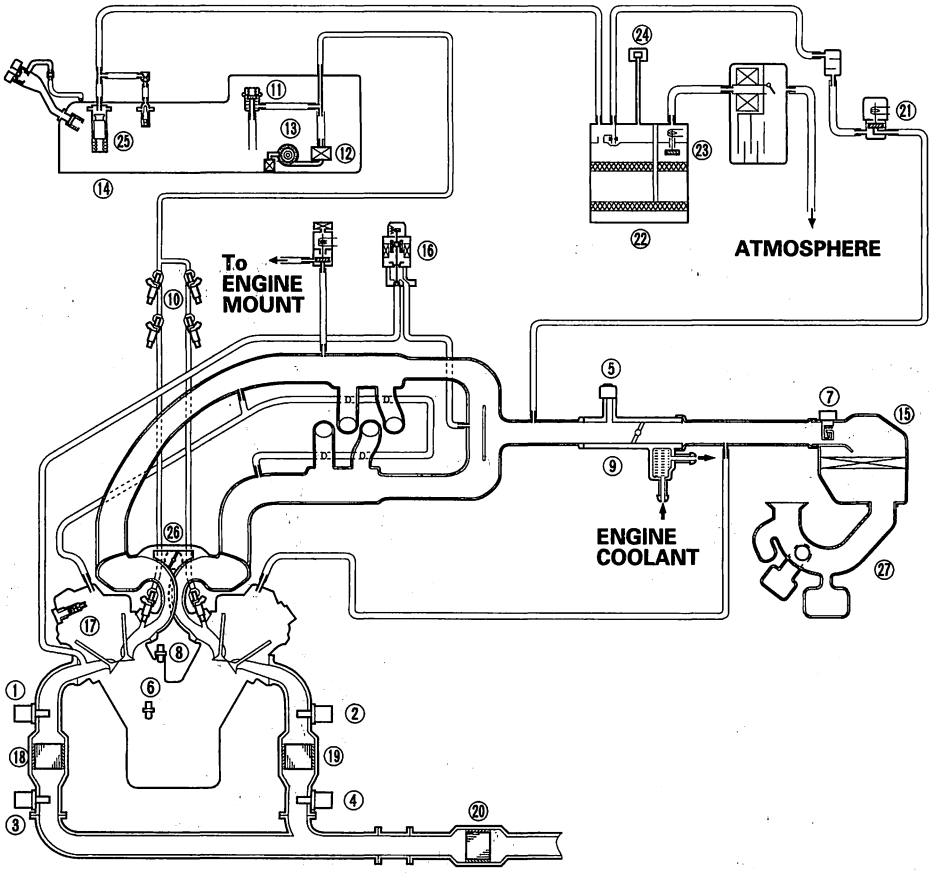


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System Description (cont'd)

Vacuum Distribution

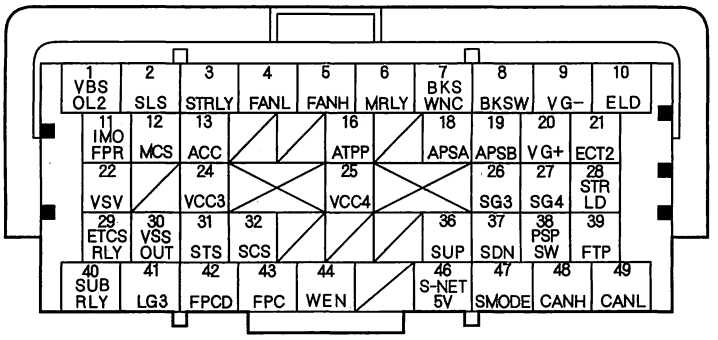


① FRONT AIR FUEL RATIO (A/F) SENSOR 2 (BANK 2, SENSOR 1)
② REAR AIR FUEL RATIO (A/F) SENSOR 1 (BANK 1, SENSOR 1)
③ FRONT SECONDARY HEATED OXYGEN SENSOR 2 (SECONDARY HO2S) (BANK 2, SENSOR 2)
④ REAR SECONDARY HEATED OXYGEN SENSOR 2 (SECONDARY HO2S) (BANK 1, SENSOR 2)
⑤ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
⑥ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
⑦ MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR
⑧ KNOCK SENSOR
⑨ THROTTLE BODY
⑩ INJECTOR
⑪ FUEL PRESSURE REGULATOR
⑫ FUEL FILTER
⑬ FUEL PUMP
⑭ FUEL TANK
⑮ AIR CLEANER
⑯ EXHAUST GAS RECIRCULATION (EGR) VALVE and POSITION SENSOR
⑰ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑱ FRONT WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 2)
⑲ REAR WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 1)
⑳ UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC)
㉑ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
㉒ EVAPORATIVE EMISSION (EVAP) CANISTER
㉓ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉔ FUEL TANK PRESSURE (FTP) SENSOR
㉕ FUEL TANK VAPOR CONTROL VALVE
㉖ INTAKE MANIFOLD TUNING (IMT) VALVE
㉗ RESONATOR

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PCM Inputs and Outputs at Connector A (□) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	WHT	VBSOL2 (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valve	With ignition switch ON (II): battery voltage
2	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in the P position, brake pedal pressed, and accelerator released: about 0 V
3	LT GRN	STRLY (STARTER RELAY)	Drives starter cut relay 2	With ignition switch ON (II): about 0 V
4	WHT	FANL (RADIATOR FAN CONTROL)	Drives condenser fan relay	With condenser fan running: about 0 V With condenser fan stopped: battery voltage
5	PUR	FANH (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
6	GRN	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 power source for the DTC memory)	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
7	BRN	BKSWNC (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position 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
8	LT GRN	BKSW (BREAK PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage

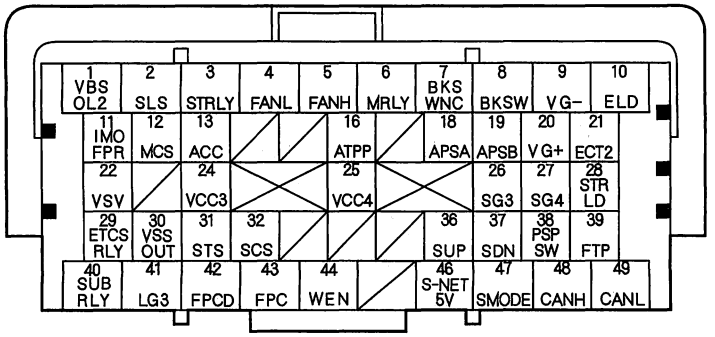
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BACK

System Description (cont'd)

PCM Inputs and Outputs at Connector A (□) (49P)



Terminal side of female terminals

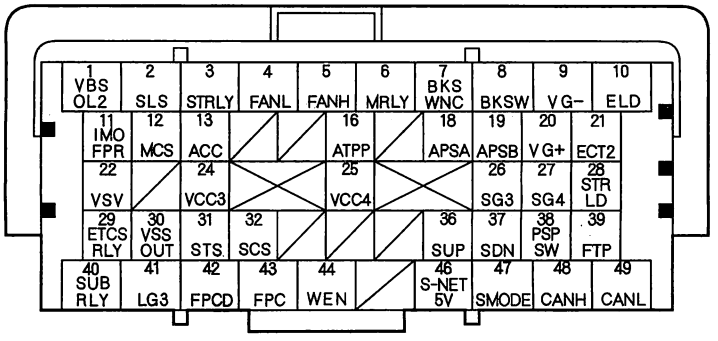
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
9	BLK	VG— (MASS AIR FLOW (MAF) SENSOR —SIDE)	Ground for MAF sensor signal	
10	ORN	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1—4.8 V (depending on electrical load)
11	BRN	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2	0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
12	BLU	MCS (ENGINE MOUNT CONTROL SOLENOID VALVE)	Drives engine mount control solenoid valve	At idle: about 0 V About idle: battery voltage
13	RED	ACC (A/C CLUTCH RELAY)	Drives A/C clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
16	GRN	ATPP (TRANSMISSION RANGE SWITCH P POSITION)	Detects transmission range switch P position signal	In P position: about 0 V In any position other than P position: battery voltage
18	PUR	APSA (ACCELERATOR PEDAL POSITION (APP) SENSOR A)	Detects APP sensor A signal	With ignition switch ON (II) and accelerator pedal pressed: about 4.7 V With ignition switch ON (II) and accelerator pedal released: about 1.0 V

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PCM Inputs and Outputs at Connector A (□) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

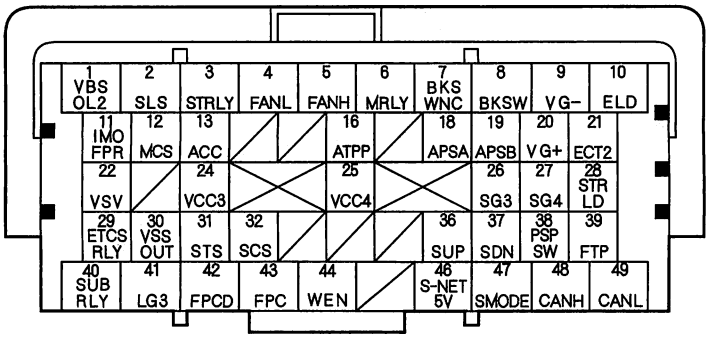
Terminal number	Wire color	Terminal name	Description	Signal
19	LT GRN	APSB (ACCELERATOR PEDAL POSITION (APP) SENSOR B)	Detects APP sensor B signal	With ignition switch ON (II) and accelerator pedal pressed: about 2.3 V With ignition switch ON (II) and accelerator pedal released: about 0.5 V
20	RED	VG+ (MASS AIR FLOW (MAF) SENSOR +SIDE)	Detects MAF sensor signal	At idle: about 1.1—1.6 V (between VG+ terminal and VG— terminal)
21	PUR	ECT2 (ENGINE COOLANT TEMPERATURE SENSOR (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
22	LT GRN	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
24	RED	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
25	ORN	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
26	WHT	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
27	GRN	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times

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System Description (cont'd)

PCM Inputs and Outputs at Connector A (□) (49P)



Terminal side of female terminals

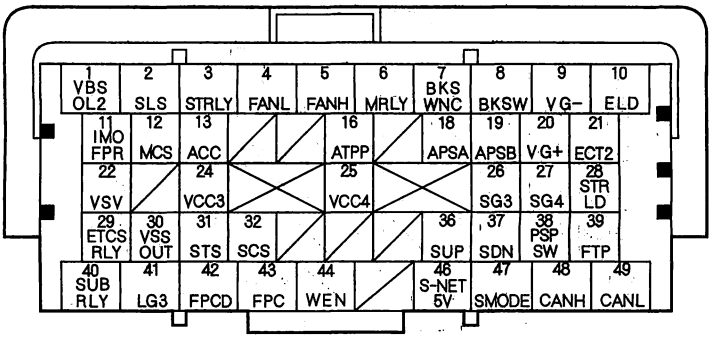
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
28	PNK	STRLD	Detects starter cut relay 2	With starter ON: battery voltage
29	BLU	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V
30	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends output shaft (countershaft) speed sensor signal	Depending on vehicle speed: pulses
31	LT BLU	STS (STARTER SWITCH SIGNAL)	Detects starter switch signal	With starter switch ON (II): battery voltage With starter switch OFF: about 0 V
32	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 5.0 V
36	BLU	SUP (UPSHIFT SWITCH)	Detects upshift switch signal	In M position and shift lever pushed toward upshift position: about 0 V In M position and shift lever in N position: battery voltage
37	GRN	SDN (DOWNSHIFT SWITH)	Detects downshift switch signal	In M position and shift lever pushed toward downshift position: about 0 V In M position and shift lever in N position: battery voltage

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PCM Inputs and Outputs at Connector A (□) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
38	PNK	PSPSW (POWER STEERING PRESSURE SWITCH SIGNAL)	Detects PSP switch signal	At idle with steering wheel in straight ahead position: about 0 V At idle with steering wheel at full lock: battery voltage
39	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
40	RED	SUBRLY (PGM-FI SUBRELAY)	Drives PGM-FI subrelay	With ignition switch ON (II): about 0 V
41	BRN	LG3 (LOGIC GROUND)	Ground circuit for the PCM	Less than 1.0 V at all time
42	LT BLU	FPCD (FUEL PUMP CONTROL MODULE DIAGNOSIS)	Detects fuel pump control diagnosis	With ignition switch ON (II): about 5.0 V At idle: about 10.0 V
43	PNK	FPC (FUEL PUMP CONTROL)	Detects fuel pump control signal	With ignition switch ON: pulses With ignition switch OFF: about 0 V
44	GRY	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
46	LT GRN	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II): pulses With ignition switch OFF: about 5.0 V

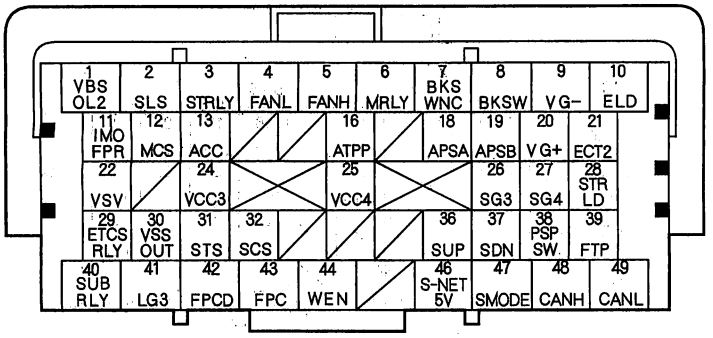
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System Description (cont'd)

PCM Inputs and Outputs at Connector A (□) (49P)



Terminal side of female terminals

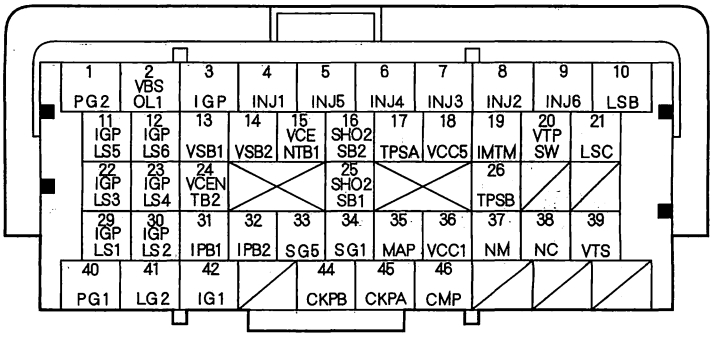
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
47	PUR	SMODE (SEQUENTIAL SPORT SHIFT MODE)	Detects sequential sportshift mode switch signal	In M position: about 0 V In any position other than M position: battery voltage
48	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): pulses
49	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): pulses

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PCM Inputs and Outputs at Connector B (△) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 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/YEL	VBSOL (POWER SOURCE FOR SOLENOID VALVES)	Power source for solenoid valve	With ignition switch ON (II): battery voltage
3	YEL/BLK	IGP (POWER SOURCE)	Power source for PCM circuit	With ignition switch ON (II): battery voltage
4	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
5	BLK/RED	INJ5 (No. 5 INJECTOR)	Drives No. 5 injector	
6	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
9	WHT/BLU	INJ6 (No. 6 INJECTOR)	Drives No. 6 injector	
10	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): current controlled

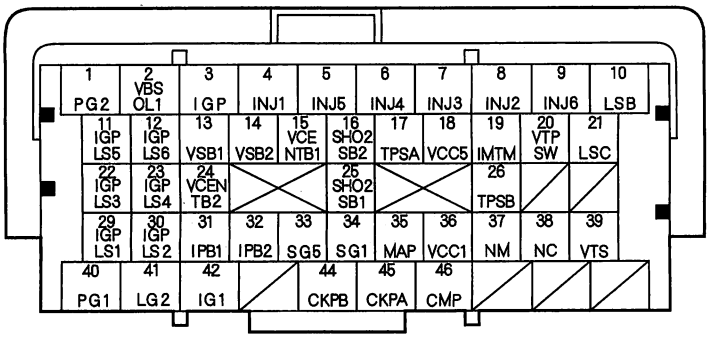
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System Description (cont'd)

PCM Inputs and Outputs at Connector B (△) (49P)



Terminal side of female terminals

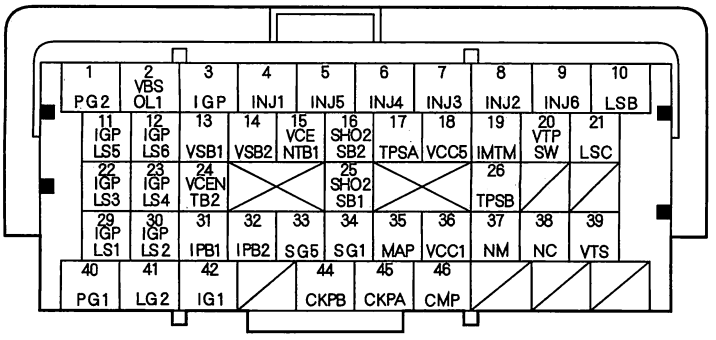
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
11	BLK/RED	IGPLS5 (No. 5 IGNITION COIL PULSE)	Drives No. 5 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
12	BRN/WHT	IGPLS6 (No. 6 IGNITION COIL PULSE)	Drives No. 6 ignition coil	
13	BLU	VSB1 (VS CELL+ BANK 1)	Detects the rear A/F sensor (BANK 1, sensor 1) VS SELL signal	With engine running: about 3.4—4.8 V
14	RED/BLU	VSB2 (VS CELL+ BANK 2)	Detects front A/F sensor (BANK 1, sensor 1) VS SELL signal	With fully warmed up engine running: about 3.4—4.8 V
15	RED	VCENTB1 (VIRTUAL GROUND BANK 1)	Reference voltage supply for rear A/F sensor (BANK 1, sensor 1)	With fully warmed up engine running: about 3.4—3.8 V
16	WHT	SHO2SB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (FRONT 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: about 0.6 V With throttle quickly closed: below 0.4 V
17	RDE/BLK	TPSA (THROTTLE POSITION (TP) SENSOR A)	Detects TP sensor A signal	With throttle fully open: about 3.9 V With throttle fully closed: about 0.9 V

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PCM Inputs and Outputs at Connector B (△) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
18	BLU	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
19	WHT/BLK	IMTM (INTAKE MANIFOLD TUNING (IMT) VALVE MONITOR)	Detects IMT valve position	With ignition switch ON (II): about 0 V With engine speed above 3,800 rpm: about 5.0 V
20	BLU/WHT	VTPSW (ROCKER ARM OIL PRESSURE SWITCH)	Detects rocker arm oil pressure switch	With engine at low speed: about 0 V With engine at high speed: battery voltage
21	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): current controlled
22	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
23	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
24	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: about 3.4—4.8 V

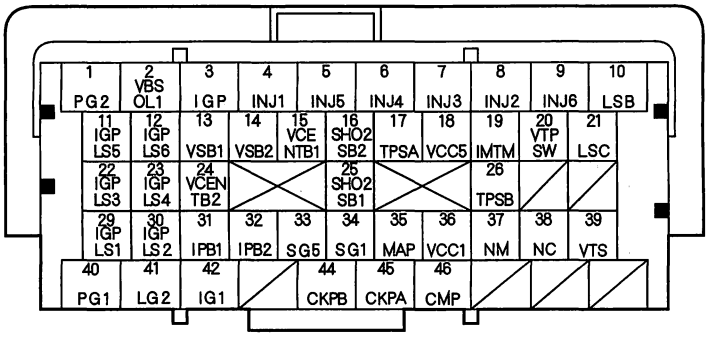
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System Description (cont'd)

PCM Inputs and Outputs at Connector B (△) (49P)



Terminal side of female terminals

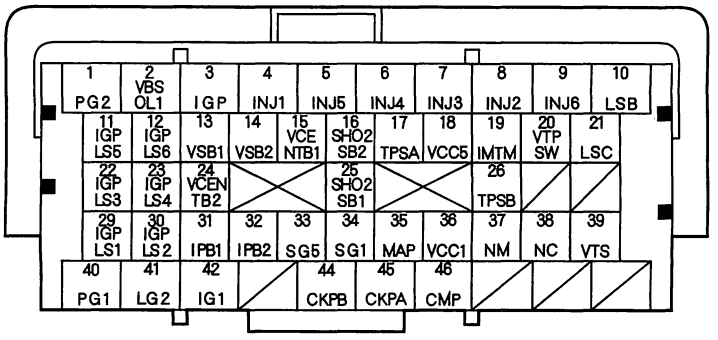
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
25	GRN	SHO2SB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR 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: about 0.6 V With throttle quickly closed: below 0.4 V
26	RED/BLU	TPSB (THROTTLE POSITION (TP) SENSOR B)	Detects TP sensor B signal	With throttle fully open: about 4.1 V With throttle fully closed: about 1.7 V
29	YEL/GRN	IGPLS1 (No. 1 IGNITION COIL PULSE)	Drives No. 1 ignition coil	With ignition switch ON (II): about 0 V With engine running: pulses
30	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
31	GRN	IPB1 (IP CELL+ BANK 1)	Detects rear A/F sensor (Bank 1, sensor 1) pump cell	With engine running: about 2.0—5.6 V
32	GRN/RED	IPB2 (IP CELL+ BANK 2)	Detects front A/F sensor (Bank 2, sensor 1) pump cell	With engine running: about 2.0—5.6 V
33	GRN	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	GRN/RED	MAP (MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR)	Detects MAP sensor signal	With ignition switch ON (II): about 3.0 V At idle: about 1.0 V (depending on engine speed)

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PCM Inputs and Outputs at Connector B (△) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
36	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	Ignition switch ON: about 5.0 V
37	RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signals	With ignition switch ON (II): about 0 V or about 5.0 V With engine at idling in N position: about 2.5 V
38	BLU	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signal	With ignition switch ON (II) and front wheels rotated by hand: pulses
39	GRN/YEL	VTS (ROCKER ARM OIL CONTROL SOLENOID)	Drives rocker arm oil control solenoid	At idle: about 0 V
40	BLK	PG1 (POWER GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
41	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
42	BLK/YEL	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
44	BLU/RED	CKPB (CRANKSHAFT POSITION (CKP) SENSOR B)	Detects CKP sensor B signal	With engine running: pulses
45	BLU	CKPA (CRANKSHAFT POSITION (CKP) SENSOR A)	Detects CKP sensor A signal	With engine running: pulses
46	YEL	CMP (CAMSHAFT POSITION (CMP) SENSOR)	Detect CMP sensor signal	With engine running: pulses

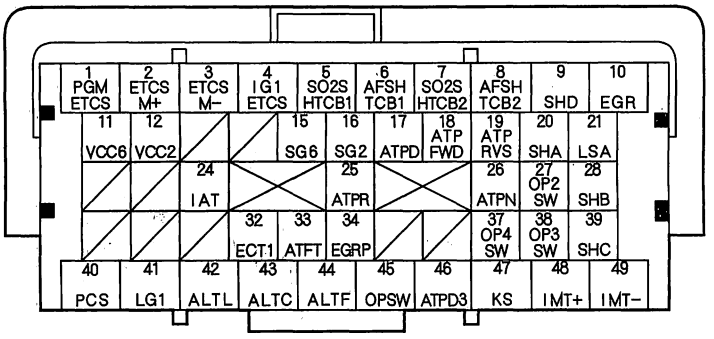
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BACK

System Description (cont'd)

PCM Inputs and Outputs at Connector C (○) (49P)



Terminal side of female terminals

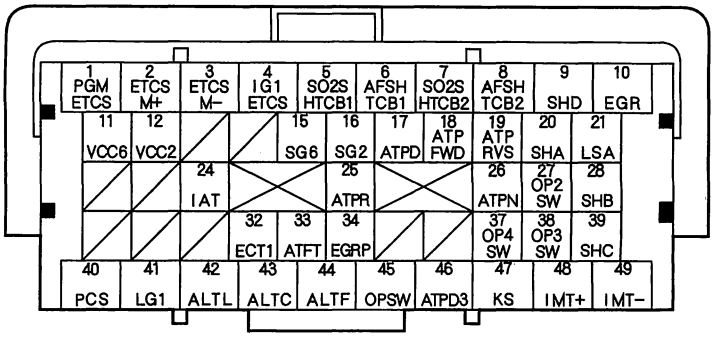
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for PCM circuit	Less than 1.0 V at all times
2	BLU	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
3	GRN	ETCSM− (THROTTLE ACTUATOR −SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	YEL/GRN	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
5	BLK/WHT	SO2SHTCB1 (REAR SECONDARY HEATED OXYGEN SENSOR (REAR SECONDARY HO2S) HEATER)	Drives rear secondary HO2S heater (Bank 1, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
6	BLK/WHT	AFSHTCB1 (REAR AIR FUEL RAITO (REAR A/F) SENSOR HEATER CONTROL BANK 1, SENSOR 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

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PCM Inputs and Outputs at Connector C (○) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
7	GRN/RED	SO2SHTCB2 (FRONT SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER)	Drives front secondary HO2S heater (Bank 2, sensor 2)	With ignition switch ON (II): battery voltage With fully warmed up engine running: duty controlled
8	GRN/WHT	AFSHTCB2 (FRONT AIR FUEL RATIO (FRONT A/F) SENSOR HEATER CONTROL BANK 2, SENSOR 1)	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
9	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in N position, and in D position during no lock-up condition: about 0 V With engine running in P and R positions, and in D position during no lock-up condition: battery voltage
10	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
11	YEL/BLU	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
12	YEL/BLU	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
15	GRN/YEL	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times

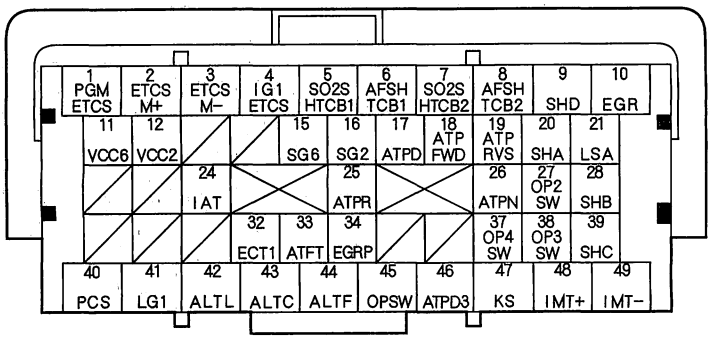
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BACK

System Description (cont'd)

PCM Inputs and Outputs at Connector C (○) (49P)



Terminal side of female terminals

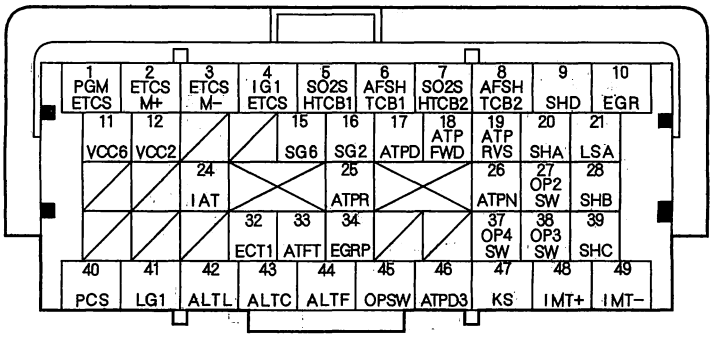
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
16	GRN/YEL	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
17	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal input	In D position: about 0 V In any position other than D position: battery voltage
18	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH D/D3 POSITION)	Detects transmission range switch D, D3 position signal	In D and D3 positions: about 0 V In any position other than D and D3 positions: battery voltage
19	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH R POSITION)	Detects transmission range switch P, R, N position signal input	In P, R, N positions: about 0 V In any position other than P, R, N positions: battery voltage
20	BLU/YEL	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in D3 position, and D position (in 1st, 2nd, or 5th gears): battery voltage With engine running in P, R, N positions, and D position (in 3rd and 4th gears): about 0 V
21	RED	LSA (A/T CLUTCH PRESSURE CONTROL SOLENOID VALVE A)	Drives A/T clutch pressure control solenoid valve A	With ignition switch ON (II): current controlled
24	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.8 V (depending on intake air temperature)
25	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R position: about 0 V In any position other than R position: battery voltage

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PCM Inputs and Outputs at Connector C (○) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

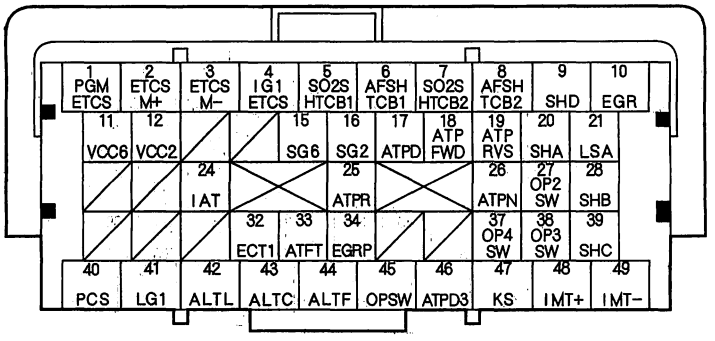
Terminal number	Wire color	Terminal name	Description	Signal
26	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal input	In N position: about 0 V In any position other than N position: battery voltage
27	BLU/BLK	OP2SW (2ND CLUTCH TRANSMISSION FLUID PRESSURE SWITCH)	Detects 2nd clutch transmission fluid pressure switch input	With ignition switch ON (II): • Without 2nd clutch pressure: about 5.0 V • With 2nd clutch pressure: about 0 V
28	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D3 positions, and D position (in 1st, 2nd, or 3rd gears): battery voltage With engine running in D position (in 4th and 5th gears): about 0 V
32	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE SENSOR (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
33	BLU/YEL	ATFT (ATF TEMPERATURE SENSOR)	Detects AFT temperature signal	With ignition switch ON (II): about 0.2—4.0 V (about 1.8 V at operating temperature) (depending on ATF temperature)
34	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Drives EGR valve position sensor signal	With engine running: about 1.2—3.0 V (depending on EGR valve lift)
37	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 5.0 V • With 4th clutch pressure: about 0 V

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System Description (cont'd)

PCM Inputs and Outputs at Connector C (○) (49P)



Terminal side of female terminals

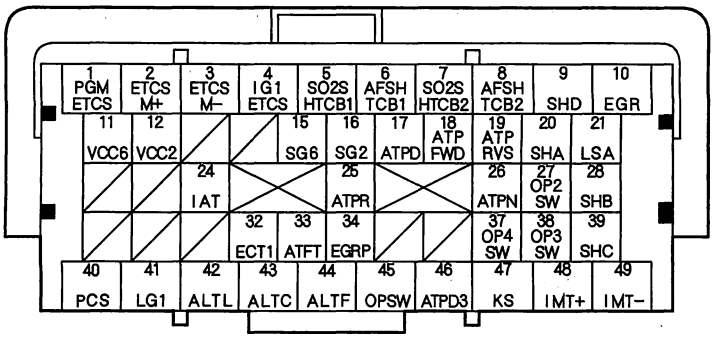
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
38	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 5.0 V • With 3rd clutch pressure: about 0 V
39	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in D position (in 1st, 3rd, and 5th gears): battery voltage With engine running in P, R, N, D3 positions, and D position (in 2nd and 4th gears): about 0 V
40	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
41	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for PCM circuit	Less than 1.0 V at all times
42	WHT/BLU	ALTL (ALTERNATOR L SIGNAL)	Detects alternator L signal	With ignition switch ON (II): about 0 V With engine running: battery voltage
43	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With fully warmed up engine running battery voltage (depending on electrical load)
44	WHT/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 0—5.0 V (depending on electrical load)
45	BUL/YEL	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch ON (II): about 0 V With engine running: battery voltage

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PCM Inputs and Outputs at Connector C (○) (49P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
46	RED	ATPD3 (TRANSMISSION RANGE SWITCH D3)	Detects transmission switch D3 signal input	In D3 position: about 0 V In any position other than D3 position: battery voltage
47	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
48	WHT/BLU	IMT+ (INTAKE MANIFOLD TUNING (IMT) ACTUATOR +SIDE)	Drives IMT actuator	With ignition switch ON (II): battery voltage
49	WHT/RED	IMT− (INTAKE MANIFOLD TUNING (IMT) ACTUATOR −SIDE)	Drives IMT actuator	With ignition switch ON (II): battery voltage

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System Description (cont'd)

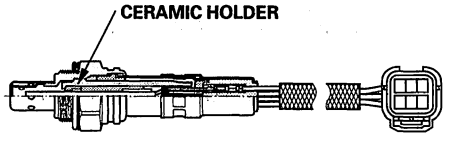
PGM-FI System

The programmed fuel injection (PGM-FI) system is a sequential multiport fuel injection system.

Alternator Control
The alternator signals the PCM during charging.

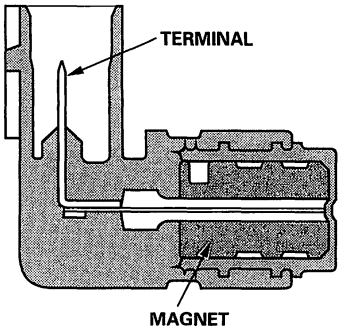
Air Conditioning (A/C) Compressor Clutch Relay
When the PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

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 TWC, and sends signals to the PCM which varies the duration of fuel injection accordingly.

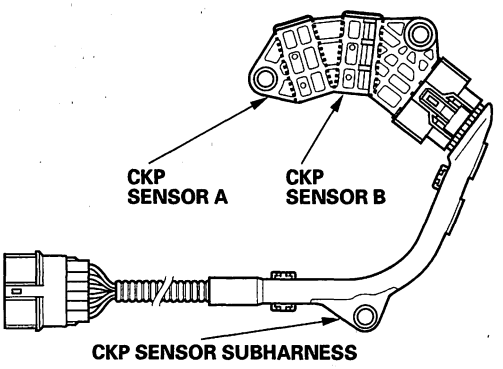


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the PCM. It converts atmospheric pressure into a voltage signal that is used by the PCM to modify the basic duration of the fuel injection discharge.

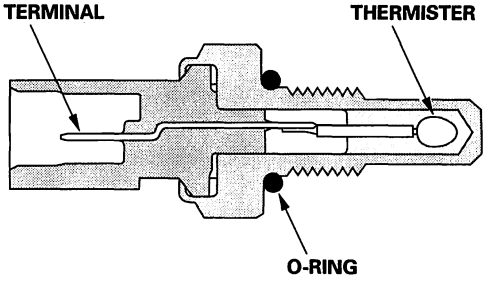
Camshaft Position (CMP) Sensor
The CMP sensor input is used by the PCM to determine ignition timing at start up (cranking) and when crank angle is abnormal.



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/Engine Coolant Temperature (ECT) Sensor 2
ECT sensors 1 and 2 are temperature dependent resistors (thermistors). The resistance decreases as the engine coolant temperature increases.



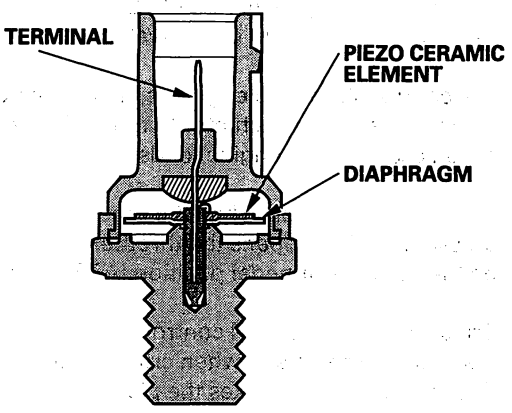
Ignition Timing Control
The PCM contains the memory for basic ignition timing at various engine speeds and manifold absolute pressures. It also adjusts the timing according to engine coolant temperature.

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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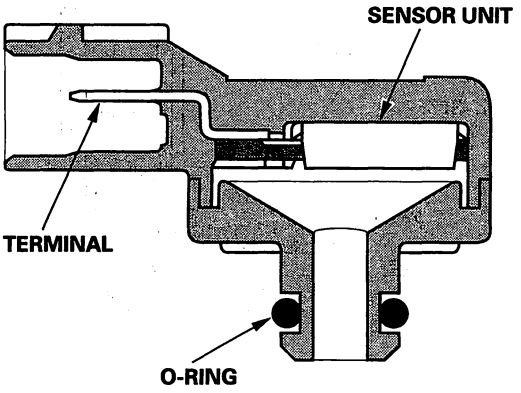
Knock Sensor
The knock control system adjusts the ignition timing to minimize knock.



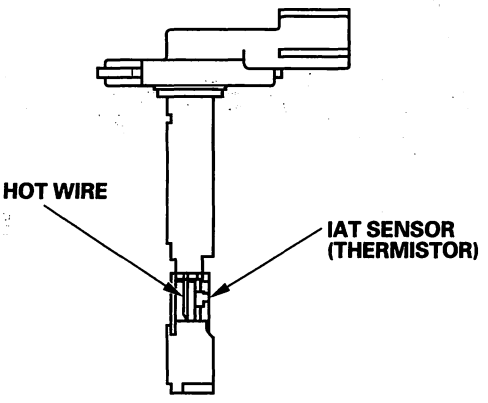
Malfunction Indicator Lamp (MIL) Indication (In relation to Readiness Codes)
The vehicle has certain "readiness codes" that are part of the on-board diagnostics for the emissions systems. If the vehicle's battery has been disconnected or gone dead, if the DTCs have been cleared, or if the PCM has been 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 set to complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-66).

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
The mass air flow (MAF) sensor/intake air temperature (IAT) sensor 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.

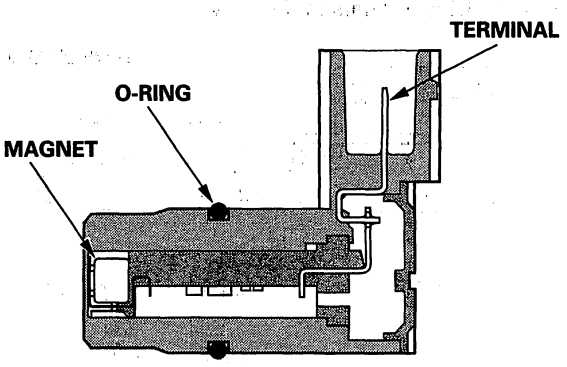


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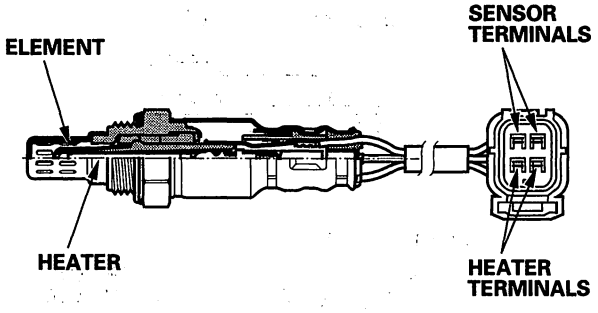
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System Description (cont'd)

Output Shaft (Countershaft) Speed Sensor
This sensor detects countershaft speed.



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

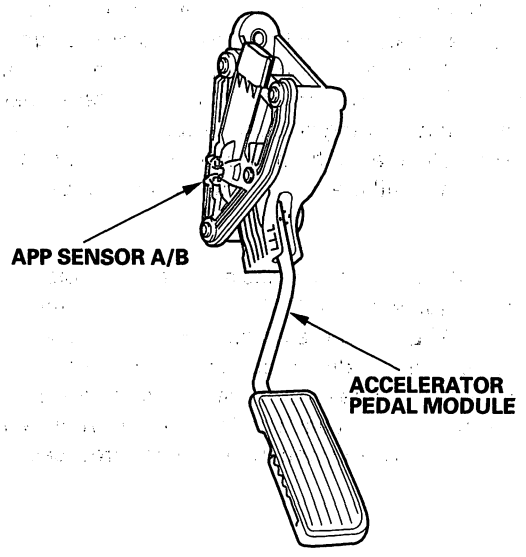
The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

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 the set speed when cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

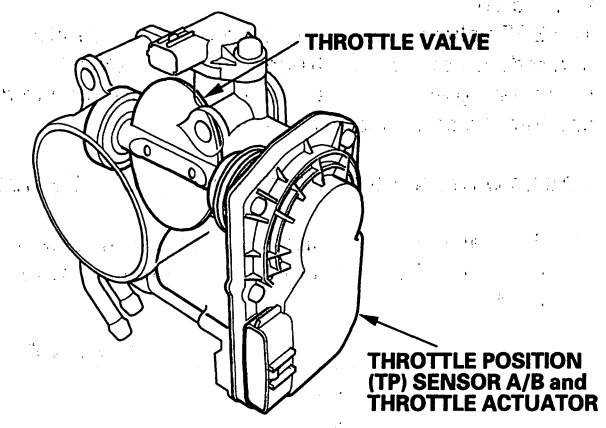
Accelerator Pedal Position (APP) Sensor
As the accelerator pedal position changes, the sensor varies the signal voltage to the PCM.



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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.



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 alternator 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.

Power Steering Pressure (PSP) Switch
The PSP switch signals the PCM when the power steering load is high.

Fuel Supply System

Fuel Cutoff Control
During deceleration with the throttle valve closed, current to the injectors is cut off to improve fuel economy at engine speeds over 850 rpm. 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 switch is turned on, the PCM grounds PGM-FI main relay 2 which feeds current to the fuel pump control module. The PCM sends a signal to the fuel pump control module to operate the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the fuel pump speed is controlled in four levels by the fuel pump control module. The PCM decides the fuel pump speed by the calculation of the injector activation time and engine speed and sends a operation command signal to the fuel pump control module. This operation made possible to decrease fuel pump noise at low engine speed.

PGM-FI Main Relay 1 and 2
PGM-FI main relay 1 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. PGM-FI main relay 2 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.

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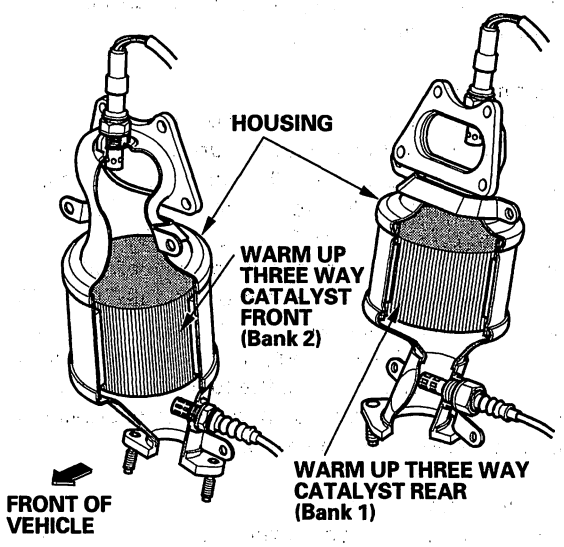
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System Description (cont'd)

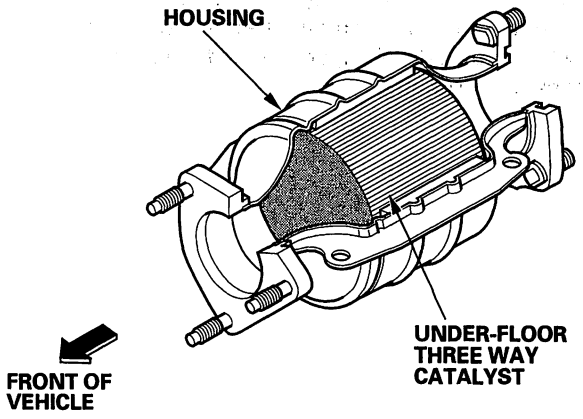
Catalytic Converter System

Warm Up/Three Way Catalytic Converter (WU-TWC) and Under-Floor 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 (CO_2), nitrogen (N_2), and water vapor.

WU-TWC



TWC



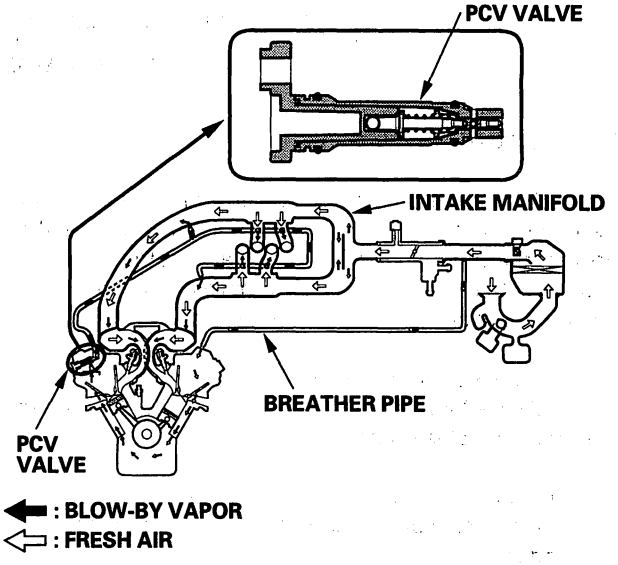
Exhaust Gas Recirculation (EGR) System

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.



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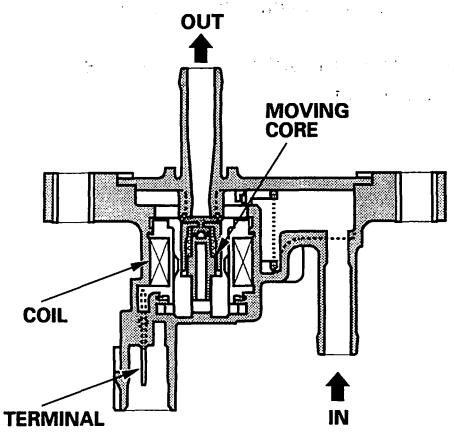
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Evaporative Emission (EVAP) Control System

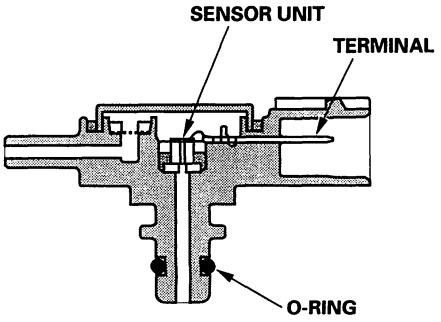
Refer to the system diagram to see a functional layout of the system.

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.

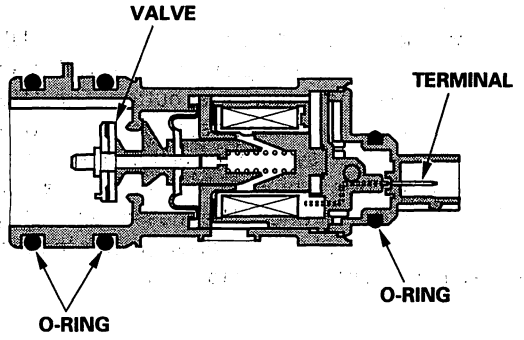
EVAP Canister Purge Valve
When the engine coolant temperature is below 140 °F (60 °C), the PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.



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.



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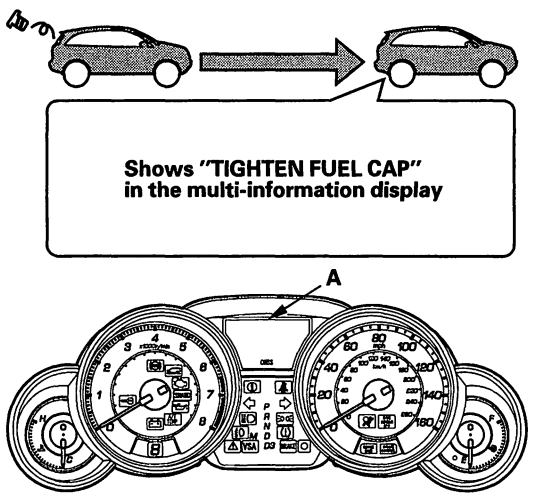
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System Description (cont'd)

Fuel Cap Warning Message

The PCM will detect a loose or missing fuel fill cap as an evaporative system leak and alerts the driver by showing a warning message in the gauge display.

First drive cycle
The first time a leak is detected a "TIGHTEN FUEL CAP" message in the gauge display (A). To scroll to another message, press the select/reset button. The "TIGHTEN FUEL CAP" message will appear each time you restart the engine until the system turns the message off. Turn the engine off then replace or tighten the fuel fill cap until it clicks at least once. The message should go off after several days of normal driving after the fuel fill cap has been tightened or replaced.



To make the message go off (with the HDS)

Procedure
1. Tighten the fuel fill cap until it clicks.
2. Clear the Temporary DTC with the HDS.
3. Verify there is no leak by doing the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

To make the message go off (without the HDS)

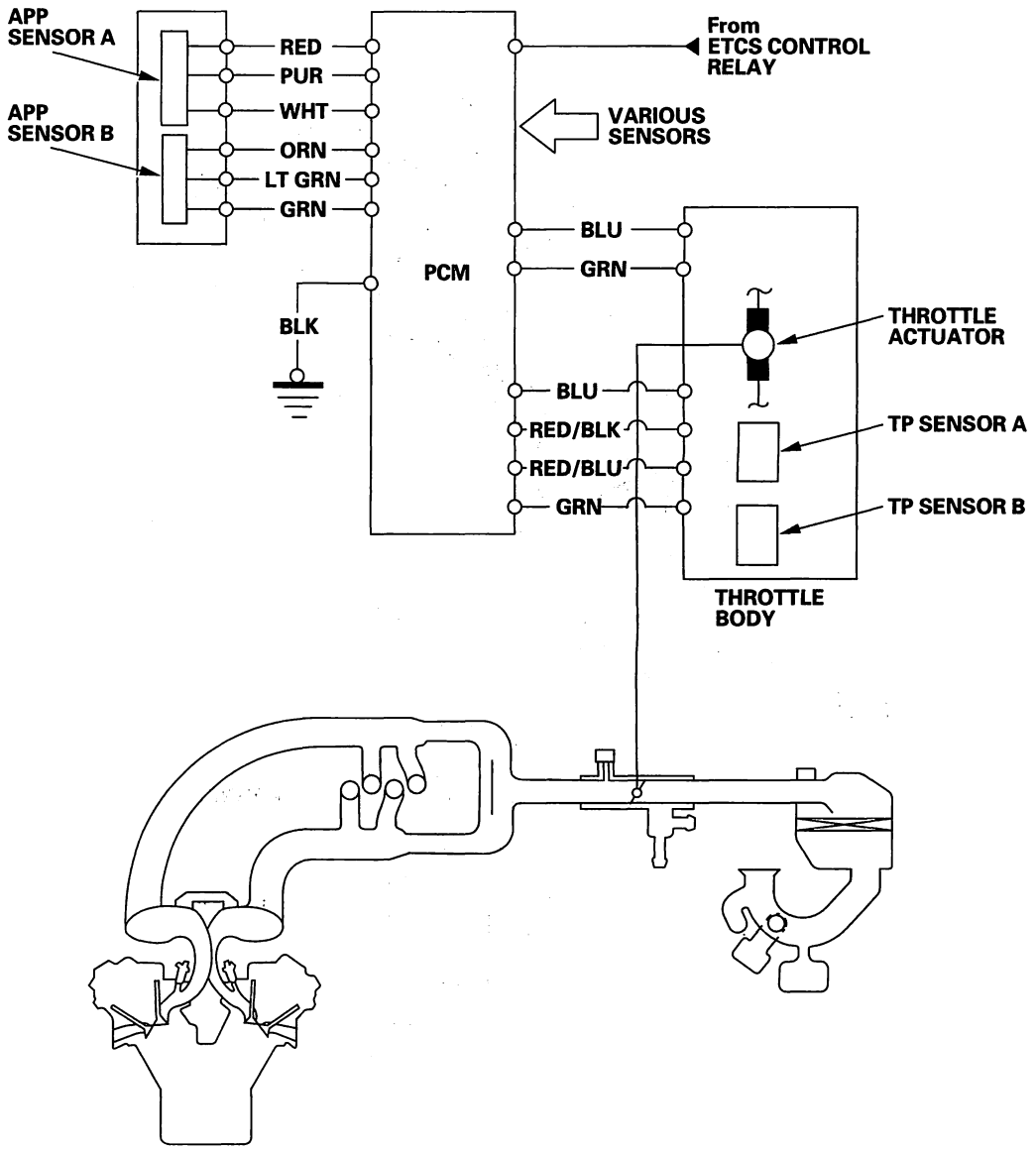
Procedure
1. Tighten the fuel fill cap until it clicks.
2. The message should go off after several days normal driving.

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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, electronic throttle control system (ETCS) control relay, and the PCM.



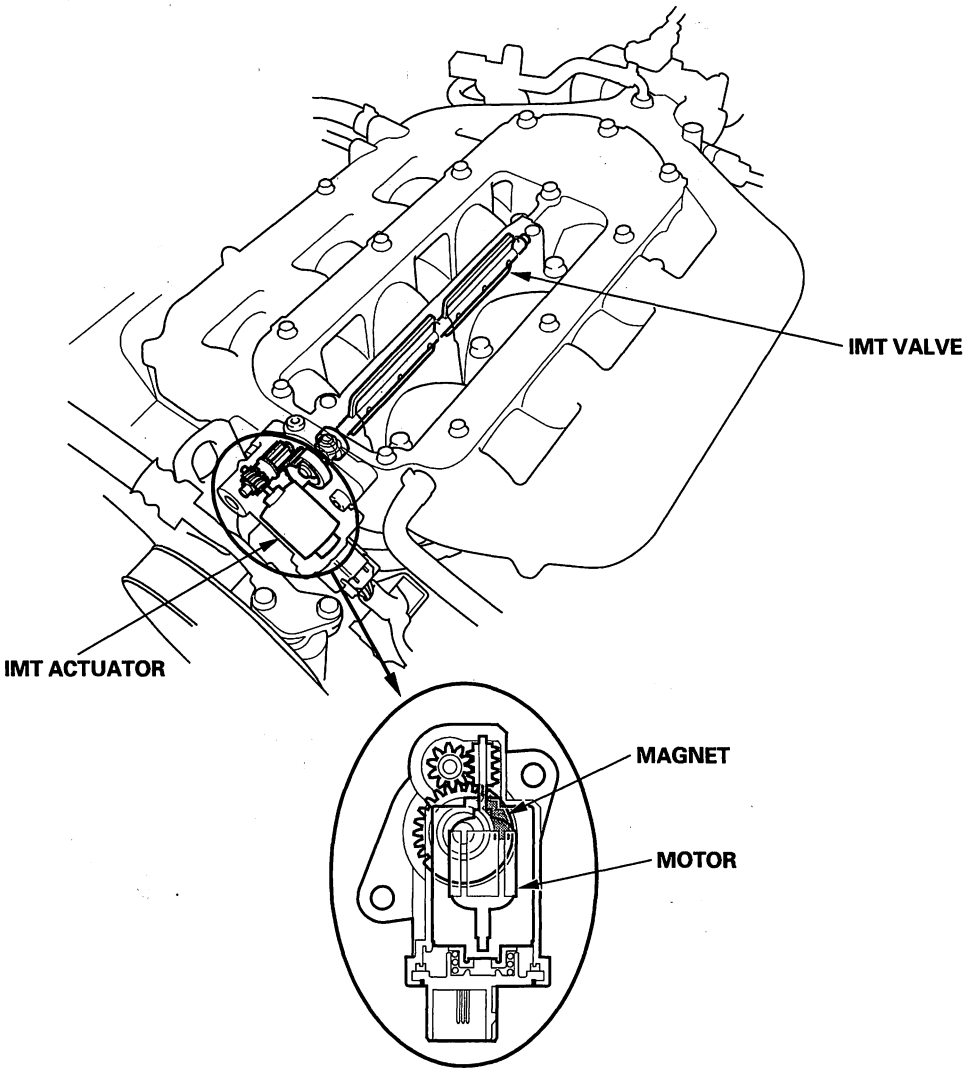
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System Description (cont'd)

Intake Manifold Tuning (IMT) Valve System

Engine power is adjusted by opening and closing the intake manifold tuning (IMT) actuator. 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.
The intake manifold tuning (IMT) valve actuator contains a sensor that detects the IMT valve position and sends it to the PCM.



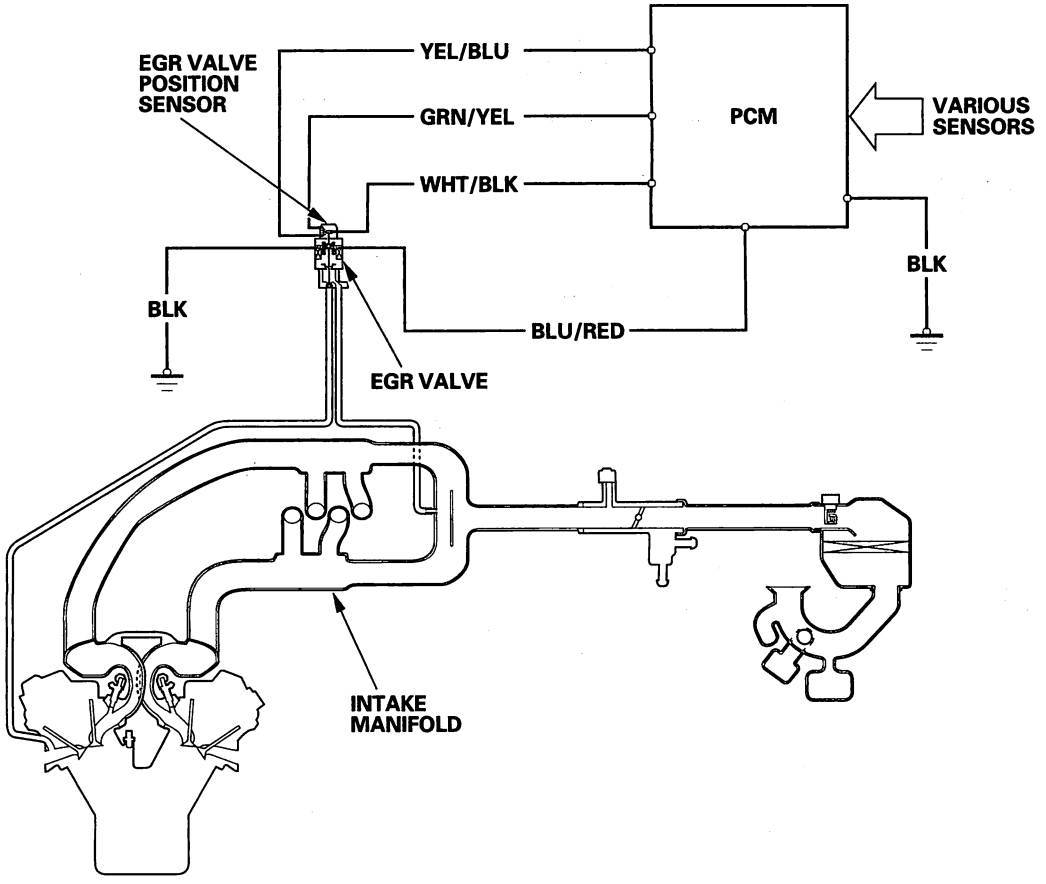
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Exhaust Gas Recirculation (EGR) System Diagram

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 contains the ideal EGR valve position for various 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.



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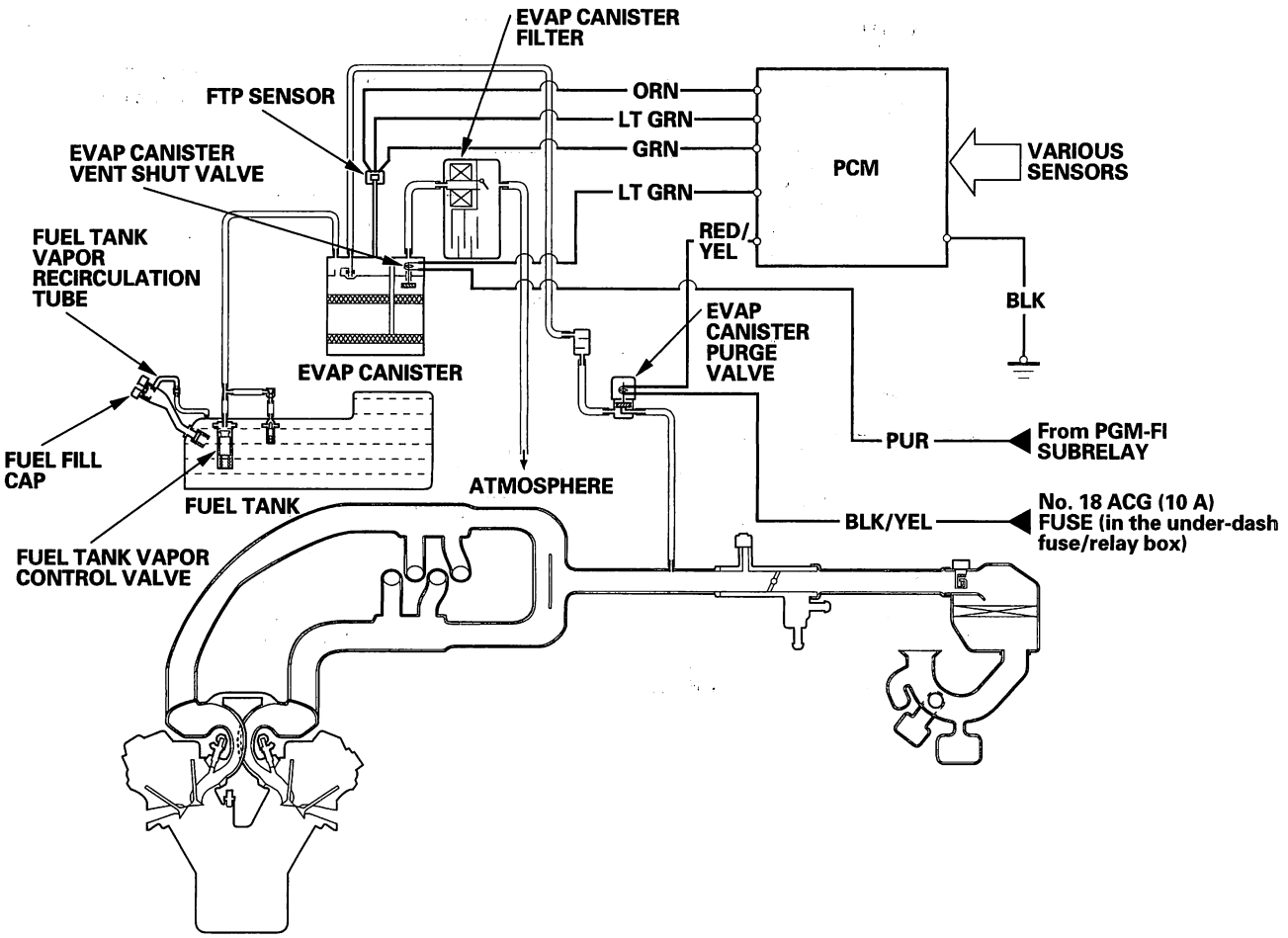
BACK

System Description (cont'd)

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.

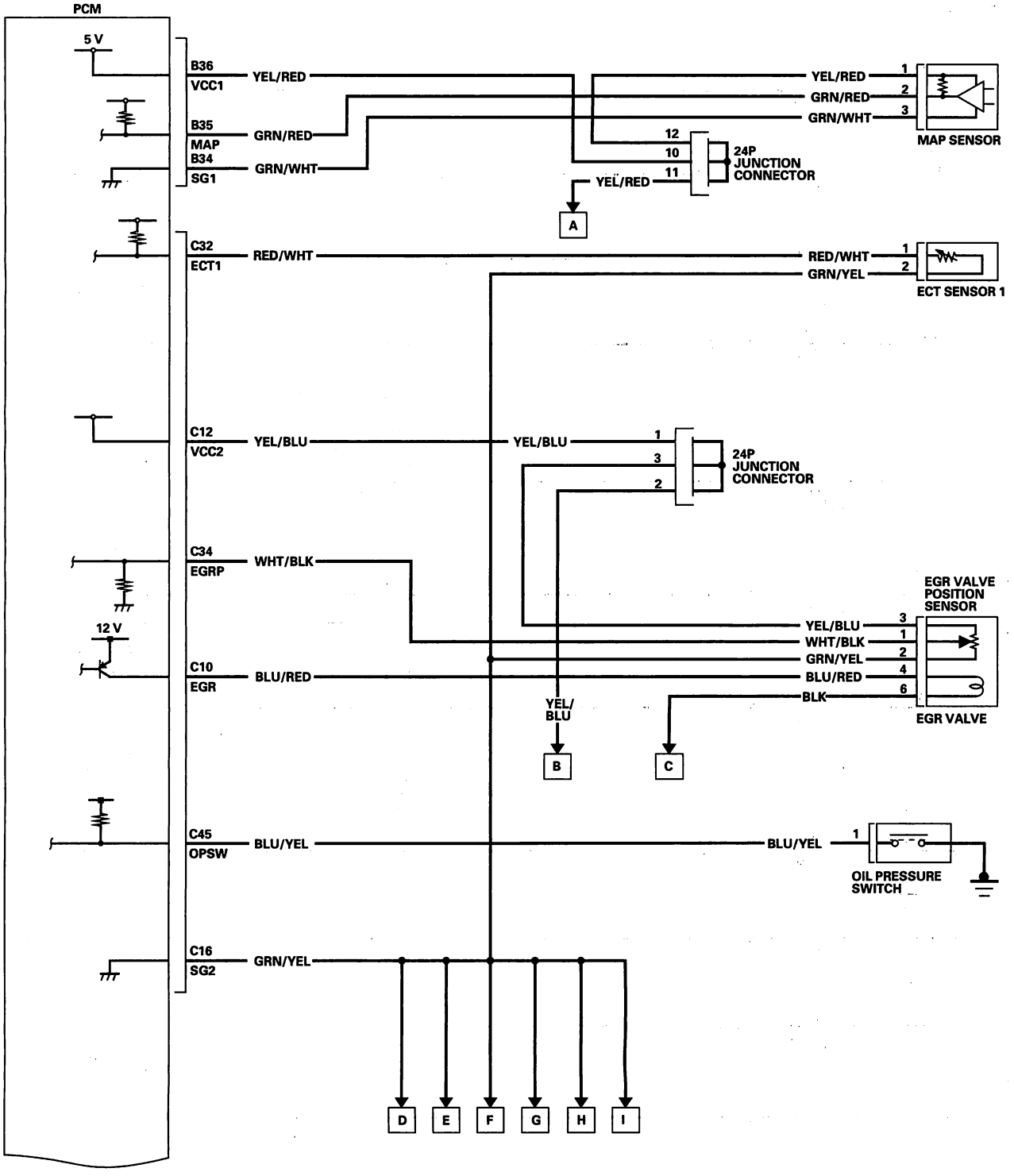
- The EVAP canister is purged by drawing fresh air through it and into a port on the intake manifold. The purging vacuum is controlled by the EVAP canister purge valve, which operates whenever engine coolant temperature is above 140 °F (60 °C).
- During refueling, the fuel tank vapor control valve opens with the pressure in the fuel tank, and feeds the fuel vapor to the EVAP canister.



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PCM Circuit Diagram

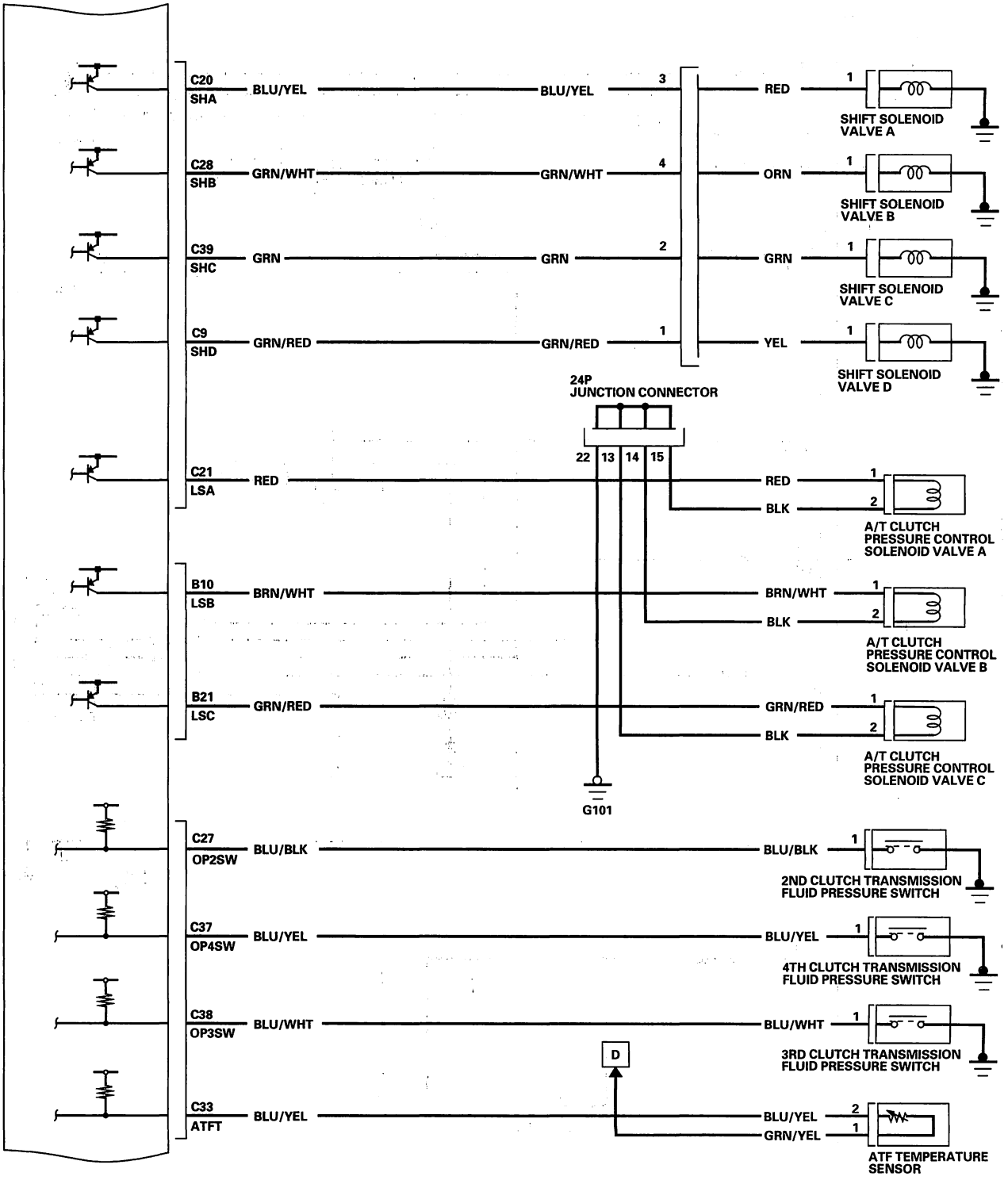


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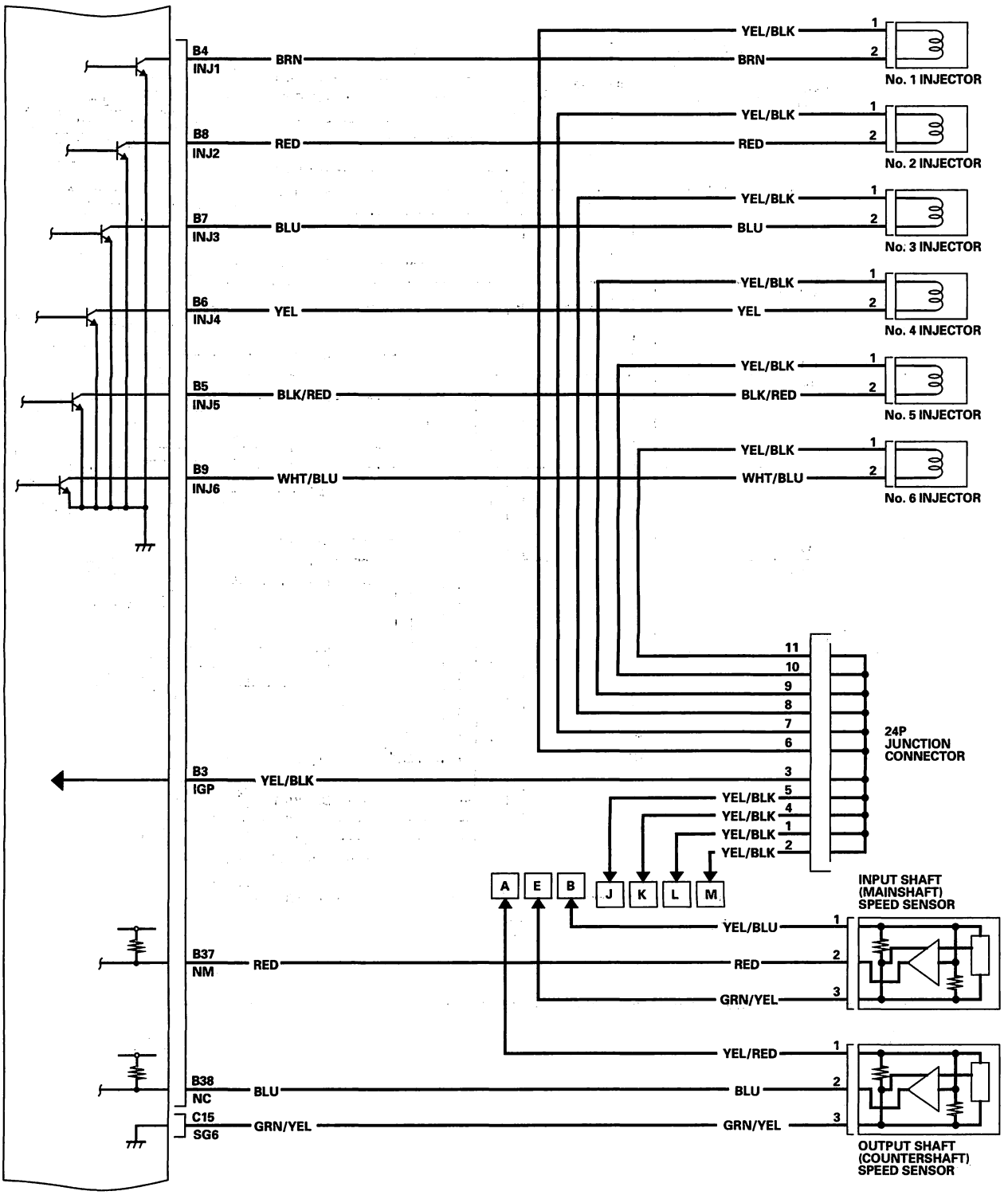
System Description (cont'd)

PCM Circuit Diagram (cont'd)



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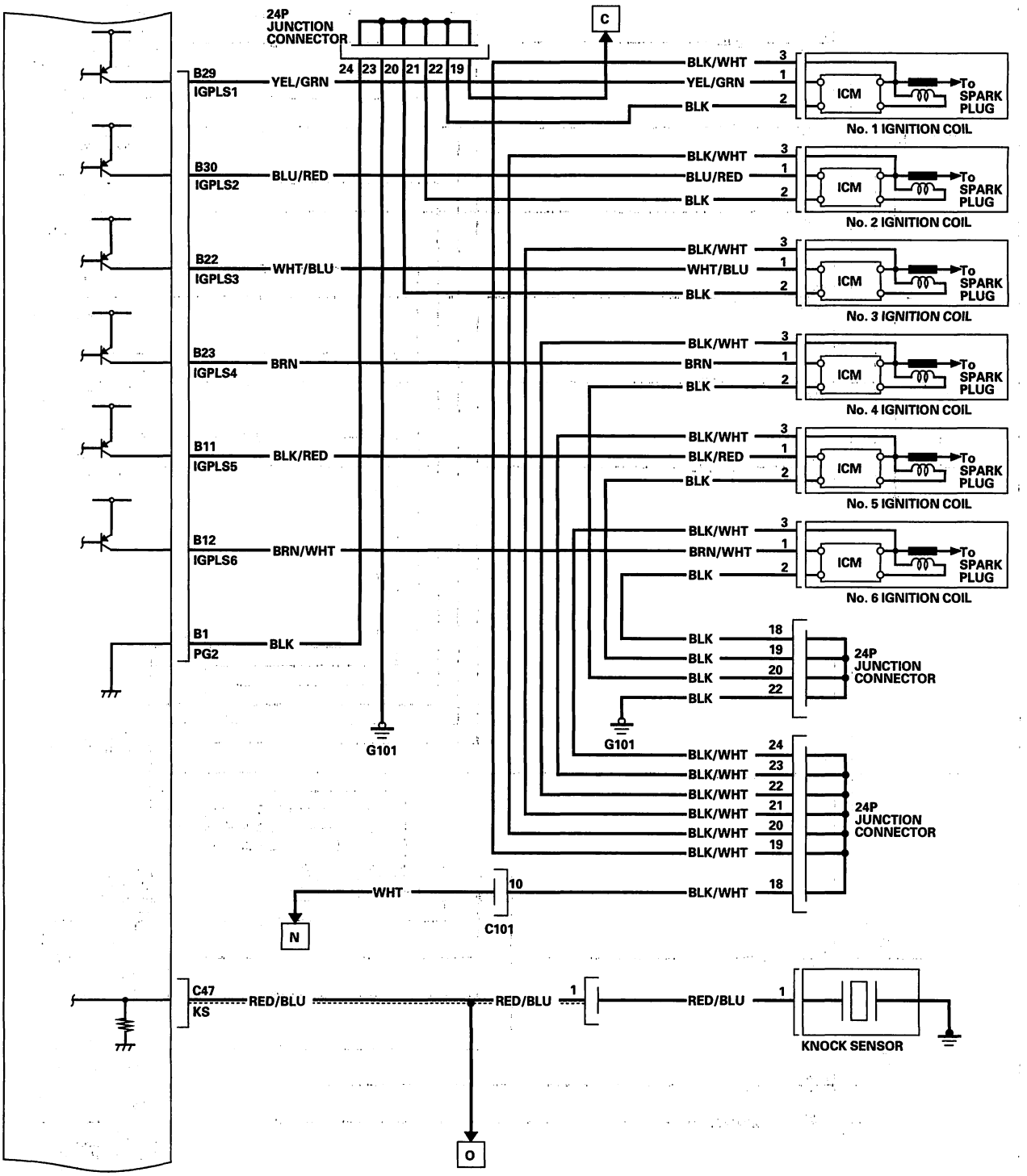


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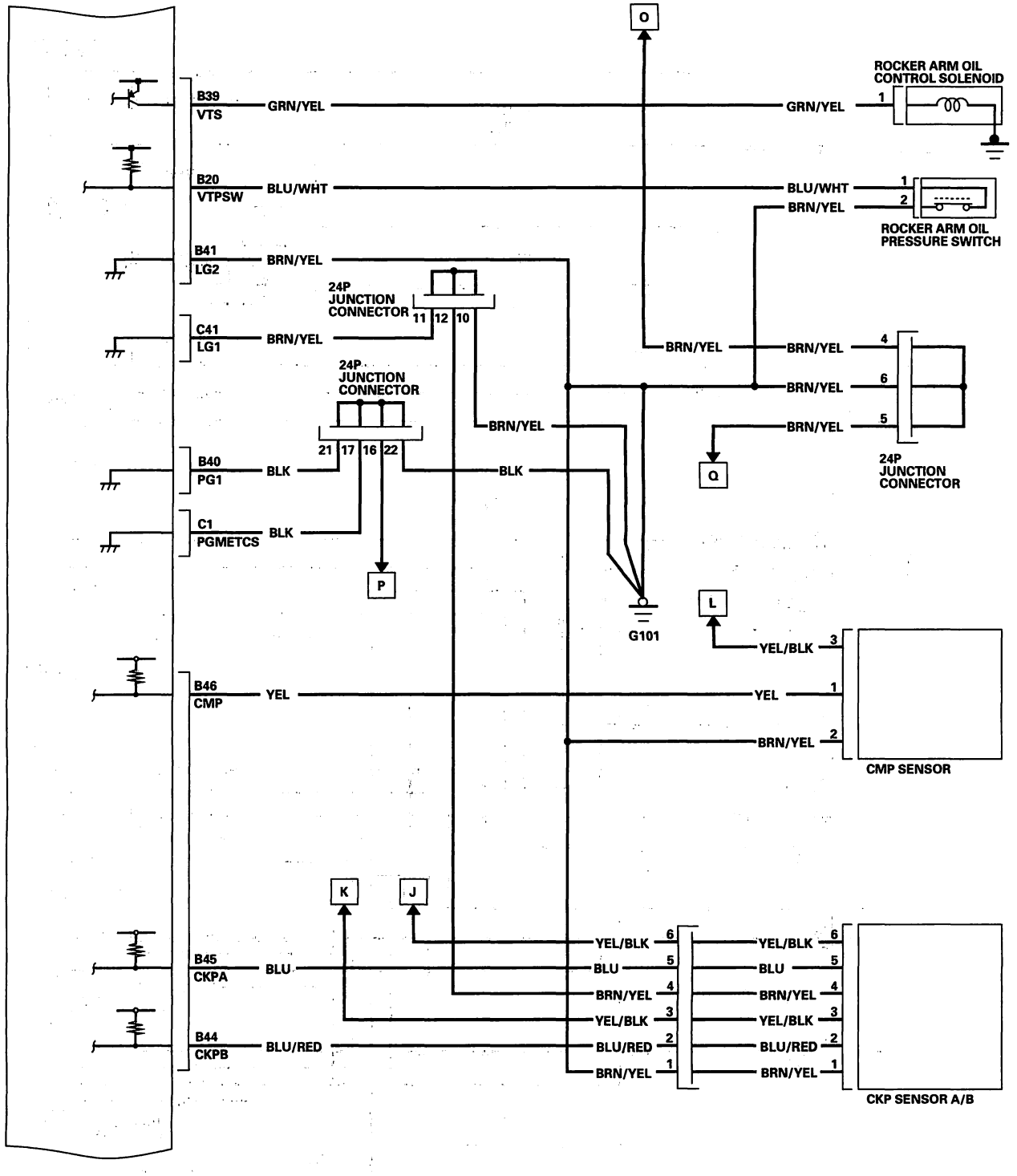
System Description (cont'd)

PCM Circuit Diagram (cont'd)



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BACK

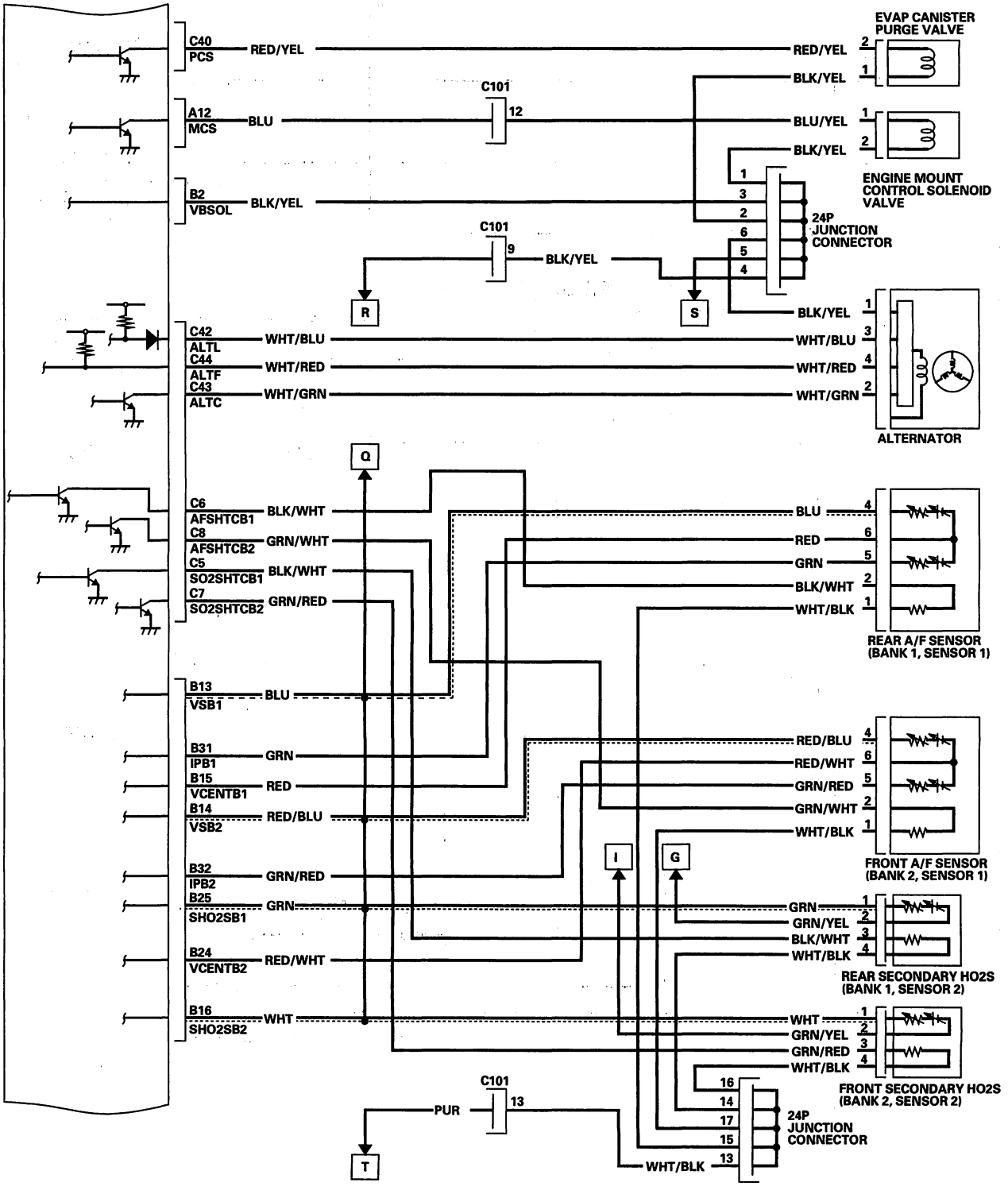


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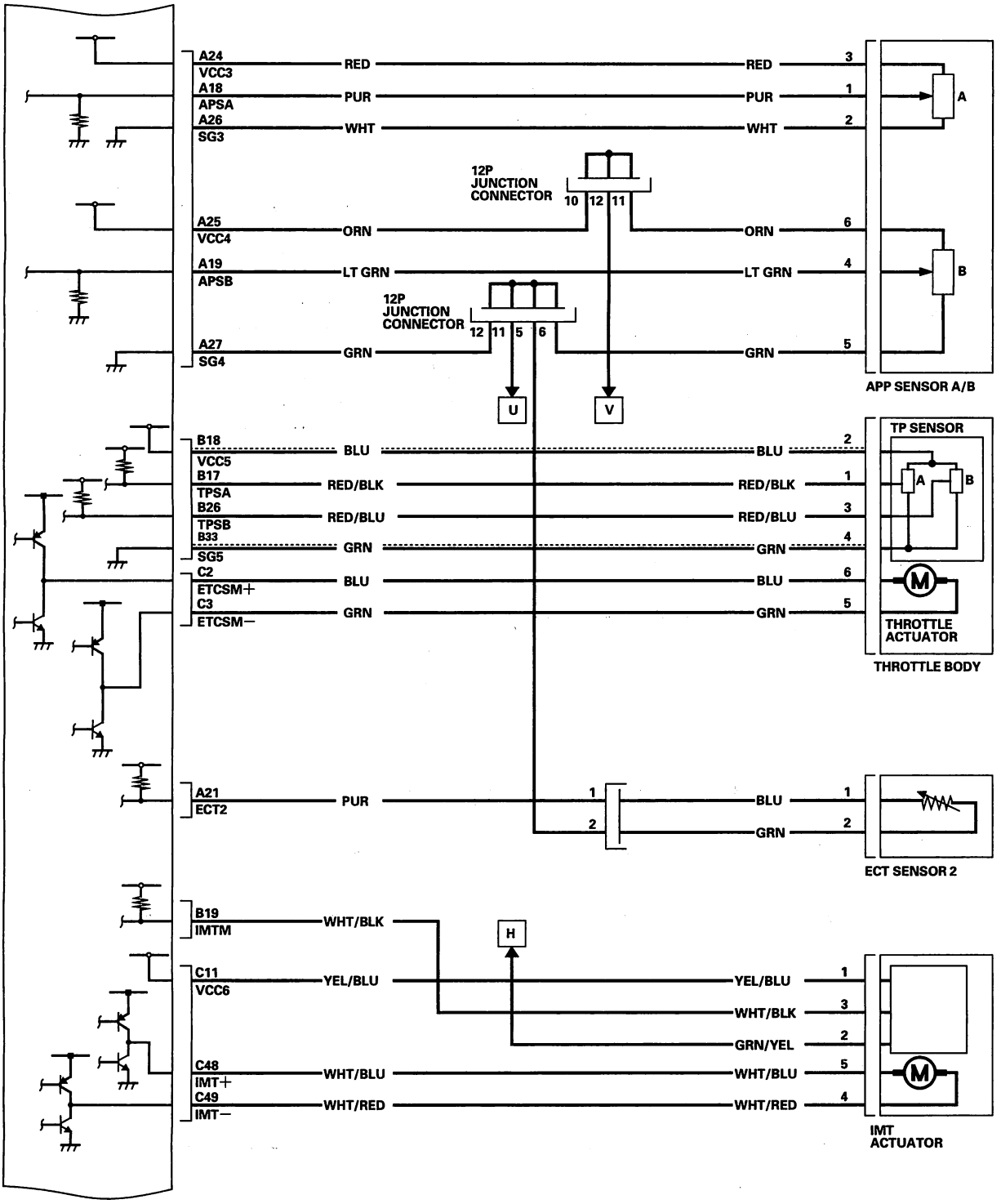
System Description (cont'd)

PCM Circuit Diagram (cont'd)



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BACK

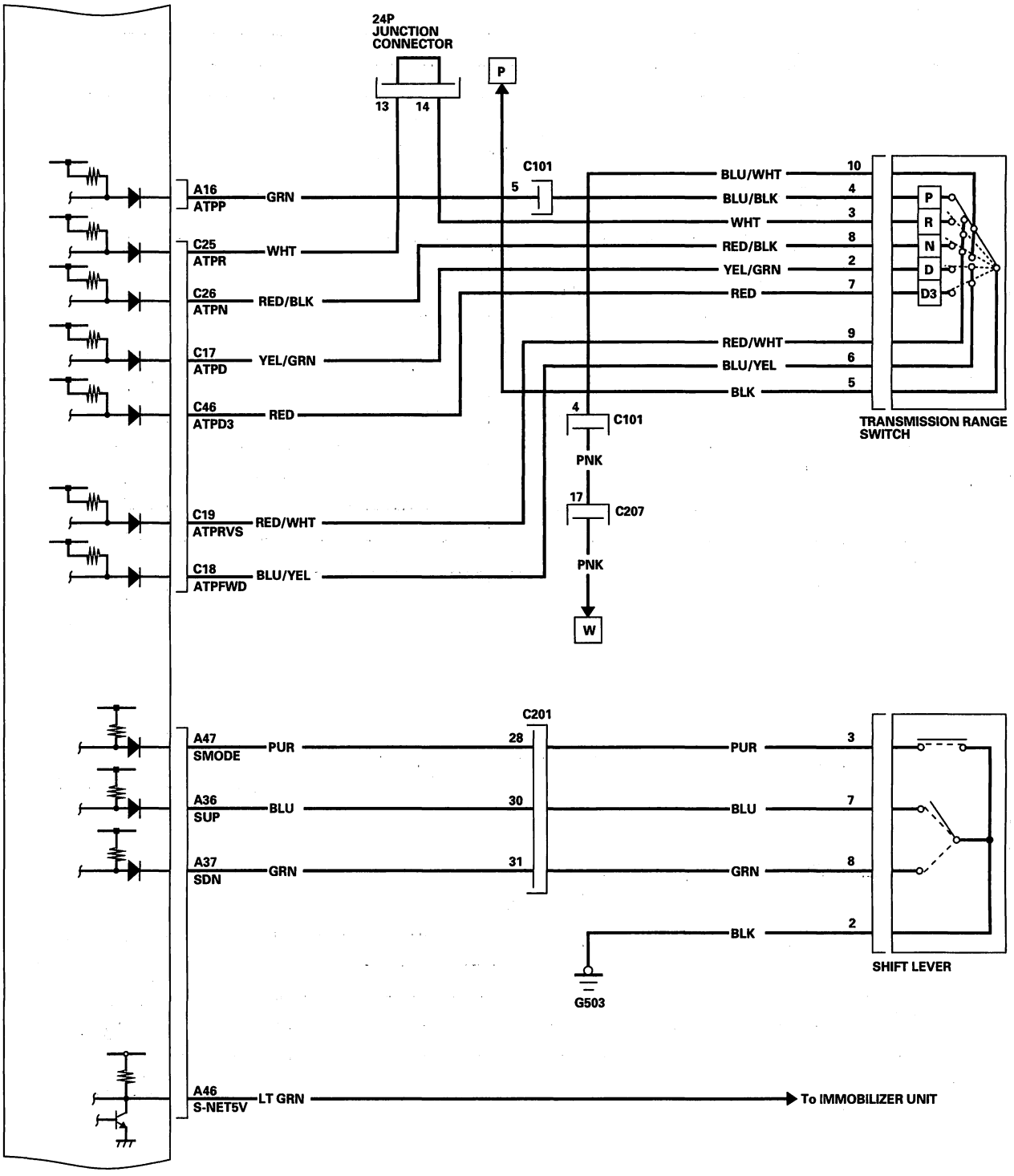


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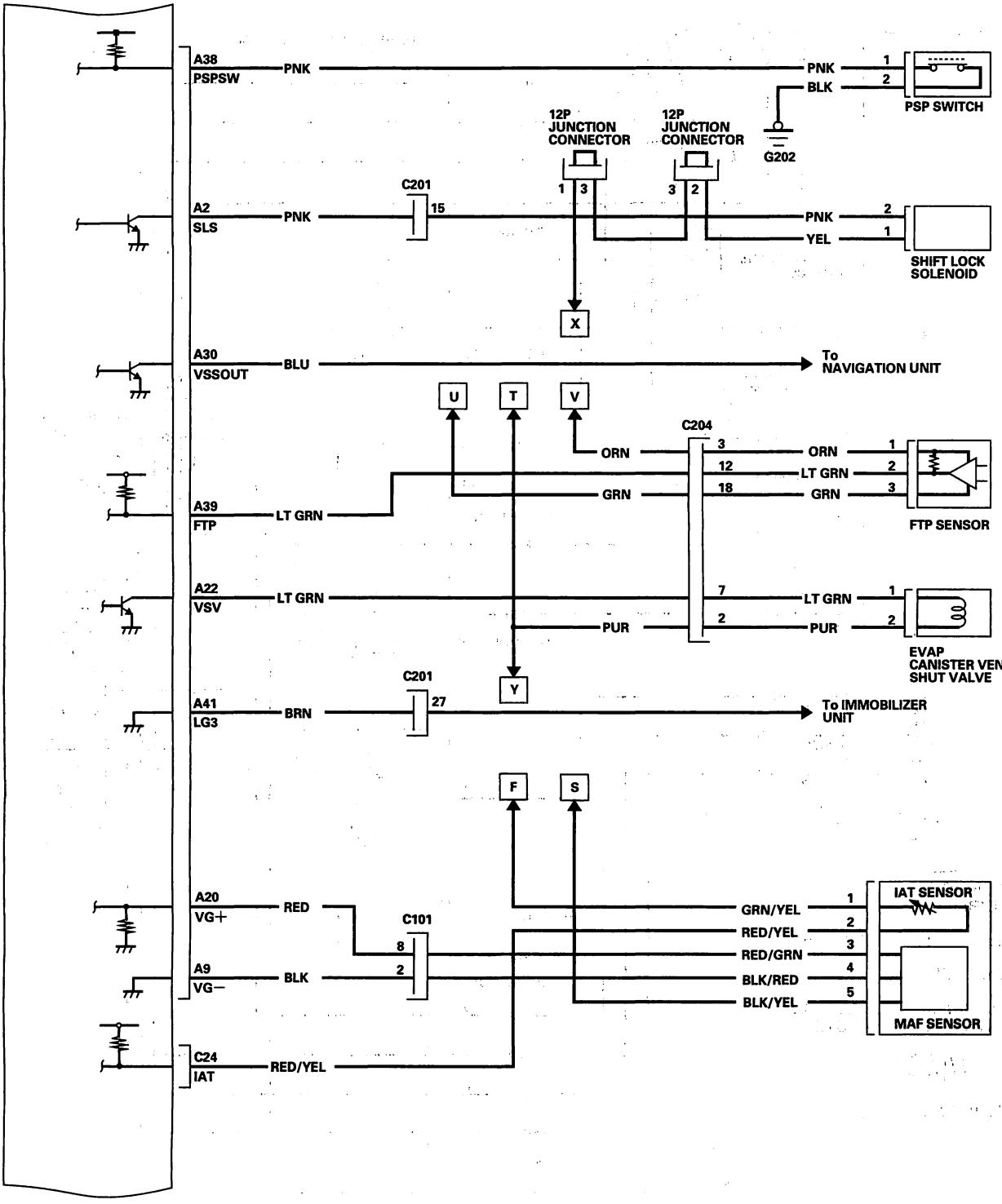
System Description (cont'd)

PCM Circuit Diagram (cont'd)



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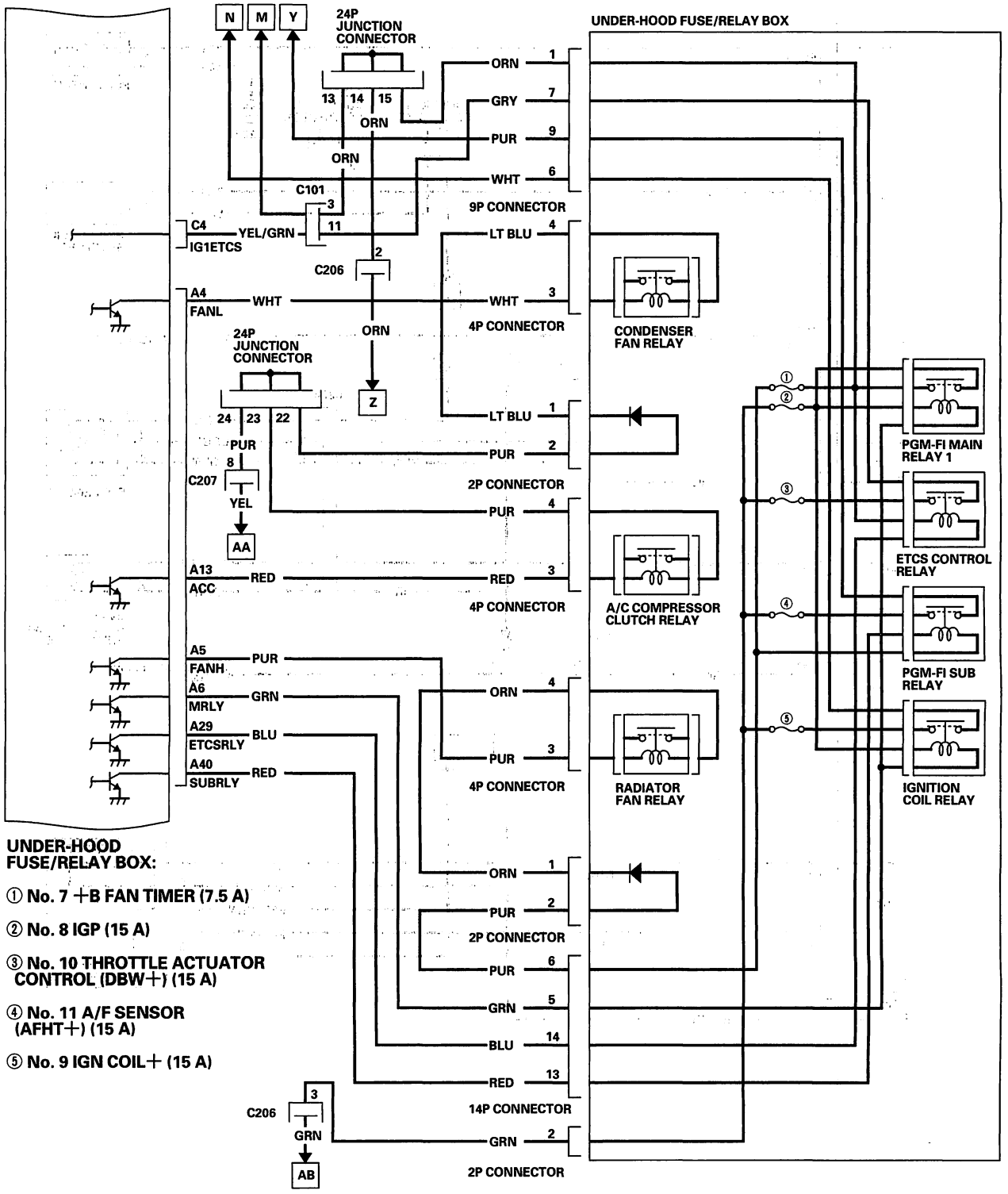


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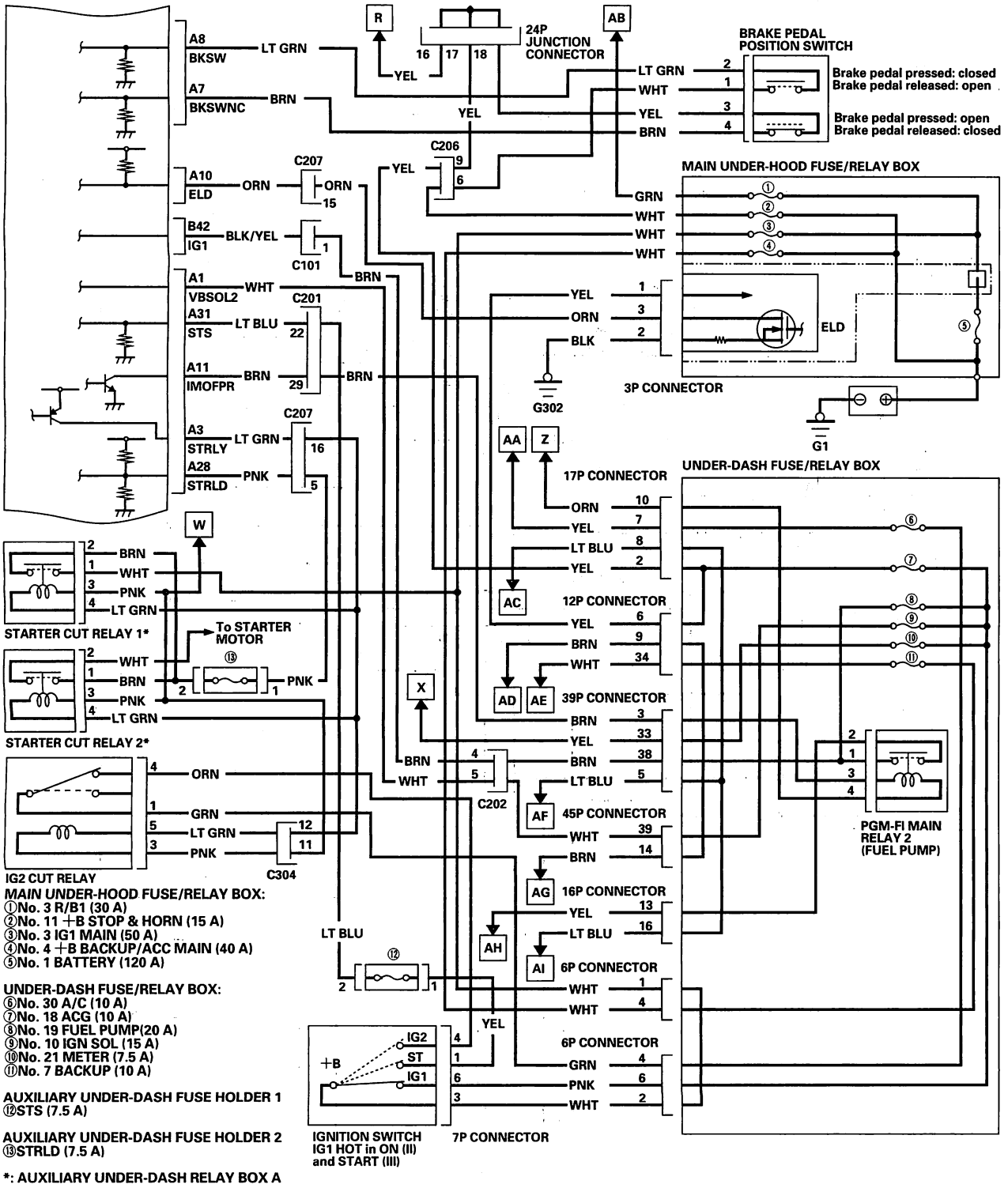
System Description (cont'd)

PCM Circuit Diagram (cont'd)



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MAIN UNDER-HOOD FUSE/RELAY BOX:
①No. 3 R/B1 (30 A)
②No. 11 +B STOP & HORN (15 A)
③No. 3 IG1 MAIN (50 A)
④No. 4 +B BACKUP/ACC MAIN (40 A)
⑤No. 1 BATTERY (120 A)

UNDER-DASH FUSE/RELAY BOX:
⑥No. 30 A/C (10 A)
⑦No. 18 ACG (10 A)
⑧No. 19 FUEL PUMP(20 A)
⑨No. 10 IGN SOL (15 A)
⑩No. 21 METER (7.5 A)
⑪No. 7 BACKUP (10 A)

AUXILIARY UNDER-DASH FUSE HOLDER 1
⑫STS (7.5 A)

AUXILIARY UNDER-DASH FUSE HOLDER 2
⑬STRLD (7.5 A)

*: AUXILIARY UNDER-DASH RELAY BOX A

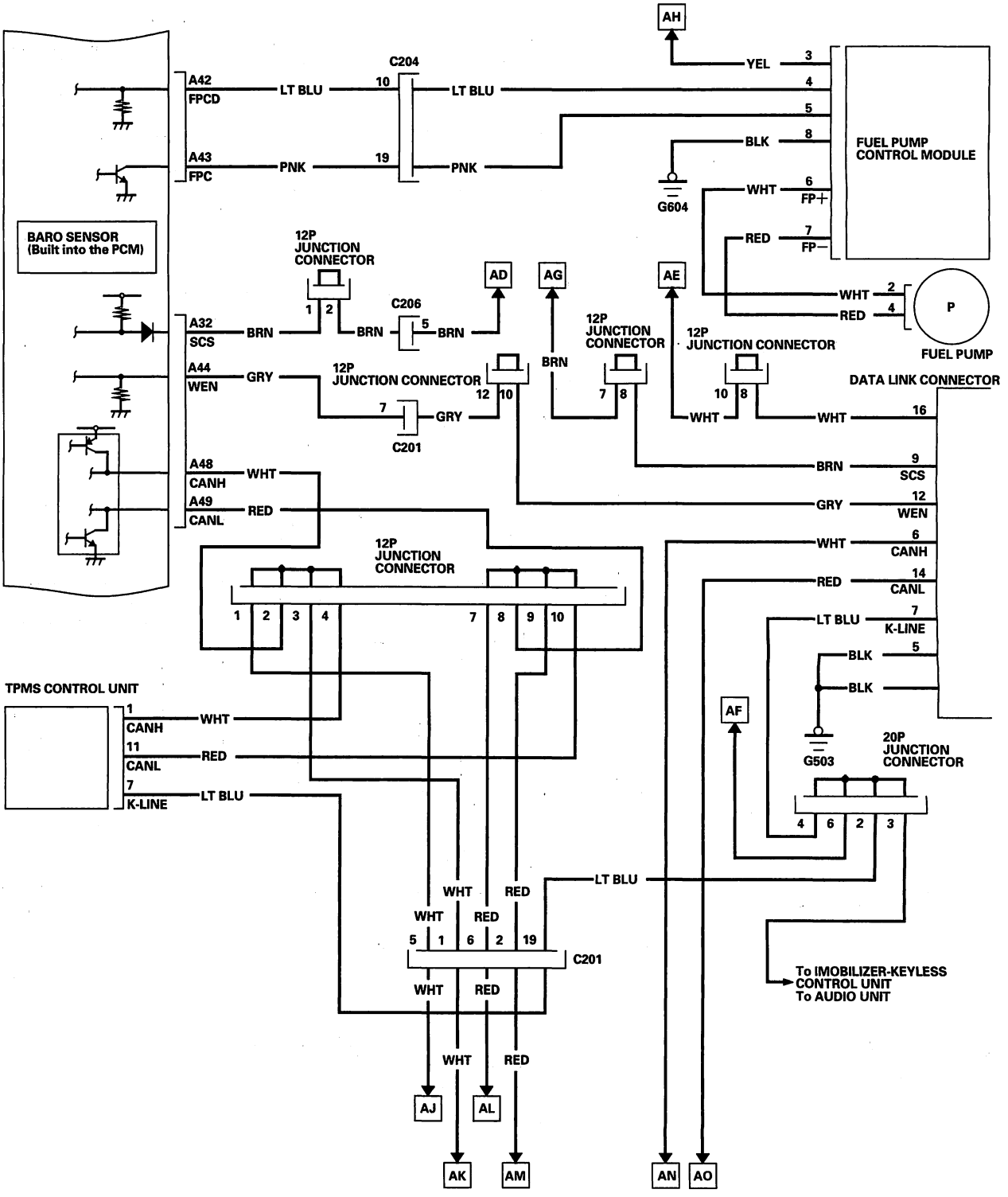
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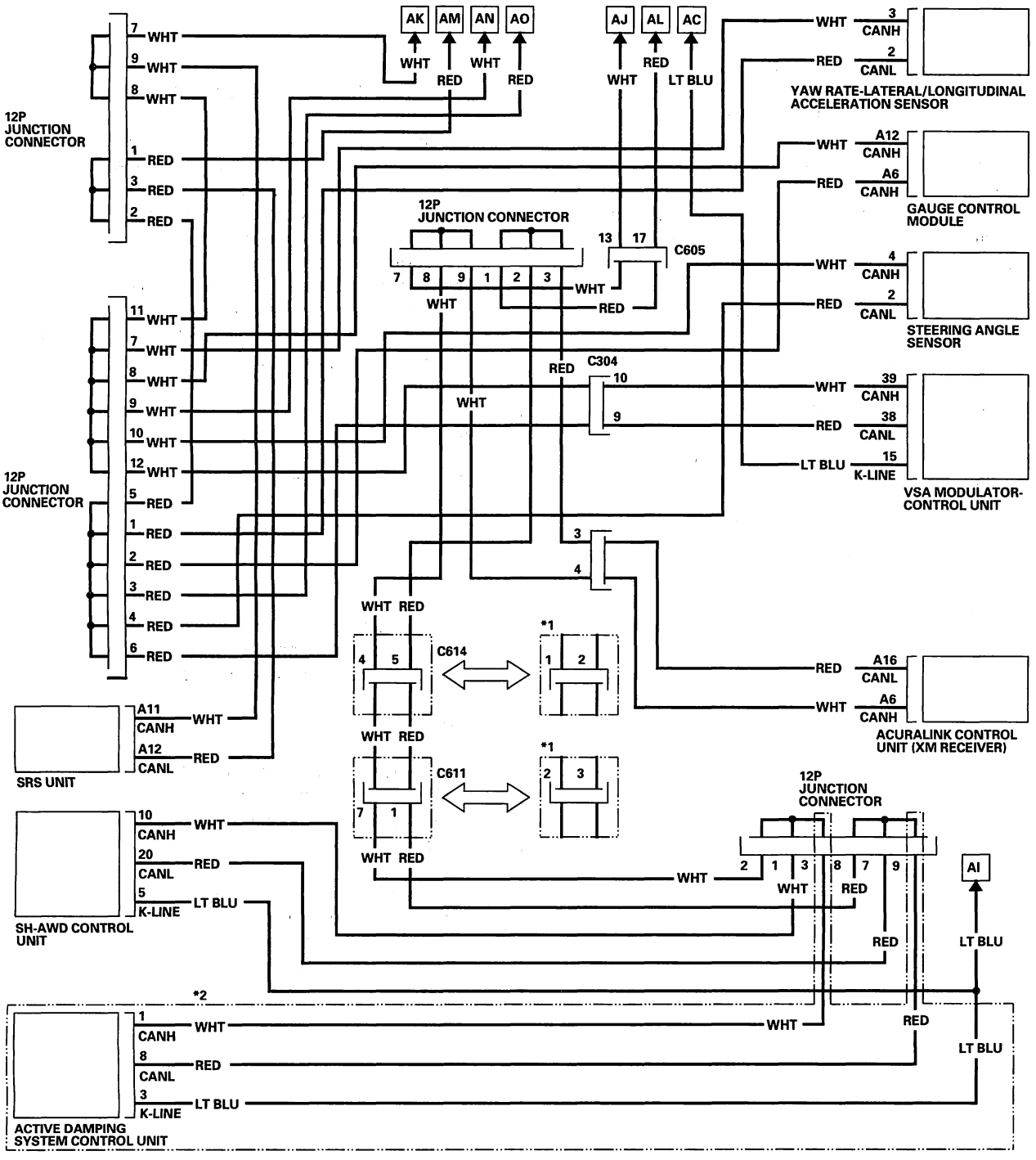
System Description (cont'd)

PCM Circuit Diagram (cont'd)



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BACK



*1: With Navigation system
*2: With Active damping system

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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 to incomplete. 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 set to 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 11-9). 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, if the DTCs have been cleared, or if 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 SENSOR 1 at 158 °F (70 °C) or more.
- IAT SENSOR at 20 °F (—7 °C) or more.
- Vehicle speed sensor (VSS) above 25 mph (40 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 complete.
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.

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Evaporative Emission (EVAP) Control System Monitor and Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

- Battery voltage is more than 10.5 V.
- Engine at idle.
- ECT SENSOR 1 and 2 between 176 °F (80 °C) and 212 °F (100 °C).
- MAP sensor less than 46.6 kPa (14 in.Hg, 350 mmHg).
- VSS 0 mph (0 km/h).
- IAT SENSOR between 32 °F (0 °C) and 212 °F (100 °C).

Procedure

1. Connect the HDS to the 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 result is normal, readiness is complete.
   - If the result is not normal, go to the next step.
4. 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, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 140 °F (60 °C) or more.

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 5 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 less than 140 °F (60 °C), run the engine until it is more than 140 °F (60 °C), then repeat the procedure.

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How to Set Readiness Codes (cont'd)

Air Fuel Ratio (A/F) Sensor Heater Monitor Readiness Code

NOTE: All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if 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, if the DTCs have been cleared, or if the PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 176 °F (80 °C) or more.

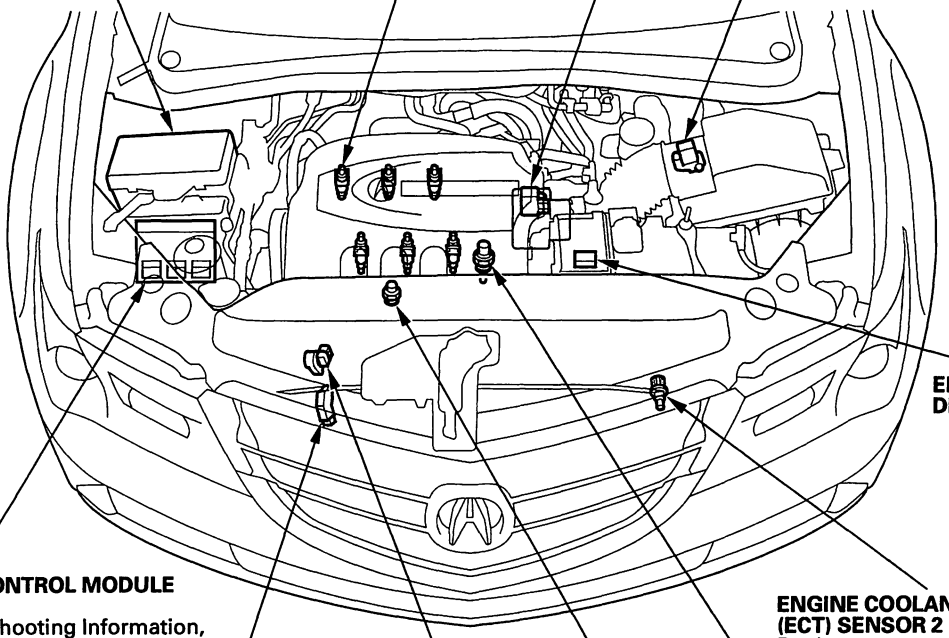
Procedure

1. Connect the HDS to the DLC.
2. Start the engine.
3. Drive at a steady speed with the transmission in D position, at 50—62 mph (80—100 km/h) or above for more than 10 seconds.
4. With the transmission in D position, 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.

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Component Location Index



INJECTORS
Replacement, page 11-236

UNDER-HOOD FUSE/RELAY BOX
Includes:
- **PGM-FI MAIN RELAY 1**
- **PGM-FI SUBRELAY**

MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
Replacement, page 11-238

MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR
Replacement, page 11-238

ELECTRICAL LOAD DETECTOR (ELD)

POWERTRAIN CONTROL MODULE (PCM)
General Troubleshooting Information, page 11-3
Update, page 11-7
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ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2
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ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
Replacement, page 11-239

CAMSHAFT POSITION (CMP) SENSOR
Replacement, page 11-242

KNOCK SENSOR
Replacement, page 11-243

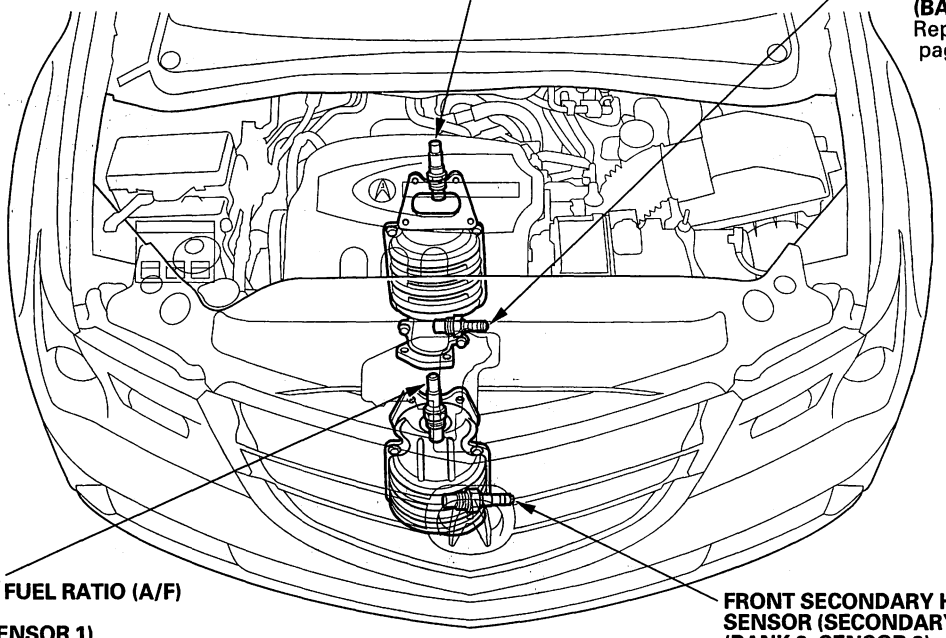
CRANKSHAFT POSITION (CKP) SENSOR
Replacement, page 11-242

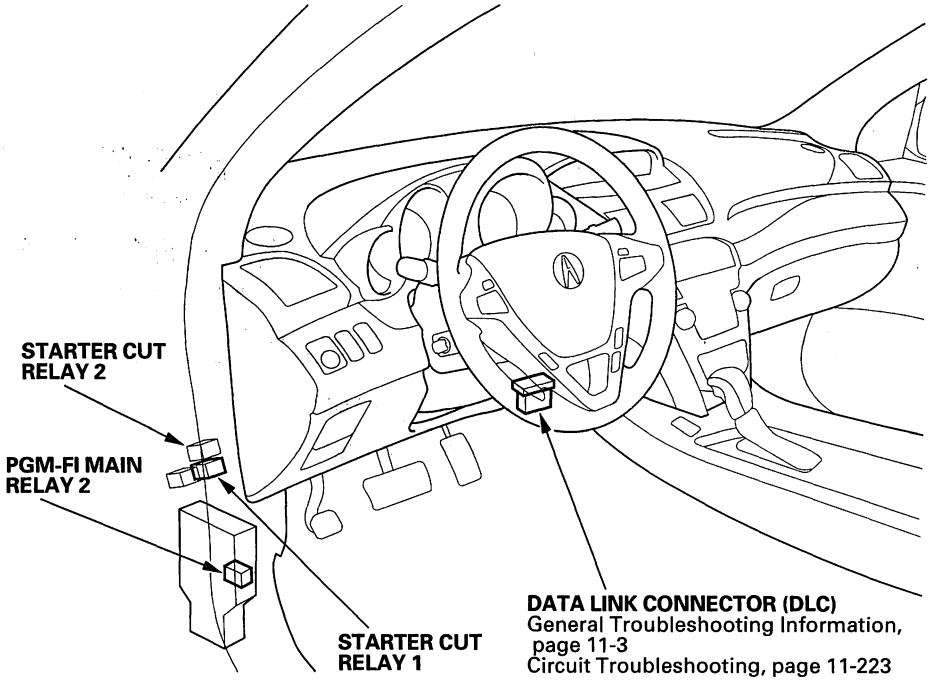
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Component Location Index (cont'd)





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BACK

DTC Troubleshooting

DTC P0101: MAF Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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. Check for poor connections or damage to these parts:

   - PCV hose
   - Intake air duct
   - Air cleaner
   - Purge (PCS) line
   - Brake booster hose

   Are the parts OK?

   YES—Go to step 2.

   NO—Repair or replace the damaged parts, then go to step 16.

2. Check for damage or looseness at the air duct in the air cleaner.

   Is it OK?

   YES—Go to step 3.

   NO—Reconnect or replace the air duct in the air cleaner, then go to step 14.

3. Check for a dirty air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element (see page 11-364), then go to step 14.

   NO—Go to step 4.

4. Turn the ignition switch ON (II).

5. 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 6.

   NO—Go to step 12.

6. Start the engine.

7. Vary the engine speed between 2,000 rpm and 3,000 rpm.

8. Check the MAF SENSOR in the DATA LIST with the HDS.

   Does the reading change?

   YES—Go to step 9.

   NO—Go to step 12.

9. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.

10. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR

11. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

    Does the screen indicate FAILED?

    YES—Go to step 12.

    NO—If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 10 and recheck.

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Replace the MAF sensor/IAT sensor (see page 11-238).
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-311).
17. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0101 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor and the PCM, then go to step 1.

    NO—Go to step 19.
19. Monitor the OBD STATUS for DTC P0101 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.■

    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 17.

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DTC P0102: MAF Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

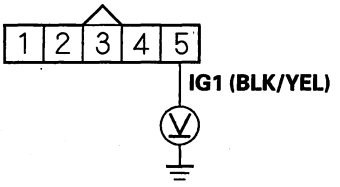
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor and the PCM. ■
3. Check the No. 18 ACG (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 4.

   NO—Repair short in the wire between the MAF sensor and the No. 18 ACG (10 A) fuse. Also replace the No. 18 ACG (10 A) fuse, then go to step 20.
4. Turn the ignition switch OFF.
5. Disconnect the MAF sensor/IAT sensor 5P connector.
6. Turn the ignition switch ON (II).
7. Measure voltage between MAF sensor/IAT sensor 5P connector terminal No. 5 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

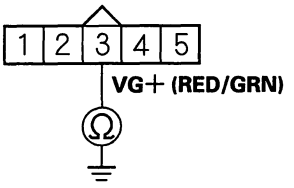
Is there battery voltage?

YES—Go to step 8.

NO—Repair open in the wire between the No. 18 ACG (10 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 5P connector terminal No. 3 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there 190—210 kΩ ?

YES—Go to step 14.

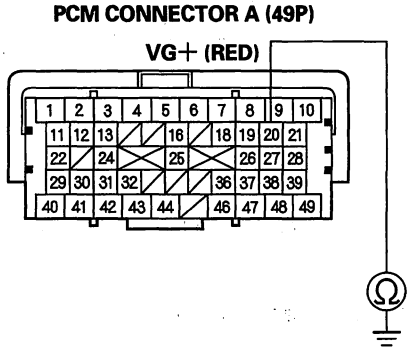
NO—Go to step 10.

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DTC Troubleshooting (cont'd)

10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (49P).
12. Check for continuity between PCM connector terminal A20 and body ground.



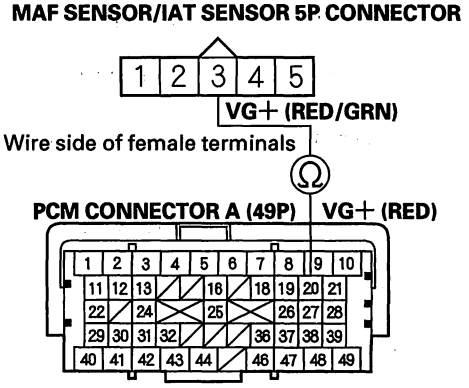
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A20) and the MAF sensor, then go to step 21.

NO—Go to step 13.

13. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 3 and PCM connector terminal A20.



Terminal side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the PCM (A20) and the MAF sensor, then go to step 21.

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14. Substitute a known-good MAF sensor/IAT sensor (see page 11-238).

15. Reconnect all connectors.

16. Turn the ignition switch ON (II).

17. Clear the DTC with the HDS.

18. Start the engine. Hold the engine speed at 2,000 rpm without load (in Park or neutral).

19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES—Go to step 26.

    NO—Replace the original MAF sensor/IAT sensor (see page 11-238), then go to step 20.

20. Turn the ignition switch OFF.

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 11-311).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0102 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P0103: MAF Sensor Circuit High Voltage

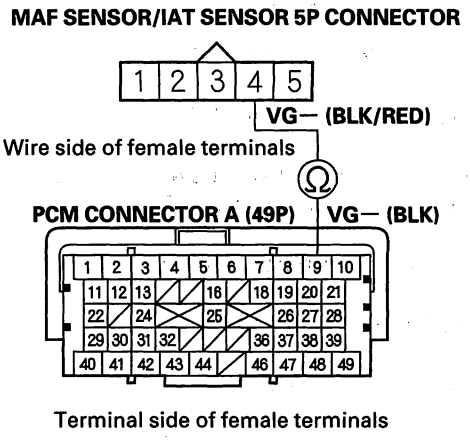
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 more 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 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 5P connector.
6. Disconnect PCM connector A (49P).
7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and PCM connector terminal A9.



Is there continuity?

YES—Go to step 8.

NO—Repair open in the wire between the PCM (A9) and the MAF sensor, then go to step 15.

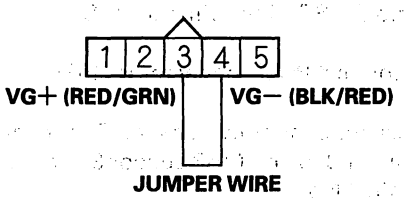
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BACK

8. Reconnect PCM connector A (49P).

9. Connect MAF sensor/IAT sensor 5P connector terminals No. 3 and No. 4 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

10. Turn the ignition switch ON (II).

11. Clear the DTC with the HDS.

12. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0103 indicated?

YES—Go to step 20.

NO—Go to step 13.

13. Turn the ignition switch OFF.

14. Replace the MAF sensor/IAT sensor (see page 11-238).

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 11-311).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0103 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0103 indicated?

YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0107: MAP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

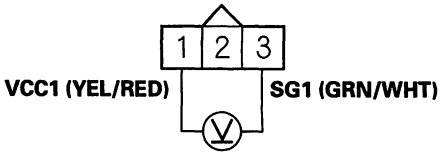
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the PCM.■
3. Turn the ignition switch OFF.
4. Disconnect the MAP sensor 3P connector.
5. Turn the ignition switch ON (II).
6. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (1.0 in.Hg, 26 mmHg), or 0.23 V or less indicated?

   YES—Go to step 12.

   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

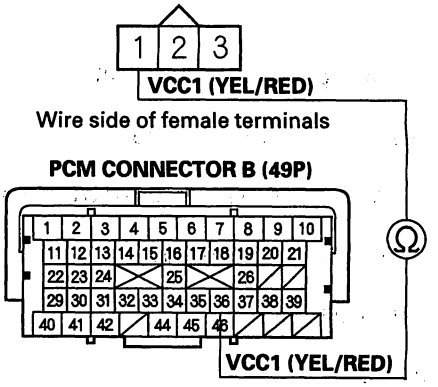
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 8.

8. Turn the ignition switch OFF.
9. Jump the SCS line with the HDS.
10. Disconnect PCM connector B (49P).
11. Check for continuity between PCM connector terminal B36 and MAP sensor 3P connector terminal No. 1.

MAP SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 23.

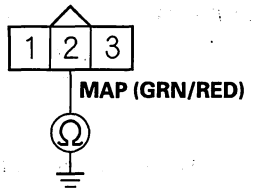
NO—Repair open in the wire between the PCM (B36) and the MAP sensor, then go to step 18.

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12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (49P).
15. 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 (B35) and the MAP sensor, then go to step 18.

NO—Go to step 23.

16. Turn the ignition switch OFF.
17. Replace the MAP sensor (see page 11-238).
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 11-311).
22. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0107 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0107 indicated?

YES—Check for poor connections or loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P0108: MAP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

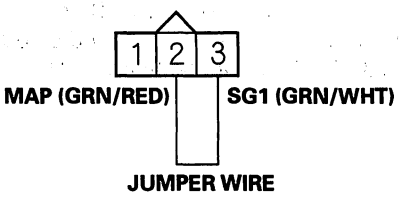
1. Turn the ignition switch ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (47.1 in.Hg, 1,197 mmHg), or 4.49 V or more 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 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

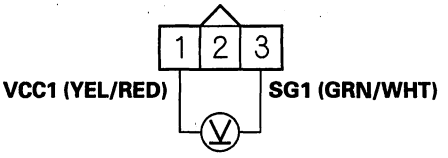
6. Turn the ignition switch ON (II).
7. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 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 18.
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?

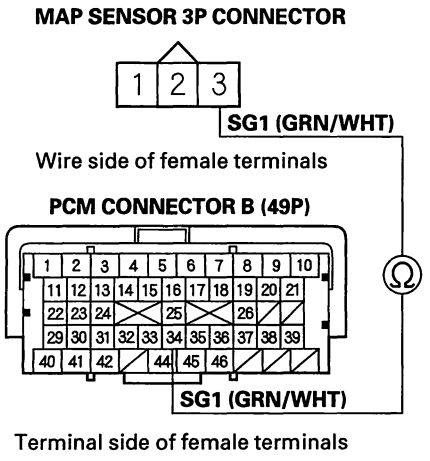
YES—Go to step 14.

NO—Go to step 10.

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BACK

10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (49P).
13. Check for continuity between PCM connector terminal B34 and MAP sensor 3P connector terminal No. 3.

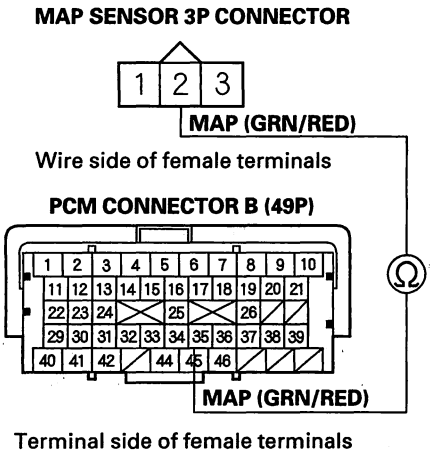


Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (B34) and the MAP sensor, then go to step 20.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (49P).
17. Check for continuity between PCM connector terminal B35 and MAP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (B35) and the MAP sensor, then go to step 20.

(cont'd)

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DTC Troubleshooting (cont'd)

18. Turn the ignition switch OFF.
19. Replace the MAP sensor (see page 11-238).
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 11-311).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0108 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0108 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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BACK

DTC P0111: IAT Sensor Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections or loose terminals at ECT sensor 1/2 and the MAF sensor/IAT sensor.

   Are the connections and terminals OK?

   YES—Go to step 2.

   NO—Repair the connections or terminals, then go to step 15.

2. Remove the MAF sensor/IAT sensor (see page 11-238).

3. Allow the IAT sensor to cool to ambient temperature.

4. Note the ambient temperature.

5. Connect the MAF sensor/IAT sensor to its 5P connector, but do not install the sensor onto the air cleaner.

6. Turn the ignition switch ON (II).

7. Note the value of the IAT SENSOR quickly in the DATA LIST with the HDS.

8. Compare the value of the IAT SENSOR to the ambient temperature.

   Does the value of the IAT SENSOR differ 5.4 °F (3 °C) or more?

   YES—Go to step 13.

   NO—Go to step 9.

9. Disconnect the MAF sensor/IAT sensor from the 5P connector.

10. Using a heat gun, blow hot air on the MAF sensor/ IAT sensor for a few seconds. Do not apply the heat longer than a few seconds or you will damage the sensor.

11. Connect the MAF sensor/IAT sensor to its 5P connector, but do not install the sensor onto the air cleaner.

12. Check the IAT SENSOR in the DATA LIST with the HDS.

    Does the IAT SENSOR change 58 °F (32 °C) or more?

    YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■

    NO—Go to step 13.

13. Turn the ignition switch OFF.

14. Replace the MAF sensor/IAT sensor (see page 11-238).

15. Turn the ignition switch ON (II).

16. Reset the PCM with the HDS.

17. Do the PCM idle learn procedure (see page 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0111 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0112: IAT Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, or 0.08 V or less indicated?

   YES—Go to step 3.

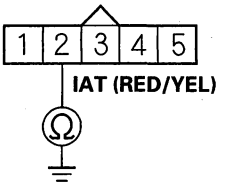
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IAT sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, 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 C (49P).
10. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the IAT sensor and the PCM (C24), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace the MAF sensor/IAT sensor (see page 11-238).
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 11-311).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0112 indicated?

    YES—Check for poor connections or loose terminals at the IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0112 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P0113: IAT Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

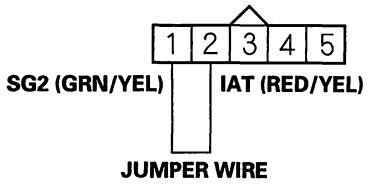
1. Turn the ignition switch ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more 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 IAT sensor and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Connect MAF sensor/IAT sensor 5P connector terminals No. 1 and No. 2 with a jumper wire.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

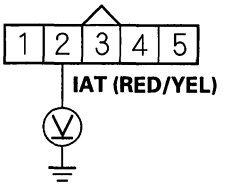
6. Turn the ignition switch ON (II).
7. Check the IAT SENSOR in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch OFF.
9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between MAF sensor/IAT sensor 5P connector terminal No. 1 and body ground.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 12.

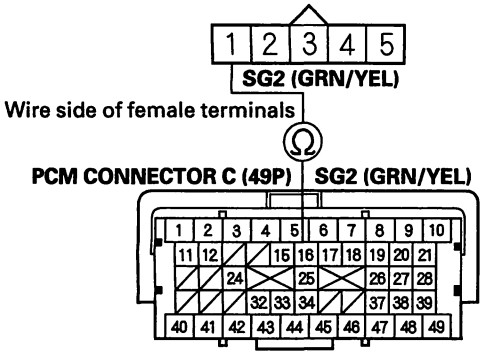
NO—Go to step 16.

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12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (49P).
15. Check for continuity between PCM connector terminal C16 and MAF sensor/IAT sensor 5P connector terminal No. 1.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Terminal side of female terminals

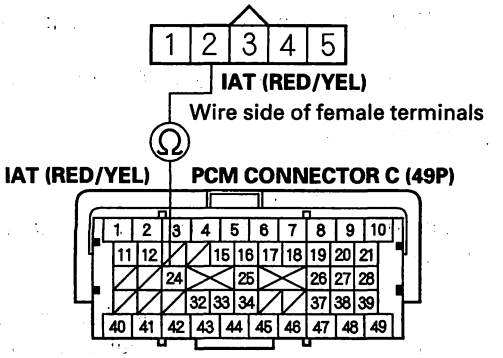
Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C16) and the MAF sensor/IAT sensor, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (49P).
19. Check for continuity between PCM connector terminal C24 and MAF sensor/IAT sensor 5P connector terminal No. 1.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C24) and the MAF sensor/IAT sensor, then go to step 22.

(cont'd)

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DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Replace the MAF sensor/IAT sensor (see page 11-238).
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 11-311).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0113 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0113 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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BACK

DTC P0116: ECT Sensor 1 Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 more, 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, the 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, the 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 11-239).
13. Turn the ignition switch ON (II).
14. Reset the PCM with the HDS.
15. Do the PCM idle learn procedure (see page 11-311).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0117: ECT Sensor 1 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 more, or 0.08 V or less indicated?

   YES—Go to step 3.

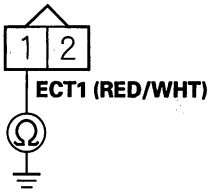
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 1 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, 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 C (49P).
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 (C32), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 1 (see page 11-239).
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 11-311).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0117 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P0118: ECT Sensor 1 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

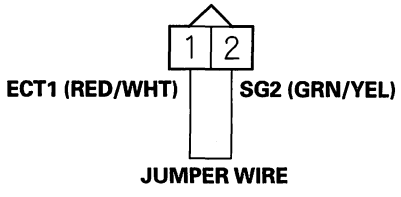
1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the 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 the 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

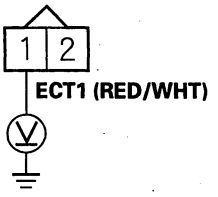
6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch OFF.
9. Remove the jumper wire.
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?

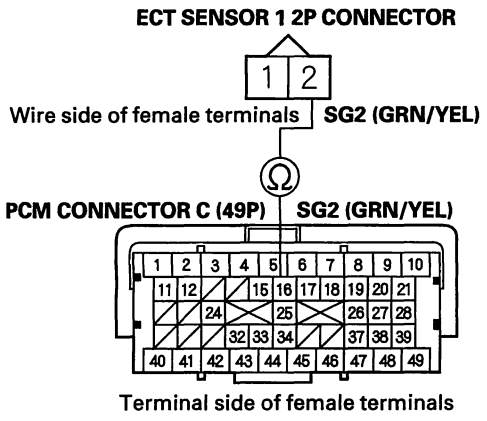
YES—Go to step 12.

NO—Go to step 16.

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12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (49P).
15. Check for continuity between PCM connector terminal C16 and ECT sensor 1 2P connector terminal No. 2.

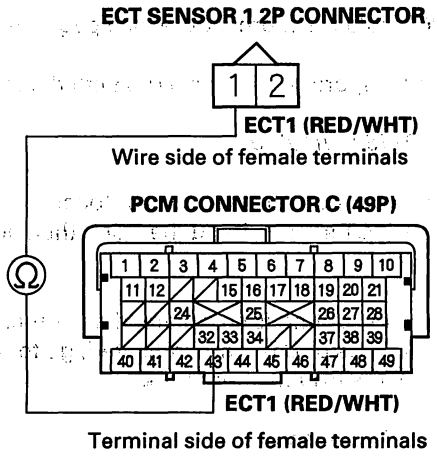


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C16) and ECT sensor 1, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (49P).
19. Check for continuity between PCM connector terminal C32 and ECT sensor 1 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (C32) and ECT sensor 1, then go to step 22.

(cont'd)

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DTC Troubleshooting (cont'd)

20. Turn the ignition switch OFF.
21. Replace ECT sensor 1 (see page 11-239).
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 11-311).
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0118 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC P0125: ECT Sensor 1 Malfunction/Slow Response

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Start the engine, and let it idle for 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, the 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). If the thermostat is OK, go to step 9. If you replaced the thermostat, go to step 11.
9. Turn the ignition switch OFF.
10. Replace ECT sensor 1 (see page 11-239).
11. Turn the ignition switch ON (II).
12. Reset the PCM with the HDS.
13. Do the PCM idle learn procedure (see page 11-311).
14. Allow the engine to cool to the ambient temperature.
15. Start the engine, and let it idle 20 minutes.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0125 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    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 15.

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DTC Troubleshooting (cont'd)

DTC P0128: Cooling System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 for symptoms in the cooling system. 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, the 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 11-311).
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.

    Is DTC P0128 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

    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 17.

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20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

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.

    Is DTC P0128 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1.

    NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 21. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 21.

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DTC Troubleshooting (cont'd)

DTC P0133: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Slow Response

DTC P0153: Front A/F Sensor (Bank 2, Sensor 1) Circuit Slow Response

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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 (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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26—81 mph (41—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, the 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 11-240).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-311).
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 (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Drive the vehicle at 25 mph (40 km/h) or less for 5 minutes, then drive at a steady speed between 26—81 mph (41—130 km/h)
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0133 and/or P0153 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    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 12.

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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

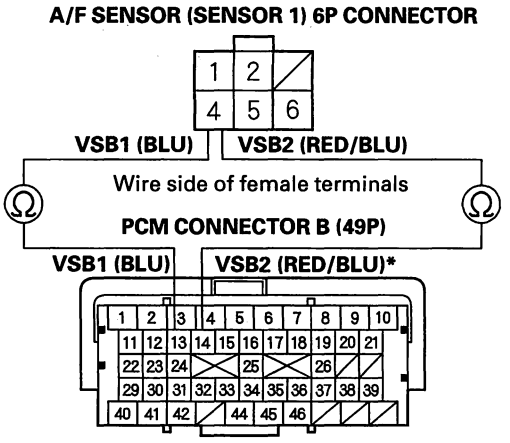
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 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, then let it idle 1 minute.
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, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay) 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 4 and PCM connector terminal B13 (B14)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

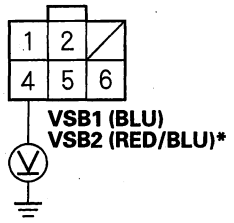
(cont'd)

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DTC Troubleshooting (cont'd)

10. Reconnect PCM connector B (49P).
11. Turn the ignition switch ON (II).
12. Measure voltage between A/F sensor (Sensor 1) 6P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

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 11-240).
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 11-311).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM, then go to step 1.

NO—Go to step 19.

19. 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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Start the engine, then let it idle 1 minute.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0134 and/or P0154 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1.

NO—Go to step 25.

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25. Monitor the OBD STATUS for DTC P0134 and/or P0154* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 23. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

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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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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.

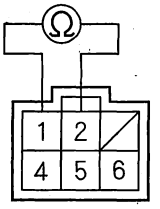
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM. ■
5. Turn the ignition switch OFF.
6. Check these fuses:
   - No. 11 A/F sensor (AFHT+) (15 A) fuse in the under-hood fuse/relay box
   - No. 3 R/B 1 (30 A) fuse in the main under-hood fuse box.
   - No. 7 +B FAN TIMER (7.5 A) fuse in the under-hood fuse/relay box

   Are any of the above fuses blown?

   YES—Repair short in the wire between the A/F sensors, the under-hood fuse/relay box (PGM-FI subrelay), then replace the blown fuse(s), and go to step 23.

   NO—Go to step 7.
7. Disconnect the A/F sensor (Sensor 1) 6P connector.
8. At the sensor side, measure resistance between A/F sensor (Sensor 1) 6P connector terminals No. 1 and No. 2.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Terminal side of male terminals

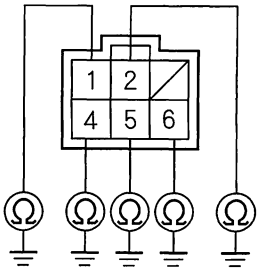
Is there 2.5—3.2 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 21.

9. At the sensor side, check for continuity between each terminal at the A/F sensor (Sensor 1) 6P connector and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 21.

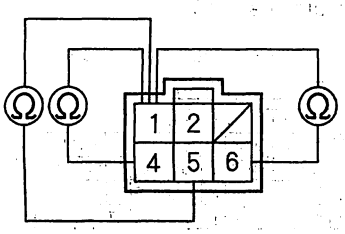
NO—Go to step 10.

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10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 6P connector terminals No. 1 and No. 4, No. 1 and No. 5, No. 1 and No. 6 individually.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Go to step 21.

NO—Go to step 11.

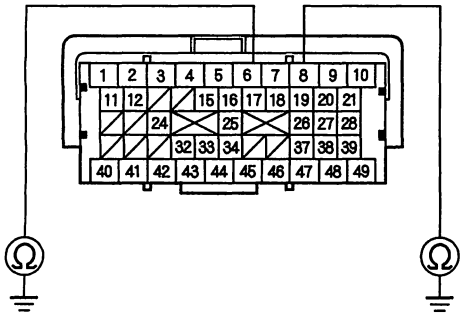
11. Jump the SCS line with the HDS.

12. Disconnect PCM connector C (49P).

13. Check for continuity between PCM connector terminal C6 (C8)* and body ground.

PCM CONNECTOR C (49P)

AFSHTCB1 (BLK/WHT) AFSHTCB2 (GRN/WHT)*



Terminal side of female terminals

Is there continuity?

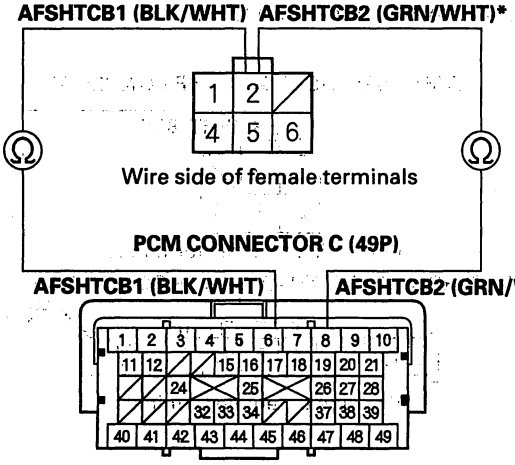
YES—Repair short in the wire between the PCM (C6 (C8)*) and the A/F sensor (Sensor 1), then go to step 22.

NO—Go to step 14.

14. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 2 and PCM connector terminal C6 (C8)*.

A/F SENSOR (SENSOR 1) 6P CONNECTOR

AFSHTCB1 (BLK/WHT) AFSHTCB2 (GRN/WHT)*



Terminal side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (C6 (C8)*) and the A/F sensor (Sensor 1), then go to step 22.

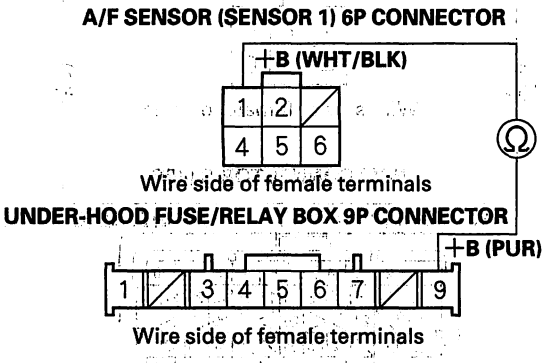
(cont'd)

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DTC Troubleshooting (cont'd)

15. Disconnect the under-hood fuse/relay box 9P connector.

16. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 1 and under-hood fuse/relay box 9P connector No. 9.



Is there continuity?

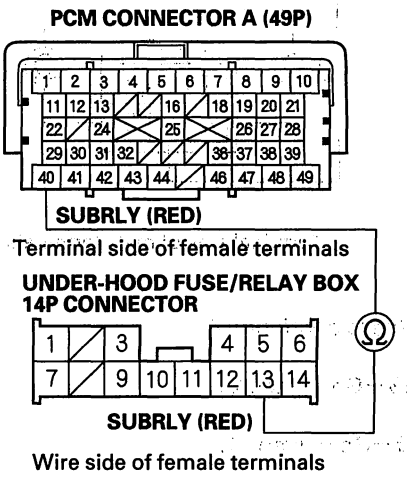
YES—Go to step 17.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the under-hood fuse/relay box, then go to step 22.

17. Disconnect PCM connector A (49P).

18. Disconnect the under-hood fuse/relay box 14P connector.

19. Check for continuity between under-hood fuse/relay box 14P connector terminal No. 13 and PCM connector terminal A40.



Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the PCM (A40) and the under-hood fuse/relay box, then go to step 22.

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20. Test the PGM-FI subrelay in the under-hood fuse/relay box (see page 22-77).

    Is the PGM-FI subrelay OK?

    YES—Go to step 28.

    NO—Replace the relay control module (under-hood fuse/relay box) (see page 22-71), then go to step 22.

21. Replace the A/F sensor (Sensor 1) (see page 11-240).

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 11-311).

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 and/or P0155 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay) and the PCM, then go to step 1.

    NO—Go to step 27.

27. 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. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

28. Reconnect all connectors.

29. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0135 and/or P0155 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0135 and/or P0155* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1), the under-hood fuse/relay box (PGM-FI subrelay) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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, then let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.05 V or less?

   YES—Go to step 5.

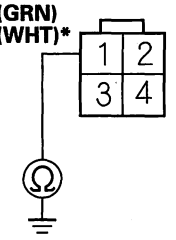
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the secondary HO2S (Sensor 2) 4P connector.
7. Turn the ignition switch ON (II).
8. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.05 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 (49P).
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 (B25 (B16)*) 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 11-241).
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 11-311).
19. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.

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20. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °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.

    Is DTC P0137 and/or P0157 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    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 20.

23. Reconnect all connectors.

24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

25. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.

26. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °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.

    Is DTC P0137 and/or P0157 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 25. If the PCM was substituted, go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0137 and/or P0157* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 25. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 25.

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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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

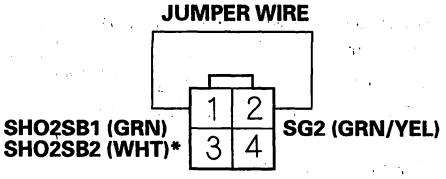
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.27 V or more?

   YES—Go to step 5.

   NO—Intermittent failure, the 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

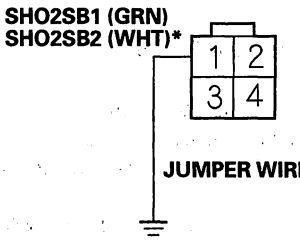
8. Turn the ignition switch ON (II).
9. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.27 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 1.27 V or more?

    YES—Go to step 15.

    NO—Repair open in the wire between the PCM (C16) and the secondary HO2S (Sensor 2), then go to step 21.

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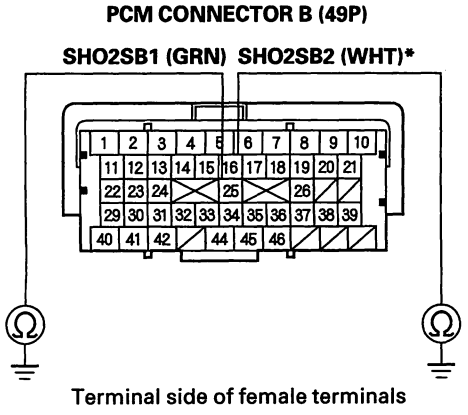
BACK

15. Turn the ignition switch OFF.

16. Jump the SCS line with the HDS.

17. Disconnect PCM connector B (49P).

18. Check for continuity between PCM connector terminal B25 (B16)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (B25 (B16)*) 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 11-241).

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 11-311).

25. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.

26. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °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.

Is DTC P0138 and/or P0158 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

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. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

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 25.

(cont'd)

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DTC Troubleshooting (cont'd)

29. Reconnect all connectors.

30. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

31. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.

32. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Engine speed at 1,500—3,000 rpm
    - Drive 1 minute or more

33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0138 and/or P0158 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1.

    NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0138 and/or P0158* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 33, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 32.

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BACK

DTC P0139: Rear Secondary HO2S (Bank 1, Sensor 2) Circuit Slow Response

DTC P0159: Front Secondary HO2S (Bank 2, Sensor 2) Circuit Slow Response

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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, then let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Vehicle speed between 35—55 mph (56—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, the 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 11-241).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-311).
11. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature above 176 °F (80 °C)
    - Transmission in D position
    - Vehicle speed between 35—55 mph (56—88 km/h)
    - Drive 5 minutes or more
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0139 and/or P0159 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    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 12.

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DTC Troubleshooting (cont'd)

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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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.

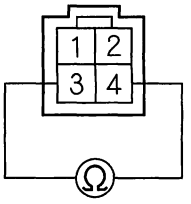
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the under-hood fuse/relay box (PGM-FI subrelay) and the PCM. ■
5. Turn the ignition switch OFF.
6. Check these fuses:
   - No. 11 A/F sensor (AFHT+) (15 A) fuse in the under-hood fuse/relay box
   - No. 3 R/B 1 (30 A) fuse in the main under-hood fuse box.
   - No. 7 +B FAN TIMER (7.5 A) fuse in the under-hood fuse/relay box

   Are any of the fuses blown?

   YES—Repair short in the wire between the A/F sensors, the under-hood fuse/relay box (PGM-FI subrelay) and the fuse, then go to step 21.

   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



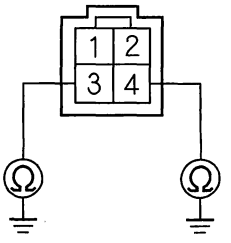
   Terminal side of male terminals

   Is there 5.4–6.6 Ω at room temperature?

   YES—Go to step 9.

   NO—Go to step 20.
9. At the secondary HO2S (sensor 2) side, 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 20.

   NO—Go to step 10.

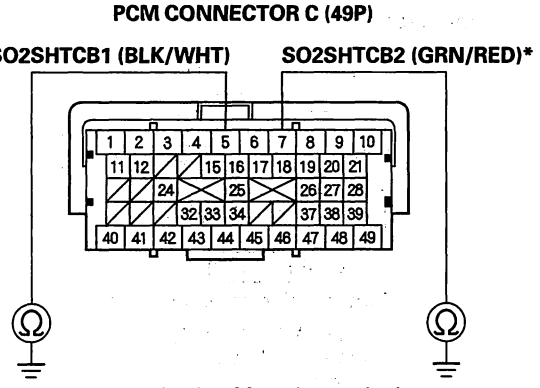
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10. Jump the SCS line with the HDS.

11. Disconnect PCM connector C (49P).

12. Check for continuity between PCM connector terminal C5 (C7)* and body ground.

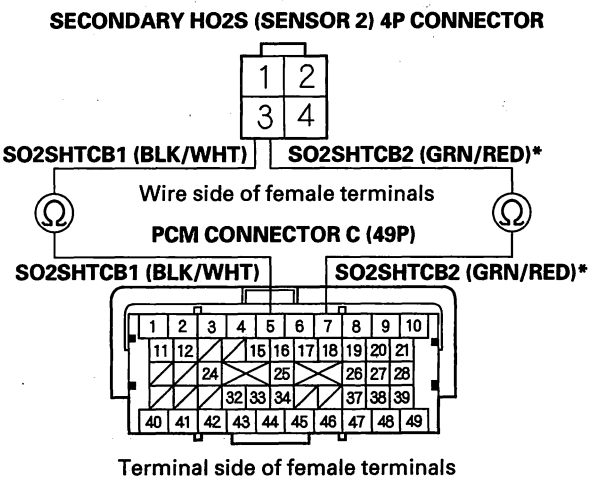


Is there continuity?

YES—Repair short in the wire between the PCM (C5 (C7)*) and the secondary HO2S (Sensor 2), then go to step 21.

NO—Go to step 13.

13. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 3 and PCM connector terminal C5 (C7)*.



Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the PCM (C5 (C7)*) and the secondary HO2S (Sensor 2), then go to step 21.

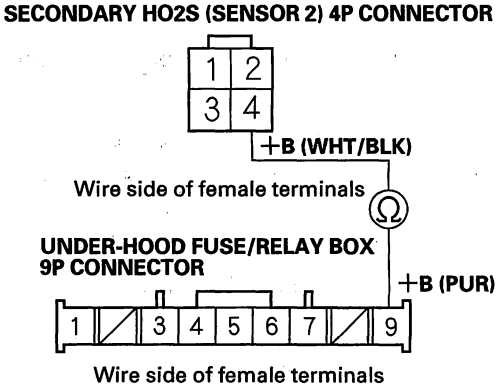
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DTC Troubleshooting (cont'd)

14. Disconnect the under-hood fuse/relay box 9P connector.

15. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and under-hood fuse/relay box 9P connector No. 9.



Is there continuity?

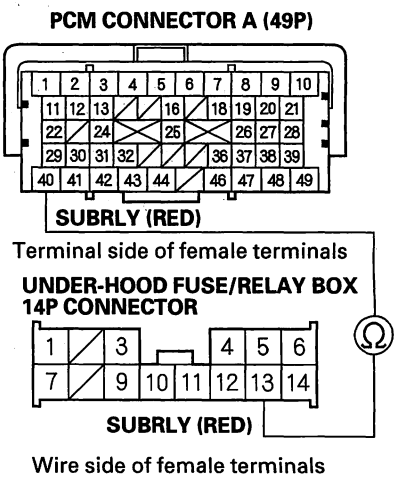
YES—Go to step 16.

NO—Repair open in the wire between the secondary HO2S (Sensor 2) and the under-hood fuse/relay box, then go to step 21.

16. Disconnect PCM connector A (49P).

17. Disconnect the under-hood fuse/relay box 14P connector.

18. Check for continuity between under-hood fuse/relay box 14P connector terminal No. 13 and PCM connector terminal A40.



Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (A40) and the under-hood fuse/relay box, then go to step 21.

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BACK

19. Test the PGM-FI subrelay in the under-hood fuse/relay box (see page 22-77).

Is the PGM-FI subrelay OK?

YES—Go to step 27.

NO—Replace the relay control module (under-hood fuse/relay box) (see page 22-71). then go to step 21.

20. Replace the secondary HO2S (Sensor 2) (see page 11-241).

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 11-311).

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM, then go to step 1.

NO—Go to step 26.

26. 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. If any other Temporary DTCs or DTCs were indicated in step 25, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0141 and/or P0161 indicated?*

YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0141 and/or P0161* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2), the under-hood fuse/relay box (PGM-FI subrelay), and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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.

P0101, P0102, P0103: Mass air flow (MAF) sensor
P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P0133, P0153, P1172, P1174, P2195, P2197, P2237, P2238, P2240, P2241, P2243, P2245, P2247, P2249, P2251, P2252, P2254, P2255, 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
P2646, P2647, P2648, P2649: VTEC system
P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system
P2279: Intake air leakage

1. Check the fuel pressure (see page 11-333).

   Is the fuel pressure OK?

   YES—If you are troubleshooting DTC P0171 or P0174, go to step 2. If you are troubleshooting DTC P0172 or P0175, check the valve clearances, and adjust if necessary. If the valve clearances are OK, replace the injectors (see page 11-236), then go to step 2.

   NO—Check these items:

   - If the pressure is too high, replace the fuel pressure regulator (see page 11-345), then go to step 2.
   - If the pressure is too low, check the fuel pump, the fuel pressure regulator, the fuel filter, and the fuel lines for restrictions, 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 11-311).

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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - 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 80 minutes of test driving to set. Using the HDS, monitor the long term fuel trim (LT FUEL TRIM) or the air fuel feed back average (AF FB AVE). If the long term fuel trim/air fuel feed back average stays within 0.84—1.18, there is no problem at this time.

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7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0171, P0172, P0174, or P0175 indicated?

   YES—Go to step 8.

   NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

8. Check for poor connections or loose terminals at the PCM.

   Are the connections and terminals OK?

   YES—Go to step 9.

   NO—Repair the connections or terminals, then step 2.

9. Check the fuel quality.

   Is the fuel quality OK?

   YES—Replace the injectors (see page 11-236), then go to step 2.

   NO—Drain the fuel tank (see page 11-333), replace the fuel, then go to step 2.

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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 07406-0070301
- 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-S5AA200

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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) (Because parts can sometimes fail without setting DTC's you should also do a physical inspection of the below systems.):

P0101, P0102, P0103: Mass air flow (MAF)
P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P0171, P0172, P0174, P0175: Fuel system
P0335, P0339, P0385, P0389: Crankshaft position (CKP) sensor A/B
P0506, P0507: Idle control system
P0340, P0344: Camshaft position (CMP) sensor
P2646, P2647, P2648, P2649: VTEC system
P0401, P0404, P0406, P2413: Exhaust gas recirculation (EGR) system

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (in Park or neutral).
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, let it idle 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 these recorded freeze data parameters:

   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - ECT SENSOR 1
   - APP SENSOR

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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, the 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, and fill it with a known-good fuel, then go to step 20.

11. Inspect the spark plugs (see page 4-24). If the spark plugs are fouled or worn, replace them.

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - ECT SENSOR 1
    - APP SENSOR

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 20.

14. Check the fuel pressure (see page 11-333).

    Is the fuel pressure OK?

    YES—Go to step 15.

    NO—
    - If the pressure is too high, replace the fuel pressure regulator (see page 11-345), then go to step 20.
    - If the pressure is too low, check the fuel pump, the fuel feed lines, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-345), then go to step 20.

15. Turn the ignition switch OFF.

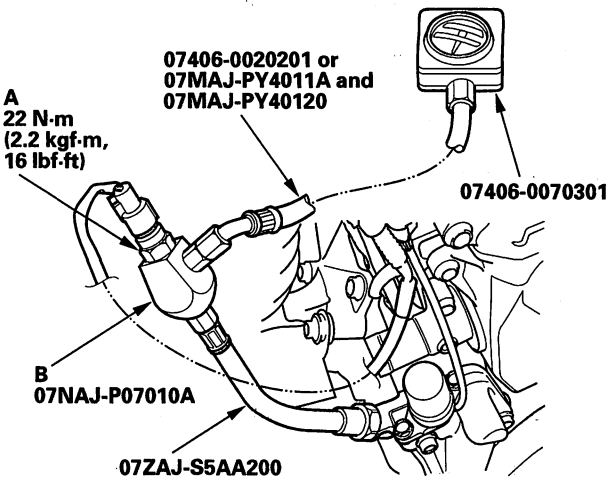
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DTC Troubleshooting (cont'd)

16. Remove the rocker arm oil pressure switch (A), and install the special tools as shown, then install the rocker arm oil pressure switch in the pressure gauge adapter (B).

    NOTE: Install the parts in the reverse order of removal with a new O-ring.



17. Reconnect the rocker arm oil pressure switch 2P connector.

18. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on.

19. Check the oil pressure at engine speeds of 1,000 and 2,000 rpm. Keep the measuring time as short as possible (less than 1 minute) because the engine is running without load.

    Is the oil pressure below 49 kPa (0.5 kgf/cm², 7 psi)?

    YES—Remove the oil pressure gauge, and reinstall the rocker arm oil pressure switch, then go to step 20.

    NO—Inspect the VTEC system (see page 6-7), then go to step 20.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Clear the CKP pattern with the HDS.

23. Do the PCM idle learn procedure (see page 11-311).

24. Do the CKP pattern learn procedure (see page 11-4).

25. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - ECT SENSOR 1
    - APP SENSOR

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0300 and any combination of DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to DTC P0301, P0302, P0303, P0304, P0305, or P0306 (see page 11-121) troubleshooting.

    NO—Go to step 27.

27. 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. If any other Temporary DTCs or DTCs were indicated in step 26, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connection or loose terminals at the ignitions coil, the injector, 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 25.

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BACK

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

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load for 2 minutes (in Park or neutral).
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 idling 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 these recorded freeze data parameters:

   - ENGINE SPEED
   - VSS
   - REL TP SENSOR
   - CLV (calculated load value)
   - GEAR POSITION
   - ECT SENSOR 1
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.
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, the 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. Reconnect all connectors.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - GEAR POSITION
    - ECT SENSOR 1

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—Intermittent failure due to poor contact at the ignition coil contactor (no misfire at this time). Make sure that the ignition coil connectors are secure.■

14. 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 4-21), then go to step 53.

    NO—Go to step 15.

15. Turn the ignition switch OFF.

16. Exchange the spark plug from the problem cylinder with the one from another cylinder.

17. Reconnect all connectors.

18. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - GEAR POSITION
    - ECT SENSOR 1

19. 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 20.

    NO—Intermittent failure due to spark plug fouling (no misfire at this time).■

20. 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 53.

    NO—Go to step 21.

21. Turn the ignition switch OFF.

22. Disconnect the ignition coil 3P connector from the problem cylinder.

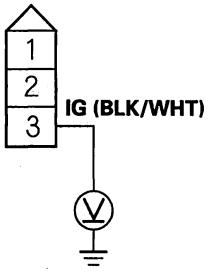
23. Turn the ignition switch ON (II).

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BACK

24. 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?

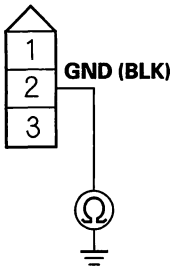
YES—Go to step 25.

NO—Repair open in the wire between the ignition coil and the under-hood fuse/relay box, then go to step 53.

25. Turn the ignition switch OFF.

26. 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 27.

NO—Repair open in the wire between the ignition coil, G101, then go to step 53.

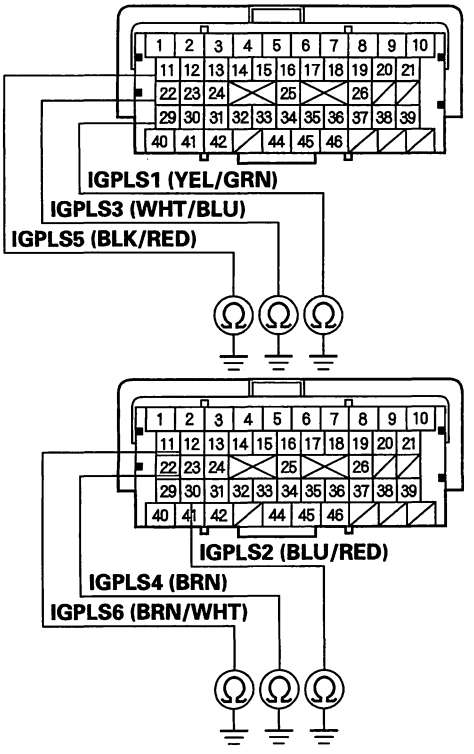
27. Jump the SCS line with the HDS.

28. Disconnect PCM connector B (49P).

29. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B29	YEL/GRN
No. 2	P0302	B30	BLU/RED
No. 3	P0303	B22	WHT/BLU
No. 4	P0304	B23	BRN
No. 5	P0305	B11	BLK/RED
No. 6	P0306	B12	BRN/WHT

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM and the ignition coil, then go to step 53.

NO—Go to step 30.

(cont'd)

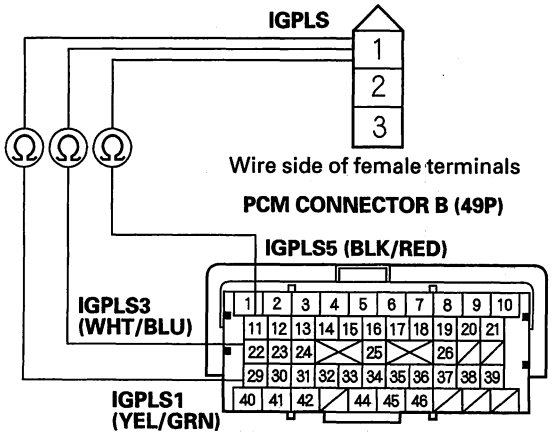
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DTC Troubleshooting (cont'd)

30. Check for continuity between appropriate ignition coil 3P connector terminal No. 1 and the appropriate PCM connector terminal of the problem cylinder (see table).

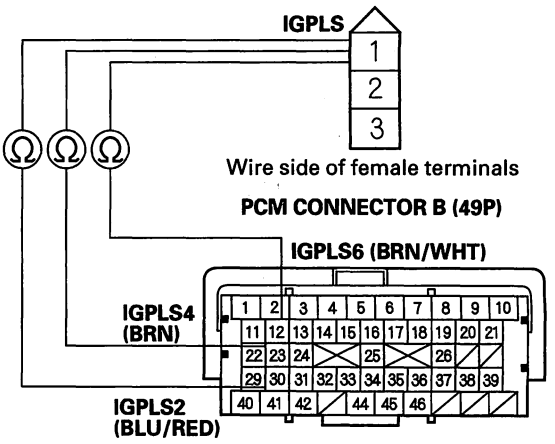
PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B29	YEL/GRN
No. 2	P0302	B30	BLU/RED
No. 3	P0303	B22	WHT/BLU
No. 4	P0304	B23	BRN
No. 5	P0305	B11	BLK/RED
No. 6	P0306	B12	BRN/WHT

IGNITION COIL 3P CONNECTOR



Terminal side of female terminals

IGNITION COIL 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the PCM and the ignition coil, then go to step 53.

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BACK

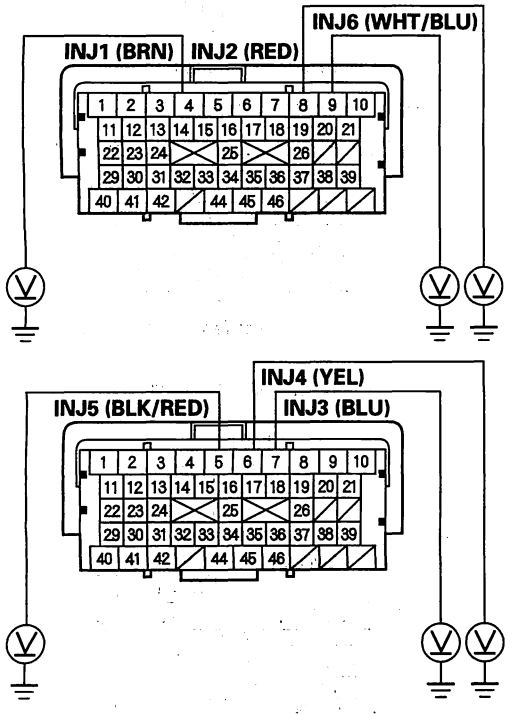
31. Remove the intake manifold (see page 9-3).

32. Turn the ignition switch ON (II).

33. Measure voltage between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 41.

NO—Go to step 34.

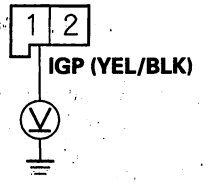
34. Turn the ignition switch OFF.

35. Disconnect the injector 2P connector from the problem cylinder.

36. Turn the ignition switch ON (II).

37. Measure voltage between injector 2P connector terminal No. 1 and body ground.

INJECTOR 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 38.

NO—Repair open in the wire between the injector and under-hood fuse/relay box (PGM-FI main relay 1), then go to step 51.

38. Turn the ignition switch OFF.

(cont'd)

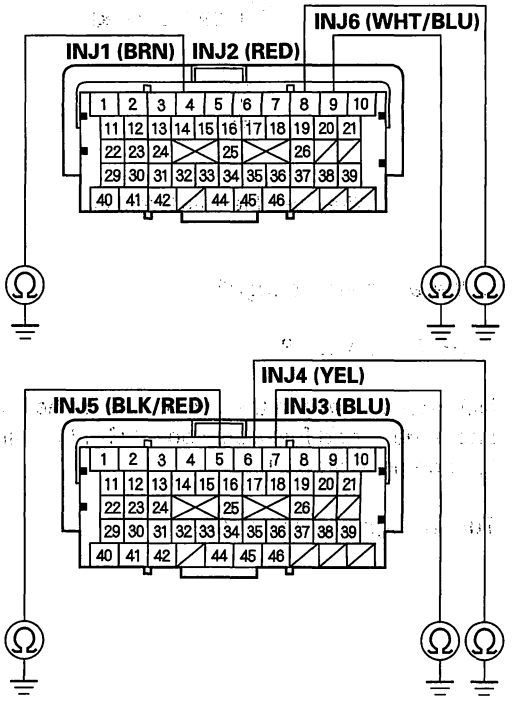
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DTC Troubleshooting (cont'd)

39. Check for continuity between body ground and the appropriate PCM connector terminal (see table).

PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

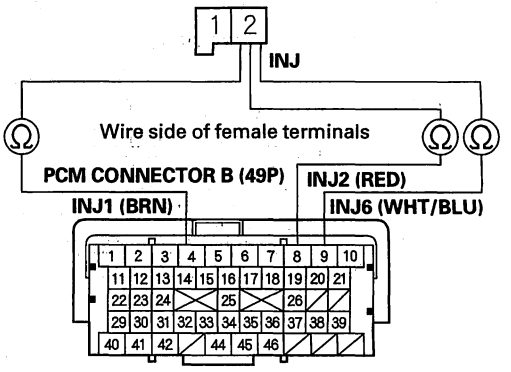
YES—Repair short in the wire between the PCM and the injector, then go to step 53.

NO—Go to step 40.

40. Check for continuity between appropriate injector 2P connector terminal No. 2 and the appropriate PCM connector terminal of the problem cylinder (see table).

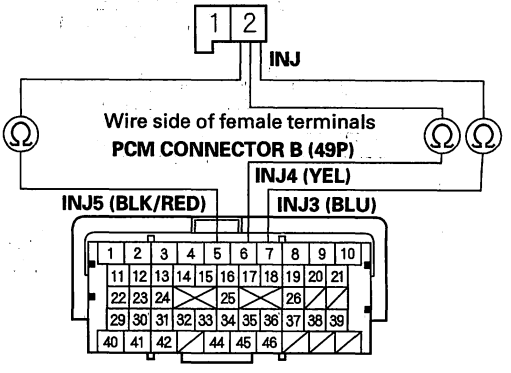
PROBLEM CYLINDER	DTC	PCM TERMINAL	WIRE COLOR
No. 1	P0301	B4	BRN
No. 2	P0302	B8	RED
No. 3	P0303	B7	BLU
No. 4	P0304	B6	YEL
No. 5	P0305	B5	BLK/RED
No. 6	P0306	B9	WHT/BLU

INJECTOR 2P CONNECTOR



Terminal side of female terminals

INJECTOR 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Check for poor connections or loose terminals at the injector and under-hood fuse/relay box (PGM-FI main relay 1), then go to step 41.

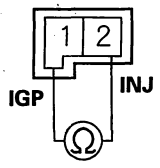
NO—Repair open in the wire between the PCM and the injector, then go to step 53.

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41. 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 42.

NO—Replace the injector (see page 11-236), then go to step 53.

42. Exchange the injector from the problem cylinder with the one from another cylinder. Also check the injector fuel inlet screen for debris, and clean if needed.

43. Reconnect all connectors, and install the intake manifold (see page 9-2).

44. Turn the ignition switch ON (II).

45. Clear the DTCs with the HDS.

46. Start the engine, and let it idle without load (in Park or neutral) for 2 minutes.

47. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- REL TP SENSOR
- CLV (calculated load value)
- GEAR POSITION
- ECT SENSOR 1

48. 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 49.

NO—Intermittent failure due to poor contact in the injector connector (no misfire at this time). Check for poor connections or loose terminals at the injector. ■

49. Determine which cylinder had the misfire.

Does the misfire occur in the cylinder where the injector was moved?

YES—Replace the faulty injector (see page 11-236), then go to step 53.

NO—Go to step 50.

50. Turn the ignition switch OFF.

51. Do an engine compression and a cylinder leakdown test (see page 6-6).

Did the engine pass both tests?

YES—Go to step 52.

NO—Repair the engine, then go to step 53.

(cont'd)

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DTC Troubleshooting (cont'd)

52. Do the VTEC rocker arm test (see page 6-7).

    Did the engine pass the test?

    YES—Go to step 61.

    NO—Repair the VTEC rocker arm, then go to step 53.

53. Reconnect all connectors.

54. Reset the PCM with the HDS.

55. Clear the CKP pattern with the HDS.

56. Do the PCM idle learn procedure (see page 11-311).

57. Do the CKP pattern learn procedure (see page 11-4).

58. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - GEAR POSITION
    - ECT SENSOR 1

59. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM, then go to step 1.

    NO—Go to step 60.

60. 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. If any other Temporary DTCs or DTCs were indicated in step 59, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, 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 58.

61. Reconnect all connectors.

62. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

63. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    - ENGINE SPEED
    - VSS
    - REL TP SENSOR
    - CLV (calculated load value)
    - GEAR POSITION
    - ECT SENSOR 1

64. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0301, P0302, P0303, P0304, P0305, or P0306 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 63. If the PCM was substituted, go to step 1.

    NO—Go to step 65.

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65. 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—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 64, go to the indicated DTC's troubleshooting.■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 63. If the PCM was substituted, 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 63.

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DTC Troubleshooting (cont'd)

DTC P0325: Knock Sensor Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

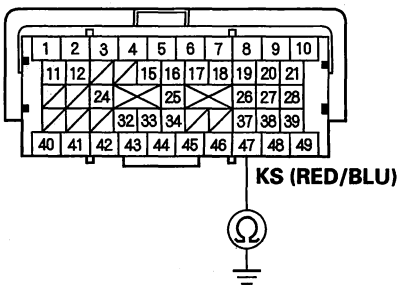
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0325 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the 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 C (49P).
10. Check for continuity between PCM connector terminal C47 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

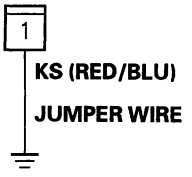
Is there continuity?

YES—Repair short in the wire between the PCM (C47) and the knock sensor subharness, then go to step 19.

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



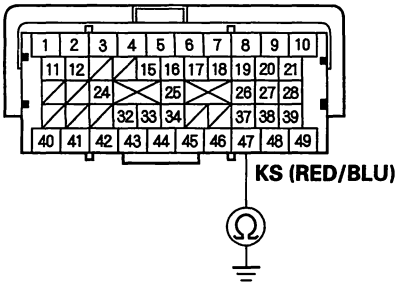
Wire side of female terminals

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BACK

12. Check for continuity between PCM connector terminal C47 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

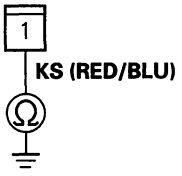
NO—Repair open in the wire between the PCM (C47) and the knock sensor subharness, then go to step 19.

13. Remove the intake manifold (see page 9-3), and the injector base (see page 9-7).

14. Disconnect the knock sensor 1P connector.

15. Check for continuity between the knock sensor subharness 1P connector terminal and body ground.

KNOCK SENSOR SUBHARNESS 1P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the knock sensor subharness, then go to step 18.

NO—Go to step 16.

16. Check for an open in the knock sensor subharness.

Is the harness OK?

YES—Go to step 17.

NO—Repair open in the knock sensor subharness, then go to step 19.

17. Replace the knock sensor (see page 11-243).

18. Install the injector base (see page 9-7), and the intake manifold (see page 9-2).

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 11-311).

23. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0325 indicated?

YES—Check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 26.

NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the knock sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 23.

(cont'd)

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DTC Troubleshooting (cont'd)

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

27. 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.

28. Hold the engine speed at 3,000—4,000 rpm for at least 10 seconds.

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0325 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1.

    NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0325 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the ignition coil, the injector, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 28. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 28.

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BACK

DTC P0335: CKP Sensor A No Signal

DTC P0385: CKP Sensor B No Signal

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to CKP sensor B.

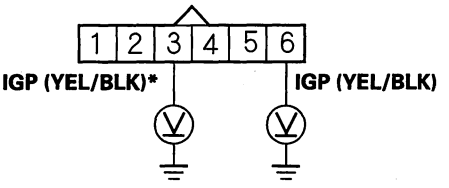
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0335 and/or P0385 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the 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 11-242).
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

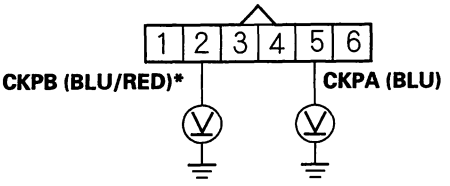
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CKP sensor A/B and the under-hood fuse/relay box (PGM-FI main relay 1), 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.

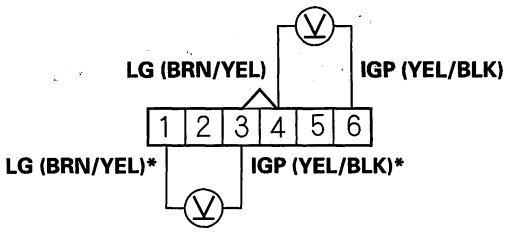
(cont'd)

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DTC Troubleshooting (cont'd)

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

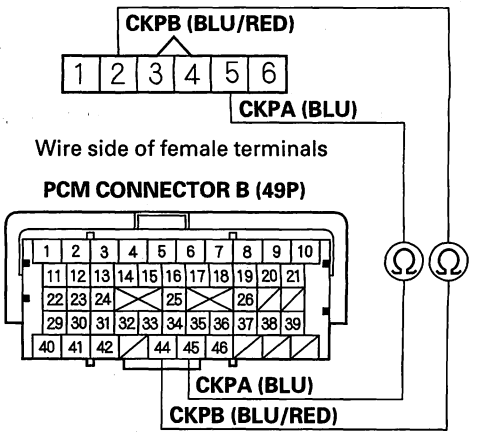
Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between CKP sensor A/B and G101, then go to step 18.

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between PCM connector terminal B45 (B44)* and CKP sensor A/B 6P connector No. 5 (No. 2)*.

CKP SENSOR A/B 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 15.

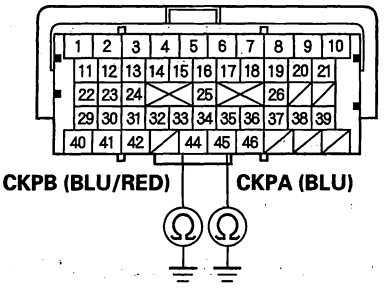
NO—Repair open in the wire between the PCM (B45 (B44)*) and CKP sensor A/B, then go to step 18.

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BACK

15. Check for continuity between PCM connector terminal B45 (B44)* and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B45 (B44)*) and CKP sensor A/B, then go to step 18.

NO—Go to step 25.

16. Turn the ignition switch OFF.
17. Replace the CKP sensor (see page 11-242).
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 11-311).
23. Do the CKP pattern learn procedure (see page 11-4).
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 and/or P0385 indicated?*

YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0339: CKP Sensor A Circuit Intermittent Interruption

DTC P0389: CKP Sensor B Circuit Intermittent Interruption

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0339 and/or P0389 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CKP sensor A/B and the PCM. ■
5. 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 6.

   NO—Reconnect the connectors or terminals, then go to step 9.
6. Check for damage to the CKP sensor A/B pulse plate on the timing belt drive pulley (see page 6-25).

   Is there damage?

   YES—Replace the CKP sensor A/B pulse plate/ timing belt drive pulley (see page 6-25), then go to step 9.

   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Replace CKP sensor A/B (see page 11-242).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Clear the CKP pattern with the HDS.
12. Do the PCM idle learn procedure (see page 11-311).
13. Do the CKP pattern learn procedure (see page 11-4).
14. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0339 and/or P0389 indicated?*

    YES—Check for poor connections or loose terminals at CKP sensor A/B and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P0340: CMP Sensor No Signal

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

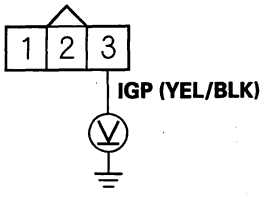
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0340 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the 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

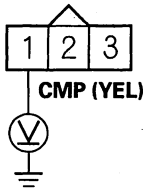
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between the CMP sensor and under-hood fuse/relay box (PGM-FI main relay 1), 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

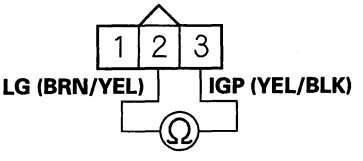
Is there about 5 V?

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.

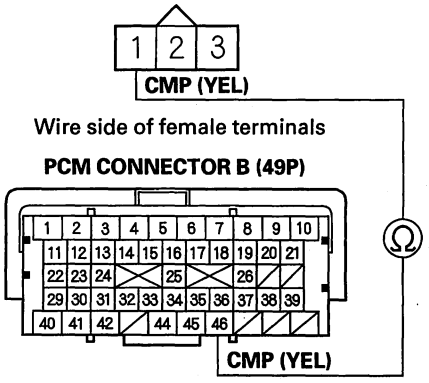
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DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between PCM connector terminal B46 and CMP sensor 3P connector terminal No. 1.

CMP SENSOR 3P CONNECTOR



Terminal side of female terminals

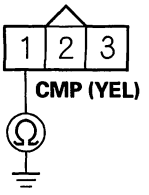
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the PCM (B46) and the CMP sensor, then go to step 18.

15. Check for continuity between CMP sensor 3P connector terminal No. 1 and body ground.

CMP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B46) 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 11-242).
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 11-311).
23. Do the CKP pattern learn procedure (see page 11-4).
24. Start the engine.

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25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at the CMP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0344: CMP Sensor Circuit Intermittent Interruption

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:
   - ENGINE SPEED
   - VSS
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0344 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the CMP sensor and the PCM. ■
5. 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 6.

   NO—Reconnect or repair the connectors or terminals, then go to step 9.
6. Check for damage to the CMP sensor pulse projection on the front camshaft pulley (see page 11-242).

   Is there damage?

   YES—Replace the front camshaft pulley (see page 6-11), then go to step 9.

   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Replace the CMP sensor (see page 11-242).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Clear the CKP pattern with the HDS.
12. Do the PCM idle learn procedure (see page 11-311).
13. Do the CKP pattern learn procedure (see page 11-4).
14. Test-drive the vehicle for 10 minutes in the range of these recorded freeze data parameters:
    - ENGINE SPEED
    - VSS
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0344 indicated?

    YES—Check for poor connections or loose terminals at the CMP sensor and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P050A: Cold Start Idle Air Control System Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050A indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Check for poor connections or blockage at the intake air duct.

   Is it OK?

   YES—Go to step 4.

   NO—Reconnect or repair the intake air duct, then go to step 20.
4. Check for damage at the air cleaner housing.

   Is it OK?

   YES—Go to step 5.

   NO—Replace the air cleaner housing (see page 11-363), then go to step 20.
5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element or remove the debris (see page 11-364), then go to step 20.

   NO—Go to step 6.
6. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle 10 seconds or more.
9. Monitor the OBD STATUS for DTC P050A 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, the 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 6 and recheck.
10. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES—Go to step 11.

    NO—Replace the throttle body (see page 11-366), then go to step 20.
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.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.

13. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 9.8–12 gm/s or about 1.70 V?

    YES—Go to step 14.

    NO—Replace the MAF sensor/IAT sensor (see page 11-238), then go to step 20.

14. Turn the ignition switch OFF.

15. Allow the engine to cool to ambient temperature.

16. Note the ambient temperature.

17. Turn the ignition switch ON (II).

18. Note the value of IAT SENSOR quickly in the DATA LIST with the HDS.

19. Compare the value of the IAT SENSOR and the ambient temperature.

    Does the value of the IAT SENSOR differ 5.4 °F (3 °C) or more?

    YES—Replace the MAF sensor/IAT sensor (see page 11-238), then go to step 20.

    NO—Check for dirt, carbon, or damage in the throttle bore. If there is dirt or carbon, clean the throttle body (see page 11-363), then go to step 20. If there is damage in the throttle bore, replace the throttle body (see page 11-366), then go to step 20.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.

23. Do the PCM idle learn procedure (see page 11-311).

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050A indicated?

    YES—Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the PCM, then go to step 1.

    NO—Go to step 25.

25. Monitor the OBD STATUS for DTC P050A in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, 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, go to step 20.

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DTC P050B: Cold Start Ignition Timing Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs other than P050B indicated?

   YES—Go to the indicated DTC's troubleshooting. ■

   NO—Go to step 3.
3. Check for poor connections or blockage at the intake air duct.

   Is it OK?

   YES—Go to step 4.

   NO—Reconnect or repair the intake air duct, then go to step 25.
4. Check for damage at the air cleaner housing.

   Is it OK?

   YES—Go to step 5.

   NO—Replace the air cleaner housing (see page 11-363), then go to step 25.
5. Check for dirt or debris in the air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element or remove the debris (see page 11-364), then go to step 25.

   NO—Go to step 6.
6. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle 10 seconds or more.
9. Monitor the OBD STATUS for DTC P050B 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, the 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 6 and recheck.
10. Inspect the ignition timing (see page 4-20).

    Is the ignition timing OK?

    YES—Go to step 12.

    NO—Go to step 11.
11. Check for damage at the CKP sensor (see page 11-242) and the timing belt drive pulley (see page 6-25).

    Is the CKP sensor and/or the CKP sensor pulser plate damaged?

    YES—Replace the CKP sensor (see page 11-242) and/or the timing belt drive pulley (see page 6-25), then go to step 6.

    NO—Go to step 31.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Do the ETCS TEST in the INSPECTION MENU with the HDS.

    Is the THROTTLE ACTUATOR CONTROL VALVE normal?

    YES—Go to step 13.

    NO—Replace the throttle body (see page 11-366), then go to step 25.

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. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm for at least 30 seconds.

15. While holding the engine speed at 2,500 rpm, check the MAF SENSOR in the DATA LIST with the HDS.

    Is there about 9.8—12 gm/s or about 170 V?

    YES—Go to step 16.

    NO—Replace the MAF sensor/IAT sensor (see page 11-238), then go to step 25.

16. Turn the ignition switch OFF.

17. Drain the coolant (see page 10-6).

18. Remove ECT sensor 1 (see page 11-239), and ECT sensor 2 (see page 11-239).

19. Allow the sensors to cool to ambient temperature.

20. Note the ambient temperature.

21. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on the engine.

22. Turn the ignition switch ON (II).

23. Note the value of ECT SENSOR 1 and ECT SENSOR 2 quickly in the DATA LIST with the HDS.

24. Compare the value of ECT SENSOR 1 and the ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does either sensor differ more than 5.4 °F (3 °C) from the ambient temperature?

    YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 25.

    NO—Check and repair any problems with the following items, then go to step 25.

    - Engine compression and cylinder leakdown
    - VTEC system
    - Engine oil
    - A/C system
    - Power steering

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.

28. Do the PCM idle learn procedure (see page 11-311).

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES—Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    NO—Go to step 30.

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30. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 29, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT 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 27.

31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

32. Let the engine cool until the value of ECT SENSOR 1 is 122 °F (50 °C) or less.

33. Do the PCM idle learn procedure (see page 11-311).

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P050B indicated?

    YES—Check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P050B in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the CKP sensor, the throttle body, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 32. If the PCM was substituted, 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 32.

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DTC Troubleshooting (cont'd)

DTC P0562: Charging System Low Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If any high current load accessories are installed, this DTC can be set.
- If DTC P16BB and/or P16BC is stored at the same time as DTC P0562, troubleshoot DTC P16BB and/or P16BC first, then recheck for DTC P0562.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0562 indicated?

   YES—Replace the alternator (see page 4-36), then go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the main under-hood fuse box, and check the battery performance (see page 22-76). ■
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-311).
10. Start the engine.
11. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Headlights on high beam
12. Hold the engine speed at 2,000 rpm (in Park or neutral) for 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0562 indicated?

    YES—Check for poor connections or loose terminals at the alternator and the main under-hood fuse box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P0563: PCM Power Source Circuit Unexpected Voltage

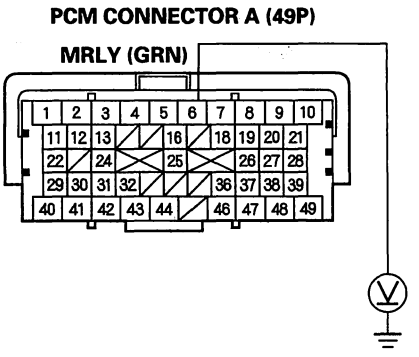
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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, the system is OK at this time. Check for poor connections or loose terminals under-hood fuse/relay box (PGM-FI main relay 1) and the No. 8 IGP (15 A) fuse in the under-hood fuse/relay box and the PCM. ■
7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Measure voltage between PCM connector terminal A6 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 13.

NO—Go to step 11.

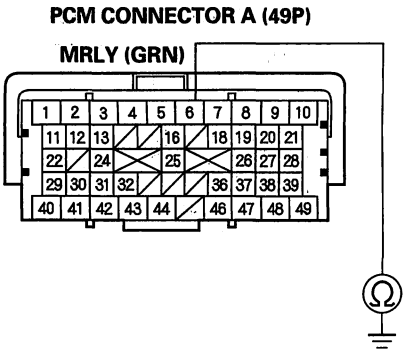
11. Disconnect the under-hood fuse/relay box 14P connector.

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DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal A6 and body ground.



Terminal side of female terminals

Is there continuity?

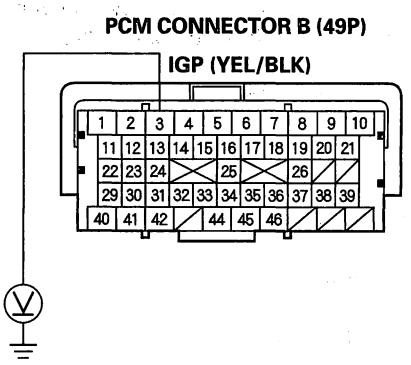
YES—Repair short in the wire between the PCM (A6) and under-hood fuse/relay box (PGM-FI main relay 1), then go to step 19.

NO—Go to step 18.

13. Reconnect PCM connector A (49P).

14. Disconnect PCM connector B (49P).

15. Measure voltage between PCM connector terminal B3 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 16.

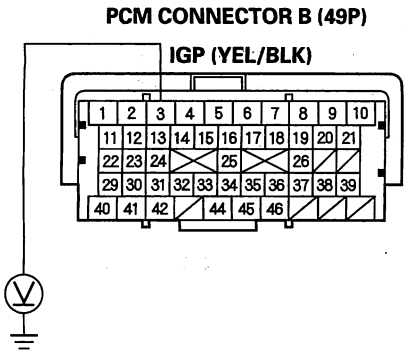
NO—Go to step 18.

16. Disconnect the under-hood fuse/relay box 9P connector.

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17. Measure voltage between PCM connector terminal B3 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (B3) and under-hood fuse/relay box (PGM-FI main relay 1), then go to step 19.

NO—Go to step 18.

18. Test PGM-FI main relay 1 in the under-hood fuse/relay box (see page 22-77)

Is PGM-FI main relay 1 OK?

YES—Go to step 26.

NO—Replace relay control module (under-hood fuse/relay box) (see page 22-71), then go to step 19.

19. Reconnect all connectors.

20. Turn the ignition switch ON (II).

21. Reset the PCM with the HDS.

22. Turn the ignition switch OFF.

23. Wait 10 seconds.

24. Do the PCM idle learn procedure (see page 11-311).

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at under-hood fuse/relay box (PGM-FI main relay 1) and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at under-hood fuse/relay box (PGM-FI main relay 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P0602: PCM Programming Error

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is indicated when a PCM 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 11-7).
2. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0602 indicated?

   YES—Replace the original PCM (see page 11-244). ■

   NO—The update is complete. ■

DTC P060A: PCM (A/T system) Internal Control Module Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P060A indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0615: Starter Cut Relay STRLD Circuit Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 P0615 indicated?

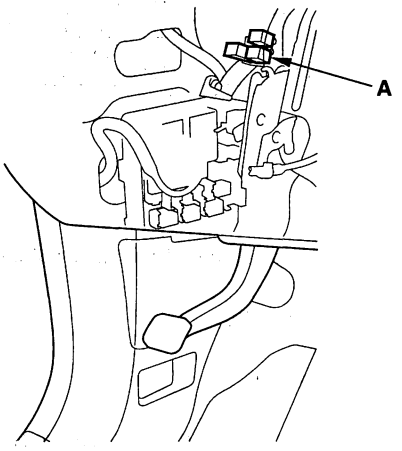
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM.■
5. Turn the ignition switch OFF.
6. Check the STRLD (7.5 A) fuse in the auxiliary under-dash fuse holder 2.

   Is the fuse OK?

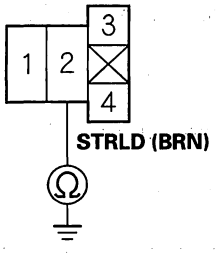
   YES—Go to step 7.

   NO—Replace the STRLD (7.5 A) fuse in the auxiliary under-dash fuse holder 2, then go to step 12.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector A (49P).
9. Remove starter cut relay 1 (A) from auxiliary under-dash relay box A.



10. Connect starter cut relay 1 4P connector terminal No. 2 to body ground with a jumper wire.

STARTER CUT RELAY 1 4P CONNECTOR



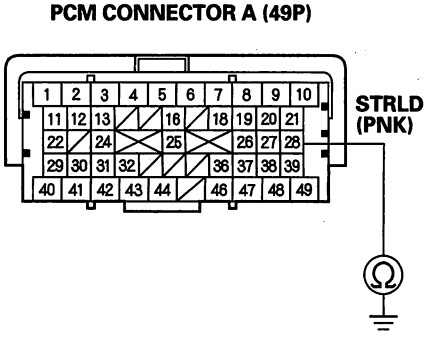
Terminal side of female terminals

(cont'd)

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DTC Troubleshooting (cont'd)

11. Check for continuity between PCM connector terminal A28 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the PCM (A28) and starter cut relay 1, then go to step 12.

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 11-311).
16. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0615 indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1 and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

17. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0615 indicated?

YES—Check for poor connections or loose terminals at starter cut relay 1 and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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BACK

DTC P062F: PCM Internal Control Module Keep Alive Memory (KAM) Error

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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—Go to step 4.

   NO—Intermittent failure, the system is OK at this time.■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P062F indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P0630: VIN Not Programmed or Mismatch

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- This DTC is stored only when the PCM does not have the VIN information of the vehicle. Use the HDS to input 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 P062F indicated?

   YES—Do the troubleshooting for P062F (see page 11-153).■

   NO—Go to step 9.
5. Clear the DTC with the HDS.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II), and wait 5 seconds.

(cont'd)

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DTC Troubleshooting (cont'd)

8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0603 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

9. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0630 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0685: PCM Power Control Circuit/ Internal Circuit Malfunction

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If the problem does not return after clearing the DTC, or if this DTC is stored intermittently, check for loose terminals at the IGP line connectors before you replace the 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 P0685 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0685 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P1109: BARO Sensor Circuit Out of Range High

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1109 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P1116: ECT Sensor 1 Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0111 is stored at the same time as DTC P1116, troubleshoot DTC P0111 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 11-239), 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 11-239).

9. Allow ECT sensor 1 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 1 to its 2P connector, but do not install it on 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 ambient temperature.

    Does the value of ECT SENSOR 1 differ 5.4 °F (3 °C) or more?

    YES—Replace ECT sensor 1 (see page 11-239), then go to step 27.

    NO—Intermittent failure, the 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.

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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 11-239), 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 11-239), 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 11-239), and ECT sensor 2 (see page 11-239).

22. Allow the sensors to cool to ambient temperature.

23. Note the ambient temperature.

24. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on 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 ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensors differ more than 5.4 °F (3 °C) from the ambient temperature?

    YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then reconnect all connectors, and refill the cooling system (see page 10-6). ■

27. Turn the ignition switch ON (II).

28. Reset the PCM with the HDS.

29. Do the PCM idle learn procedure (see page 11-311).

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P1128: MAP Sensor Signal Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Inspect the air cleaner element (see page 11-364).

   Is it OK?

   YES—Go to step 2.

   NO—Clean or replace the air cleaner element (see page 11-364).

2. Turn the ignition switch ON (II).
3. 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 8.

   NO—Go to step 4.

4. Clear the DTC with the HDS.
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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Engine speed between 1,200 and 5,500 rpm
   - Transmission in D position
   - Vehicle speed accelerated from 16—31 mph (25—50 km/h) under half throttle

7. Monitor the OBD STATUS for DTC P1128 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, the 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.

8. Turn the ignition switch OFF.
9. Replace the MAP sensor (see page 11-238).
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-311).
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 under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Engine speed between 1,200 and 5,500 rpm
    - Transmission in D position
    - Vehicle speed accelerated from 16—31 mph (25—50 km/h) under half throttle

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1128 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting. ■

    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 14.

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BACK

DTC P1129: MAP Sensor Signal Higher than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose

   Are there any vacuum leaks?

   YES—Repair or replace the part(s) with vacuum leaks, then go to step 9.

   NO—Go to step 2.

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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Engine speed between 1,400 and 6,500 rpm
   - Transmission in D position
   - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds.
   - During the drive, decelerate (with the throttle fully closed) for 2 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, the 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 11-238).

9. Turn the ignition switch ON (II).

10. Reset the PCM with the HDS.

11. Do the PCM idle learn procedure (see page 11-311).

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.

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DTC Troubleshooting (cont'd)

13. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Engine speed between 1,400 and 6,500 rpm
    - Transmission in D position
    - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds.
    - During the drive, decelerate (with the throttle fully closed) for 2 seconds.

14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1129 indicated?

    YES—Check for poor connections or loose terminals at the MAP sensor and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 14, go to the indicated DTC's troubleshooting.■

    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.

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BACK

DTC P1172: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Out of Range High

DTC P1174: Front A/F Sensor (Bank 2, Sensor 1) Circuit Out of Range High

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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, the 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 11-240).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-311).
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.

    Is DTC P1172 and/or P1174 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    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 or OUT OF CONDITION, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P1297: ELD Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

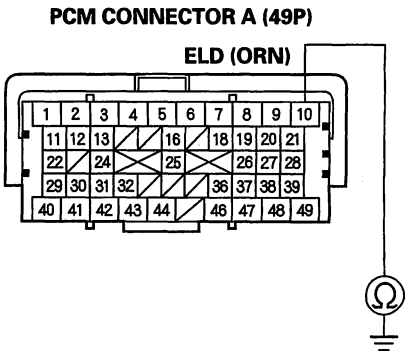
   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the 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 72 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 A (49P).
10. Check for continuity between PCM connector terminal A10 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A10) and the ELD, then go to step 13.

NO—Go to step 20.

11. Turn the ignition switch OFF.
12. Replace the left side engine compartment wire harness (see page 22-24).
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 11-311).
17. Start the engine.
18. Turn on the headlights.

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19. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES—Check for poor connections or loose terminals at the ELD unit and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

20. Reconnect all connectors.

21. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

22. Start the engine.

23. Turn on the headlights.

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1297 indicated?

    YES—Check for poor connections or loose terminals at the ELD unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 22. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P1298: ELD Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

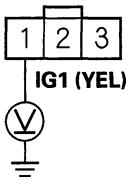
1. Start the engine, and let it idle.
2. Check the ELD in the DATA LIST with the HDS.

   Is 0.2 A or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the 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

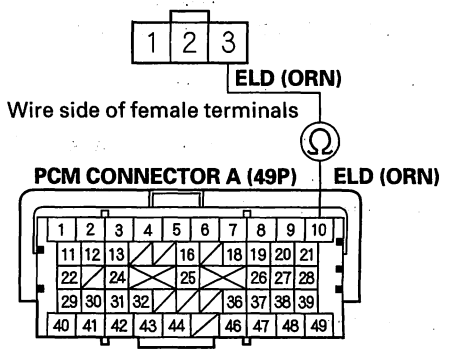
Is there battery voltage?

YES—Go to step 7.

NO—Repair open in the wire between the No. 18 IG ACG (10 A) fuse in the under-dash fuse/relay box and the ELD, then go to step 13.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Check for continuity between PCM connector terminal A10 and ELD 3P connector terminal No. 3.

ELD 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 11.

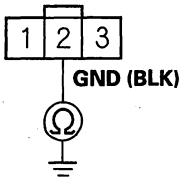
NO—Repair open in the wire between the PCM (A10) and the ELD, then go to step 13.

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11. 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 12.

NO—Repair open in the wire between the ELD and G302, then go to step 13.

12. Replace the left side engine compartment wire harness (see page 22-24).

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 11-311).

17. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Go to step 18.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

18. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1298 indicated?

YES—Check for poor connections or loose terminals at the ELD unit and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P1549: Charging System High Voltage

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If a high voltage battery (24 V, etc.) is connected to the vehicle, this DTC can be stored.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C switch off
   - Headlights off
5. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P1549 indicated?

   YES—Replace the alternator (see page 4-36), then go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the main under-hood fuse box.■
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-311).
10. Start the engine.
11. Check under these conditions:
    - A/C switch off
    - Headlights off
12. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1549 indicated?

    YES—Check for poor connections or loose terminals at the alternator and the main under-hood fuse box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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BACK

DTC P16BB: Alternator B Terminal Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C switch on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BB indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator and the main under-hood fuse box, and check the battery performance (see page 22-76).■
7. Check for poor connections or loose terminals at the alternator and the main under-hood fuse box (+B line).

   Are the connections and terminals OK?

   YES—Go to step 8.

   NO—Repair the connectors or terminals, then go to step 9.
8. Check for an open in the wire between the alternator and main under-hood fuse box at the starter subharness.

   Is the harness OK?

   YES—Replace the alternator (see page 4-36), then go to step 9.

   NO—Repair open in the wire between the alternator and the main under-hood fuse box, then go to step 9.
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see page 11-311).
12. Start the engine.
13. Check under these conditions:
    - A/C switch on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Headlights on high beam
14. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BB indicated?

    YES—Check for poor connections or loose terminals at the alternator and the main under-hood fuse box, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P16BC: Alternator FR Terminal Circuit/ IGP Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Check for poor connections at the alternator 4P connector.

   Are the connections OK?

   YES—Go to step 2.

   NO—Repair the connections, then go to step 18.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Start the engine.
5. Check under these conditions:
   - A/C switch on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Headlights on high beam
6. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.
7. Check for Temporary DTCs or DTCs with the HDS.

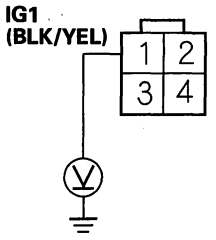
   Is DTC P16BC indicated?

   YES—Go to step 8.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator. ■

8. Turn the ignition switch OFF.
9. Disconnect the alternator 4P connector.
10. Turn the ignition switch ON (II).
11. Measure voltage between alternator 4P connector terminal No. 1 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

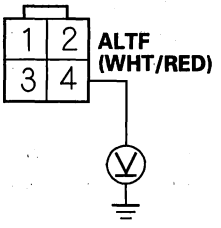
Is there battery voltage?

YES—Go to step 12.

NO—Repair open in the wire between the alternator (IG1 line) and the No. 18 ACG (10 A) fuse in under-dash fuse/relay box, then go to step 17.

12. Measure voltage between alternator 4P connector terminal No. 4 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Replace the alternator (see page 4-36), then go to step 17.

NO—Go to step 13.

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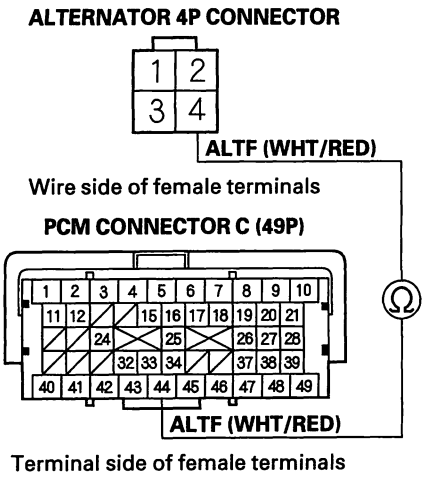
BACK

13. Turn the ignition switch OFF.

14. Jump the SCS line with the HDS.

15. Disconnect PCM connector C (49P).

16. Check for continuity between alternator 4P connector terminal No. 4 and PCM connector terminal C44.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (C44) and the alternator, then go to step 17.

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 11-311).

21. Start the engine.

22. Check under these conditions:

- A/C switch on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Headlights on high beam

23. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P16BC indicated?

YES—Check for poor connections or loose terminals at the alternator and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

(cont'd)

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DTC Troubleshooting (cont'd)

25. Reconnect all connectors.

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

27. Start the engine.

28. Check under these conditions:

    - A/C switch on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Headlights on high beam

29. Hold the engine speed at 2,000 rpm (in Park or neutral) 1 minute.

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BC indicated?

    YES—Check for poor connections or loose terminals at the alternator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 27. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P16BD: Starter Cut Relay 2 Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BD indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 2 and the PCM. ■
4. Replace starter cut relay 2.
5. Reset the PCM with the HDS.
6. Do the PCM idle learn procedure (see page 11-311).
7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BD indicated?

   YES—Check for poor connections or loose terminals at starter cut relay 2 and the PCM, then go to step 1.

   NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P16BE: Starter Cut Relay 1 Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BE indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1 and the PCM. ■
4. Replace starter cut relay 1.
5. Reset the PCM with the HDS.
6. Do the PCM idle learn procedure (see page 11-311).
7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BE indicated?

   YES—Check for poor connections or loose terminals at starter cut relay 1 and the PCM, then go to step 1.

   NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P16BF: Starter Cut Relay STRLY Circuit Malfunction

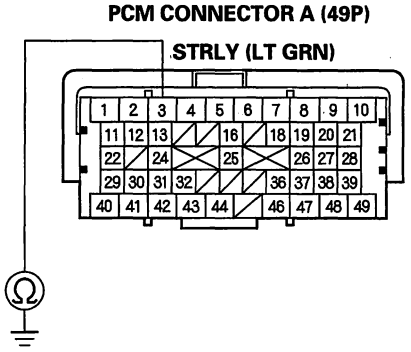
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P16BF indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM. ■
4. Turn the ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Remove starter cut relay 1 and starter cut relay 2.
7. Disconnect PCM connector A (49P).
8. Check for continuity between PCM connector terminal A3 and body ground.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the PCM (A3) and starter cut relay 1 or starter cut relay 2, then go to step 9.

   NO—Go to step 14.
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 11-311).
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BF indicated?

    YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
14. Reconnect all connectors.
15. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P16BF indicated?

    YES—Check for poor connections or loose terminals at starter cut relay 1, starter cut relay 2, and the PCM, then go to step 1. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2183: ECT Sensor 2 Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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 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 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 11-239), 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 11-239).

9. Allow ECT sensor 2 to cool to ambient temperature.

10. Note the ambient temperature.

11. Connect ECT sensor 2 to its 2P connector, but do not install it on 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 ambient temperature.

    Does ECT SENSOR 2 differ 5.4 °F (3 °C) or more?

    YES—Replace ECT sensor 2 (see page 11-239), then go to step 27.

    NO—Intermittent failure, the 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 11-239), 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 11-239), then go to step 27.

    NO—Go to step 19.

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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 11-239), and ECT sensor 2 (see page 11-239).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 to its 2P connector, and ECT sensor 2 to its 2P connector, but do not install them on 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 ambient temperature, and the value of ECT SENSOR 2 and the ambient temperature individually.

    Does one of the sensor differ more than 5.4 °F (3 °C) from the ambient temperature?

    YES—Replace the sensor that differed more than 5.4 °F (3 °C) from the ambient temperature, then go to step 27.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then reconnect all connectors, and refill the cooling system (see page 10-6). ■
27. Turn the ignition switch ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-311).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2183 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2184: ECT Sensor 2 Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 more, or 0.08 V or less indicated?

   YES—Go to step 3.

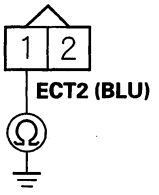
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 2 and the PCM. ■
3. Turn the ignition switch OFF.
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 356 °F (180 °C) or more, 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 (49P).
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 (A21), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch OFF.
12. Replace ECT sensor 2 (see page 11-239).
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 11-311).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2184 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2185: ECT Sensor 2 Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

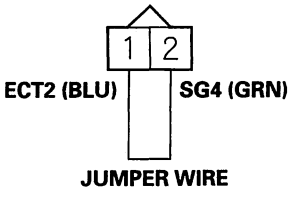
1. Turn the ignition switch ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the 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 the 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

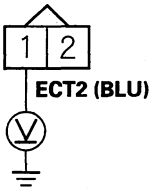
6. Turn the ignition switch ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °F (−40 °C) or less, or 4.92 V or more indicated?

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch OFF.
9. Remove the jumper wire from the 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 16.

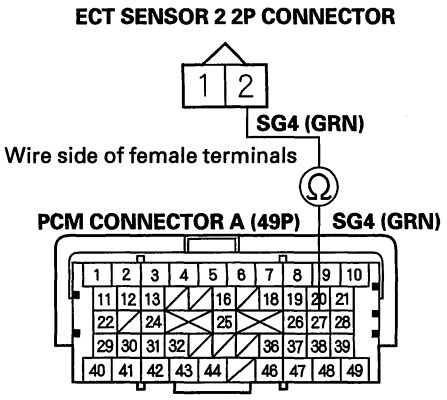
12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector A (49P).

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DTC Troubleshooting (cont'd)

15. Check for continuity between PCM connector terminal A27 and ECT sensor 2 2P connector terminal No. 2.

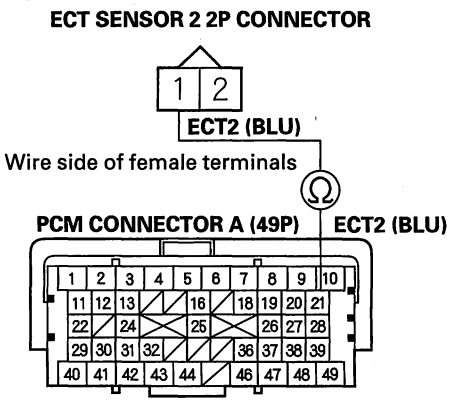


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (A27) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (49P).
19. Check for continuity between PCM connector terminal A21 and ECT sensor 2 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (A21) and ECT sensor 2, then go to step 22.

20. Turn the ignition switch OFF.
21. Replace ECT sensor 2 (see page 11-239).
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 11-311).

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26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.

28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2185 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 2 and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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, P2118, P2135, P2138, P2176 or a combination of P2122 and P2127, P2122 and P2138 or P2127 and P2138 is stored at the same time as DTC P2195 (P2197)*, troubleshoot those DTCs first, then recheck for DTC P2195 (P2197)*.

1. Check the installation of the A/F sensor (Sensor 1).

   Is the A/F sensor loose or disconnected from the exhaust pipe?

   YES—Go to step 6.

   NO—Go to step 2.

2. Turn the ignition switch ON (II).
3. Clear the DTC with the HDS.
4. Start the engine, then let it idle.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2195 and/or P2197 indicated?*

   YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 13.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

6. Turn the ignition switch OFF.
7. Reinstall the A/F sensor (Sensor 1) (see page 11-240).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-311).
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 and/or P2197 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    NO—Go to step 12.

12. 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. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at A/F sensor (Sensor 1) and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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13. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

14. Start the engine, then let it idle for 2 minutes.

15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2195 and/or P2197 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 14. If the PCM was substituted, go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 and/or P2197* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 15, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2227: BARO Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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 (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Throttle position between 17 degrees and 33 degrees for 3 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Intermittent failure, the system is OK at this time.■

   NO—If the screen indicates FAILED, go to step 7. If the screen indicates NOT COMPLETED, go to step 5.

(cont'd)

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DTC Troubleshooting (cont'd)

7. Check the condition of the air cleaner element.

   Is the air cleaner element OK?

   YES—Go to step 8.

   NO—Replace the air cleaner element (see page 11-364).

8. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

9. Reset the PCM with the HDS.

10. Do the PCM idle learn procedure (see page 11-311).

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 (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Throttle position between 17 degrees and 33 degrees for 3 seconds

13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2227 indicated?

    YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 11. If the PCM was substituted, go to step 1.

    NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 11. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 11.

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BACK

DTC P2228: BARO Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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, the system is OK at this time.■
3. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2228 indicated?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted in step 3, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

DTC P2229: BARO Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 4.49 V, or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time.■
3. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2229 indicated?

   YES—Check for poor connections or loose terminals at the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted in step 3, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P2237: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit High Voltage

DTC P2240: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit High Voltage

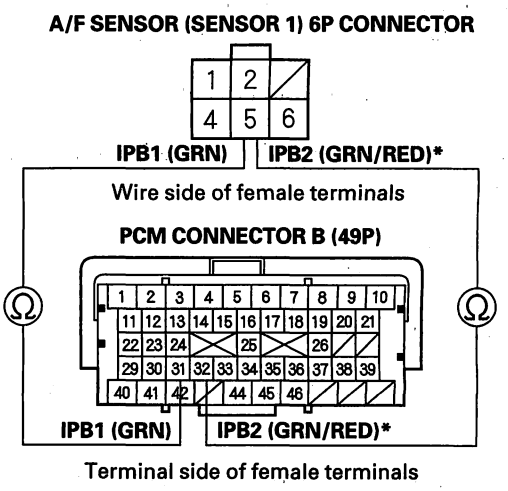
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

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, the 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 5 to and PCM connector terminal B31 (B32)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (B31 (B32)*) and the A/F sensor (Sensor 1), then go to step 14.

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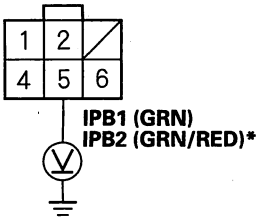
BACK

10. Reconnect PCM connector B (49P).

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 A/F sensor (Sensor 1) 6P connector terminal No. 5 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

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 11-240).

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240' indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. 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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.■

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, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2237 and/or P2240' indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2237 and/or P2240' in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2238: Rear A/F Sensor (Bank 1, Sensor 1) IP Circuit Low Voltage

DTC P2241: Front A/F Sensor (Bank 2, Sensor 1) IP Circuit Low Voltage

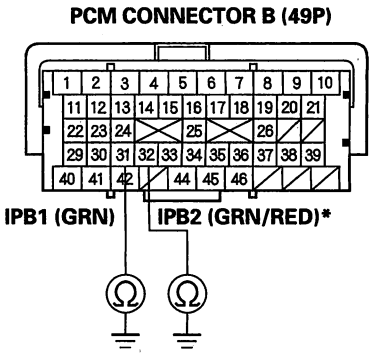
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

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, the 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between PCM connector terminal B31 (B32)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B31 (B32)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

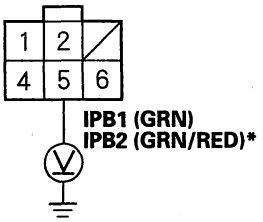
10. Reconnect PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

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BACK

12. Measure voltage between A/F sensor (Sensor 1) 6P connector terminal No. 5 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

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 11-240).

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.■

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, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2238 and/or P2241 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2238 and/or P2241* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2243: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit High Voltage

DTC P2247: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit High Voltage

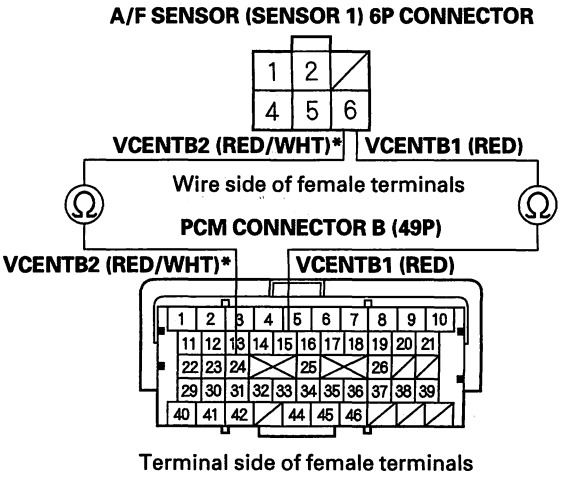
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

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, the 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between A/F sensor (Sensor 1) 8P connector terminal No. 6 and PCM connector terminal B15 (B24)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (B15 (B24)*) and the A/F sensor (Sensor 1), then go to step 14.

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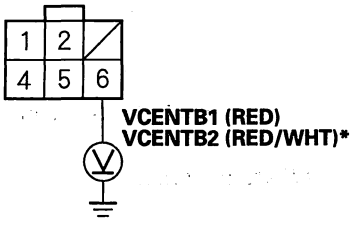
BACK

10. Reconnect PCM connector B (49P).

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 A/F sensor (Sensor 1) 6P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

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 11-240).

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. 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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

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, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2243 and/or P2247 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2243 and/or P2247* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2245: Rear A/F Sensor (Bank 1, Sensor 1) VCENT Circuit Low Voltage

DTC P2249: Front A/F Sensor (Bank 2, Sensor 1) VCENT Circuit Low Voltage

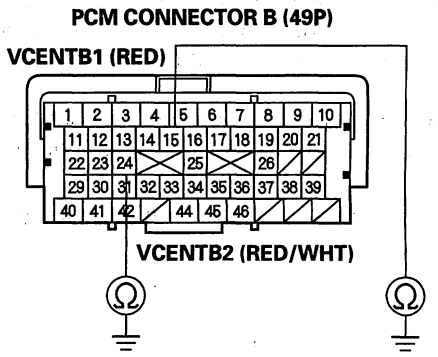
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

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, the 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between PCM connector terminal B15 (B24)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B15 (B24)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

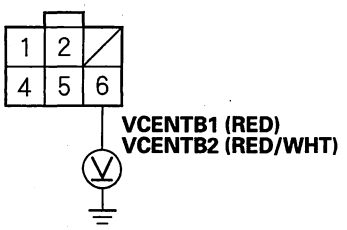
10. Reconnect PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

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BACK

12. Measure voltage between A/F sensor (Sensor 1) 6P connector terminal No. 6 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

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 11-240).
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 11-311).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2245 and/or P2249 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

    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, keep idling until a result comes on.

20. Turn the ignition switch OFF.
21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2245 and/or P2249 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2245 and/or P2249* in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2251: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit High Voltage

DTC P2254: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit High Voltage

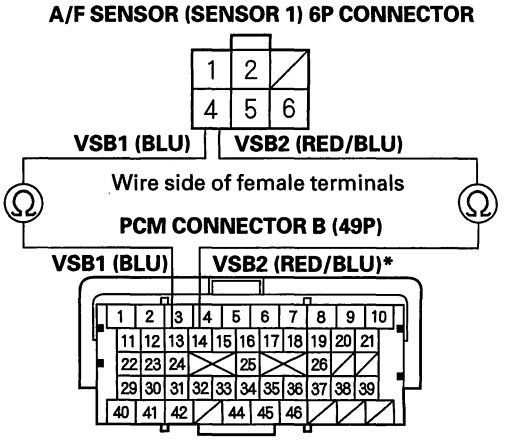
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2251 and/or P2254* is stored at the same time as DTC P0134 and/or P0154*, troubleshoot DTC P2251 and/or P2254* first, then recheck for P0134 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, the 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between A/F sensor (Sensor 1) 6P connector terminal No. 4 and PCM connector terminal B13 (B14)*.



Is there continuity?

YES—Go to step 10.

NO—Repair open in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

10. Reconnect PCM connector B (49P).

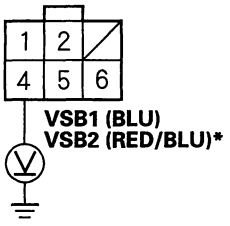
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BACK

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 A/F sensor (Sensor 1) 6P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

Is there about 0.2 V or less?

YES—Go to step 20.

NO—Go to step 13.

13. Replace the A/F sensor (Sensor1) (see page 11-240).

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

NO—Go to step 19.

19. 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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting.■

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, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

If DTC P2251 and/or P2254 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2251 and/or P2254* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting.■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2252: Rear A/F Sensor (Bank 1, Sensor 1) VS Circuit Low Voltage

DTC P2255: Front A/F Sensor (Bank 2, Sensor 1) VS Circuit Low Voltage

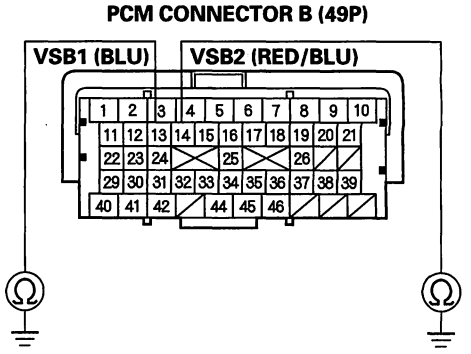
NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Information marked with an asterisk (*) applies to the front bank (Bank 2).

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, the 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) 6P connector.
8. Disconnect PCM connector B (49P).
9. Check for continuity between PCM connector terminal B13 (B14)* and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B13 (B14)*) and the A/F sensor (Sensor 1), then go to step 14.

NO—Go to step 10.

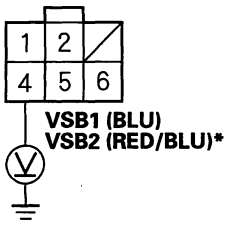
10. Reconnect PCM connector B (49P).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle 2 minutes.

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12. Measure voltage between A/F sensor (Sensor 1) 6P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 6P CONNECTOR



Wire side of female terminals

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 11-240).

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

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. If any other Temporary DTCs or DTCs were indicated in step 18, go to the indicated DTC's troubleshooting. ■

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, keep idling until a result comes on.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2252 and/or P2255 indicated?*

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2252 and/or P2255* in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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, then let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Vehicle speed between 35—55 mph (56—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, the 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 11-241).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-311).
11. Start the engine, then let it idle without load (in Park or neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Vehicle speed between 35—55 mph (56—88 km/h)
    - Drive 1 minute or more
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2270, P2271, P2272, and/or P2273* indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    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 12.

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DTC P2610: PCM Internal Power Off Timer Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 P2610 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P2A00: Rear A/F Sensor (Bank 1, Sensor 1) Circuit Range/Performance Problem

DTC P2A03: Front A/F Sensor (Bank 2, Sensor 1) Circuit Range/Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Vehicle speed between 25—55 mph (40—88 km/h) for 5 minutes.
   - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed) for 4 seconds.
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 6.

   NO—If the screen indicates PASSED, intermittent failure, the 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 11-240).
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.
10. Do the PCM idle learn procedure (see page 11-311).
11. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Vehicle speed between 25—55 mph (40—88 km/h) for 5 minutes.
    - Drive at a steady speed between 55—75 mph (88—120 km/h) for 10 seconds, then decelerate (with the throttle fully closed) for 4 seconds.
12. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2A00 and/or P2A03 indicated?*

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 12, go to the indicated DTC's troubleshooting. ■

    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.

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DTC U0028: F-CAN Malfunction (BUS-OFF)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 U0028 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time.■
4. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0028 indicated?

   YES—If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC U0114: F-CAN Malfunction (PCM-SH-AWD Control Unit)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0028 is stored at the same time as DTC U0114, troubleshoot DTC U0028 first, then recheck for DTC U0114.

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 U0114 indicated?

   YES—Go to step 4.

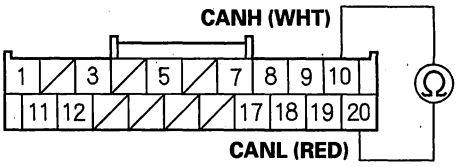
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the SH-AWD control unit, and the PCM. ■
4. Check for DTCs in the DTCs MENU with the HDS.

   Is SH-AWD system DTC 41 indicated?

   YES—Go to step 5.

   NO—Go to step 8.
5. Turn the ignition switch OFF.
6. Disconnect the SH-AWD control unit 20P connector.
7. Check for continuity between SH-AWD control unit 20P connector terminals No. 10 and No. 20*.

SH-AWD CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good SH-AWD control unit (see page 15-71), then go to step 15 and recheck. If DTC U0114 is not indicated, replace the original SH-AWD control unit (see page 15-71), then go to step 15.

NO—Repair open in the wire between the SH-AWD control unit (No. 10 (No. 20)*) and the PCM (A48 (A49)*), then go to step 15.

*: CANL line

8. Check for a poor connections at the SH-AWD control unit 20P connector and 8P connector.

   Are the connections OK?

   YES—Go to step 9.

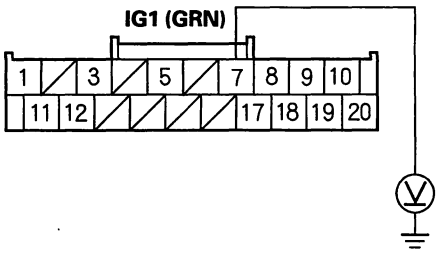
   NO—Repair the connections, then go to step 15.

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9. Turn the ignition switch OFF.
10. Disconnect the SH-AWD control unit 20P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between SH-AWD control unit 20P connector terminal No. 7 and body ground.

SH-AWD CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

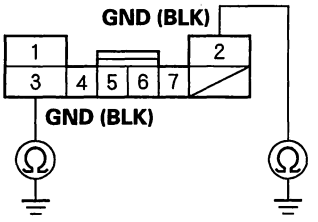
Is there battery voltage?

YES—Go to step 13.

NO—Check the No. 20 SVTM-4, ARC, ODS (7.5 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 20 STVM-4, ARC, ODS (7.5 A) fuse and the SH-AWD control unit, then go to step 15.

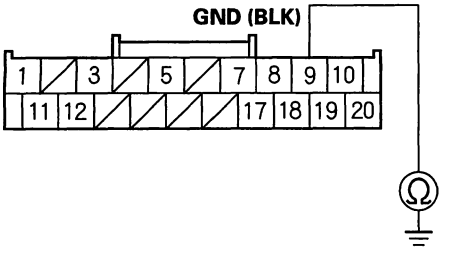
13. Turn the ignition switch OFF.
14. Check for continuity between SH-AWD control unit 20P connector terminals No. 9 and body ground, and between SH-AWD control unit 8P connector terminal No. 2 and No. 3 and body ground individually.

SH-AWD CONTROL UNIT 8P CONNECTOR



Wire side of female terminals

SH-AWD CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good SH-AWD control unit (see page 15-71), then go to step 15 and recheck. If DTC U0114 is not indicated, replace the original SH-AWD control unit (see page 15-71), then go to step 15.

NO—Repair open in the wire between the SH-AWD control unit and body ground (G603), then go to step 15.

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DTC Troubleshooting (cont'd)

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 11-311).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC U0114 indicated?

    YES—Check for poor connections or loose terminals at the gauge control module, the SH-AWD control unit, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC U0122: F-CAN Malfunction (PCM-VSA Modulator-Control Unit)

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC U0028 is stored at the same time as DTC U0122, troubleshoot DTC U0028 first, then recheck for DTC U0122.

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 U0122 indicated?

   YES—Go to step 4.

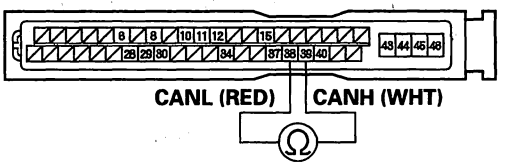
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module, the VSA modulator-control unit, and the PCM. ■
4. Check for DTCs in the DTCs MENU with the HDS.

   Is VSA DTC 86 indicated?

   YES—Go to step 5.

   NO—Go to step 8.
5. Turn the ignition switch OFF.
6. Disconnect the VSA modulator-control unit 46P connector.
7. Check for continuity between VSA modulator-control unit 46P connector terminals No. 38* and No. 39.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VSA modulator-control unit (see page 19-102), then go to step 15 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit (see page 19-102), then go to step 15.

NO—Repair open in the wire between the VSA modulator-control unit (No. 39 (No. 38)*) and the PCM (A48 (A49)*), then go to step 15.

*: CANL line

8. Check for a poor connection at the VSA modulator-control unit 46P connector.

   Are the connections OK?

   YES—Go to step 9.

   NO—Repair the connection(s), then go to step 15.

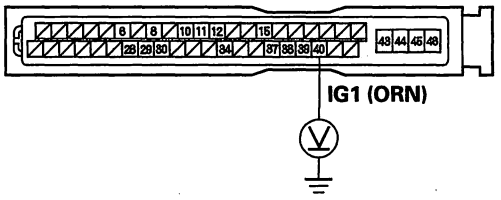
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DTC Troubleshooting (cont'd)

9. Turn the ignition switch OFF.
10. Disconnect the VSA modulator-control unit 46P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between VSA modulator-control unit 46P connector terminal No. 40 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

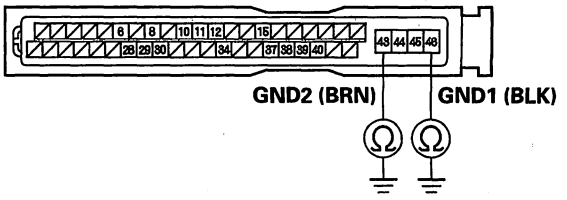
Is there battery voltage?

YES—Go to step 13.

NO—Check the No. 29 VSA (10 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 29 VSA (10 A) fuse and the VSA modulator-control unit, then go to step 15.

13. Turn the ignition switch OFF.
14. Check for continuity between VSA modulator-control unit 46P connector terminals No. 43 and No. 46 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good VSA modulator-control unit (see page 19-102), then go to step 15 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit (see page 19-102), then go to step 15.

NO—Repair open in the wire between the VSA modulator-control unit and body ground (G303), then go to step 15.

15. Reconnect the VSA modulator-control unit 46P connector.
16. Turn the ignition switch ON (II).
17. Reset the PCM with the HDS.
18. Do the PCM idle learn procedure (see page 11-311).
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC U0122 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the VSA modulator-control unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC U0155: F-CAN Malfunction (PCM-Gauge Control Module)

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 U0155 indicated?

   YES—Go to step 4.

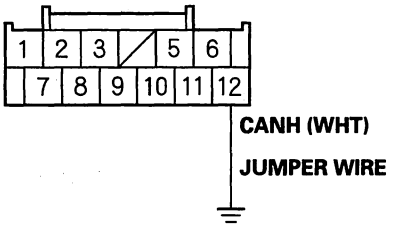
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the PCM.■
4. Check for body electrical DTCs in the DTCs MENU with the HDS.

   Is DTC B1168, B1169, and/or B1178 indicated?

   YES—Go to step 5.

   NO—Do the gauge control module input test (see page 22-334).■
5. Turn the ignition switch OFF.
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (see page 22-337).
8. Disconnect gauge control module connector A (12P).
9. Disconnect PCM connector A (49P).
10. Connect gauge control module connector terminal A12 to body ground with a jumper wire.

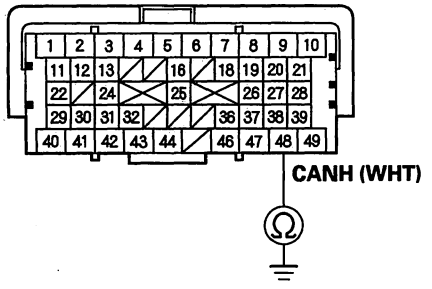
GAUGE CONTROL MODULE CONNECTOR A (12P)



Wire side of female terminals

11. Check for continuity between PCM connector terminal A48 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the PCM (A48) and the gauge control module, then go to step 14.

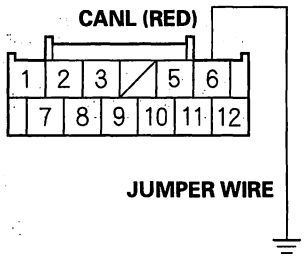
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DTC Troubleshooting (cont'd)

12. Connect gauge control module connector terminal A6 to body ground with a jumper wire.

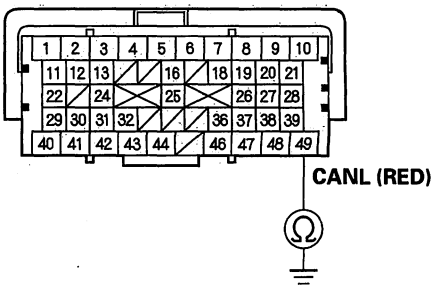
GAUGE CONTROL MODULE CONNECTOR A (12P)



Wire side of female terminals

13. Check for continuity between PCM connector terminal A49 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good gauge control module (see page 22-337), then go to step 14 and recheck. If DTC U0155 is not indicated, replace the original gauge control module (see page 22-337), then go to step 14.

NO—Repair open in the wire between the PCM (A49) and the gauge control module, then go to step 14.

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

Is DTC U0155 indicated?

YES—Check for poor connections or loose terminals at the gauge control module and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC U0300: PGM-FI System and A/T System Program Version Mismatch

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Do not turn the ignition switch OFF while updating the PCM. If you turn the ignition switch OFF before completion, the PCM will be damaged.

1. Do the PCM update procedure (PGM-FI system) (see page 11-7).

2. Do the PCM update procedure (A/T system) (see page 14-8).

3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0300 indicated?

   YES—Replace the original PCM (see page 11-244). ■

   NO—The update is complete. ■

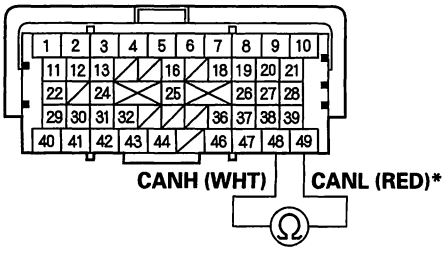
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F-CAN Circuit Troubleshooting (Part 1)

NOTE: Information marked with an asterisk (*) applies to the CANL line.

1. Turn the ignition switch OFF.
2. Jump the SCS line with the HDS.
3. Disconnect PCM connector A (49P), then disconnect the HDS.
4. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

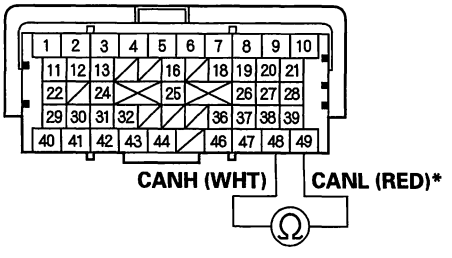
Is there about 333–408 Ω ?

YES—Go to F-CAN circuit troubleshooting (Part 2)

NO—Go to step 5.

5. Disconnect gauge control module connector A (12P) (see page 22-337).
6. Disconnect the VSA modulator-control unit 46P connector (see page 19-102).
7. Disconnect SRS unit connector A (28P) (see page 24-152).
8. Disconnect the TPMS unit 20P connector (see page 18-162).
9. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 4P connector (see page 19-100).
10. Disconnect the steering angle sensor 5P connector (see page 19-99).
11. Disconnect the SH-AWD control unit 20P connector (see page 15-71).
12. With active damper system: Disconnect the active damper control unit 14P connector (see page 18-118).
13. With AcuraLink: Disconnect the AcuraLink control unit (XM receiver) connector A (20P) (see page 23-96).
14. Check for continuity between PCM connector terminals A48 and A49*.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between PCM connector terminals A48 and A49*.■

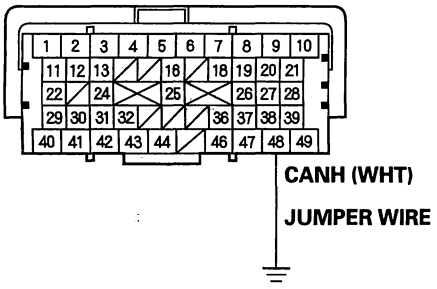
NO—Go to step 15.

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BACK

15. Connect PCM connector terminal A48 to body ground with a jumper wire.

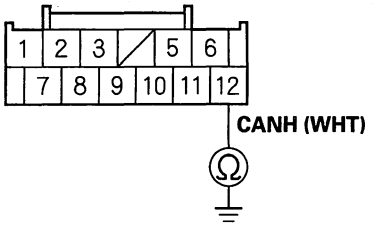
PCM CONNECTOR A (49P)



Terminal side of female terminals

16. Check for continuity between gauge control module connector terminal A12 and body ground.

GAUGE CONTROL MODULE CONNECTOR A (12P)



Wire side of female terminals

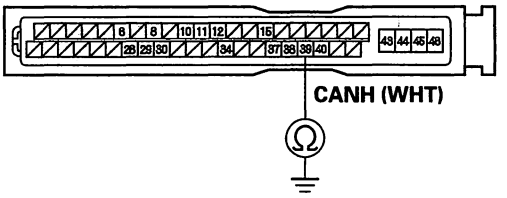
Is there continuity?

YES—Go to step 17.

NO—Repair open in the wire between the PCM (A48) and the gauge control module. ■

17. Check for continuity between VSA modulator-control unit 46P connector terminal No. 39 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

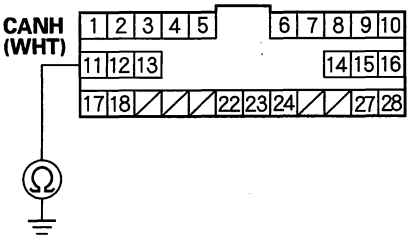
Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the PCM (A48) and the VSA modulator-control unit. ■

18. Check for continuity between SRS unit connector terminal A11 and body ground.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (A48) and the SRS unit. ■

(cont'd)

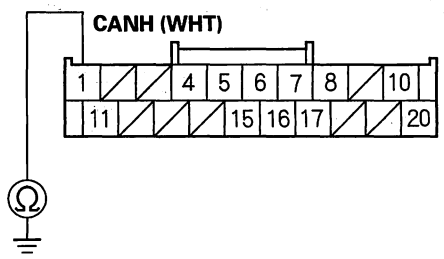
BACK

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F-CAN Circuit Troubleshooting (Part 1) (cont'd)

19. Check for continuity between TPMS control unit 20P connector terminal No. 1 and body ground.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

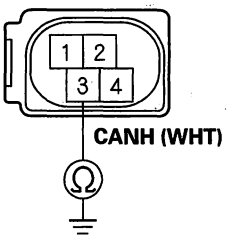
Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the PCM (A48) and the TPMS control unit.■

20. Check for continuity between yaw rate-lateral/longitudinal acceleration sensor 4P connector terminal No. 3 and body ground.

YAW RATE-LATERAL/LONGITUDINAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

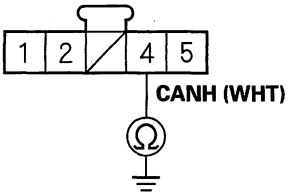
Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (A48) and the yaw rate-lateral/longitudinal acceleration sensor.■

21. Check for continuity between steering angle sensor 5P connector terminal No. 4 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 22.

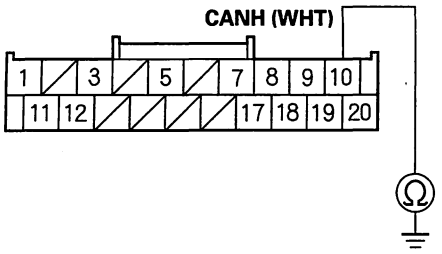
NO—Repair open in the wire between the PCM (A48) and the steering angle sensor.■

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22. Check for continuity between SH-AWD control unit 20P connector terminal No. 10 and body ground.

SH-AWD CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

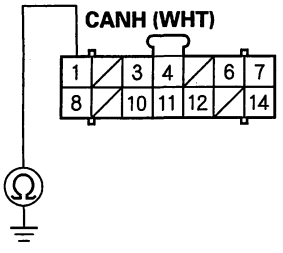
Is there continuity?

YES—
- With active damper system: Go to step 23.
- Without active damper system: Go to step 24.

NO—Repair open in the wire between the PCM (A48) and the SH-AWD control unit.■

23. Check for continuity between active damper control unit 14P connector terminal No. 1 and body ground.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

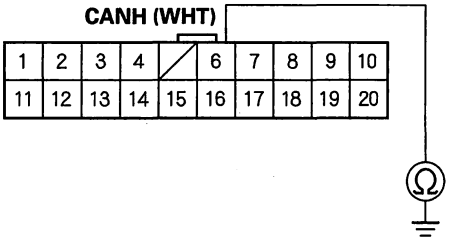
Is there continuity?

YES—
- With AcuraLink: Go to step 24.
- Without AcuraLink: Go to step 25.

NO—Repair open in the wire between the PCM (A48) and active damper control unit.■

24. Check for continuity between AcuraLink control unit (XM receiver) connector terminal A6 and body ground.

ACURALINK CONTROL UNIT (XM RECEIVER) CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the PCM (A48) and the AcuraLink control unit (XM receiver).■

(cont'd)

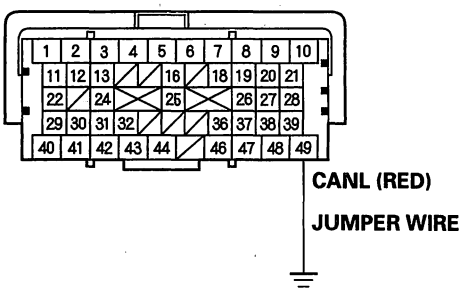
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F-CAN Circuit Troubleshooting (Part 1) (cont'd)

25. Remove the jumper wire from PCM connector A (49P).

26. Connect PCM connector terminal A49 to body ground with a jumper wire.

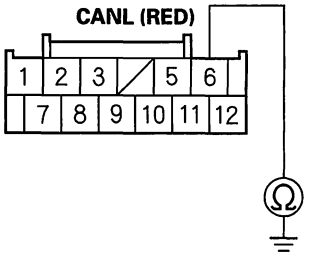
PCM CONNECTOR A (49P)



Terminal side of female terminals

27. Check for continuity between gauge control module connector terminal A6 and body ground.

GAUGE CONTROL MODULE CONNECTOR A (12P)



Wire side of female terminals

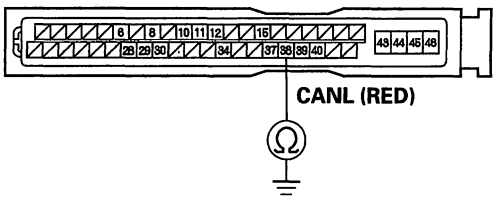
Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between the PCM (49P) and the gauge control module. ■

28. Check for continuity between VSA modulator-control unit 46P connector terminal No. 38 and body ground.

VSA MODULATOR-CONTROL UNIT 46P CONNECTOR



Wire side of female terminals

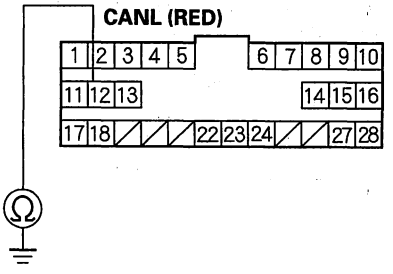
Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (46P) and the VSA modulator-control unit. ■

29. Check for continuity between SRS unit connector terminal A12 and body ground.

SRS UNIT CONNECTOR A (28P)



Wire side of female terminals

Is there continuity?

YES—Go to step 30.

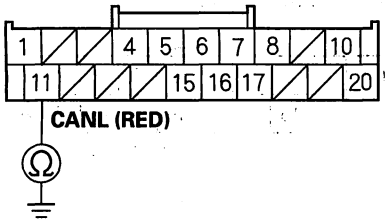
NO—Repair open in the wire between the PCM (49P) and the SRS unit. ■

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30. Check for continuity between TPMS control unit 20P connector terminal No. 11 and body ground.

TPMS CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

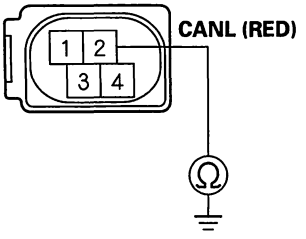
Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the PCM (A49) and the TPMS control unit. ■

31. Check for continuity between yaw rate-lateral/longitudinal acceleration sensor 4P connector terminal No. 2 and body ground.

YAW RATE-LATERAL/LONGITUDINAL ACCELERATION SENSOR 4P CONNECTOR



Wire side of female terminals

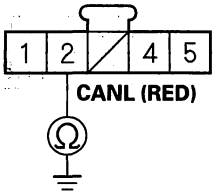
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the PCM (A49) and the yaw rate-lateral/longitudinal acceleration sensor. ■

32. Check for continuity between steering angle sensor 5P connector terminal No. 2 and body ground.

STEERING ANGLE SENSOR 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 33.

NO—Repair open in the wire between the PCM (A49) and the steering angle sensor. ■

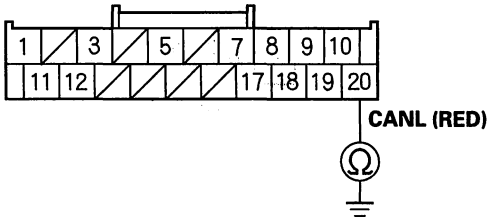
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F-CAN Circuit Troubleshooting (Part 1) (cont'd)

33. Check for continuity between SH-AWD control unit 20P connector terminal No. 20 and body ground.

SH-AWD CONTROL UNIT 20P CONNECTOR



Wire side of female terminals

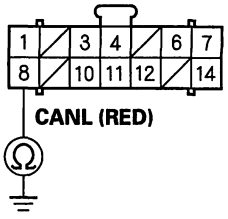
Is there continuity?

YES—
- With active damper system: Go to step 34.
- Without active damper system: Go to step 35.

NO—Repair open in the wire between the PCM (A49) and the SH-AWD control unit.■

34. Check for continuity between active damper control unit 14P connector terminal No. 8 and body ground.

ACTIVE DAMPER CONTROL UNIT CONNECTOR B (14P)



Wire side of female terminals

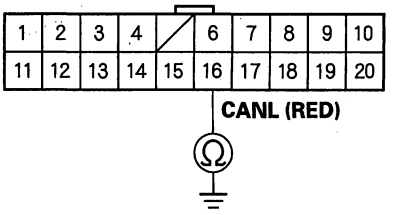
Is there continuity?

YES—
- With AcuraLink: Go to step 35.
- Without AcuraLink: Go to step 36.

NO—Repair open in the wire between the PCM (A49) and active damper control unit.■

35. Check for continuity between AcuraLink control unit (XM receiver) connector terminal A16 and body ground.

ACURALINK CONTROL UNIT (XM RECEIVER) CONNECTOR A (20P)



Wire side of female terminals

Is there continuity?

YES—Go to step 36.

NO—Repair open in the wire between the PCM (A49) and the AcuraLink control unit (XM receiver).■

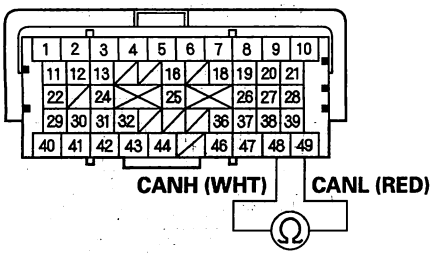
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BACK

36. Reconnect the gauge control module 12P connector.

37. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 38.

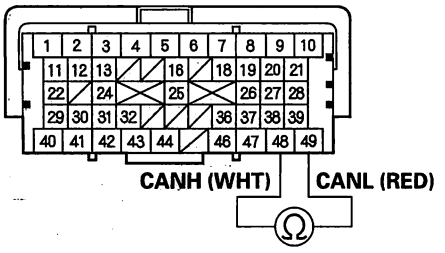
NO—Substitute a known-good gauge control module (see page 22-337). If the HDS identifies the vehicle, replace the original gauge control module (see page 22-337). ■

38. Disconnect gauge control module connector A (12P).

39. Reconnect the VSA modulator-control unit 46P connector.

40. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 41.

NO—Substitute a known-good VSA modulator-control unit (see page 19-102). If the HDS identifies the vehicle, replace the original VSA modulator-control unit (see page 19-102). ■

41. Disconnect the VSA modulator-control unit 46P connector.

42. Reconnect SRS unit connector A (28P).

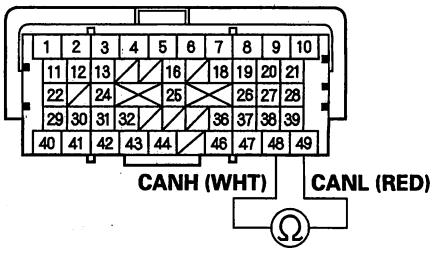
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F-CAN Circuit Troubleshooting (Part 1) (cont'd)

43. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 44.

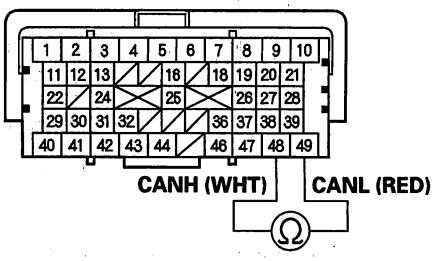
NO—Substitute a known-good SRS unit (see page 24-152). If the HDS identifies the vehicle, replace the original SRS unit (see page 24-152).■

44. Disconnect SRS unit connector A (28P).

45. Reconnect the TPMS control unit 20P connector.

46. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 47.

NO—Substitute a known-good TPMS control unit (see page 18-162). If the HDS identifies the vehicle, replace the original TPMS control unit (see page 18-162).■

BACK

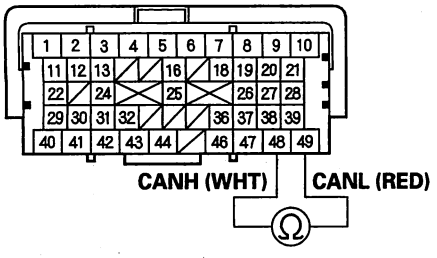
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47. Disconnect the TPMS control unit 20P connector.

48. Reconnect SH-AWD control unit 20P connector.

49. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 50.

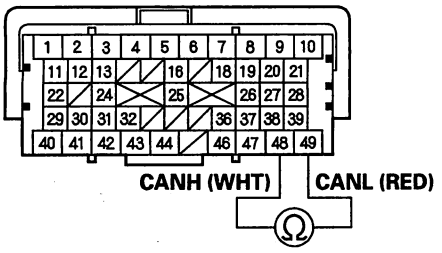
NO—Substitute a known-good SH-AWD control unit (see page 15-71). If the HDS identifies the vehicle, replace the original SH-AWD control unit (see page 15-71).■

50. Disconnect the SH-AWD control unit 20P connector.

51. Reconnect the active damper control unit 14P connector.

52. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 53.

NO—Substitute a known-good active damper control unit (see page 18-118). If the HDS identifies the vehicle, replace the original active damper control unit (see page 18-118).■

(cont'd)

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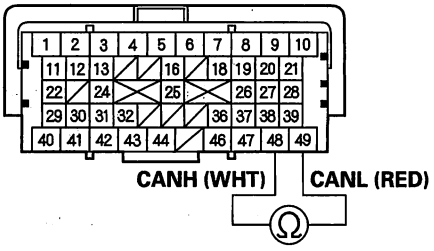
F-CAN Circuit Troubleshooting (Part 1) (cont'd)

53. Disconnect the active damper control unit 14P connector.

54. Reconnect AcuraLink control unit (XM receiver) connector A (20P).

55. Measure resistance between PCM connector terminals A48 and A49.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

NO—Substitute a known-good AcuraLink control unit (XM receiver) (see page 23-96). If the HDS identifies the vehicle, replace the original AcuraLink control unit (XM receiver) (see page 23-96).■

F-CAN Circuit Troubleshooting (Part 2)

1. Disconnect the gauge control module connector A (12P) (see page 22-337).

2. Disconnect the VSA modulator-control unit 25P connector (see page 19-102).

3. Disconnect SRS unit connector A (28P) (see page 24-152).

4. Disconnect TPMS control unit connector A (20P) (see page 18-162).

5. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 4P connector (see page 19-100).

6. Disconnect the steering angle sensor 5P connector (see page 19-99).

7. Disconnect the SH-AWD control unit connector A (20P) (see page 15-71).

8. With active damper system: Disconnect the active damper control unit 14P connector (see page 18-118).

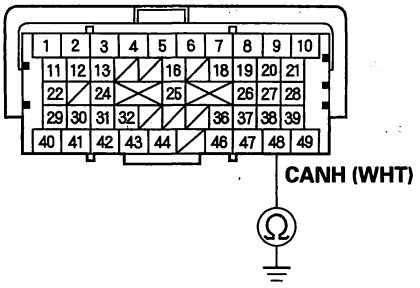
9. With AcuraLink: Disconnect the AcuraLink control unit (XM receiver) connector A (20P) (see page 23-96).

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BACK

10. Check for continuity between PCM connector terminal A48 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

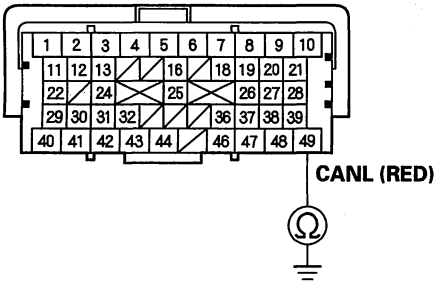
Is there continuity?

YES—Repair short in the wire between PCM connector terminal A48 and the gauge control module, the VSA modulator-control unit, the SRS unit, the TPMS control unit, the yaw rate-lateral/longitudinal acceleration sensor, the steering angle sensor, the SH-AWD control unit, the active damper control unit (with active damper system), the AcuraLink control unit (XM receiver (with AcuraLink)) or the DLC.■

NO—Go to step 11.

11. Check for continuity between PCM connector terminal A49 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PCM connector terminal A49 and the gauge control module, the VSA modulator-control unit, the SRS unit, the TPMS control unit, the yaw rate-lateral/longitudinal acceleration sensor, the steering angle sensor, the SH-AWD control unit, the active damper control unit (with active damper system), the AcuraLink control unit (XM receiver (with AcuraLink)) or the DLC.■

NO—Go to step 12.

(cont'd)

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F-CAN Circuit Troubleshooting (Part 2) (cont'd)

12. Reconnect all connectors.
13. Connect the HDS to the DLC (see page 11-3).
14. Disconnect gauge control module connector A (12P).
15. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the gauge control module (see page 22-337). ■

    NO—Go to step 16.
16. Turn the ignition switch OFF.
17. Reconnect gauge control module connector A (12P).
18. Disconnect the VSA modulator-control unit 46P connector.
19. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the VSA modulator-control unit (see page 19-102). ■

    NO—Go to step 20.
20. Turn the ignition switch OFF.
21. Reconnect the VSA modulator-control unit 46P connector.
22. Disconnect SRS unit connector A (28P).
23. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the SRS unit (see page 24-152). ■

    NO—Go to step 24.
24. Turn the ignition switch OFF.
25. Reconnect the SRS unit connector A (28P).
26. Disconnect the TPMS control unit connector A (20P).
27. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace TPMS control unit (see page 18-162). ■

    NO—Go to step 28.
28. Turn the ignition switch OFF.
29. Reconnect the TPMS control unit connector A (28P).
30. Disconnect the yaw rate-lateral/longitudinal acceleration sensor 4P connector.

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BACK

31. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the yaw rate-lateral/longitudinal acceleration sensor (see page 19-100).■

    NO—Go to step 32.

32. Turn the ignition switch OFF.

33. Reconnect the yaw rate-lateral/longitudinal acceleration sensor 4P connector.

34. Disconnect the steering angle sensor 5P connector.

35. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the steering angle sensor (see page 19-99).

    NO—Go to step 36.

36. Turn the ignition switch OFF.

37. Reconnect the steering angle sensor 5P connector.

38. Disconnect the SH-AWD control unit connector A (20P)

39. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the SH-AWD control unit (see page 15-71).■

    NO—Go to step 40.

40. Turn the ignition switch OFF.

41. Reconnect the SH-AWD control unit 20P connector.

42. Disconnect the active damper control unit 14P connector.

43. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the active damper control unit (see page 18-118).■

    NO—Go to step 44.

44. Turn the ignition switch OFF.

45. Reconnect the active damper control unit.

46. Disconnect AcuraLink control unit (XM receiver) connector A (20P).

47. Turn the ignition switch ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the AcuraLink control unit (XM receiver).■

    NO—*Update* the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

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MIL Circuit Troubleshooting

1. Turn the ignition switch ON (II).
2. Do the gauge self-diagnostic function (see page 22-315).

   Does the MIL indicator flash?

   YES—Go to step 3.

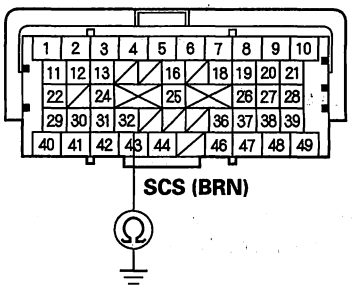
   NO—Substitute a known-good gauge control module, and recheck. If the MIL circuit is OK, replace the original gauge control module (see page 22-337).■
3. Connect the HDS to the DLC (see page 11-3).
4. Check the SCS in the DATA LIST with the HDS.

   Is a short indicated?

   YES—Go to step 5.

   NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■
5. Turn the ignition switch OFF.
6. Disconnect PCM connector A (49P), then disconnect the HDS.
7. Check for continuity between PCM connector terminal A32 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A32) and the SRS unit, the DLC.■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

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DLC Circuit Troubleshooting

NOTE: Make sure the HDS and the DLC cable of the HDS is normal.

1. Turn the ignition switch OFF.
2. Connect the HDS to the DLC (see page 11-3).

   NOTE: Make sure the HDS is properly connected to the DLC.
3. Turn the ignition switch ON (II), and read the HDS.

   Does the HDS identify the vehicle?

   YES—Go to step 4.

   NO—Go to step 21.
4. Check for Temporary DTCs or DTCs in 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 5.
5. Turn the ignition switch OFF.
6. Turn the ignition switch ON (II), and watch the SRS indicator.

   Does the SRS indicator stay on?

   YES—Go to the SRS system's general troubleshooting information (see page 24-30). ■

   NO—Go to step 7.
7. Turn the ignition switch OFF.
8. Turn the ignition switch ON (II), and watch the VSA indicator.

   Does the VSA indicator stay on?

   YES—Go to the VSA system's general troubleshooting information (see page 19-43). ■

   NO—Go to step 9.
9. Turn the ignition switch OFF.
10. Turn the ignition switch ON (II), and watch the immobilizer indicator.

    Does the immobilizer indicator stay on or flash?

    YES—Go to the immobilizer system's troubleshooting (see page 22-402). ■

    NO—Go to step 11.
11. Turn the ignition switch OFF.
12. Turn the ignition switch ON (II), and watch the SH-AWD indicator.

    Does the SH-AWD indicator stay on?

    YES—Go to the SH-AWD system's general troubleshooting information (see page 15-4). ■

    NO—Go to step 13.

(cont'd)

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DLC Circuit Troubleshooting (cont'd)

13. Do the gauge self-diagnostic function (see page 22-315) to make sure the gauge is known-good. If the function test is OK, go to step 14.

14. Check for B-CAN system DTCs without the HDS (see page 22-81).

    Are any B-CAN DTCs indicated?

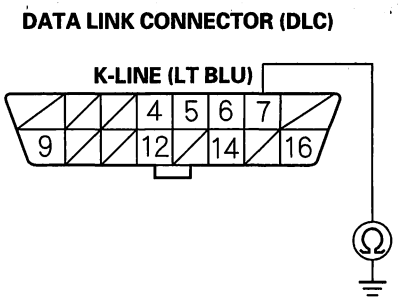
    YES—Go to the indicated DTC's troubleshooting.■

    NO—Go to step 15.

15. Turn the ignition switch OFF.

16. Disconnect the HDS from the DLC.

17. Check for continuity between DLC terminal No. 7 and body ground.



Terminal side of female terminals

Is there 5 Ω or less?

YES—Go to step 18.

NO—Go to step 19.

18. Continue to check for continuity between DLC terminal No. 7 and body ground, while disconnecting these parts, one at a time:

    - SRS unit connector A (28P)
    - VSA modulator-control unit 46P connector
    - Immobilizer-keyless control unit 7P connector
    - Audio unit 17P connector
    - SH-AWD control unit 20P connector
    - Active damper control unit 14P connector
    - TPMS control unit 20P connector
    - MICU connector P (30P)

    Does continuity go away when one of the above components is disconnected?

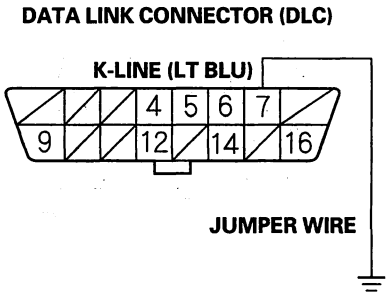
    YES—Replace the part that caused an open when it was disconnected.■

    NO—Repair short in the wire between the DLC (K-line) and the VSA modulator-control unit, the immobilizer-keyless control unit, the audio unit, the SH-AWD control unit, the active damper control unit, or the TPMS control unit.■

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BACK

19. Connect DLC terminal No. 7 to body ground with a jumper wire.



Terminal side of female terminals

20. Check for continuity between body ground and these connector terminals:

Connector	Terminal
SRS unit A (28P)	No. 24 (LT BLU)
VSA modulator-control unit 46P	No. 15 (LT BLU)
Immobilizer-keyless control unit 7P	No. 5 (LT BLU)
Audio unit 17P	No. 6 (LT BLU)
SH-AWD control unit 20P	No. 5 (LT BLU)
Active damper control unit 14P	No. 3 (LT BLU)
TPMS control unit 20P	No. 7 (LT BLU)
MICU 30P	No. 6 (LT BLU)

Is there continuity between the DLC terminal and each of the terminals in the chart?

YES—Replace the unit that does not communicate with the HDS. ■

NO—Repair open in the wire between the DLC (K-line) and the appropriate connector. ■

21. Do the gauge self-diagnostic function (see page 22-315) to make sure the gauge is known-good. If the function test is OK, go to step 22.

22. Check for B-CAN system DTCs without the HDS (see page 22-81).

Is DTC B1168, B1169, and/or B1178 indicated?

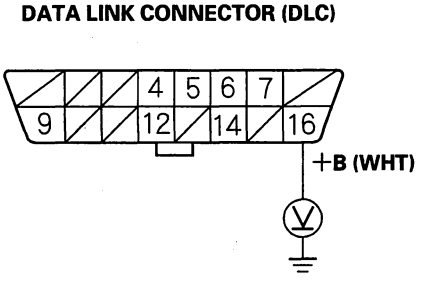
YES—Go to step 35.

NO—Go to step 23.

23. Turn the ignition switch OFF.

24. Disconnect the HDS from the DLC.

25. Measure voltage between DLC terminal No. 16 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 26.

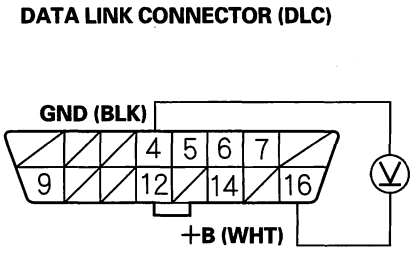
NO—Repair open in the wire between DLC terminal No. 16 and the No. 7 BACK UP (10 A) fuse in the under-dash fuse/relay box. ■

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DLC Circuit Troubleshooting (cont'd)

26. Measure voltage between DLC terminals No. 4 and No. 16.



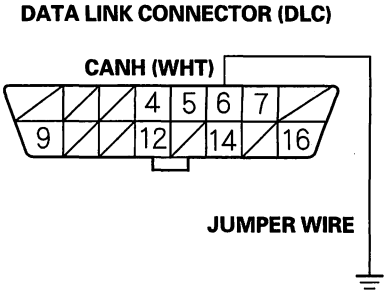
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 27.

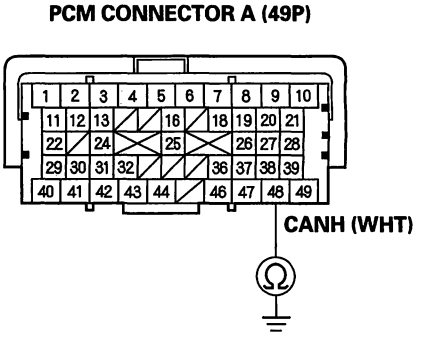
NO—Repair open in the wire between DLC terminal No. 4 and G503.■

27. Connect the HDS to the DLC (see page 11-3).
28. Jump the SCS line with the HDS.
29. Disconnect PCM connector A (49P).
30. Disconnect the HDS from the DLC.
31. Connect DLC terminal No. 6 to body ground with a jumper wire.



Terminal side of female terminals

32. Check for continuity between PCM connector terminal A48 and body ground.



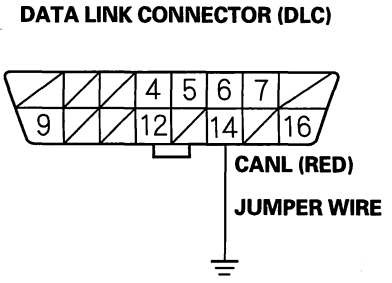
Terminal side of female terminals

Is there continuity?

YES—Go to step 33.

NO—Repair open in the wire between the PCM (A48) and DLC terminal No. 6.■

33. Connect DLC terminal No. 14 to body ground with a jumper wire.



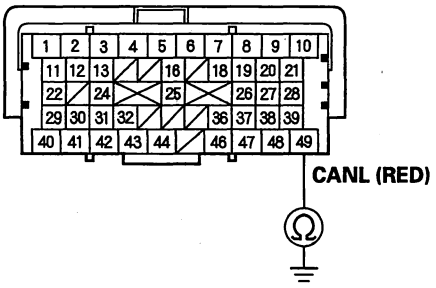
Terminal side of female terminals

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BACK

34. Check for continuity between PCM connector terminal A49 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

NO—Repair open in the wire between the PCM (A49) and DLC terminal No. 14.■

35. Try to start the engine.

Does the engine start and idle smoothly?

YES—Go to F-CAN circuit troubleshooting (see page 11-208).■

NO—Go to step 36.

36. Turn the ignition switch OFF.

37. Check the No. 3 IG1 MAIN (50 A) fuse in the main under-hood fuse box.

Is the fuse OK?

YES—Repair open in the wire between the No. 3 IG1 MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 38.

NO—Repair short in the wire between the No. 3 IG1 MAIN (50 A) fuse and the main under-hood fuse box. Also replace the No. 3 IG1 MAIN (50 A) fuse.■

(cont'd)

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DLC Circuit Troubleshooting (cont'd)

38. Inspect the No. 8 IGP (15 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES—Go to step 44.

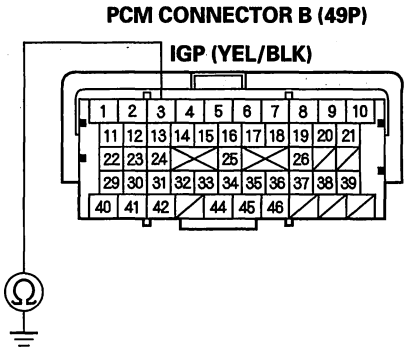
    NO—Go to step 39.

39. Remove the blown No. 8 IGP (15 A) fuse from the under-hood fuse/relay box.

40. Jump the SCS line with the HDS.

41. Disconnect PCM connector B (49P).

42. Check for continuity between PCM connector terminal B3 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 43.

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). Also replace the No. 8 IGP (15 A) fuse in the under-hood fuse/relay box.■

43. Disconnect each of the components or connectors below, one at a time, and check for continuity between PCM connector terminal B3 and body ground.

    - PGM-FI main relay 2
    - Each injector 2P connector
    - Camshaft position (CMP) sensor 3P connector
    - Crankshaft position (CKP) sensor 6P connector
    - Under-hood fuse/relay box 9P connector

    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 (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). Also replace the No. 8 IGP (15 A) fuse.■

    NO—Repair short in the wire between the PCM (B3) and the PGM-FI mainrelay 2, the injector, the CKP sensor, or the under-hood huse/relay box. Also replace the No, 8 IGP (15 A) fuse in the under-hood fuse/relay box.■

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BACK

44. Inspect the No. 19 FUEL PUMP (20 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

YES—Go to step 51.

NO—Go to step 45.

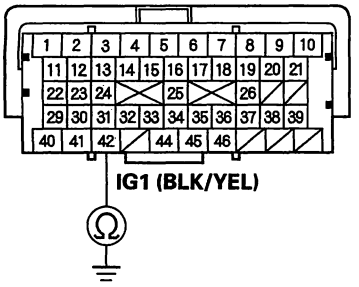
45. Remove the blown No. 19 FUEL PUMP (20 A) fuse in the under-dash fuse/relay box.

46. Jump the SCS line with the HDS.

47. Disconnect PCM connector B (49P).

48. Check for continuity between PCM connector terminal B42 and body ground.

PCM CONNECTOR B (49P)



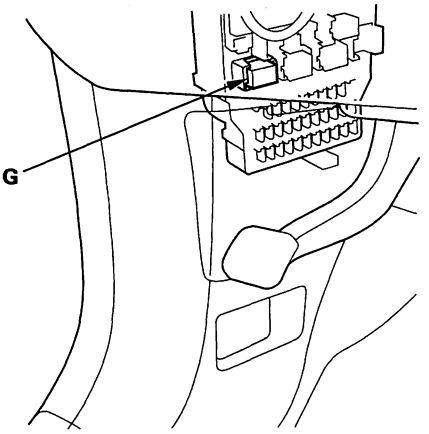
Terminal side of female terminals

Is there continuity?

YES—Go to step 49.

NO—Replace the No. 19 FUEL PUMP (20 A) fuse in the under-hood fuse/relay box, and update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

49. Remove PGM-FI main relay 2 (G) from the under-dash fuse/relay box.



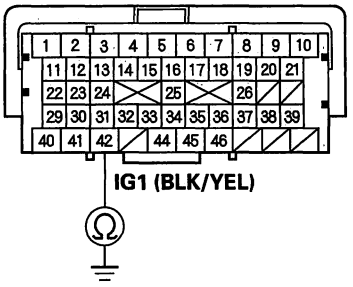
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DLC Circuit Troubleshooting (cont'd)

50. Check for continuity between PCM connector terminal B42 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 19 FUEL PUMP (20 A) fuse and the PCM (B42), between the No. 19 FUEL PUMP (20 A) fuse and PGM-FI main relay 2, or between the No. 19 FUEL PUMP (20 A) fuse and the immobilizer control unit. Also replace the No. 19 FUEL PUMP (20 A) fuse in the under-dash fuse/relay box. ■

NO—Go to step 51.

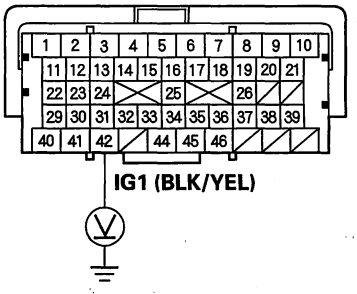
51. Jump the SCS line with the HDS.

52. Disconnect PCM connectors A (49P) and B (49P).

53. Turn the ignition switch ON (II).

54. Measure voltage between PCM connector terminal B42 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

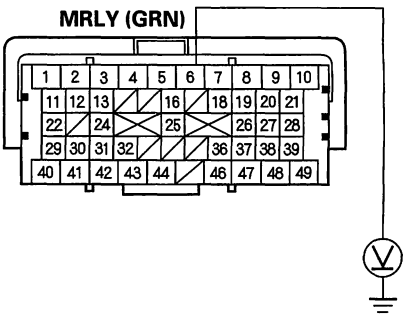
Is there battery voltage?

YES—Go to step 55.

NO—Repair open in the wire between the No. 19 FUEL PUMP (20 A) fuse and the PCM (B42). ■

55. Measure voltage between PCM connector terminal A6 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 59.

NO—Go to step 56.

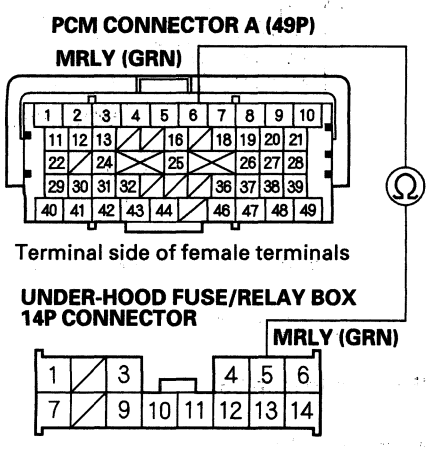
56. Turn the ignition switch OFF.

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57. Disconnect the under-hood fuse/relay box 14P connector.

58. Check for continuity between PCM connector terminal A6 and under-hood fuse/relay box 14P connector terminal No. 5.



Is there continuity?

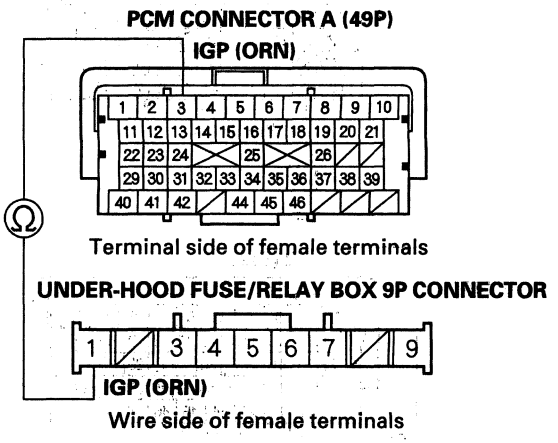
YES—
- Replace the under-hood fuse/relay box.
- Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).

NO—Repair open in the wire between the PCM (A6) and the under-hood fuse/relay box.■

59. Turn the ignition switch OFF.

60. Disconnect the under-hood fuse/relay box 9P connector.

61. Check for continuity between PCM connector terminal B3 and under-hood fuse/relay box 9P connector terminal No. 1.



Is there continuity?

YES—Go to step 62.

NO—Repair open in the wire between the PCM (B3) and the under-hood fuse/relay box.■

62. Test PGM-FI main relay 1 in the under-hood fuse/relay box (see page 22-77).

Is PGM-FI main relay 1 OK?

YES—Go to step 63.

NO—Replace the relay control module (under-hood fuse/relay box) (see page 22-71).■

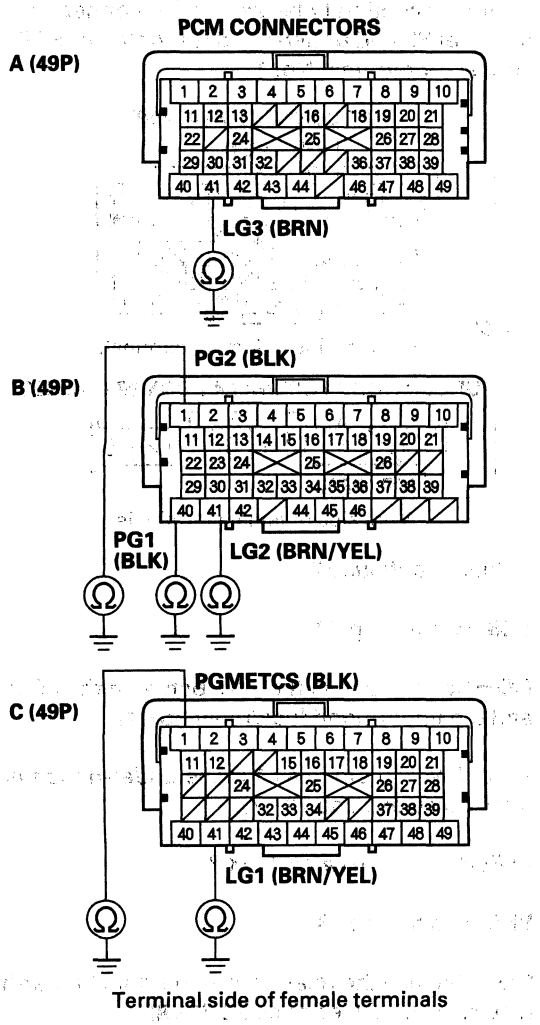
(cont'd)

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DLC Circuit Troubleshooting (cont'd)

63. Disconnect PCM connector C (49P).

64. Check for continuity between body ground and PCM connector terminals A41, B1, B40, B41, C1, and C41 individually.



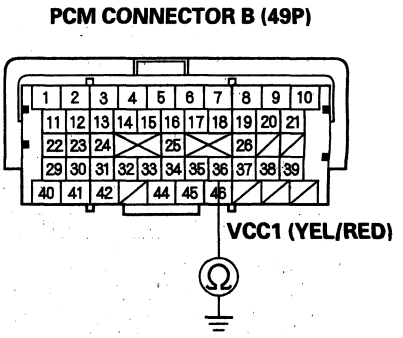
Terminal side of female terminals

Is there continuity?

YES—Go to step 65.

NO—Repair open in the wire between the PCM (A41, B1, B40, B41, C1, C41) and G101.■

65. Check for continuity between PCM connector terminal B36 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 66.

NO—Go to step 67.

66. Continue to check for continuity between PCM connector terminal B36 and body ground, while disconnecting these parts, one at a time:

- MAP sensor 3P connector
- Output shaft (countershaft) speed sensor 3P connector

Does continuity go away when one of the above components is disconnected?

YES—Replace the part that caused an open when it was disconnected.■

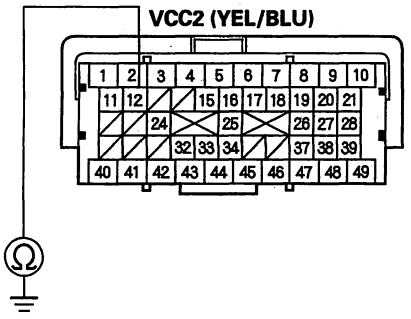
NO—Repair short in the wire between the PCM (B36) and the MAP sensor, the output shaft (countershaft) speed sensor.■

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67. Check for continuity between PCM connector terminal C12 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 68.

NO—Go to step 69.

68. Continue to check for continuity between PCM connector terminal C12 and body ground, while disconnecting these parts, one at a time:

- EGR valve 6P connector
- Input shaft (mainshaft) speed sensor 3P connector

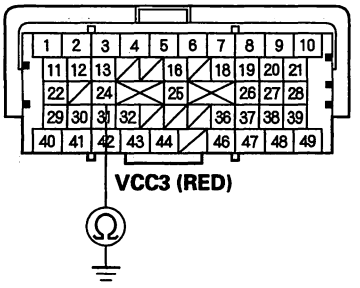
Does continuity go away when one of the above components is disconnected?

YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the PCM (C12) and the EGR valve or the input shaft (mainshaft) speed sensor. ■

69. Check for continuity between PCM connector terminal A24 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 70.

NO—Go to step 71.

70. Continue to check for continuity between PCM connector terminal A24 and body ground, while disconnecting the APP sensor 6P connector.

Is there continuity?

YES—Repair short in the wire between the PCM (A24) and APP sensor A. ■

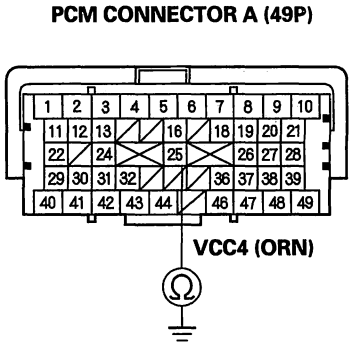
NO—Replace the accelerator pedal module (see page 11-286). ■

(cont'd)

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DLC Circuit Troubleshooting (cont'd)

71. Check for continuity between PCM connector terminal A25 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 72.

NO—Go to step 73.

72. Continue to check for continuity between PCM connector terminal A25 and body ground, while disconnecting these connectors one at a time.

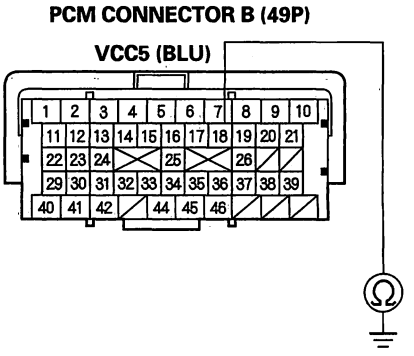
- APP sensor 6P connector
- FTP sensor 3P connector

Does continuity go away when one of the above components is disconnected?

YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the PCM (A25) and the APP sensor B or the FTP sensor. ■

73. Check for continuity between PCM connector terminal B18 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 74.

NO—Go to step 75.

74. Continue to check for continuity between PCM connector terminal B18 and body ground, while disconnecting the throttle body 6P connector.

Is there continuity?

YES—Repair short in the wire between the PCM (B18) and the throttle body. ■

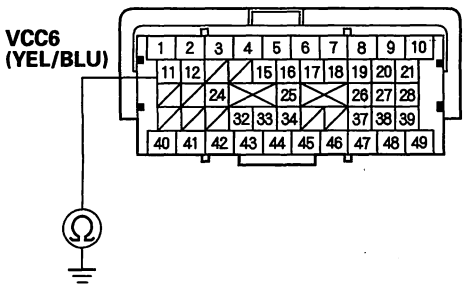
NO—Replace the throttle body (see page 11-366). ■

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75. Check for continuity between PCM connector terminal C11 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 76.

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■

76. Continue to check for continuity between PCM connector terminal C11 and body ground, while disconnecting the IMT actuator.

Is there continuity?

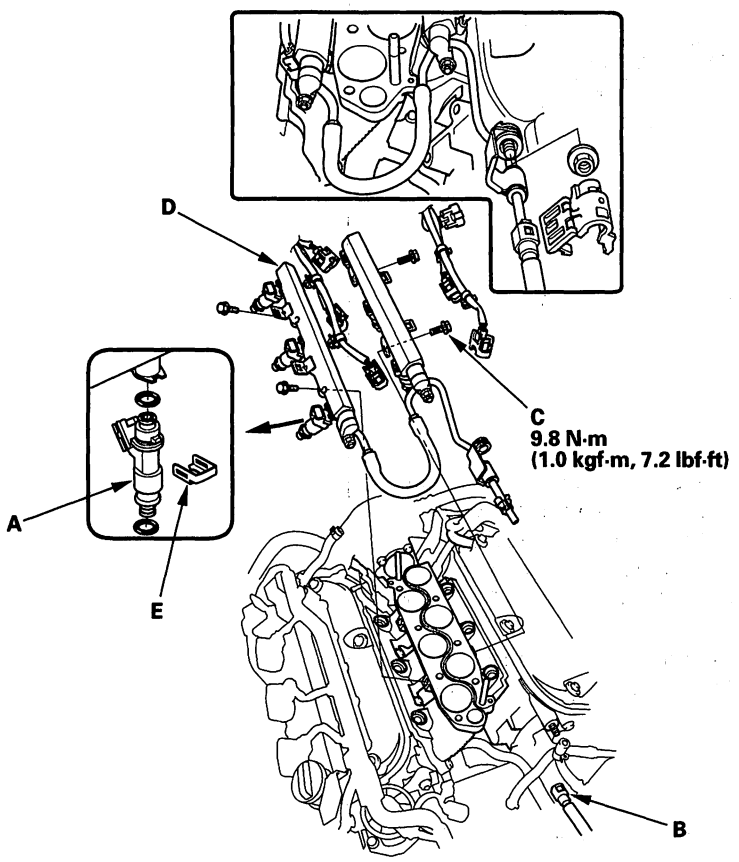
YES—Repair short in the wire between the PCM (C11) and the IMT actuator. ■

NO—Replace the IMT actuator (see page 11-365). ■

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Injector Replacement

1. Relieve fuel pressure (see page 11-333).
2. Remove the intake manifold (see page 9-3).
3. Disconnect the connectors from the injectors (A).

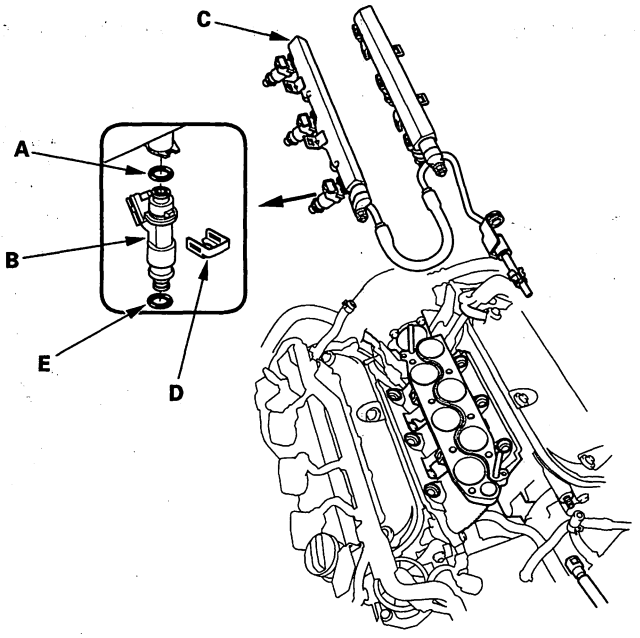


4. Disconnect the quick-connect fitting (B).
5. Remove the fuel rail mounting bolts (C) from the fuel rail (D).
6. Remove the injector clip (E) from the fuel rail.
7. Remove the injectors from the rails.

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BACK

8. Coat the new O-ring (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).

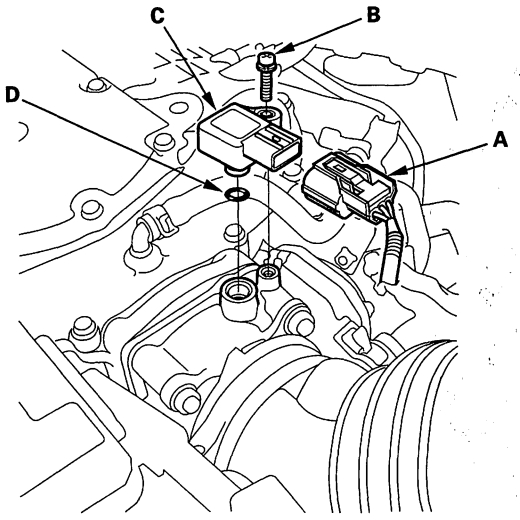


9. Install the injector clip (D).
10. Coat the new injector O-ring (E) with clean engine oil.
11. Install the injectors in the injector base.
12. Install the fuel rail mounting bolts.
13. Install the connectors on the injectors.
14. Connect the quick-connect fitting (see page 11-340).
15. Turn the ignition switch ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel pressure in the fuel line rises. Repeat this two or three times, then check for fuel leakage.
16. Install the intake manifold.

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MAP Sensor Replacement

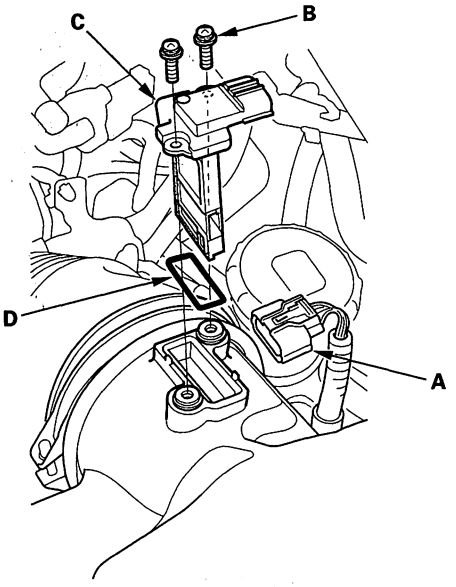
1. Remove the engine cover (see step 1 on page 9-3).
2. Disconnect the MAP sensor connector (A).



3. Remove the screw (B).
4. Remove the MAP sensor (C).
5. Install the parts in the reverse order of removal with a new O-ring (D).

MAF Sensor/IAT Sensor Replacement

1. Disconnect the MAF sensor/IAT senor 5P connector (A).



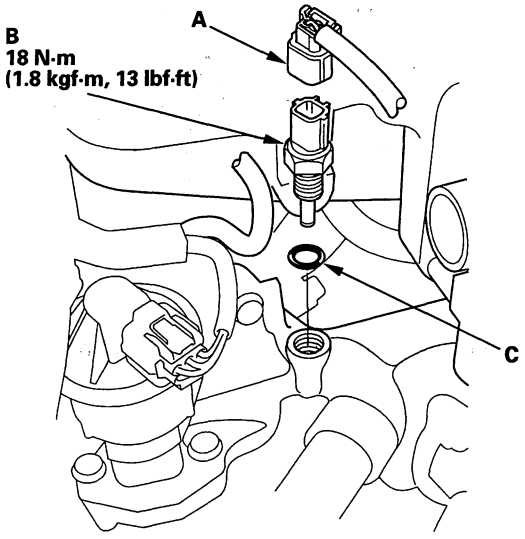
2. Remove the screw (B).
3. Remove the MAF sensor/IAT senor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

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ECT Sensor 1 Replacement

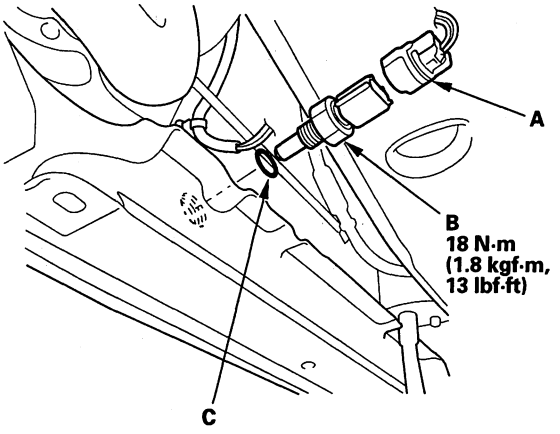
1. Drain the engine coolant (see page 10-6).
2. Remove the engine cover (see step 1 on page 9-3).
3. Remove the main under-hood fuse/relay box.
4. Disconnect the ECT sensor 1 2P connector (A).



5. Remove ECT sensor 1 (B).
6. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).

ECT Sensor 2 Replacement

1. Drain the engine coolant (see page 10-6).
2. Remove the splash shield.
3. Disconnect the ECT sensor 2 2P connector (A).



4. Remove ECT sensor 2 (B).
5. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-6).

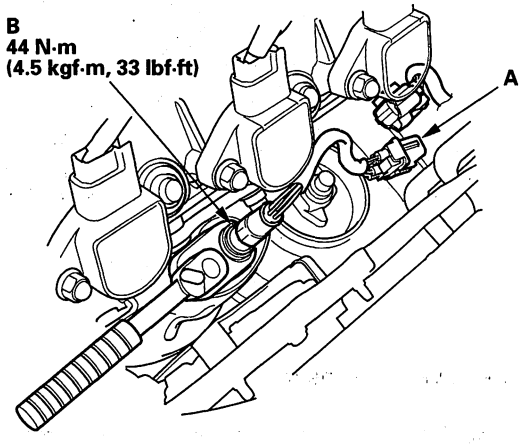
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A/F Sensor Replacement

Special Tools Required
O2 sensor socket wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

Front Bank (Bank 2)

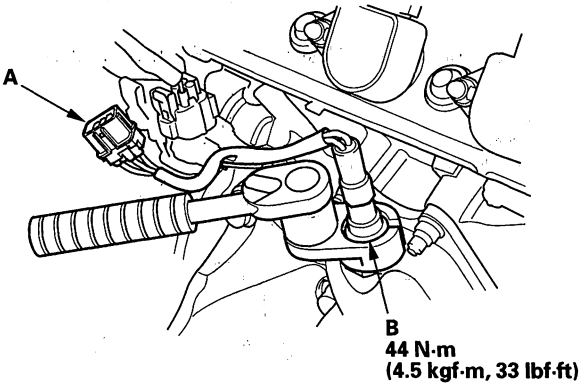
1. Disconnect the front A/F sensor 6P connector (A), then remove the A/F sensor (B).



2. Install the parts in the reverse order of removal.

Rear Bank (Bank 1)

1. Disconnect the rear A/F sensor 6P connector (A), then remove the rear A/F sensor (B).



2. Install the parts in the reverse order of removal.

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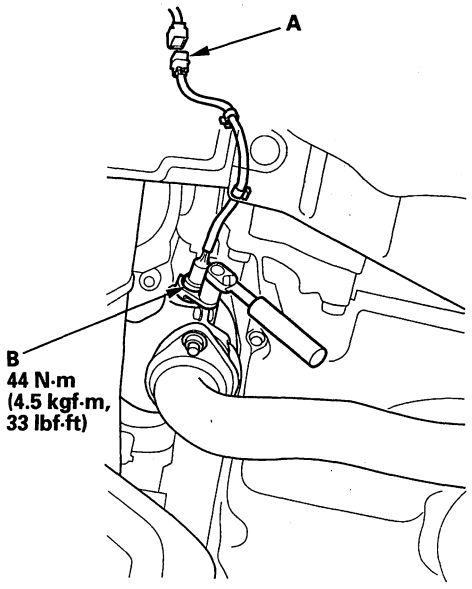
BACK

Secondary HO2S Replacement

Special Tools Required
O2 sensor socket wrench, Snap-on YA8875, SP Tools 93750, or equivalent, commercially available

Front Bank (Bank 2)

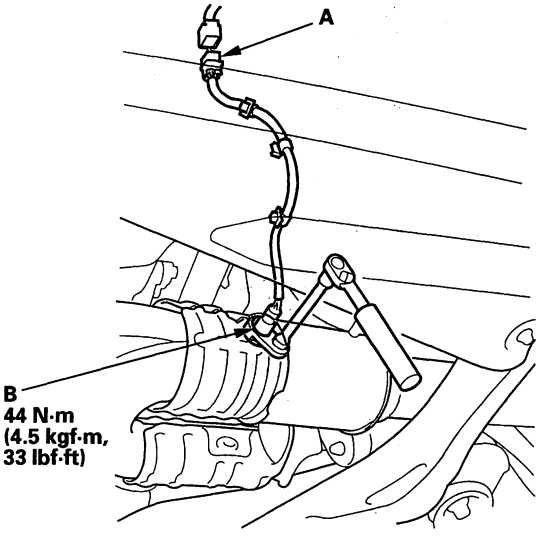
1. Disconnect the front secondary HO2S 4P connector (A), then remove the front secondary HO2S (B).



2. Install the parts 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).

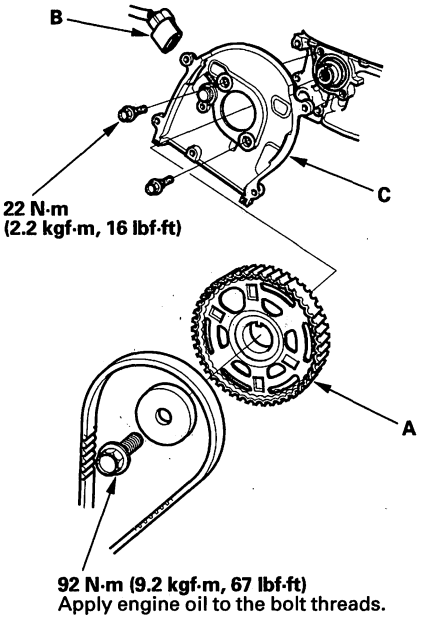


2. Install the parts in the reverse order of removal.

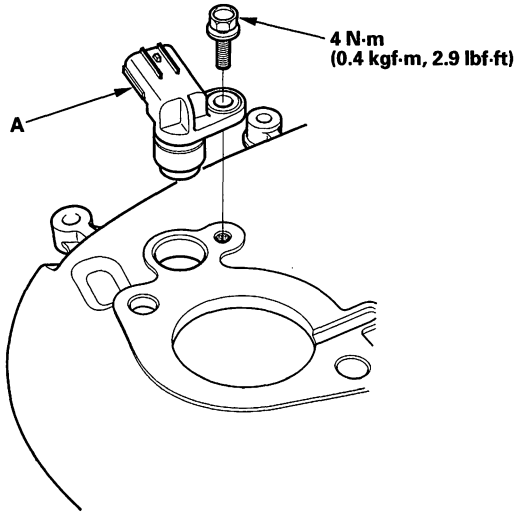
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CMP Sensor Replacement

1. Remove the timing belt (see page 6-13).
2. Remove the front camshaft pulley (CMP sensor pulse plate) (A).



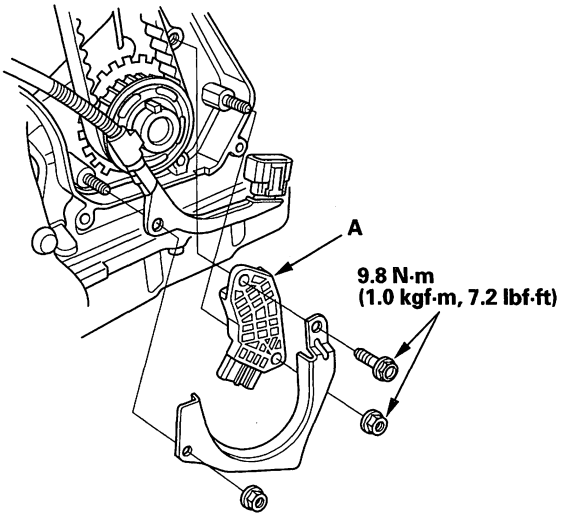
3. Disconnect the CMP sensor connector (B), then remove the back cover (C).
4. Remove the CMP sensor (A) from the back cover.



5. Install the parts in the reverse order of removal. Install the timing belt (see page 6-16).
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

CKP Sensor Replacement

1. Move the auto-tensioner to remove tension from the drive belt, then remove the belt (see page 4-33).
2. Remove the crankshaft pulley (see page 6-11).
3. Remove the upper and lower front covers from the engine (see page 6-13).
4. Remove the CKP sensor (A) from the oil pump.



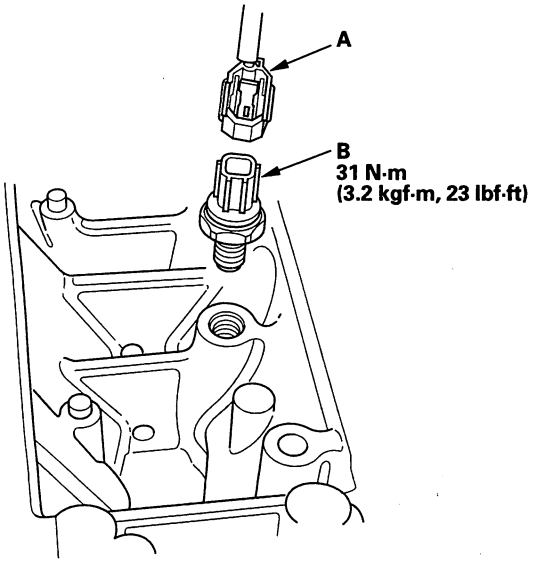
5. Install the parts in the reverse order of removal.
6. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

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Knock Sensor Replacement

1. Remove the intake manifold (see page 9-3).
2. Remove the injector rails and the injector base (see page 9-7).
3. Disconnect the knock sensor 1P connector (A), then remove the knock sensor (B).



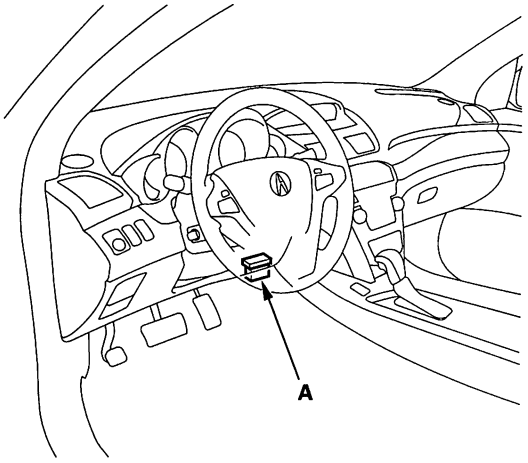
4. Install the parts in the reverse order of removal.

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PCM Replacement

NOTE:
- Make sure the HDS is loaded with the latest software version.
- If you are replacing the PCM after substituting a known-good PCM, reinstall the original PCM, then do this procedure.
- USA, Canada models: During the procedure, is any READ DATA, WRITE DATA, or other data checks fail, note the failure, then continue.

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. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223). If you are returning from DLC circuit troubleshooting, skip steps 4 through 9, 18 through 23, and 26 through 28, and do the following procedures after replacing the PCM;

   - USA, Canada models: Replace the engine oil (see page 8-6) and the engine oil filter (see page 8-7).
   - USA, Canada models: Replace the ATF (see page 14-266).
   - USA, Canada models: Clean the throttle body (see page 11-363).

4. USA, Canada models: Select the PGM-FI system with the HDS.

5. USA, Canada models: Select the INSPECTION MENU with the HDS.

6. USA, Canada models: Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: USA, Canada models: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

7. USA, Canada models: Select the REPLACE PCM MENU, then select READ DATA and follow the screen prompts.

   NOTE:
   - USA, Canada models: Doing this step copies (READS) the engine oil life data from the original PCM so you can later download (WRITES) it into the new PCM.
   - USA, Canada models: If READ DATA indicates FAILED, continue with this procedure.

8. USA, Canada models: Select the A/T system with the HDS.

9. USA, Canada models: Select the REPLACE TCM/PCM MENU, then select READ DATA and follow the screen prompts.

   NOTE:
   - USA, Canada models: Doing this step copies (READS) the ATF life data from the original PCM so you can later download (WRITES) it into the new PCM.
   - USA, Canada models: If READ DATA indicates FAILED, continue with this procedure.

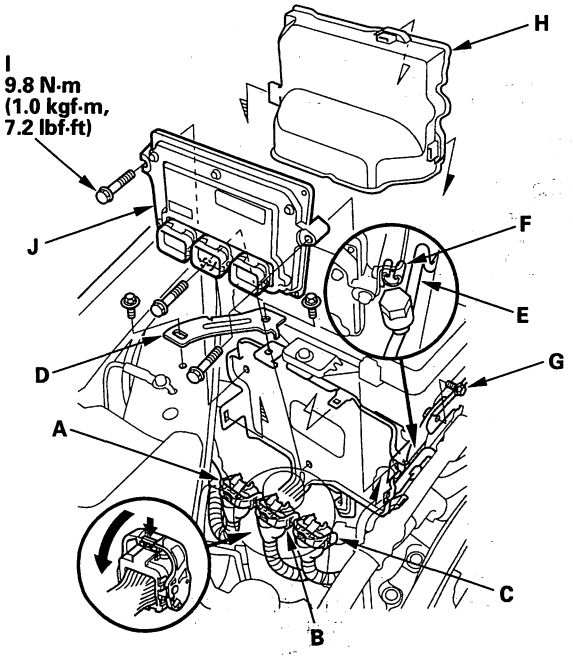
10. Turn the ignition switch OFF.

11. Jump the SCS line with the HDS.

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12. Remove the bracket (D), then free the A/C discharge line (E) from the clip (F) and remove the A/C suction line mounting bracket bolt (G).



13. Remove the cover (H), then disconnect the PCM connectors A, B, and C.

    NOTE: PCM connectors A, B, and C have symbols (A=□, B=△, C=○) embossed on them for identification.

14. Remove the bolts (I), then remove the PCM (J).

15. Install the parts in the reverse order of removal.

16. Turn the ignition switch ON (II).

17. USA, Canada models: Manually input the VIN to the PCM with the HDS.

    NOTE: USA, Canada models: DTC P0630 "VIN Not Programmed or Mismatch" may be stored because the VIN has not been programmed into the PCM; ignore it, and continue this procedure.

18. USA, Canada models: If the READ DATA (engine oil life) failed in step 7, go to step 21. Otherwise, go to step 19.

19. USA, Canada models: Select the PGM-FI system with the HDS.

20. USA, Canada models: Select the REPLACE PCM MENU, then select WRITE DATA and follow the screen prompts.

    NOTE: USA, Canada models: If the WRITE DATA indicates FAILED, continue with this procedure.

21. USA, Canada models: If the READ DATA (ATF life) failed in step 9, go to step 24. Otherwise go to step 22.

22. USA, Canada models: Select the A/T SYSTEM with the HDS.

23. USA, Canada models: Select the REPLACE TCM/ PCM MENU, then select WRITE DATA and follow the screen prompts.

    NOTE: USA, Canada models: If the WRITE DATA indicates FAILED, continue with this procedure.

24. Select IMMOBI system with the HDS.

25. Enter the immobilizer code with the PCM replacement procedure in the HDS; it allows you to start the engine.

26. USA, Canada models: If the TP POSITION CHECK failed in step 6 clean the throttle body (see page 11-363), then go to step 27.

27. USA, Canada models: If the READ DATA failed in step 7 or the WRITE DATA failed in step 20, replace the engine oil (see page 8-6) and engine oil filter (see page 8-7), then go to step 28.

28. USA, Canada models: If the READ DATA failed in step 9 or the WRITE DATA failed in step 25, replace the ATF (see page 14-266), then go to step 29.

29. Select PGM-FI system and reset the PCM with the HDS.

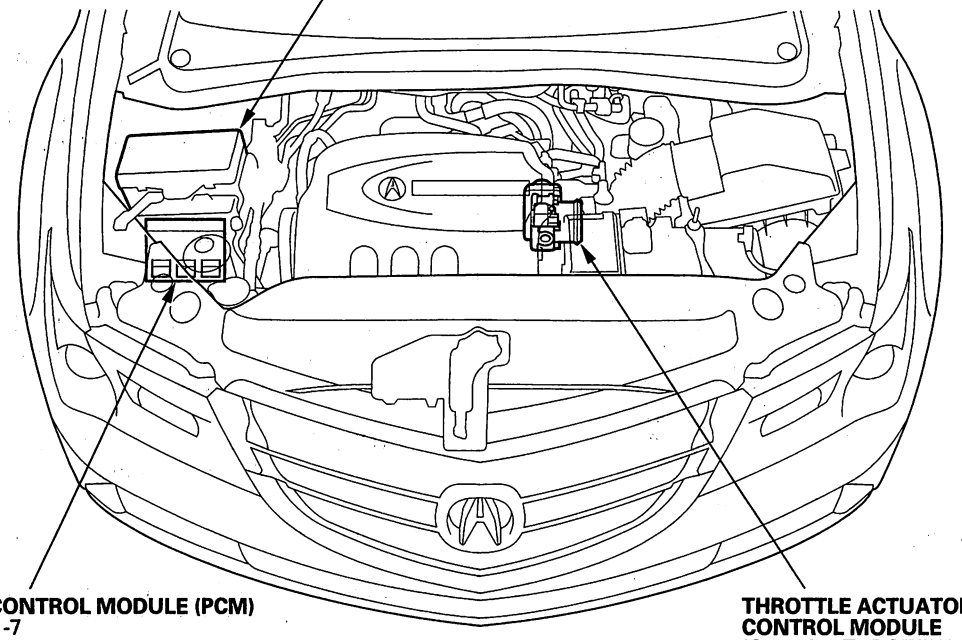
30. Update the PCM if it does not have the latest software (see page 11-7).

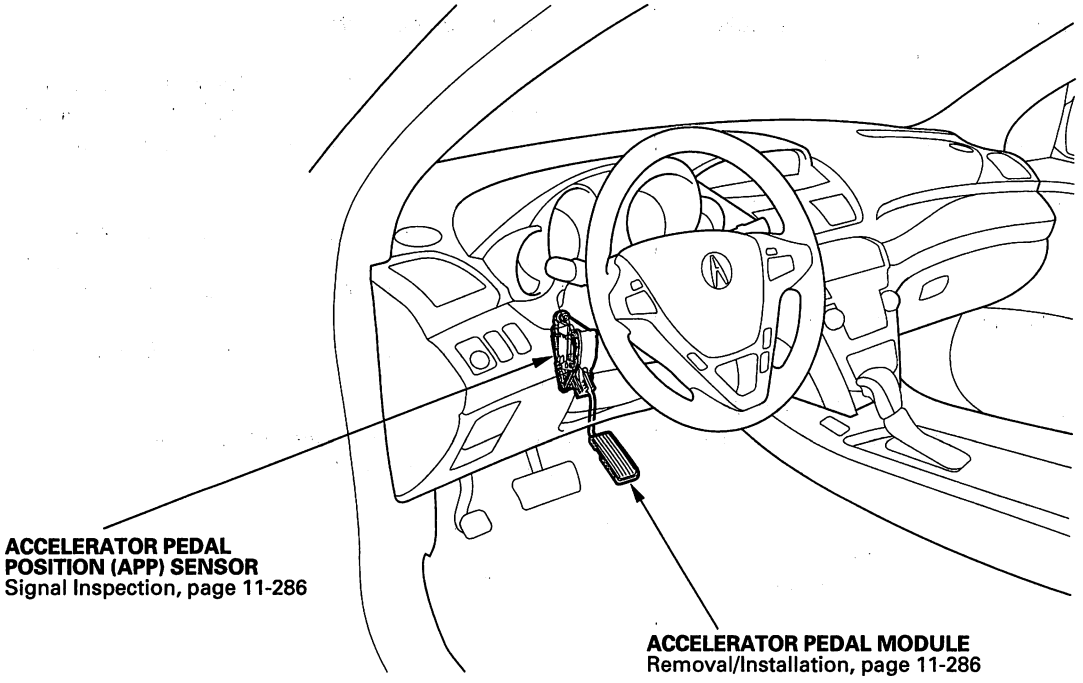
31. Do the PCM idle learn procedure (see page 11-311).

32. Do the CKP pattern learn procedure (see page 11-4).

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Component Location Index





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DTC P0122: TP Sensor A Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

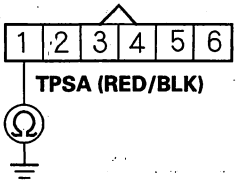
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES—Go to step 10.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (49P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

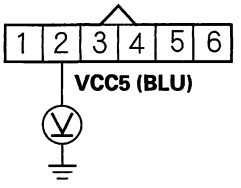
Is there continuity?

YES—Repair short in the wire between the throttle body and the PCM (B17), then go to step 18.

NO—Go to step 23.

10. Disconnect the throttle body 6P connector.
11. 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 16.

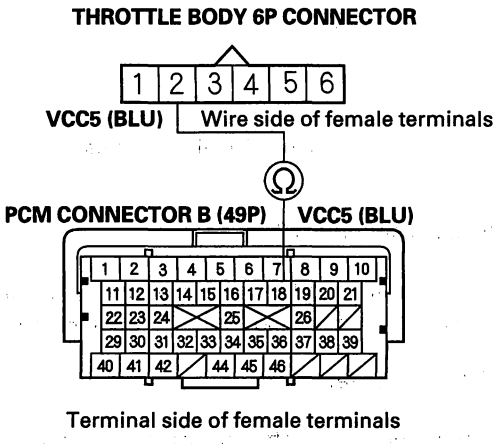
NO—Go to step 12.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector B (49P).
15. Check for continuity between PCM connector terminal B18 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the PCM (B19), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-366).
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 11-311).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0122 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0123: TP Sensor A Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

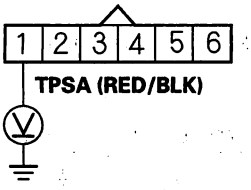
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES—Go to step 13.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. 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 18.

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (49P).

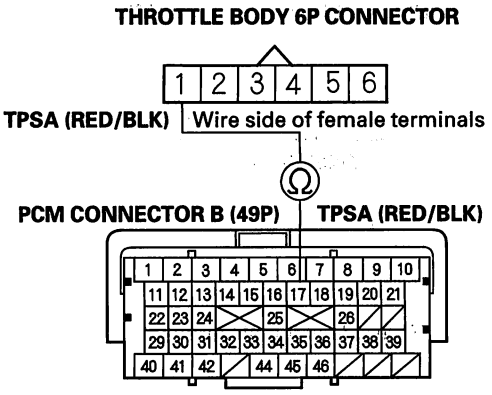
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BACK

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DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal B17 and throttle body 6P connector terminal No. 1.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B17), then go to step 20.

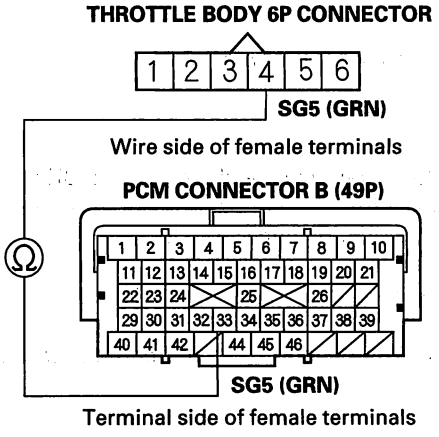
13. Turn the ignition switch OFF.

14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector B (49P).

17. Check for continuity between PCM connector terminal B33 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B33), then go to step 20.

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BACK

18. Turn the ignition switch OFF.

19. Replace the throttle body (see page 11-366).

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 11-311).

24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

25. Reconnect all connectors.

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0123 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P0222: TP Sensor B Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

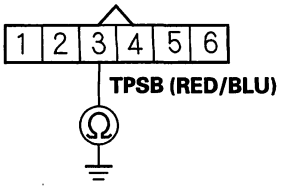
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM.■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

   YES—Go to step 10.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (49P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

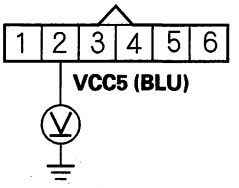
Is there continuity?

YES—Repair short in the wire between the throttle body and the PCM (B26), then go to step 18.

NO—Go to step 23.

10. 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?

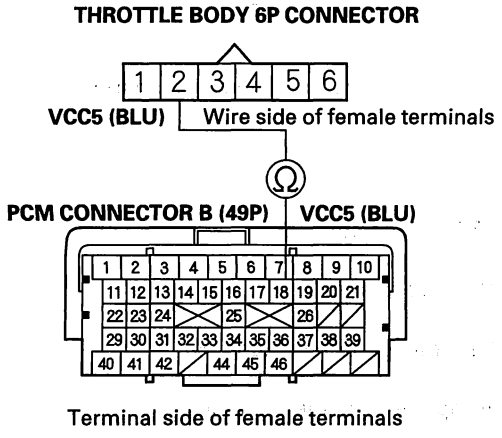
YES—Go to step 16.

NO—Go to step 11.

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BACK

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Disconnect the throttle body 6P connector.
15. Check for continuity between PCM connector terminal B18 and throttle body 6P connector terminal No. 2.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the throttle body and the PCM (B18), then go to step 18.

16. Turn the ignition switch OFF.
17. Replace the throttle body (see page 11-366).
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 11-311).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
23. Reconnect all connectors.
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0222 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0223: TP Sensor B Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

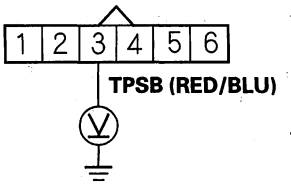
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0123 and P0223 indicated at the same time?

   YES—Go to step 13.

   NO—Go to step 5.
5. Turn the ignition switch OFF.
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch ON (II).
8. 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 18.

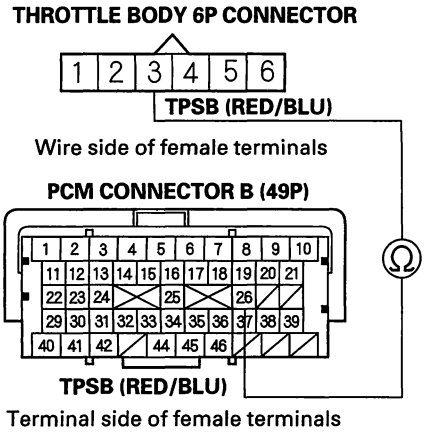
NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (49P).

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BACK

12. Check for continuity between PCM connector terminal B26 and throttle body 6P connector terminal No. 3.



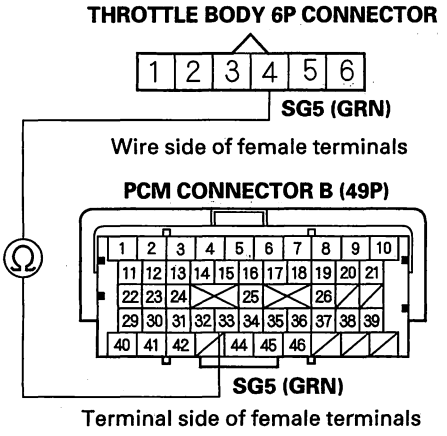
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B26), then go to step 20.

13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector B (49P).

17. Check for continuity between PCM connector terminal B33 and throttle body 6P connector terminal No. 4.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the PCM (B33), then go to step 20.

(cont'd)

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DTC Troubleshooting (cont'd)

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-366).
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 11-311).
24. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
25. Reconnect all connectors.
26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0223 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P1658: ETCS Control Relay ON Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Do the ETCS TEST in the INSPECTION MENU with the HDS.

   Is the RELAY circuit OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the under-hood fuse/relay box (ETCS control relay) and the PCM. ■

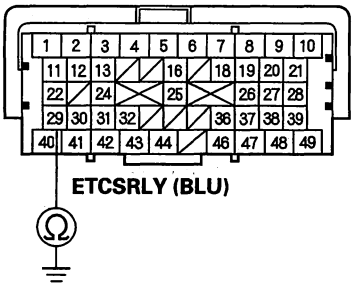
   NO—Go to step 3.
3. Turn the ignition switch OFF.
4. Test the ETCS control relay in the under-hood fuse/relay box (see page 22-77).

   ETCS control relay OK?

   YES—Go to step 5.

   NO—Replace the relay control module (under-hood fuse/relay box) (see page 22-71), then go to step 14.
5. Jump the SCS line with the HDS.
6. Disconnect PCM connector A (49P).
7. Disconnect the under-hood fuse/relay box 14P connector.
8. Check for continuity between PCM connector terminal A29 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (A29) and the under-hood fuse/relay box (ETCS control relay), then go to step 14.

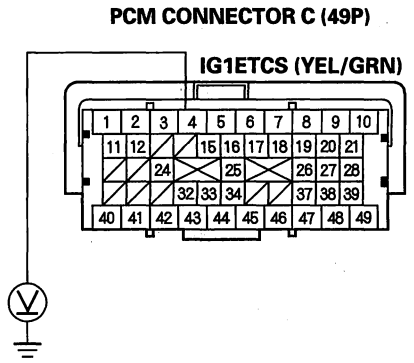
NO—Go to step 9.

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DTC Troubleshooting (cont'd)

9. Disconnect PCM connector C (49P).
10. Disconnect the under-hood fuse/relay box 9P connector.
11. Turn the ignition switch ON (II).
12. Measure voltage between PCM connector terminal C4 and body ground.



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the PCM (C4) and the under-hood fuse/relay box (ETCS control relay), then go to step 13.

NO—Go to step 19.

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 11-311).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the under-hood fuse/relay box (ETCS control relay) and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
19. Turn the ignition switch OFF.
20. Reconnect all connectors.
21. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the under-hood fuse/relay box (ETCS control relay) and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P1659: ETCS Control Relay OFF Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 P1659 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the under-hood fuse/relay box (ETCS control relay) and the PCM. ■
4. Turn the ignition switch OFF.
5. Check the No. 10 THROTTLE ACTUATOR CONTROL (DBW+) (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Go to step 6.

   NO—Go to step 14.
6. Test the ETCS control relay in the under-hood fuse/relay box (see page 22-77).

   Is the ETCS control relay OK?

   YES—Go to step 7.

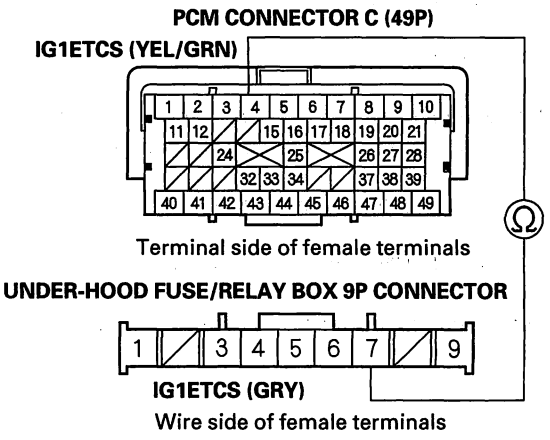
   NO—Replace the relay control module (under-hood fuse/relay box) (see page 22-71), then go to step 21.
7. Jump the SCS line with the HDS.
8. Disconnect PCM connector C (49P).
9. Disconnect the under-hood fuse/relay box 9P connector.

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DTC Troubleshooting (cont'd)

10. Check for continuity between under-hood fuse/relay box 9P connector terminal No. 7 and PCM connector terminal C4.



Is there continuity?

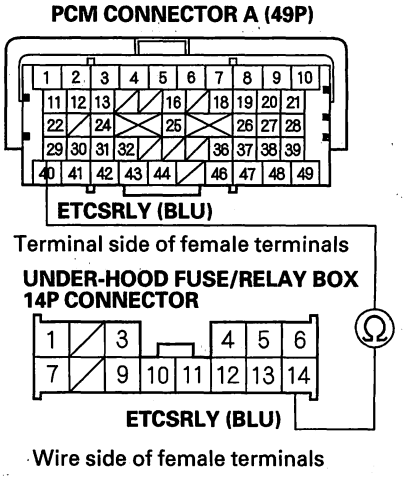
YES—Go to step 11.

NO—Repair open in the wire between the PCM (C4) and the under-hood fuse/relay box, then go to step 21.

11. Disconnect PCM connector A (49P).

12. Disconnect under-hood fuse/relay box 14P connector.

13. Check for continuity between under-hood fuse/relay box 14P connector terminal No. 14 and PCM connector terminal A29.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the PCM (A29) and the under-hood fuse/relay box, then go to step 21.

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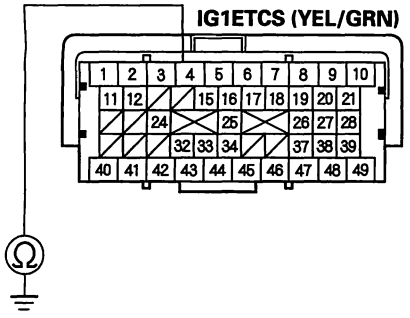
14. Jump the SCS line with the HDS.

15. Disconnect PCM connector C (49P).

16. Disconnect the under-hood fuse/relay box 9P connector.

17. Check for continuity between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

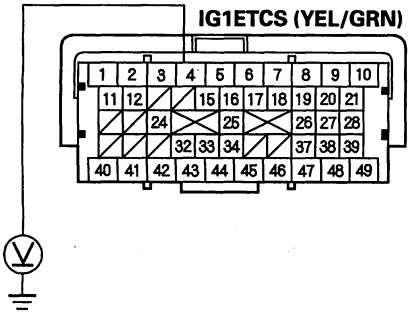
YES—Repair short in the wire between the PCM (C4) and the under-hood fuse/relay box, then go to step 21.

NO—Go to step 18.

18. Install the under-hood fuse/relay box 9P connector, and replace the No. 10 THROTTLE ACTUATOR CONTROL (DBW+) fuse in the under-hood fuse/relay box.

19. Measure voltage between PCM connector terminal C4 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 26.

NO—Replace the right side engine compartment wire harness. Also replace the No. 10 THROTTLE ACTUATOR CONTROL (DBW+) fuse in the under-hood fuse/relay box, then go to step 21.

20. Turn the ignition switch OFF.

21. Reconnect all connectors.

22. Turn the ignition switch ON (II).

23. Reset the PCM with the HDS.

(cont'd)

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DTC Troubleshooting (cont'd)

24. Do the PCM idle learn procedure (see page 11-311).

25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES—Check for poor connections or loose terminals at the under-hood fuse/relay box and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1659 indicated?

    YES—Check for poor connections or loose terminals at the under-hood fuse/relay box and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

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 fingers if the throttle valve is activated.

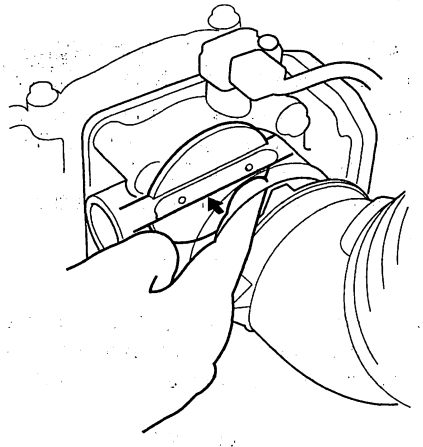
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM.■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve closed as shown.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Clean the throttle body (see page 11-363), then go to step 12 and recheck. If DTC P1683 is indicated, go to step 11.

    NO—Go to step 11.
11. Replace the throttle body (see page 11-366).
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-311).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1683 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

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 fingers if the throttle valve is activated.

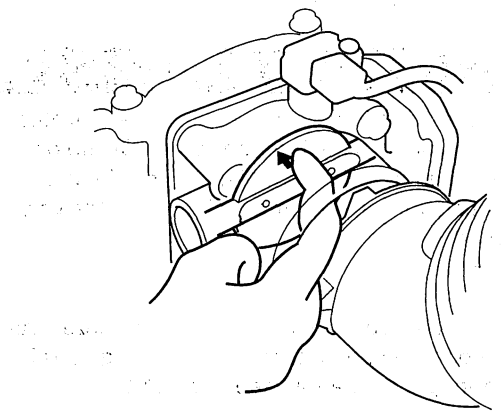
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Push the throttle valve open as shown.



10. Release the throttle valve.

    Does the throttle valve return?

    YES—Clean the throttle body (see page 11-363), then go to step 12 and recheck. If DTC P1684 is indicated, go to step 11.

    NO—Go to step 11.
11. Replace the throttle body (see page 11-366).
12. Turn the ignition switch ON (II).
13. Reset the PCM with the HDS.
14. Do the PCM idle learn procedure (see page 11-311).
15. Turn the ignition switch OFF, and wait 10 seconds.
16. Turn the ignition switch ON (II).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1684 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2101: ETCS Malfunction

⚠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 fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 P2101 indicated?

   YES—Go to step 7.

   NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   • ENGINE SPEED
   • VSS
   • APP SENSOR A
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2101 indicated?

   YES—Go to step 7.

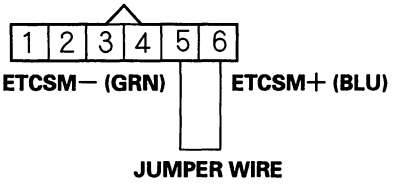
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-363).■
7. Turn the ignition switch OFF.
8. Disconnect the intake air duct from the throttle body.
9. Turn the ignition switch 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.

    Does the throttle valve operate smoothly?

    YES—Clean the throttle body (see page 11-363), then go to step 21 and recheck. If DTC P2101 is indicated, go to step 19.

    NO—Go to step 13.
13. Turn the ignition switch OFF.
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (49P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

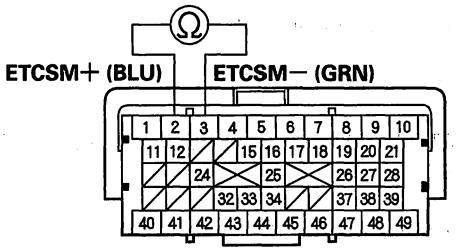
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DTC Troubleshooting (cont'd)

18. Check for continuity between PCM connector terminals C2 and C3.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wires between the throttle body and the PCM (C2, C3), then go to step 20.

19. Turn the ignition switch OFF.

20. Replace the throttle body (see page 11-366).

21. Turn the ignition switch ON (II).

22. Reset the PCM with the HDS.

23. Do the PCM idle learn procedure (see page 11-311).

24. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

- ENGINE SPEED
- VSS
- APP SENSOR A

25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-363), and go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

26. Reconnect all connectors.

27. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2101 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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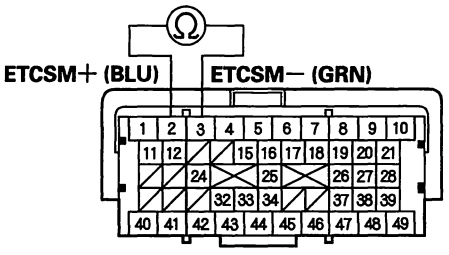
BACK

DTC P2118: Throttle Actuator Current Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Jump the SCS line with the HDS.
2. Disconnect PCM connector C (49P).
3. Measure resistance between PCM connector terminals C2 and C3.

PCM CONNECTOR C (49P)



Terminal side of female terminals

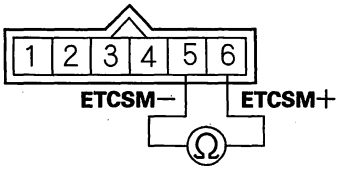
Is there about 1.0 Ω or less?

YES—Go to step 4.

NO—Go to step 15.

4. Disconnect the throttle body 6P connector.
5. 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 6.

NO—Repair short in the wires between the PCM connector terminals C3 (ETCSM−line) and C4 (ETCSM+line), then go to step 7.

6. Replace the throttle body (see page 11-366).
7. Reconnect all connectors.
8. Turn the ignition switch ON (II).
9. Reset the PCM with the HDS.

(cont'd)

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DTC Troubleshooting (cont'd)

10. Do the PCM idle learn procedure (see page 11-311).
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.

    Is DTC P2118 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
15. Reconnect all connectors.
16. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2118 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2122: APP Sensor A (TP Sensor D) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

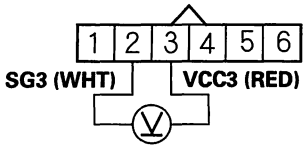
1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES—Go to step 3.

   NO—Intermittent failure, the 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. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

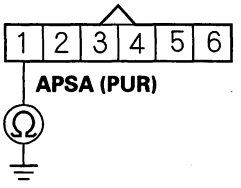
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

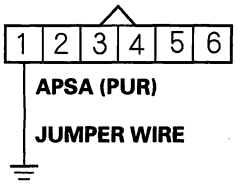
Is there continuity?

YES—Repair short in the wire between the PCM (A18) and APP sensor A, then go to step 24.

NO—Go to step 11.

11. Connect APP sensor 6P connector terminal No. 1 to body ground with a jumper wire.

APP SENSOR 6P CONNECTOR



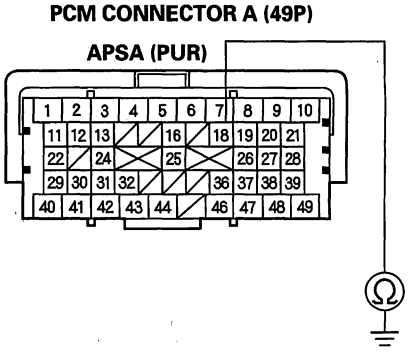
Wire side of female terminals

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DTC Troubleshooting (cont'd)

12. Check for continuity between PCM connector terminal A18 and body ground.



Terminal side of female terminals

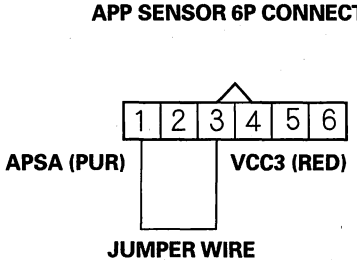
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the PCM (A18) and APP sensor A, then go to step 24.

13. Reconnect PCM connector A (49P).

14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.



Wire side of female terminals

15. Turn the ignition switch ON (II).

16. Check APP SENSOR A in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES—Go to step 29.

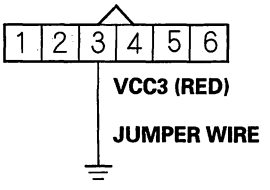
NO—Go to step 22.

17. Turn the ignition switch OFF.

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector A (49P).

20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.



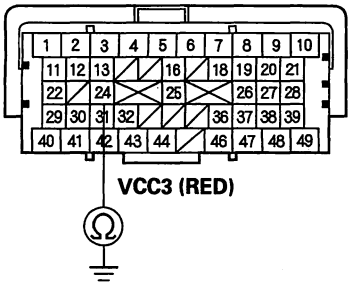
Wire side of female terminals

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BACK

21. Check for continuity between PCM connector terminal A24 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the PCM (A24) and APP sensor A, then go to step 24.

22. Turn the ignition switch OFF.

23. Replace the accelerator pedal module (see page 11-286).

24. Reconnect all connectors.

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Do the PCM idle learn procedure (see page 11-311).

28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

29. Turn the ignition switch OFF.

30. Reconnect all connectors.

31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at APP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P2123: APP Sensor A (TP Sensor D) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

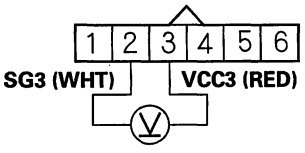
1. Turn the ignition switch ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES—Go to step 3.

   NO—Intermittent failure, the 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. Measure voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

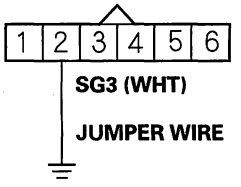
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

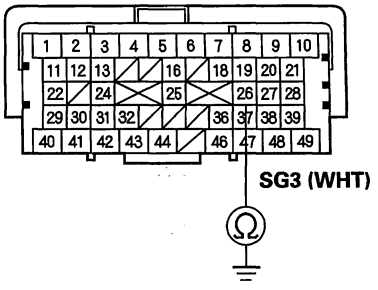
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between PCM connector terminal A26 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (A26) and APP sensor A, then go to step 14.

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BACK

12. Turn the ignition switch OFF.

13. Replace the accelerator pedal module (see page 11-286).

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 11-311).

18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at APP sensor A and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

19. Reconnect all connectors.

20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at APP sensor A and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC Troubleshooting (cont'd)

DTC P2127: APP Sensor B (TP Sensor E) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

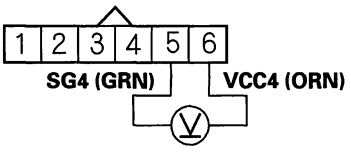
1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 0.2 V or less?

   YES—Go to step 3.

   NO—Intermittent failure, the 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. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

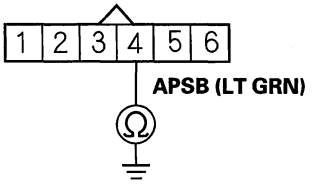
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 17.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

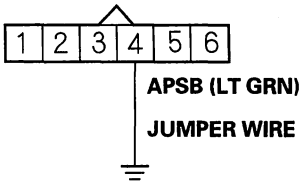
Is there continuity?

YES—Repair short in the wire between the PCM (A19) and APP sensor B, then go to step 24.

NO—Go to step 11.

11. Connect APP sensor 6P connector terminal No. 4 to body ground with a jumper wire.

APP SENSOR 6P CONNECTOR



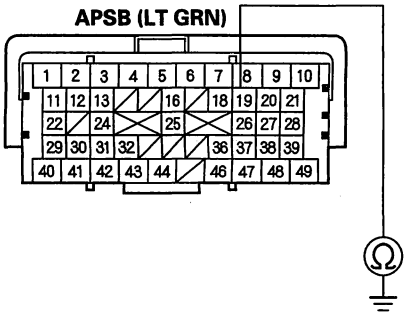
Wire side of female terminals

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BACK

12. Check for continuity between PCM connector terminal A19 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

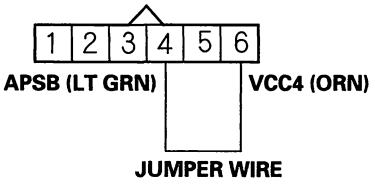
YES—Go to step 13.

NO—Repair open in the wire between the PCM (A19) and APP sensor B, then go to step 24.

13. Reconnect PCM connector A (49P).

14. Connect APP sensor 6P connector terminals No. 4 and No. 6 with a jumper wire.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch ON (II).

16. Check APP SENSOR B in the DATA LIST with the HDS.

Is there about 0.2 V or less?

YES—Go to step 29.

NO—Go to step 22.

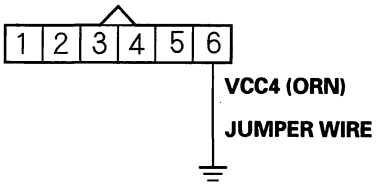
17. Turn the ignition switch OFF.

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector A (49P).

20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

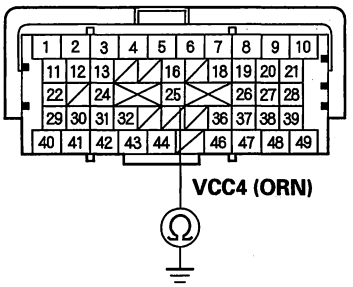
(cont'd)

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DTC Troubleshooting (cont'd)

21. Check for continuity between PCM connector terminal A25 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the PCM (A25) and APP sensor B, then go to step 24.

22. Turn the ignition switch OFF.
23. Replace the accelerator pedal module (see page 11-286).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure (see page 11-311).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES—Check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2127 indicated?

YES—Check for poor connections or loose terminals at APP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2128: APP Sensor B (TP Sensor E) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

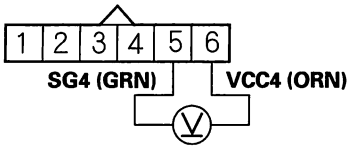
1. Turn the ignition switch ON (II).
2. Check APP SENSOR B in the DATA LIST with the HDS.

   Is there about 4.9 V or more?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals 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. Measure voltage between APP sensor 6P connector terminals No. 5 and No. 6.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

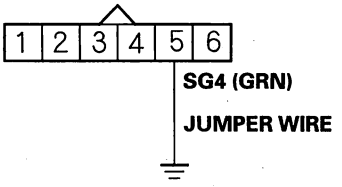
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector A (49P).
10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

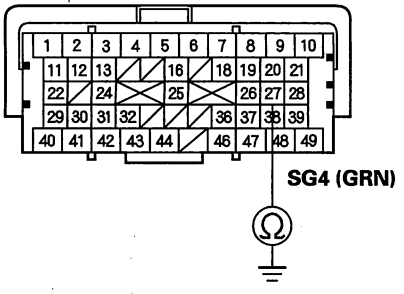
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between PCM connector terminal A27 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (A27) and APP sensor B, then go to step 14.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Replace the accelerator pedal module (see page 11-286).
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 11-311).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES—Check for poor connections or loose terminals at APP sensor B and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
19. Reconnect all connectors.
20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES—Check for poor connections or loose terminals at APP sensor B and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P2135: TP Sensor A/B Voltage Incorrect Correlation

⚠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 fingers if the throttle valve is activated.

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

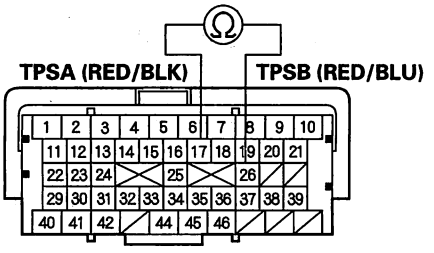
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the intake air duct from the throttle body.
7. Turn the ignition switch ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

   Does the valve temporarily move to the fully closed position?

   YES—Go to step 15.

   NO—Go to step 9.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector B (49P).
12. Check for continuity between PCM connector terminals B17 and B26.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Go to step 22.

(cont'd)

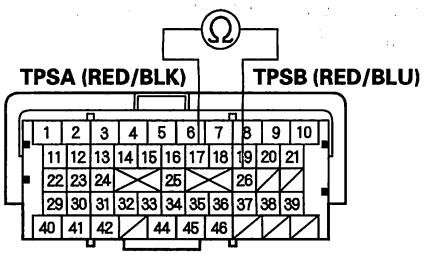
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DTC Troubleshooting (cont'd)

13. Disconnect the throttle body 6P connector.

14. Check for continuity between PCM connector terminals B17 and B26.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM B17 (TPSA line) and the B26 (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 11-366).

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 11-311).

21. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

22. Reconnect all connectors.

23. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2135 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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BACK

DTC P2138: APP Sensor A/B (TP Sensor D/E) Incorrect Voltage Correlation

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with 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.

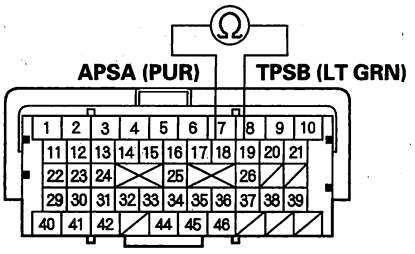
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at APP sensor and the PCM. ■
5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

   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 A (49P).
10. Check for continuity between PCM connector terminals A18 and A19.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM terminals (A18, A19), then go to step 13.

NO—Go to step 21.

11. Turn the ignition switch OFF.
12. Replace the accelerator pedal module (see page 11-286).
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 11-311).
17. Turn the ignition switch OFF.
18. Turn the ignition switch ON (II).
19. Press the accelerator pedal to the floor.

(cont'd)

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DTC Troubleshooting (cont'd)

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the PCM, then clean the throttle body (see page 11-363), and go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

21. Reconnect all connectors.

22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

23. Turn the ignition switch OFF.

24. Turn the ignition switch ON (II).

25. Press the accelerator pedal to the floor.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2138 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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BACK

DTC P2176: Throttle Actuator Control System Idle Position Not Learned

⚠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 fingers if the throttle valve is activated.

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P2135 is stored at the same time as DTC P2176, troubleshoot DTC P2135 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, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the PCM, then clean the throttle body (see page 11-363).■
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. Visually check the throttle valve operation while doing the ETCS TEST in the INSPECTION MENU with the HDS.

    Does the throttle valve move to its fully closed position?

    YES—Go to step 11.

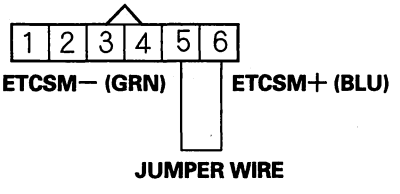
    NO—Go to step 12.
11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES—Clean the throttle body (see page 11-363), then go to step 21.

    NO—Go to step 18.
12. Turn the ignition switch OFF.
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect PCM connector C (49P).
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

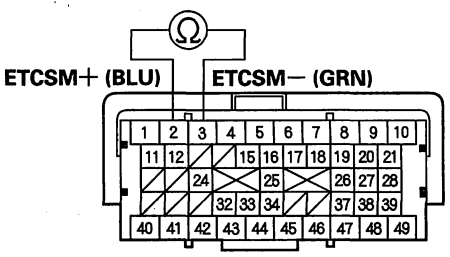
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DTC Troubleshooting (cont'd)

17. Check for continuity between PCM connector terminals C2 and C3.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 27.

NO—Repair open in the wires between the throttle body and the PCM (C2, C3), then go to step 20.

18. Turn the ignition switch OFF.
19. Replace the throttle body (see page 11-366).
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 11-311).
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.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

27. Reconnect all connectors.
28. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
29. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2176 indicated?

YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

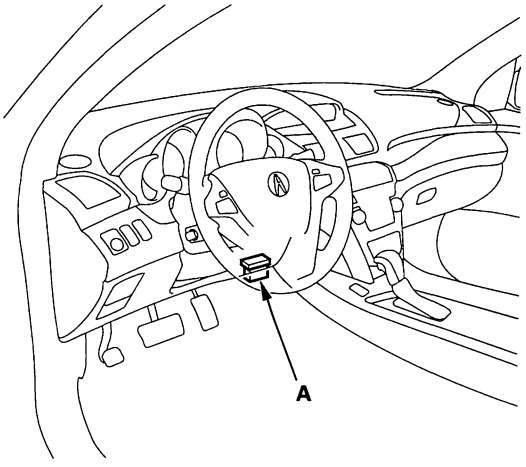
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BACK

APP Sensor Signal Inspection

NOTE:
- This procedure checks the APP sensor in its fully closed position. In any other position, the APP sensor stores DTCs which are covered in other troubleshooting procedures.
- Check for Temporary DTCs or DTCs with the HDS before doing this procedure. If any DTCs are indicated, troubleshoot them first, then do this procedure.
- Press the accelerator pedal several times to check its operation. If it does not operate smoothly, check the pedal. If you find a problem, replace the accelerator pedal module (see page 11-286).

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. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).

4. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

   - If it is 0 %, the APP sensor is OK.
   - If it is not 0 %, update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then go to step 5.

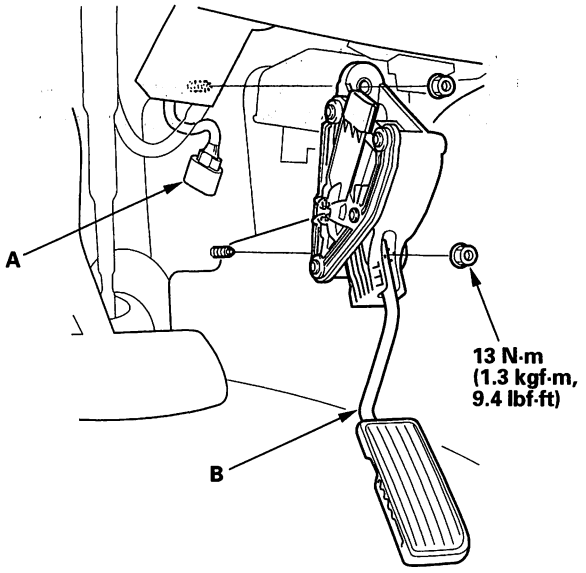
5. Make sure the accelerator pedal is not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

   - If it is 0 %, the APP sensor is OK.
   - If it is not 0 %, replace the accelerator pedal module (see page 11-286), then go to step 1.

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Accelerator Pedal Module Removal/Installation

1. Disconnect the accelerator pedal position (APP) sensor 6P connector (A).



2. Remove the accelerator pedal module (B).

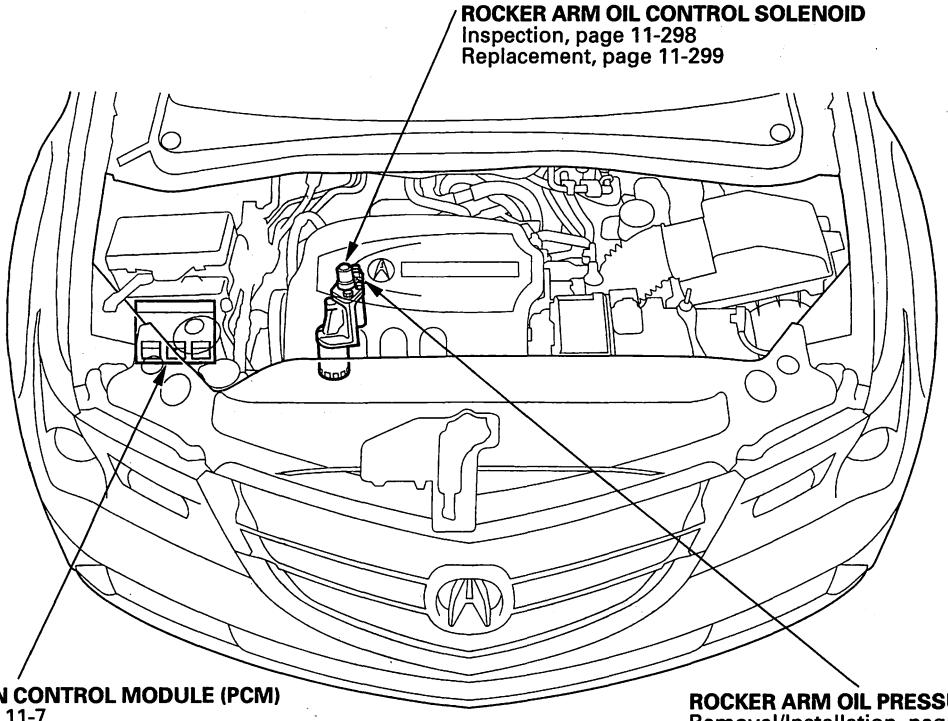
   NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

3. Install the parts in the reverse order of removal.

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Component Location Index



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DTC Troubleshooting

DTC P2646: Rocker Arm Oil Pressure Switch Circuit Low Voltage

Special Tools Required
- Pressure gauge adapter 07NAJ-P07010A
- A/T low pressure gauge w/panel 07406-0070301
- 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-S5AA200

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 19.

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, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch, the rocker arm oil control solenoid, and the PCM. ■

   NO—Go to step 5.

5. Turn the ignition switch OFF.

6. Disconnect the rocker arm oil pressure switch 2P connector.

7. Turn the ignition switch ON (II).

8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is ON indicated?

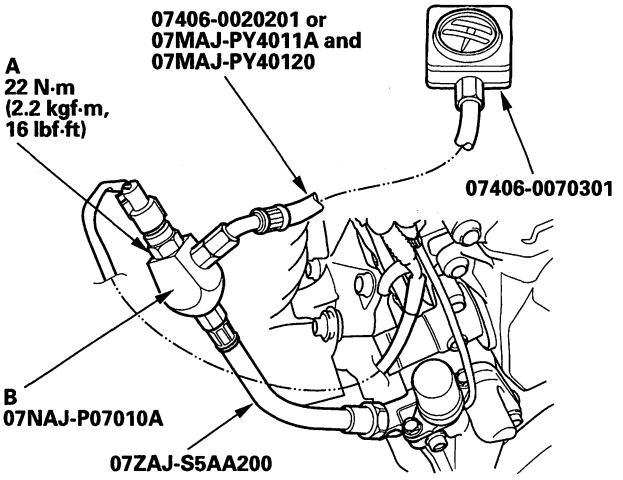
   YES—Go to step 14.

   NO—Go to step 9.

9. Turn the ignition switch OFF.

10. Remove the rocker arm oil pressure switch (A), install the special tools as shown, then install the rocker arm oil pressure switch on the oil pressure gauge adapter (B).

    NOTE: Install the parts in the reverse order of removal with a new O-ring.



11. Start the engine.

12. Do the VTEC TEST in the INSPECTION MENU with the HDS.

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13. Check the oil pressure.

    Does the oil pressure increase to at least 392 kPa (4.0 kgf/cm², 56.9 psi)?

    YES—Replace the rocker arm oil pressure switch (see page 11-299), then go to step 18.

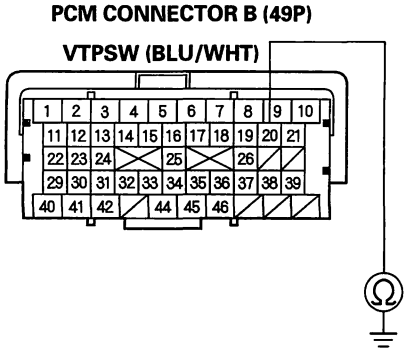
    NO—Inspect the VTEC system. If it is OK. Replace the rocker arm oil control solenoid (see page 11-299), then go to step 18.

14. Turn the ignition switch OFF.

15. Jump the SCS line with the HDS.

16. Disconnect PCM connector B (49P).

17. Check for continuity between PCM connector terminal B20 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B20) and the rocker arm oil pressure switch, then go to step 18.

NO—Go to step 25.

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 11-311).

22. Do the VTEC TEST in the INSPECTION MENU with the HDS.

23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM, then go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 23, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

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DTC Troubleshooting (cont'd)

25. Reconnect all connectors.

26. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

27. Do the VTEC TEST in the INSPECTION MENU with the HDS.

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2646 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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BACK

DTC P2647: Rocker Arm Oil Pressure Switch Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 16.

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, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM.■

   NO—Go to step 5.

5. Check the result of step 4.

   - VTEC Switch Failure
   - VTEC Switch Open
   - VTEC Switch SIG Line Open
   - VTEC Switch GND Line Open

   Is the test result any of the above?

   YES—Go to step 6.

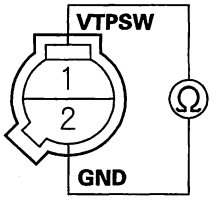
   NO—Check for poor connections or loose terminals at the rocker arm oil pressure switch. If it is OK, replace the rocker arm oil control solenoid (see page 11-299), then go to step 15.

6. Turn the ignition switch OFF.

7. Disconnect the rocker arm oil pressure switch 2P connector.

8. At the rocker arm oil pressure switch side, check for continuity between rocker arm oil pressure switch 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Terminal side of male terminals

Is there continuity?

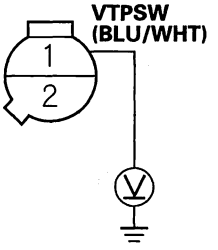
YES—Go to step 9.

NO—Replace the rocker arm oil pressure switch (see page 11-299), then go to step 15.

9. Turn the ignition switch ON (II).

10. Measure voltage between rocker arm oil pressure switch 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Repair open in the wire between the rocker arm oil pressure switch and G101, then go to step 15.

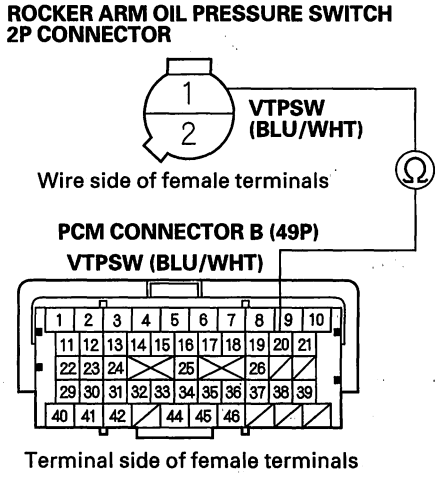
NO—Go to step 11.

(cont'd)

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DTC Troubleshooting (cont'd)

11. Turn the ignition switch OFF.
12. Jump the SCS line with the HDS.
13. Disconnect PCM connector B (49P).
14. Check for continuity between PCM connector terminal B20 and rocker arm oil pressure switch 2P connector terminal No. 1.



Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (B20) and the rocker arm oil pressure switch, then go to step 15.

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 11-311).
19. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM, then go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Reconnect all connectors.
22. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
23. Do the VTEC TEST in the INSPECTION MENU with the HDS.
24. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P2647 indicated?

YES—Check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—Go to step 25.

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25. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil pressure switch and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2648: Rocker Arm Oil Control Solenoid Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

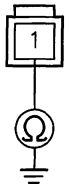
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Do the VTEC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM. ■

   NO—Go to step 4.
4. Turn the ignition switch OFF.
5. Disconnect the rocker arm oil control solenoid 1P connector.
6. At the solenoid side, measure resistance between the rocker arm oil control solenoid 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID 1P CONNECTOR



Terminal side of male terminals

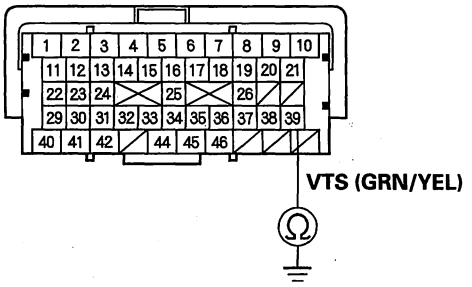
Is there 14—30 Ω at room temperature?

YES—Go to step 7.

NO—Go to step 10.

7. Jump the SCS line with the HDS.
8. Disconnect PCM connector B (49P).
9. Check for continuity between PCM connector terminal B39 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (B39) and the rocker arm oil control solenoid, then go to step 11.

NO—Go to step 18.

10. Replace the rocker arm oil control solenoid (see page 11-299).
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 11-311).
15. Do the VTEC TEST in the INSPECTION MENU with the HDS.
16. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM, then go to step 1.

    NO—Go to step 17.

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17. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 16, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Do the VTEC TEST in the INSPECTION MENU with the HDS.

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2648 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P2649: Rocker Arm Oil Control Solenoid Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

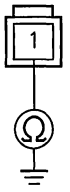
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2649 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM. ■
5. Turn the ignition switch OFF.
6. Disconnect the rocker arm oil control solenoid 1P connector.
7. At the solenoid side, measure resistance between the rocker arm oil control solenoid 1P connector terminal and the solenoid valve body.

ROCKER ARM OIL CONTROL SOLENOID 1P CONNECTOR



Terminal side of male terminals

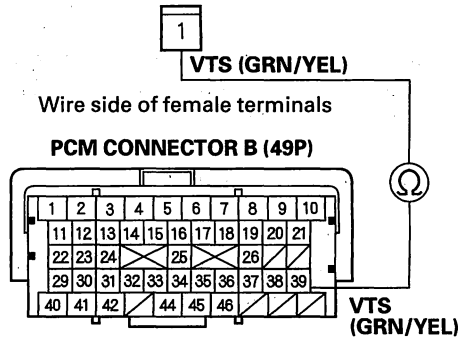
Is there 14—30 Ω at room temperature?

YES—Go to step 8.

NO—Go to step 11.

8. Jump the SCS line with the HDS.
9. Disconnect PCM connector B (49P).
10. Check for continuity between PCM connector terminal B39 and the rocker arm oil control solenoid 1P connector terminal.

ROCKER ARM OIL CONTROL SOLENOID 1P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (B39) and the rocker arm oil control solenoid, then go to step 12.

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11. Replace the rocker arm oil control solenoid (see page 11-299).

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 11-311).

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.

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM, then go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

19. Reconnect all connectors.

20. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2649 indicated?

    YES—Check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 22.

22. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 21, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the rocker arm oil control solenoid and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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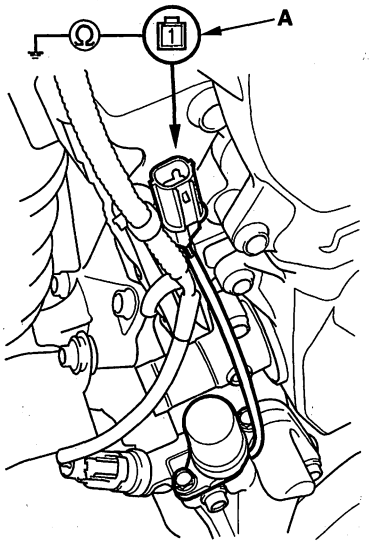
Rocker Arm Oil Control Solenoid Test

1. Disconnect the rocker arm oil control solenoid connector.

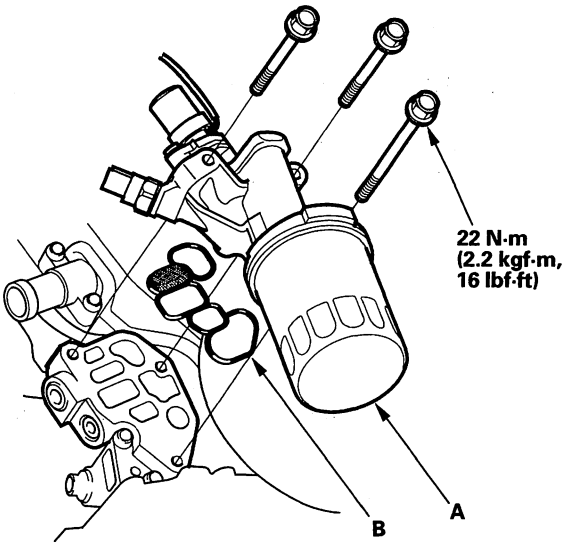
2. Measure resistance between the rocker arm oil control solenoid 1P connector terminal (A) and body ground.

   - If the resistance is as specified, go to step 3.
   - If the resistance is not as specified, replace the rocker arm oil control solenoid.

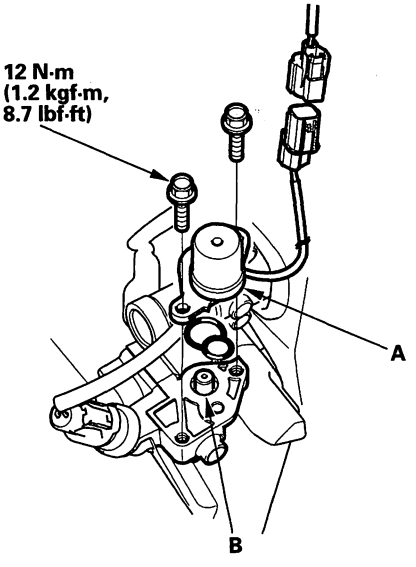
   Resistance: 14—30 Ω



3. Remove the rocker arm oil control solenoid/oil filter assembly (A) from the oil pump, and check the rocker arm oil control solenoid filter (B) for a restriction. If there is a restriction, replace the rocker arm oil control solenoid filter, the engine oil filter, and the engine oil.



4. If the filter is not restricted, remove the rocker arm oil control solenoid (A), and push the valve (B) with your finger to check its movement. If the valve moves freely, it is normal; check the engine oil pressure (see page 8-6). If the valve binds or sticks, replace the rocker arm oil control solenoid assembly.

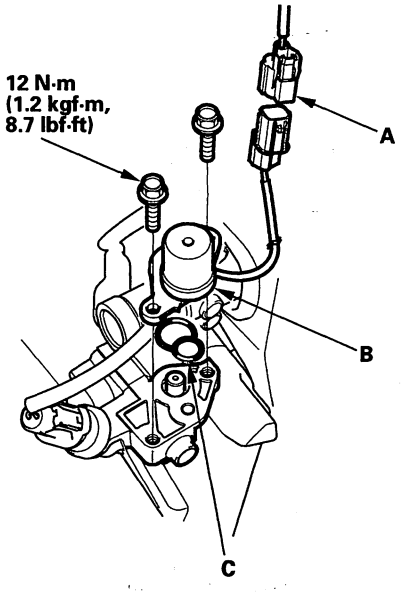


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BACK

Rocker Arm Oil Control Solenoid Replacement

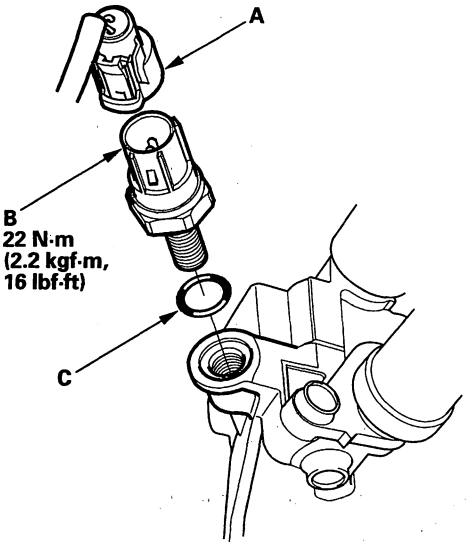
1. Disconnect the rocker arm oil control solenoid connector (A).



2. Remove the rocker arm oil control solenoid (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

Rocker Arm Oil Pressure Switch Removal/Installation

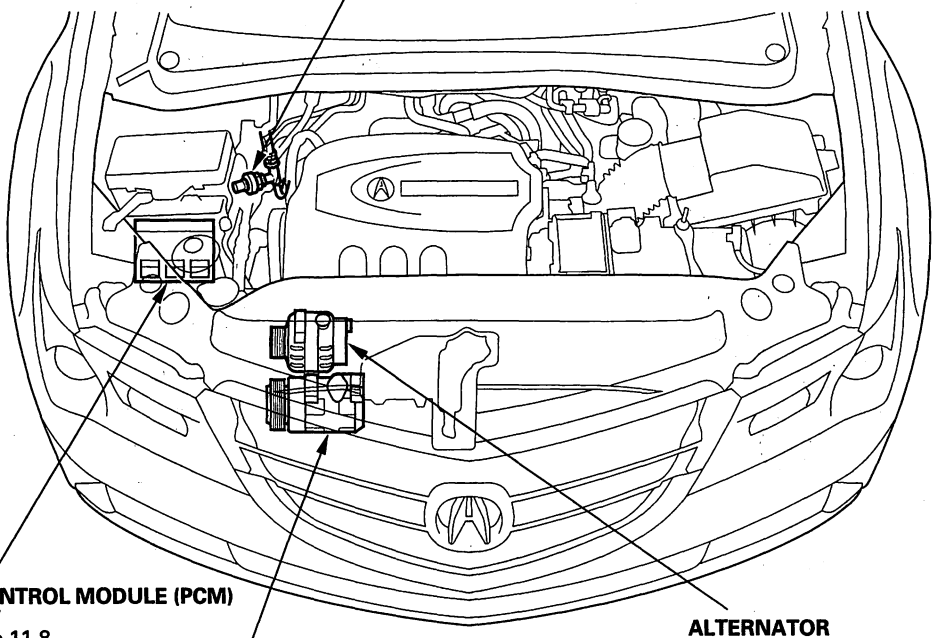
1. Disconnect the rocker arm oil pressure switch connector (A), then remove the rocker arm oil pressure switch (B).

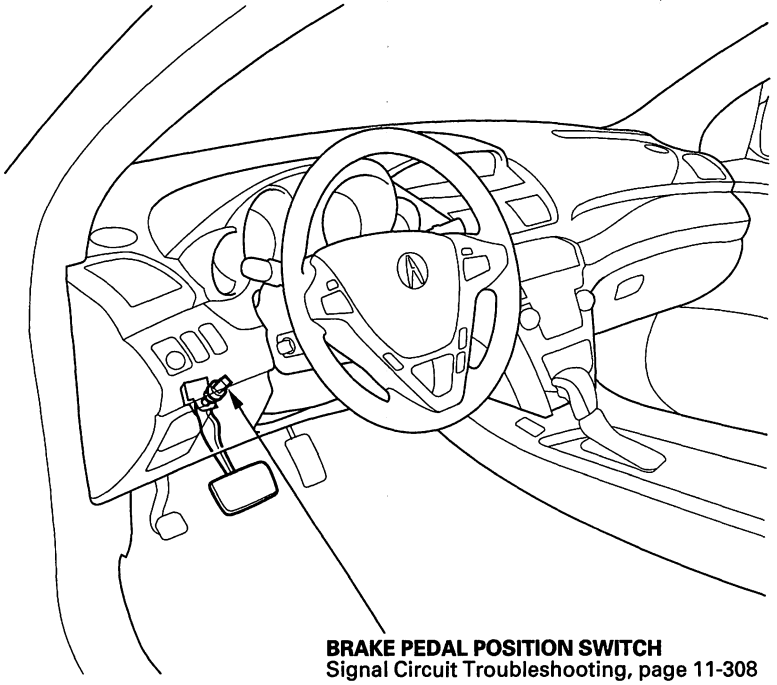


2. Install the parts in the reverse order of removal with a new O-ring (C).

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Component Location Index





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BACK

DTC P0506: Idle Control System RPM Lower Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 20 seconds.
4. Check for these conditions in the DATA LIST with the HDS:
   - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
   - Intake air temperature (IAT SENSOR) 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 8. 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 11-363). Also check for damage to the air cleaner element (see page 11-364), then go to step 13. If there is damage in the throttle bore, go to step 12.

   NO—Check the A/C system or power steering system, then go to step 10.
8. Remove the intake air duct from the throttle body.
9. 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 11-363). Also check for damage to the air cleaner element (see page 11-364), then go to step 13. If there is damage in the throttle bore, go to step 12.

   NO—Go to step 10.
10. Recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.).
11. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the 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 10 and recheck.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Replace the throttle body (see page 11-366).

13. Reset the PCM with the HDS.

14. Do the PCM idle learn procedure (see page 11-311).

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 20 seconds.

16. Check for these conditions in the DATA LIST with the HDS:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Intake air temperature (IAT SENSOR) 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

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0506 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

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BACK

DTC P0507: Idle Control System RPM Higher Than Expected

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 20 seconds.
4. Monitor the OBD STATUS for DTC P0507 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, the 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. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster hose

   Are there any leaks?

   YES—Repair or replace the leaking part(s), then go to step 6.

   NO—Go to step 6.

6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-311).
9. 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 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 10, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the throttle body and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

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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.

   Does it indicate ON?

   YES—Go to step 5.

   NO—Do the A/C pressure switch circuit troubleshooting (see page 21-81).
5. Check the A/C system.

   Does the A/C system operate?

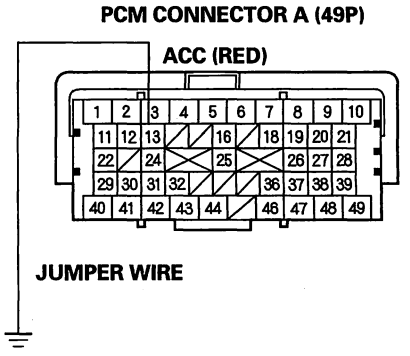
   YES—The air conditioning system circuit is OK. ■

   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 21-134).

   NO—Go to step 9.
9. Turn the ignition switch OFF.
10. Jump the SCS line with the HDS.
11. Disconnect PCM connector A (49P).
12. Turn the ignition switch ON (II).
13. Momentarily connect PCM connector terminal A13 to body ground with a jumper wire several times.



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the PCM. If the connections are OK, check the A/C clutch relay (see page 22-77), repair open in the wire between the PCM (A13) and the A/C clutch relay and the other A/C systems.

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BACK

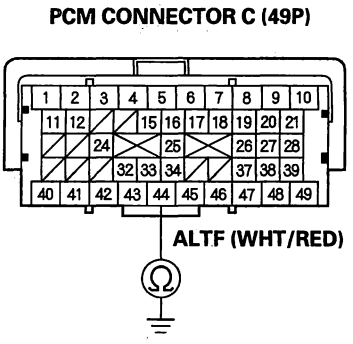
Alternator FR Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

   Does the percentage vary?

   YES—The alternator signal circuit is OK.■

   NO—Go to step 4.
4. Turn the headlight switch and ignition switch OFF.
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect PCM connector C (49P).
8. Check for continuity between body ground and PCM connector terminal C44.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C44) and the alternator.■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244).■

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PSP Switch Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
2. Align the steering wheel straight ahead.
3. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 4.

   NO—Go to step 14.
4. Turn the steering wheel to the full lock position.
5. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it change to OFF?

   YES—The PSP switch signal circuit is OK. ■

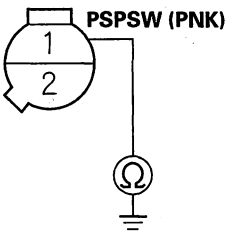
   NO—Go to step 6.
6. Turn the ignition switch OFF.
7. Disconnect the PSP switch 2P connector.
8. Start the engine.
9. Check the PSP SWITCH in the DATA LIST with the HDS.

   Does it change to OFF?

   YES—Replace the PSP switch. ■

   NO—Go to step 10.
10. Turn the ignition switch OFF.
11. Jump the SCS line with the HDS.
12. Disconnect PCM connector A (49P).
13. Check for continuity between PSP switch 2P connector terminal No. 1 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

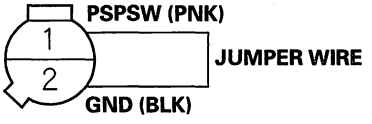
Is there continuity?

YES—Repair short in the wire between the PCM (A38) and the PSP switch. ■

NO—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■

14. Turn the ignition switch OFF.
15. Disconnect the PSP switch 2P connector.
16. Connect PSP switch 2P connector terminals No. 1 and No. 2 with a jumper wire, then start the engine.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

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17. Check the PSP SWITCH in the DATA LIST with the HDS.

Does it change to ON?

YES—Replace the PSP switch. ■

NO—Go to step 18.

18. Turn the ignition switch OFF.

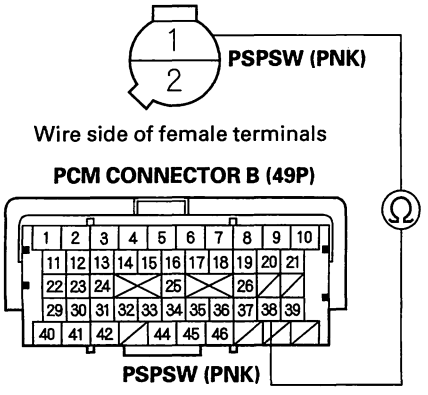
19. Remove the jumper wire from the PSP switch 2P connector.

20. Jump the SCS line with the HDS.

21. Disconnect PCM connector A (49P).

22. Check for continuity between PCM connector terminal A38 and PSP switch 2P connector terminal No. 1.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Terminal side of female terminals

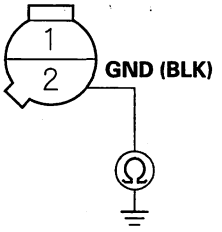
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the PSP switch and the PCM (A38). ■

23. Check for continuity between PSP switch 2P connector terminal No. 2 and body ground.

PSP SWITCH 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8), then recheck. If the symptom/indication goes away with a known-good PCM, replace the original PCM (see page 11-244). ■

NO—Repair open in the wire between the PSP switch and G202. ■

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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?

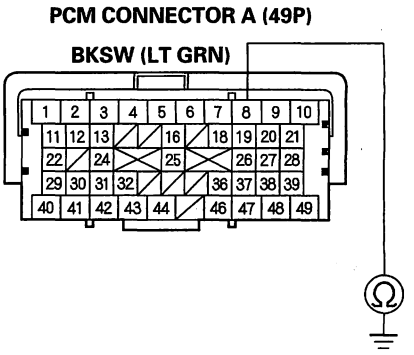
   YES—Go to step 3.

   NO—Inspect the brake pedal position switch (see page 19-6).■
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 (BKSW 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 A (49P).
8. Check for continuity between PCM connector terminal A8 and body ground.



Terminal side of female terminals

Is there continuity?

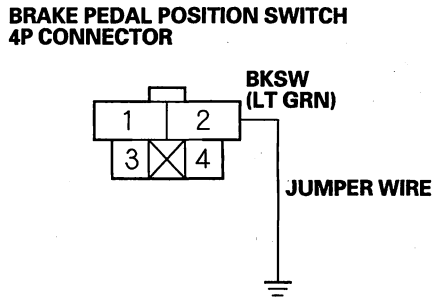
YES—Repair short in the wire between the PCM (A8) and the No. 11 +B STOP & HORN (15 A) fuse. Replace the No. 11 +B STOP & HORN (15 A) fuse.■

NO—Go to step 9.

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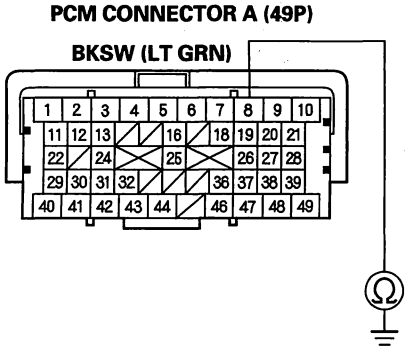
BACK

9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.



Wire side of female terminals

10. Check for continuity between PCM connector terminal A8 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 11 +B STOP & HORN (15 A) fuse. Inspect the brake pedal position switch (see page 19-6). ■

NO—Repair open in the wire between the PCM (A8) and the brake pedal position switch. ■

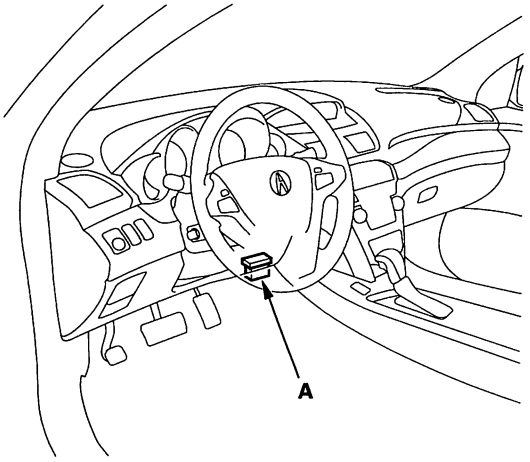
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Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
  - 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. Turn the ignition switch ON (II).

4. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).

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. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be:
   710±50 rpm (in Park or neutral)

7. Let the engine idle for 1 minute with high electric load (A/C switch ON, temperature set to max cool, blower fan on high, and headlights on high beam).

   Idle speed should be:
   710±50 rpm (in Park or neutral)

   NOTE: If the idle speed is not within specification, do the PCM idle learn procedure (see page 11-311). If the idle speed is still not within specification, go to symptom troubleshooting.

8. Reconnect the EVAP canister purge valve connector.

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PCM Idle Learn Procedure

The idle learn procedure must be done so the PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace PCM.
- Reset PCM.
- Update PCM.
- Clean or replace the throttle body.

NOTE: Erasing DTCs with the HDS does not require you to do the idle learn procedure.

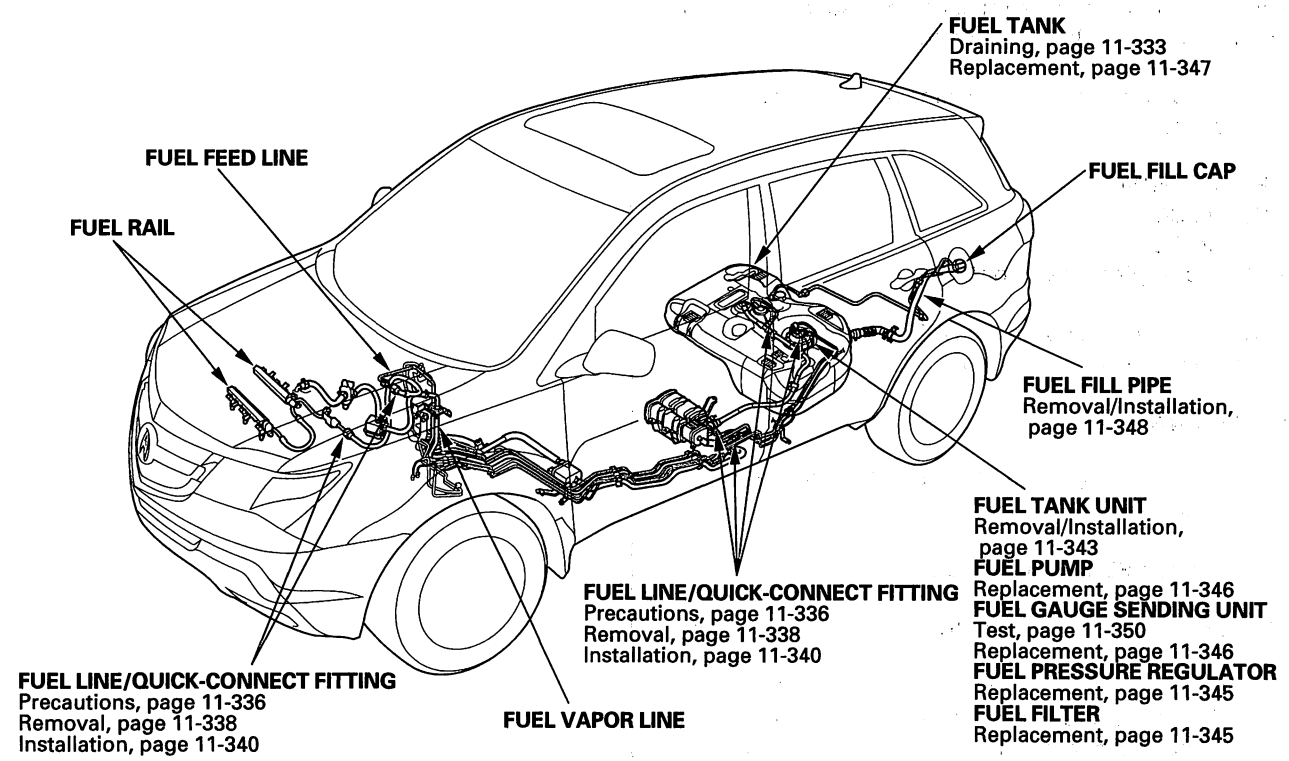
Procedure

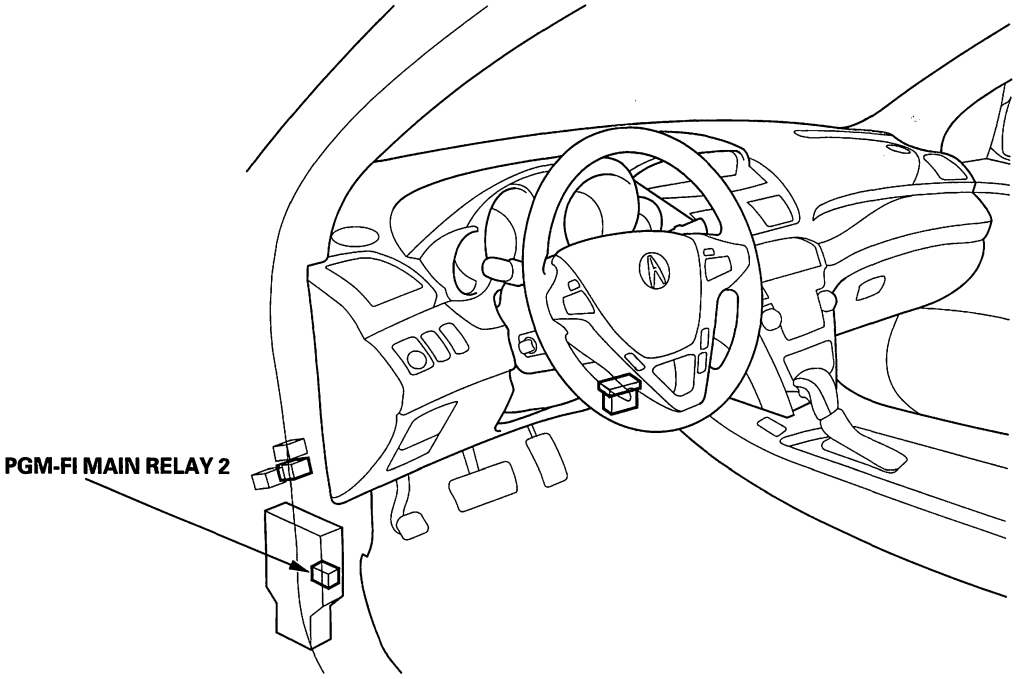
1. Make sure all electrical items (A/C, audio, lights, etc.) are off.
2. Reset the PCM with the HDS.
3. Turn the ignition switch ON (II), and wait 2 seconds.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 194 °F (90 °C).
5. Let the engine idle for 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.

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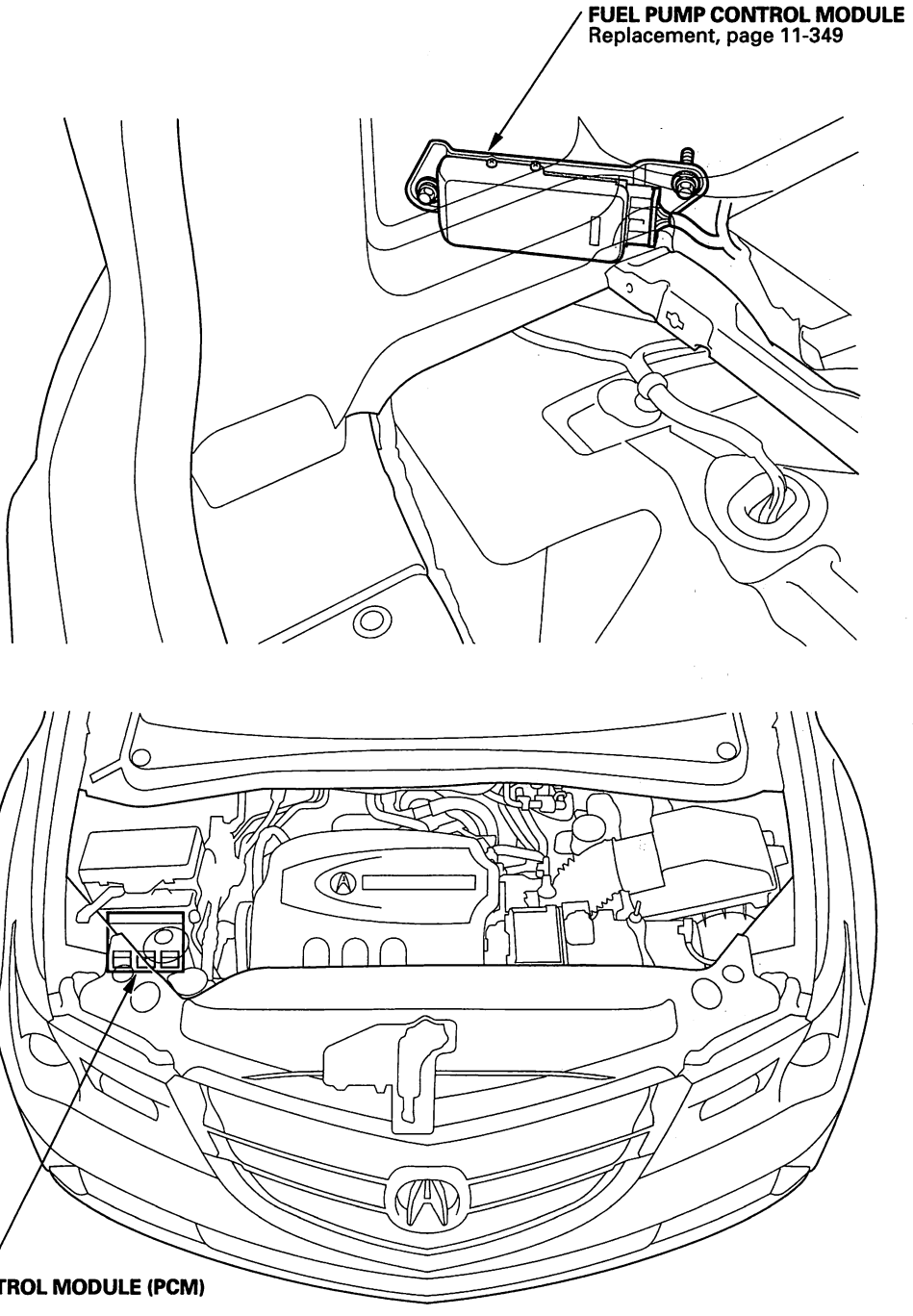
Component Location Index





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DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Because it requires 162 miles (260 km) of driving without refueling to complete this diagnosis, this DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-350).

   Is the fuel gauge sending unit OK?

   YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. ■

   NO—Replace the fuel gauge sending unit (see page 11-346), 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 11-311).

5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0461 indicated?

   YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

   NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0462: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0462 indicated?

   YES—Go to step 4.

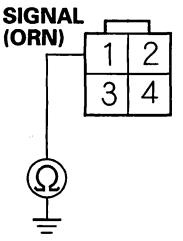
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■
4. Turn the ignition switch OFF.
5. Remove the second row seat (see page 20-156).
6. Remove the access panel from the floor.
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Replace the fuel gauge sending unit (see page 11-346), then go to step 22.

    NO—Go to step 11.
11. Turn the ignition switch OFF.
12. Remove the gauge control module (see page 22-337).
13. Disconnect the gauge control module 12P connector.
14. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 23.

NO—Go to step 15.

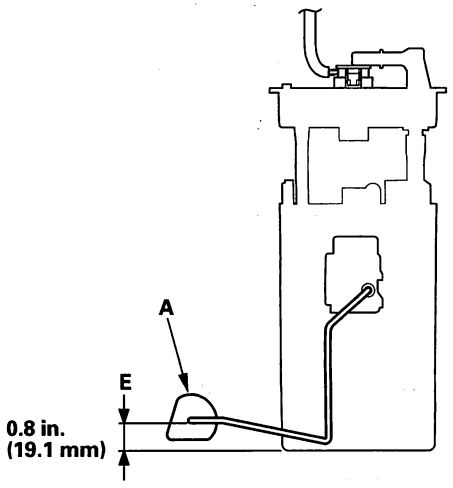
15. Reconnect the gauge control module 12P connector.
16. Remove the fuel tank unit (see page 11-343).
17. Connect the fuel tank unit 4P connector.
18. Turn the ignition switch ON (II).
19. Clear the DTC with the HDS.

(cont'd)

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DTC Troubleshooting (cont'd)

20. Set the float (A) to the E position.



21. Check the fuel gauge.

    Does the fuel gauge move to the empty position?

    YES—Go to step 29.

    NO—Replace the gauge control module (see page 22-337), then go to step 22.

22. Turn the ignition switch OFF.

23. Install the parts in the reverse order of removal.

24. Reconnect all connectors.

25. Turn the ignition switch ON (II).

26. Reset the PCM with the HDS.

27. Do the PCM idle learn procedure (see page 11-311).

28. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

29. Turn the ignition switch OFF.

30. Install the parts in the reverse order of removal.

31. Reconnect all connectors.

32. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

33. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0462 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting.■

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DTC P0463: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

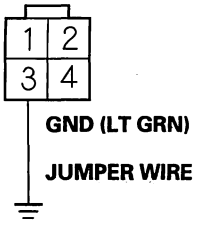
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, and wait 5 seconds.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

   Is DTC P0463 indicated?

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module and the fuel gauge sending unit. ■
4. Turn the ignition switch OFF.
5. Remove the second row seat (see page 20-156).
6. Remove the access panel from the floor.
7. Disconnect the fuel tank unit 4P connector.
8. Connect fuel tank unit 4P connector terminal No. 3 to body ground with a jumper wire.

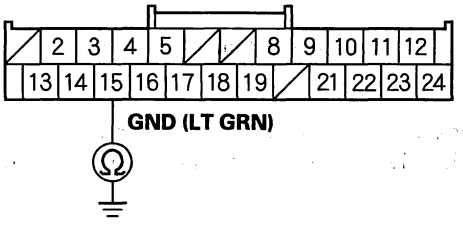
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

9. Remove the gauge control module (see page 22-337).
10. Disconnect the gauge control module 24P connector.
11. Check for continuity between gauge control module 24P connector terminal No. 15 and body ground.

GAUGE CONTROL MODULE 24P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the gauge control module (GND line) and the fuel gauge sending unit, then go to step 24.

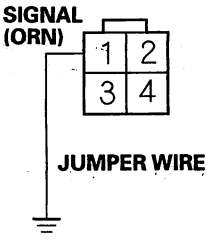
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DTC Troubleshooting (cont'd)

12. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

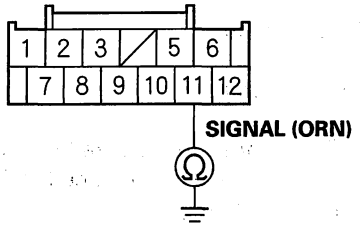
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

13. Check for continuity between gauge control module 12P connector terminal No. 11 and body ground.

GAUGE CONTROL MODULE CONNECTOR A (12P)



Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 24.

14. Remove the jumper wire from the fuel tank unit 5P connector.

15. Remove the fuel tank unit (see page 11-343).

16. Test the fuel gauge sending unit (see page 11-350).

Is the fuel gauge sending unit OK?

YES—Go to step 17.

NO—Replace the fuel gauge sending unit (see page 11-346), then go to step 24.

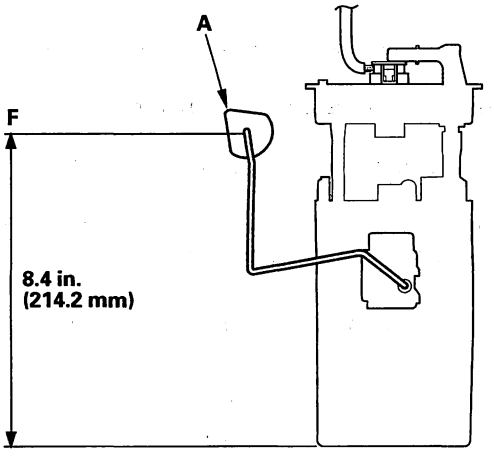
17. Connect the fuel tank unit 4P connector.

18. Reconnect the gauge control module 12P connector.

19. Turn the ignition switch ON (II).

20. Clear the DTC with the HDS.

21. Set the float (A) to the F position.



22. Check the fuel gauge.

Does the gauge move to the full position?

YES—Go to step 30.

NO—Replace the gauge control module (see page 22-337), then go to step 24.

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23. Turn the ignition switch OFF.
24. Install the parts in the reverse order of removal.
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 11-311).
29. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the throttle body and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
30. Turn the ignition switch OFF.
31. Install the parts in the reverse order of removal.
32. Reconnect all connectors.
33. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0627: Fuel Pump Control Module System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to the start (III) position.

   NOTE: This vehicle has an auto control mode starting system. It keeps the starter motor running after the ignition switch is released for 15 seconds, or until the engine starts.

4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0627 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2, the fuel tank unit, and the PCM. ■

5. Turn the ignition switch OFF.
6. Check the No. 19 FUEL PUMP (20 A) fuse in under-dash fuse/relay box.

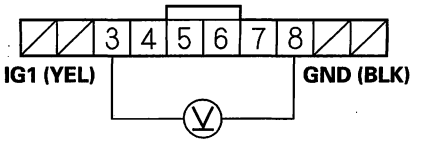
   Is the fuse blown?

   YES—Replace the under-dash fuse/relay box. Also replace the No. 19 FUEL PUMP (20 A) fuse, then go to step 73.

   NO—Go to step 7.

7. Disconnect the fuel pump control module 10P connector (see page 11-349).
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



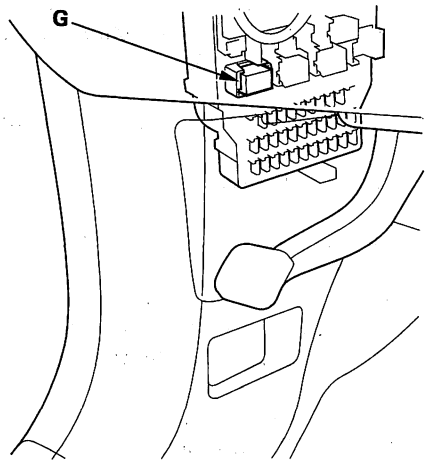
Wire side of female terminals

Is there battery voltage?

YES—Go to step 27.

NO—Go to step 9.

9. Turn the ignition switch OFF.
10. Remove the left kick panel (see page 20-76), then remove PGM-FI main relay 2 (G) from the under-dash fuse/relay box.



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BACK

11. Test PGM-FI main relay 2 (see page 22-77).

Is PGM-FI main relay 2 OK?

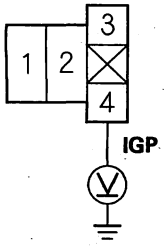
YES—Go to step 12.

NO—Replace PGM-FI main relay 2, then go to step 73.

12. Turn the ignition switch ON (II).

13. Measure voltage between PGM-FI main relay 2 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 18.

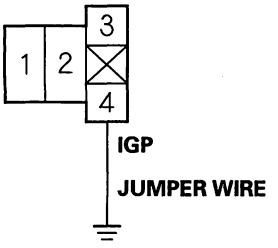
NO—Go to step 14.

14. Turn the ignition switch OFF.

15. Disconnect the under-hood fuse/relay box 9P connector.

16. Connect PGM-FI main relay 2 4P connector terminal No. 4 to body ground with a jumper wire.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

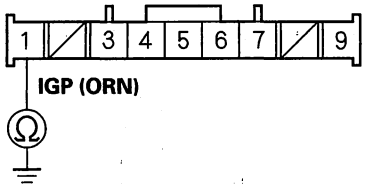
(cont'd)

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DTC Troubleshooting (cont'd)

17. Check for continuity between under-hood fuse/relay box 9P connector terminal No. 1 and body ground.

UNDER-HOOD FUSE/RELAY BOX 9P CONNECTOR



Wire side of female terminals

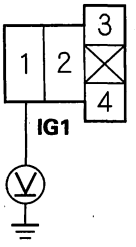
Is there continuity?

YES—Replace the relay control module (under-hood fuse/relay box) (see page 22-71), then go to step 74.

NO—
- Repair open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box, then go to step 74.
- If needed, replace the under-dash fuse/relay box (see page 22-72), then go to step 74.

18. Measure voltage between PGM-FI main relay 2 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

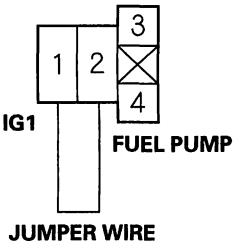
YES—Go to step 19.

NO—Replace the under-dash fuse/relay box (see page 22-72), then go to step 73.

19. Turn the ignition switch OFF.

20. Connect PGM-FI main relay 2 4P connector terminals No. 1 and No. 2 with a jumper wire.

PGM-FI MAIN RELAY 2 4P CONNECTOR



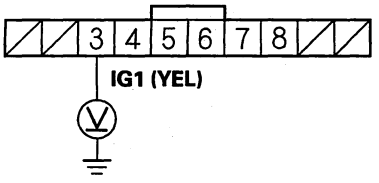
Terminal side of female terminals

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BACK

21. 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 22.

NO—
- Repair open in the wire between the under-dash fuse/relay box and the fuel pump control module, then go to step 73.
- If needed, replace the under-dash fuse/relay box (see page 22-72), then go to step 73.

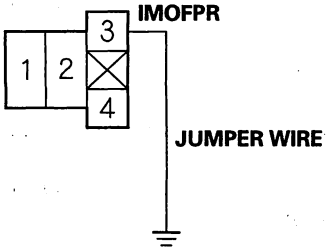
22. Turn the ignition switch OFF.

23. Jump the SCS line with the HDS.

24. Disconnect PCM connector A (49P).

25. Connect PGM-FI main relay 2 4P connector terminal No. 3 to body ground with a jumper wire.

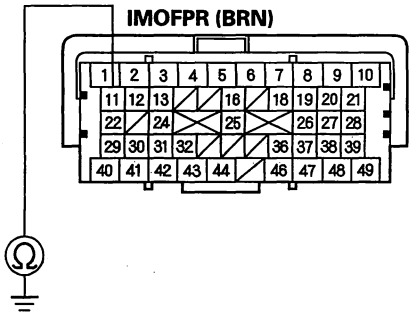
PGM-FI MAIN RELAY 2 4P CONNECTOR



Terminal side of female terminals

26. Check for continuity between PCM connector terminal A11 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 79.

NO—Repair open in the wire between the PCM (A11) and PGM-FI main relay 2, then go to step 73.

(cont'd)

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DTC Troubleshooting (cont'd)

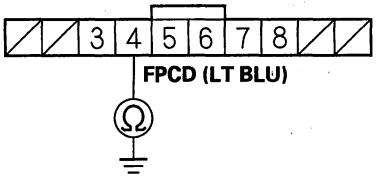
27. Turn the ignition switch OFF.
28. Reconnect the fuel pump control module 10P connector (see page 11-349).
29. Turn the ignition switch ON (II).
30. Clear the DTC with the HDS.
31. Turn the ignition switch OFF.
32. Turn the ignition switch ON (II), and check for sound from the fuel pump within 2 seconds.

    Does the fuel pump operate?

    YES—Go to step 33.

    NO—Go to step 53.
33. Turn the ignition switch OFF.
34. Disconnect the fuel pump control module 10P connector.
35. 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

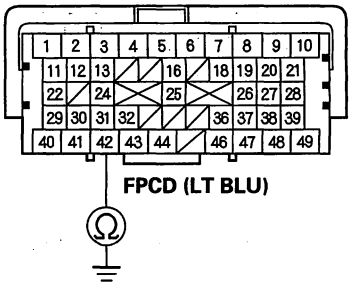
Is there continuity?

YES—Go to step 36.

NO—Go to step 39.

36. Jump the SCS line with the HDS.
37. Disconnect PCM connector A (49P).
38. Check for continuity between PCM connector terminal A42 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

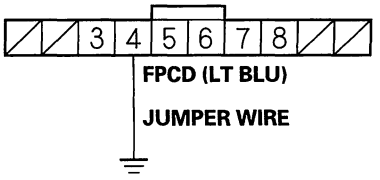
Is there continuity?

YES—Repair short in the wire between the PCM (A42) and the fuel pump control module, then go to step 73.

NO—Go to step 79.

39. Jump the SCS line with the HDS.
40. Disconnect PCM connector A (49P).
41. Connect fuel pump control module 10P connector terminal No. 4 to body ground with a jumper wire.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



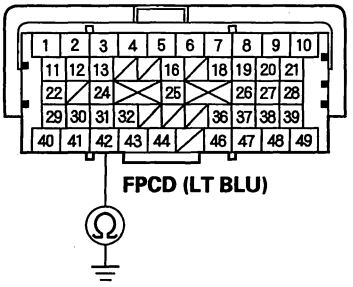
Wire side of female terminals

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BACK

42. Check for continuity between PCM connector terminal A42 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 43.

NO—Repair open in the wire between the PCM (A42) and the fuel pump control module, then go to step 73.

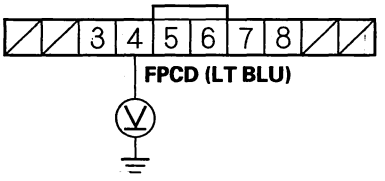
43. Remove the jumper wire from the fuel pump control module 10P connector.

44. Reconnect the fuel pump control module 10P connector and PCM connector A (49P).

45. Turn the ignition switch ON (II).

46. Measure voltage 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 about 8 V or more?

YES—Go to step 47.

NO—Replace the fuel pump control module (see page 11-349), then go to step 73.

47. Turn the ignition switch OFF.

48. Remove the second row seat (see page 20-156).

49. Remove the access panel from the floor.

50. Disconnect the fuel tank unit 4P connector.

51. Disconnect the fuel pump control module 10P connector.

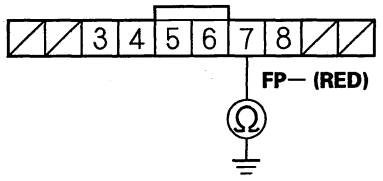
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DTC Troubleshooting (cont'd)

52. 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 tank unit, then go to step 73.

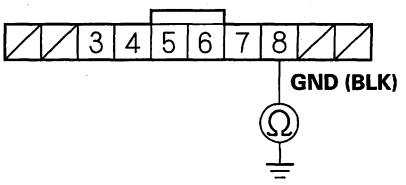
NO—Substitute a known-good fuel pump control module (see page 11-349), then go to step 73 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-349), then go to step 73. If DTC P0627 is indicated, go to step 80.

53. Turn the ignition switch OFF.

54. Disconnect the fuel pump control module 10P connector (see page 11-349).

55. 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

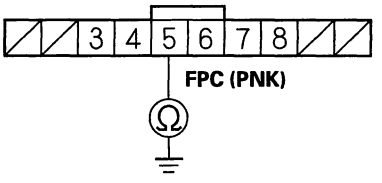
Is there continuity?

YES—Go to step 56.

NO—Repair open in the wire between the fuel pump control module (GND line) and G604, then go to step 73.

56. 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 57.

NO—Go to step 60.

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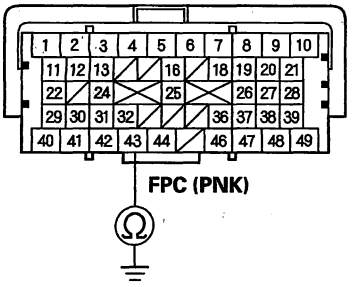
BACK

57. Jump the SCS line with the HDS.

58. Disconnect PCM connector A (49P).

59. Check for continuity between PCM connector terminal A43 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

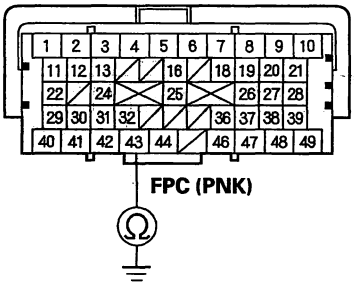
YES—Repair short in the wire between the PCM (A43) and the fuel pump control module, then go to step 73.

NO—Go to step 79.

60. Reconnect the fuel pump control module 10P connector.

61. Turn the ignition switch ON (II), and measure voltage between PCM connector terminal A43 and body ground within 2 seconds.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 62.

NO—Replace the fuel pump control module (see page 11-349), then go to step 73.

62. Turn the ignition switch OFF.

63. Remove the second row seat (see page 20-156).

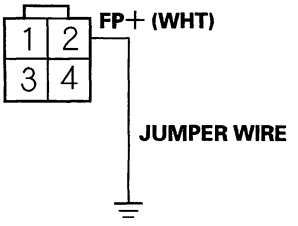
64. Remove the access panel from the floor.

65. Disconnect the fuel tank unit 4P connector.

66. Disconnect the fuel pump control module 10P connector (see page 11-349).

67. Connect between fuel tank unit 4P connector terminal No. 2 to body ground with a jumper wire.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

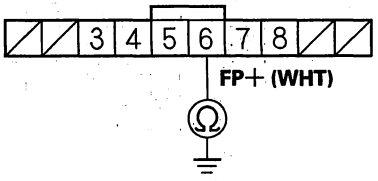
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DTC Troubleshooting (cont'd)

68. 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

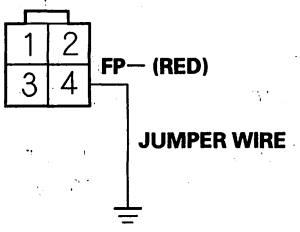
Is there continuity?

YES—Go to step 69.

NO—Repair open in the wire between the fuel pump control module (FP+ line) and the fuel tank unit, then go to step 73.

69. Connect between fuel tank unit 4P connector terminal No. 4 to body ground with a jumper wire.

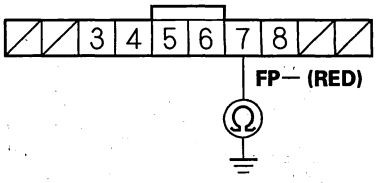
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

70. 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 71.

NO—Repair open in the wire between the fuel pump control module (FP— line) and the fuel tank unit, then go to step 73.

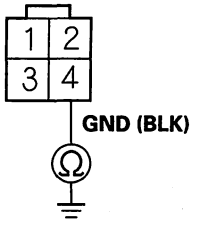
71. Reconnect the fuel pump control module 10P connector.

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72. Turn the ignition switch ON (II), and measure voltage between fuel tank unit 4P connector terminal No. 2 and body ground within 2 seconds.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the fuel tank unit (see page 11-343), then go to step 73.

NO—Substitute a known-good fuel pump control module (see page 11-349), then go to step 73 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-349), then go to step 73. If DTC P0627 is indicated, go to step 80.

73. Turn the ignition switch OFF.

74. Reconnect all connectors.

75. Turn the ignition switch ON (II).

76. Reset the PCM with the HDS.

77. Do the PCM idle learn procedure (see page 11-311).

78. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0627 indicated?

YES—Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2, the fuel tank unit, and the PCM, then go to step 1.

NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

79. Reconnect all connectors.

80. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

81. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0627 indicated?

YES—Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2, the fuel pump, and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

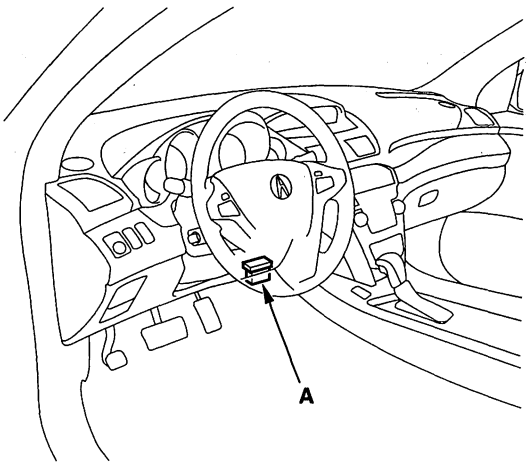
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Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by disabling the fuel pump and then disconnecting the fuel tube/quick connect fitting in the engine compartment.

With the HDS

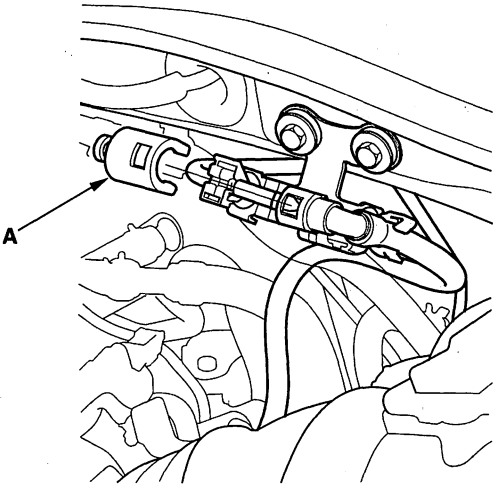
1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).
2. Turn the ignition switch OFF.
3. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



4. Turn the ignition switch ON (II).
5. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).
6. Turn the ignition switch OFF.
7. Remove the fuel fill cap to relieve the pressure in the fuel tank.
8. Turn the ignition switch ON (II).
9. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.
10. 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 11-4).

11. Turn the ignition switch OFF.
12. Disconnect the negative cable from the battery.
13. Remove the quick-connect fitting cover (A).

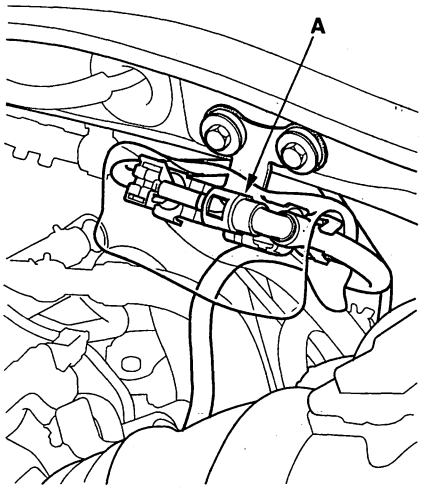


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BACK

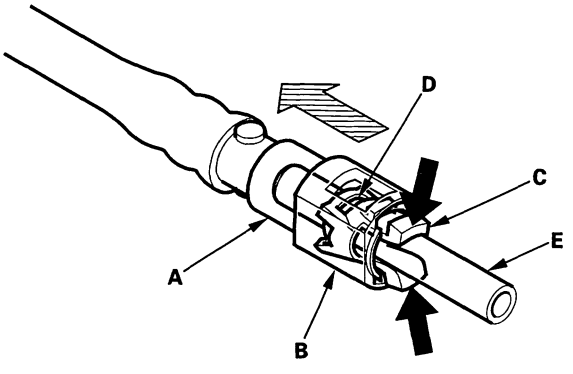
14. Check the fuel quick-connect fitting for dirt, and clean it if needed.

15. Place a rag or shop towel over the quick-connect fitting (A).



16. 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.



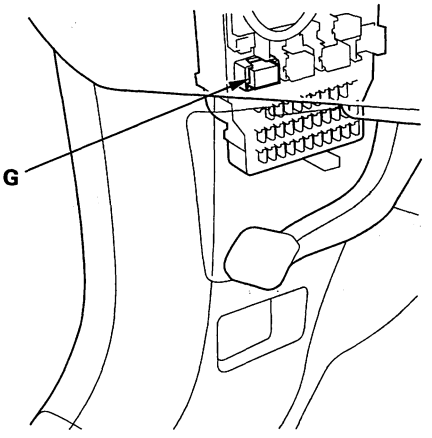
17. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-339).

18. Reconnect the negative cable to the battery, then do this:
    - Enter the anti-theft code for the audio system and the navigation system (if equipped).
    - Set the clock.

Without the HDS

1. Make sure you have the anti-theft code for the audio system and the navigation system (if equipped).

2. Remove PGM-FI main relay 2 (G) from the under-dash fuse/relay box.



3. Start the engine, and let it idle until it stalls.

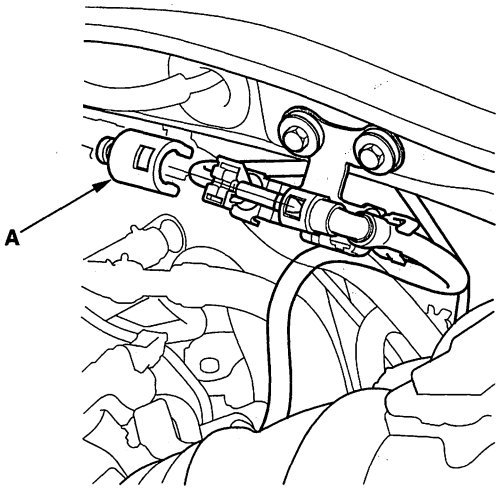
    NOTE: If any DTCs are stored, clear and ignore them.

(cont'd)

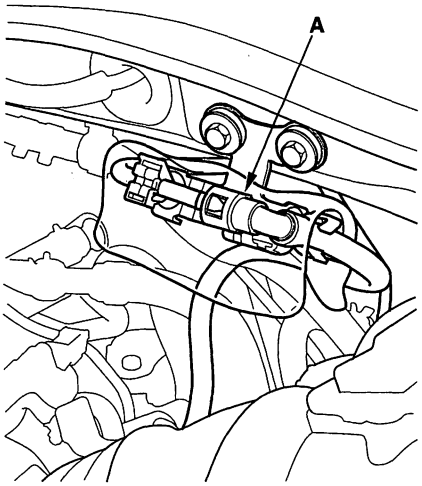
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Fuel Pressure Relieving (cont'd)

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).

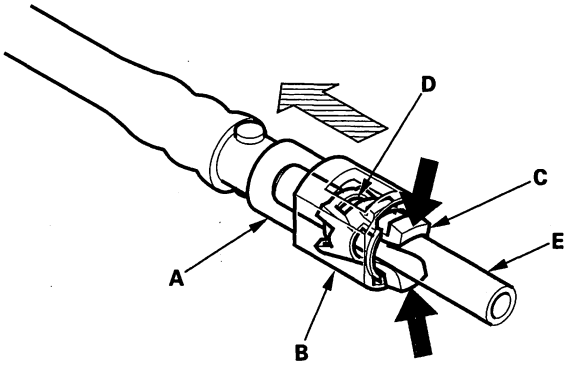


8. Check the fuel quick-connect fitting for dirt, and clean it if needed.
9. Place a rag or shop towel over the quick-connect fitting (A).



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 11-339).
12. Reconnect the negative cable to the battery, then do this:
    - Enter the anti-theft code for the audio system and the navigation system (if equipped).
    - Set the clock.

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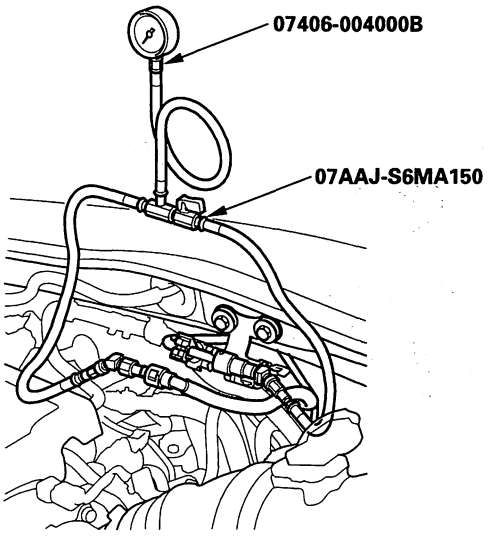
BACK

Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-330).

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 (see page 11-320).

5. Read the fuel pressure gauge. The pressure should be 390—440 kPa (4.0—4.5 kgf/cm^2, 57—64 psi).

   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-345) and the fuel filter (see page 11-345), then recheck the fuel pressure.

Fuel Tank Draining

1. Remove the fuel tank unit (see page 11-343).

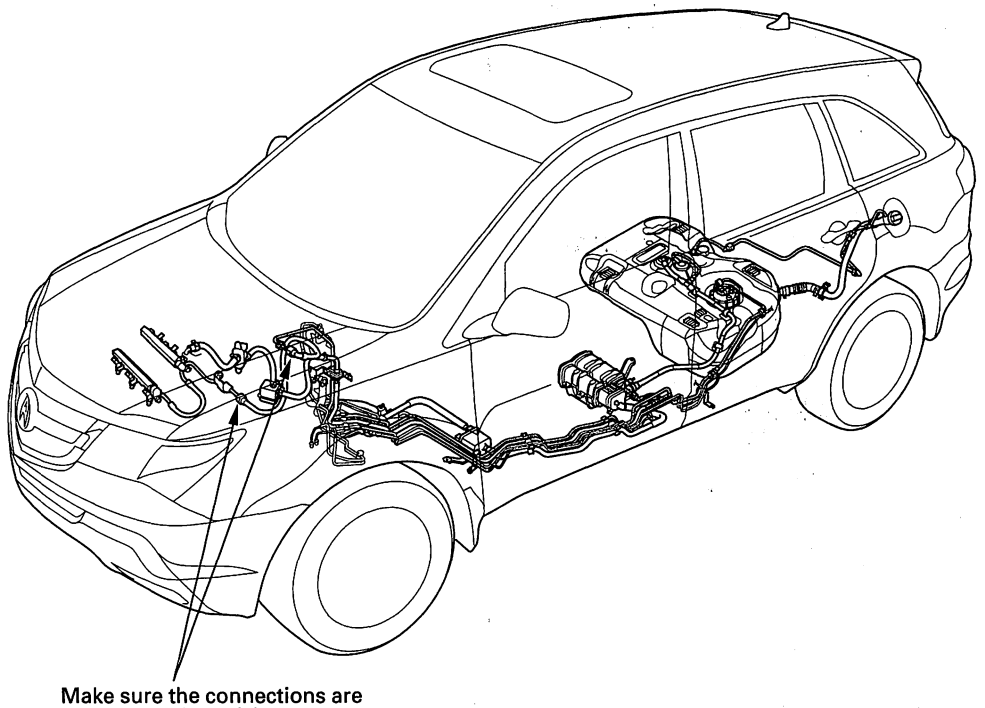
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.

3. Reinstall the fuel tank unit (see page 11-343).

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Fuel Line Inspection

Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.

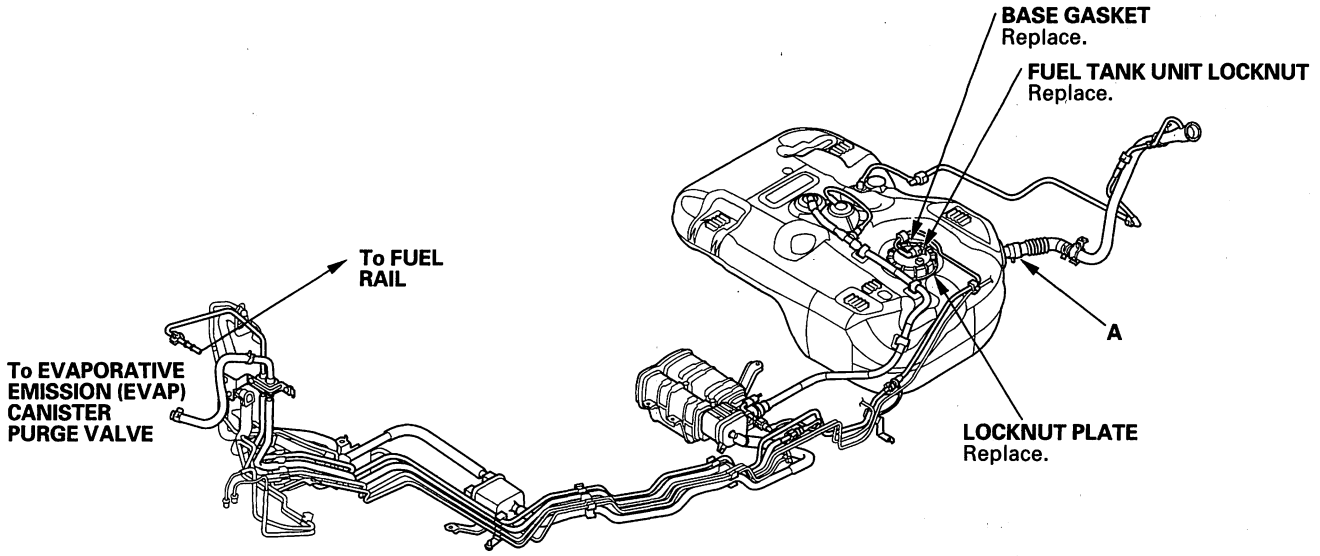


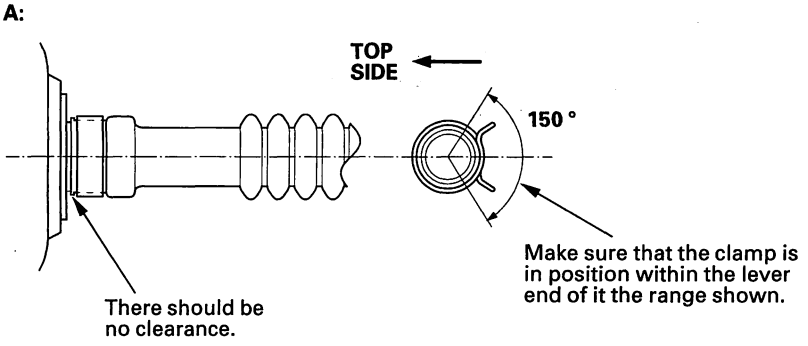
Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.

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Check all clamps, and retighten if necessary.



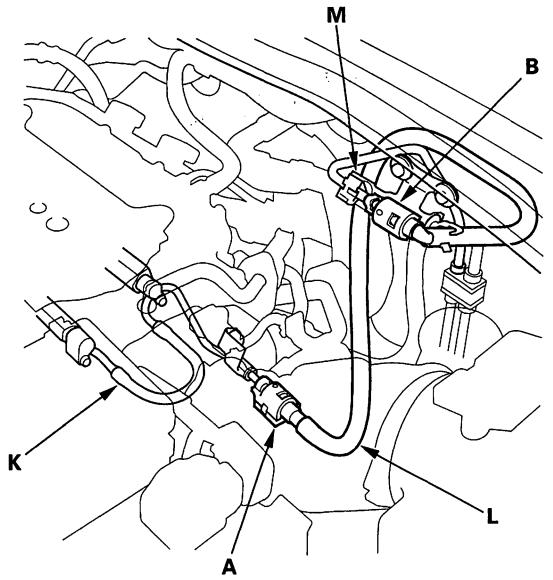


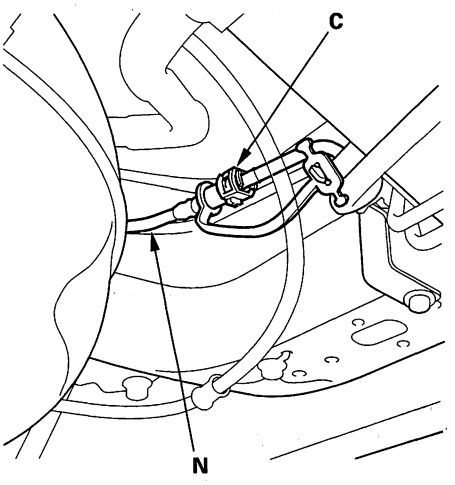
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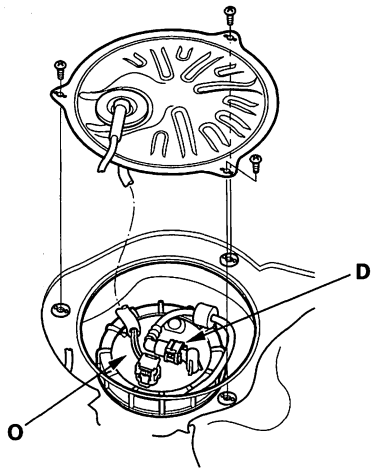
Fuel Line/Quick-Connect Fitting Precautions

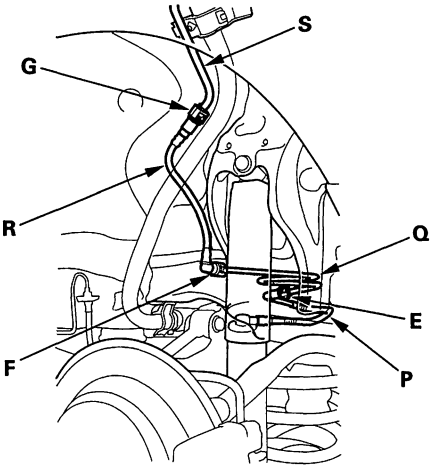
The fuel line/quick-connect fittings (A), (B), (C), (D), (E), (F), (G), (H), (I), (J) connect the fuel feed hose (K) to the fuel feed hose (L), the fuel feed hose to the fuel feed line (M), the fuel feed line to the fuel feed tube (N), the fuel feed tube to the fuel tank unit (O), the breather tube (P) to the breather pipe (Q), the breather pipe to the breather tube (R), the breather tube to the breather pipe (S), the EVAP canister (T) to the fuel vapor tube (U), the fuel vapor tube to the fuel vapor line (V), the fuel vent tube (W) and the vent shut float tube (X). When removing or installing the fuel feed hose, fuel tank unit, fuel tank or breather tube, 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.



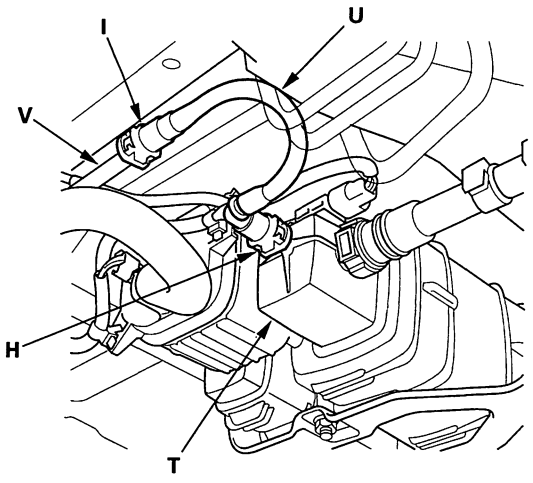


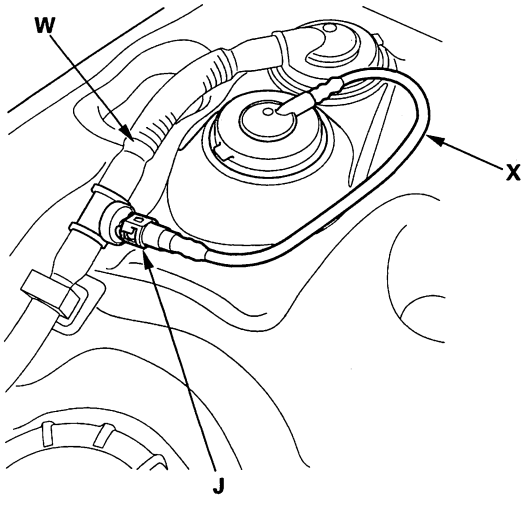




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A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- 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 pipe.
- replacing the EVAP canister.
- replacing the breather pipe.
- it has been removed from the line.
- it is damaged.

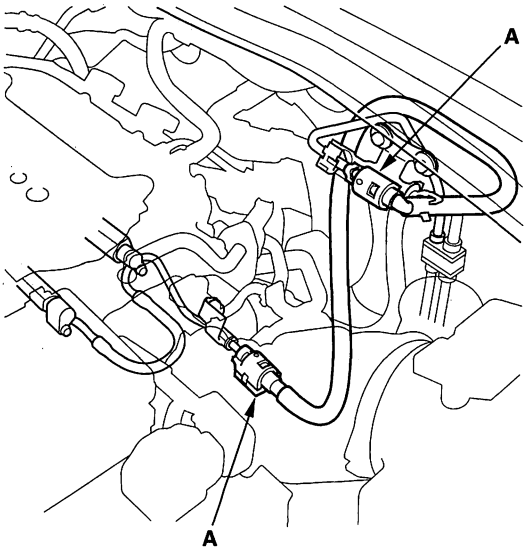
Place	Manufacturer	Retainer color	Line diameter
A	Tokai	Blue green	0.31 in. (8.0 mm)
B	Tokai	Blue green	0.31 in. (8.0 mm)
C	TI Automotive	Gray	0.31 in. (8.0 mm)
D	TI Automotive	Blue	0.37 in. (9.5 mm)
E	Tokai	Orange	0.37 in. (9.5 mm)
F	Tokai	Orange	0.37 in. (9.5 mm)
G	Tokai	Natural	0.47 in. (12 mm)
H	TI Automotive	Blue	0.37 in. (9.5 mm)
I	TI Automotive	Natural	0.47 in. (12 mm)
J	Tokai	White	0.31 in. (8.0 mm)

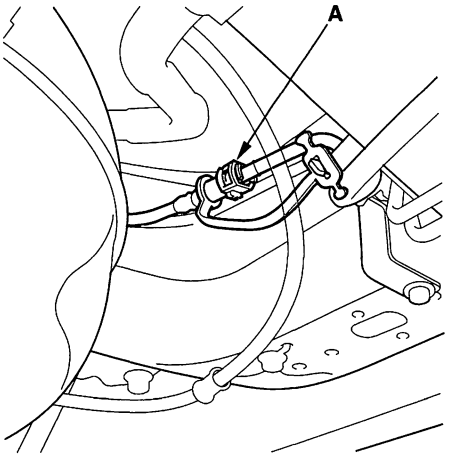
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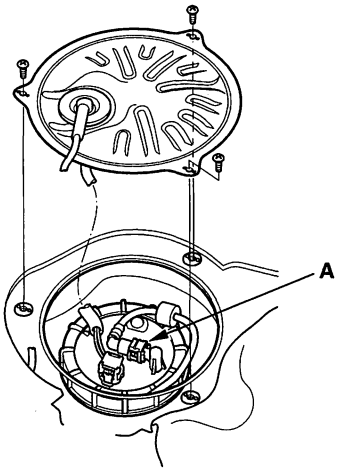
Fuel Line/Quick-Connect Fitting Removal

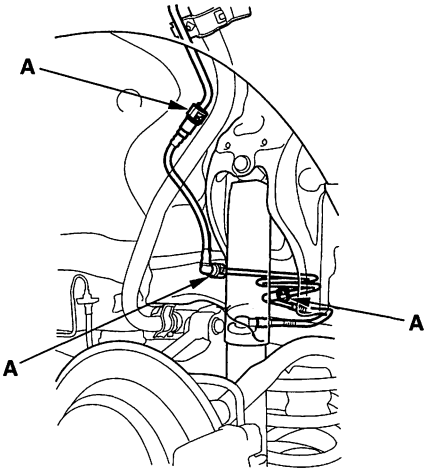
NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see page 11-336).

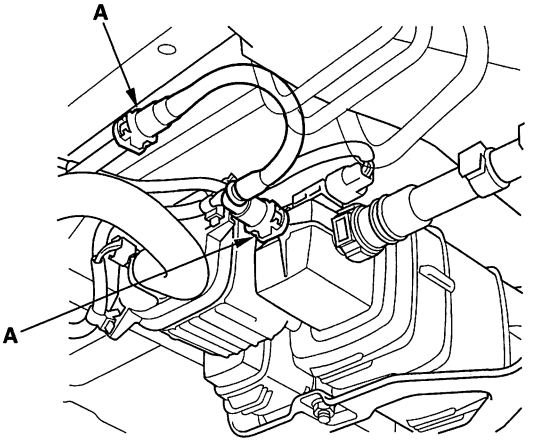
1. Relieve the fuel pressure (see page 11-330).
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.





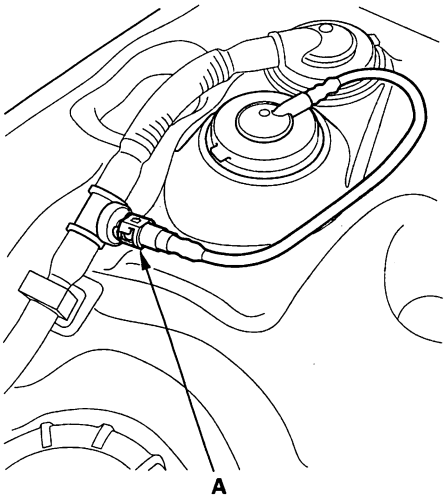






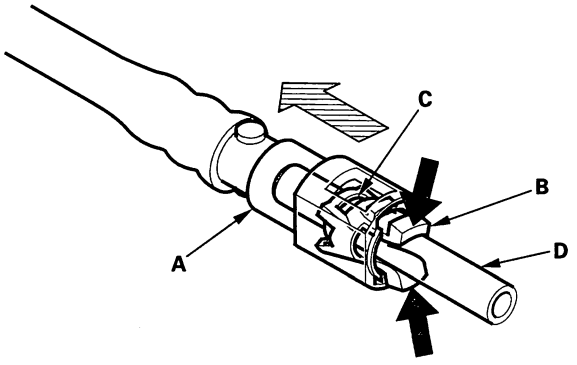
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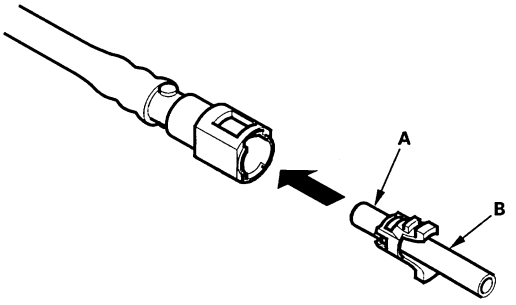
3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

   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.



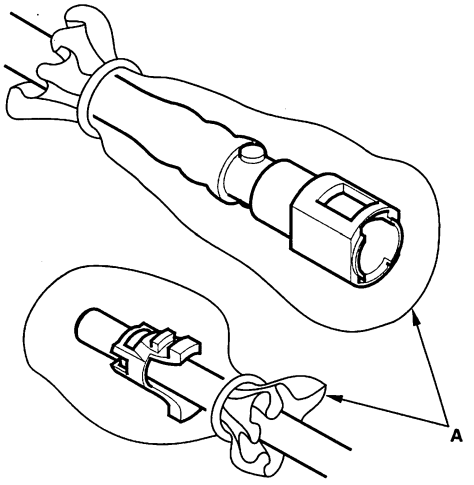
4. Check the contact area (A) of the line (B) for dirt or damage.

   - If it is dirty, clean it.
   - If it is rusty or damaged, replace the fuel pump, fuel filter, or fuel feed line.



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 pipe.
   - replacing the EVAP canister.
   - it has been removed from the line.
   - it is damaged.

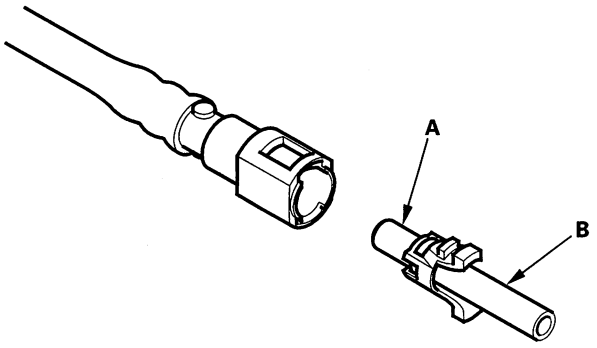


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Fuel Line/Quick-Connect Fitting Installation

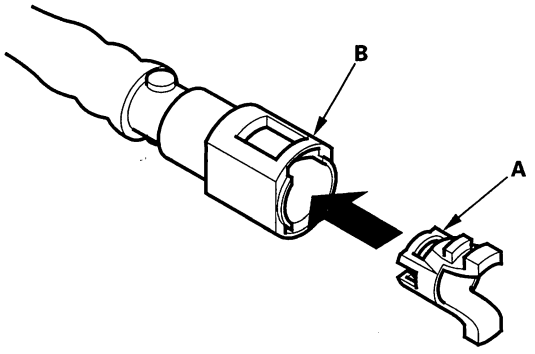
NOTE: Before you work on the fuel lines and fittings, read the "Fuel Line/Quick-Connect Fitting Precautions" (see page 11-336).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

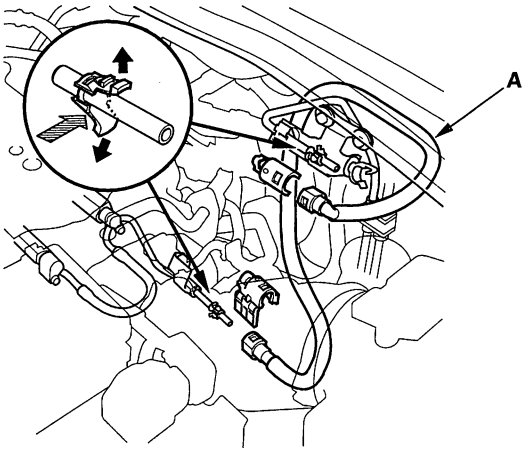


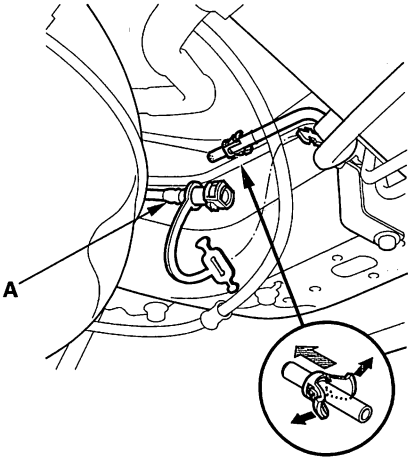
2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

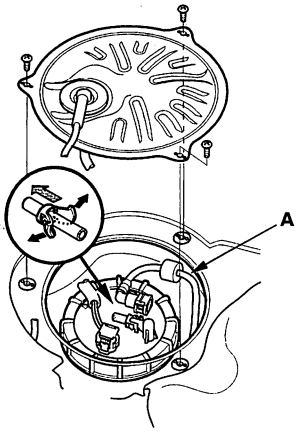
- replacing the fuel rail.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge pipe.
- replacing the EVAP canister.
- removing the retainer from the line.
- Use the same manufacturer retainer and the same size retainer when the replacing the retainer (see page 11-336).



3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.

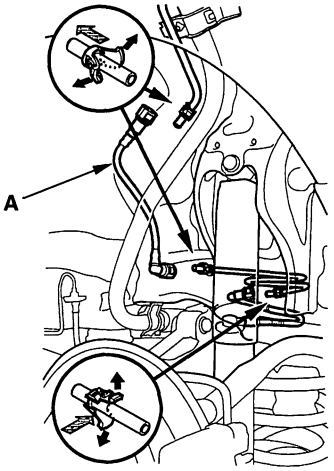


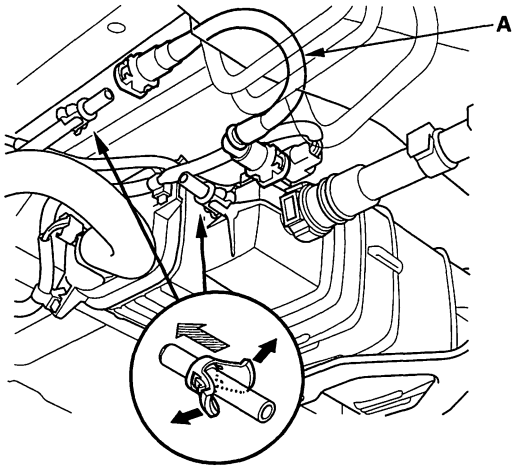


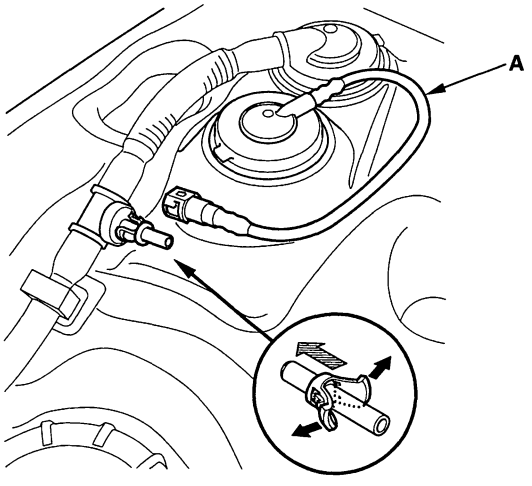


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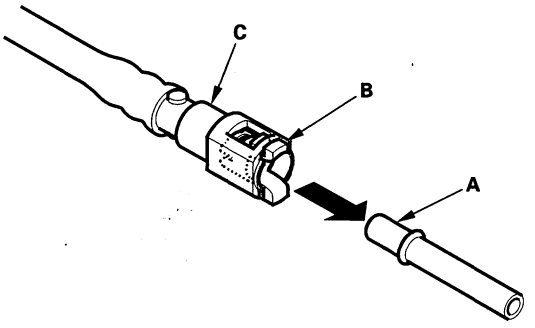




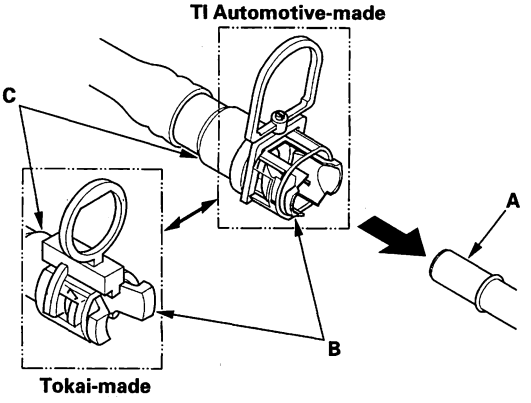
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

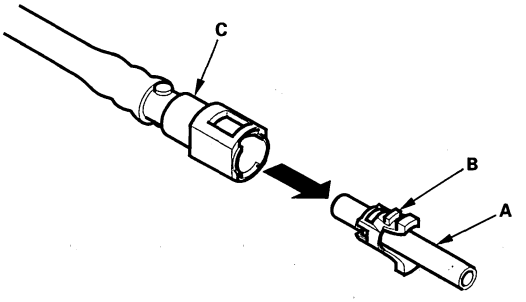
Connection with new retainer



Connection to new fuel line



Reconnection to existing retainer



(cont'd)

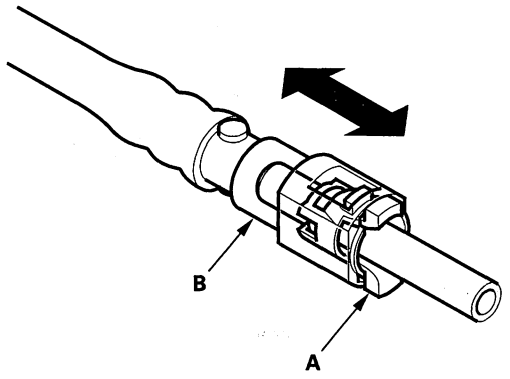
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Fuel Line/Quick-Connect Fitting Installation (cont'd)

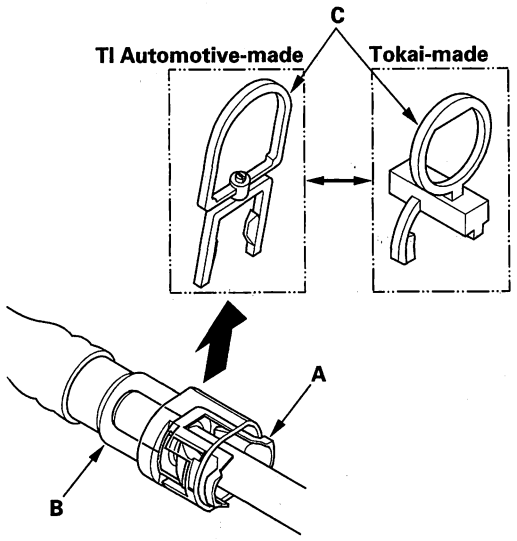
5. When you are reconnecting the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you are replacing the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm the connection is secure.

   NOTE: Before you remove the ring pull, make sure the fuel line connection is secure. If the connection is not secure, the ring pull could break when you try to remove it.

Reconnection to existing retainer



Connection to new fuel line



6. Reconnect the negative cable to the battery, and turn the ignition switch ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat two or three times, and check that there is no leakage in the fuel supply system.

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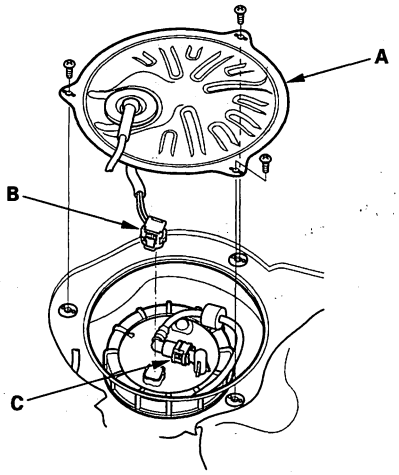
BACK

Fuel Tank Unit Removal/Installation

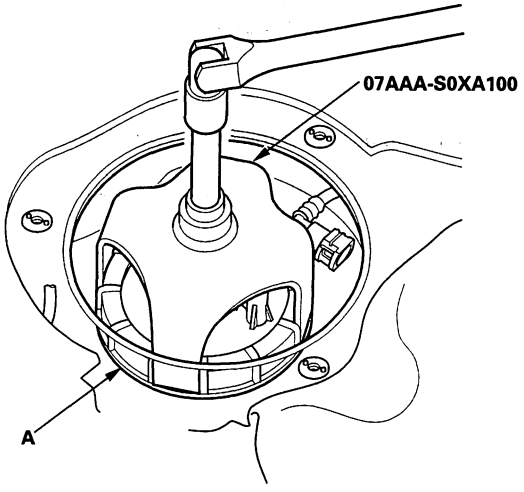
Special Tools Required
Fuel sender wrench 07AAA-S0XA100

Removal

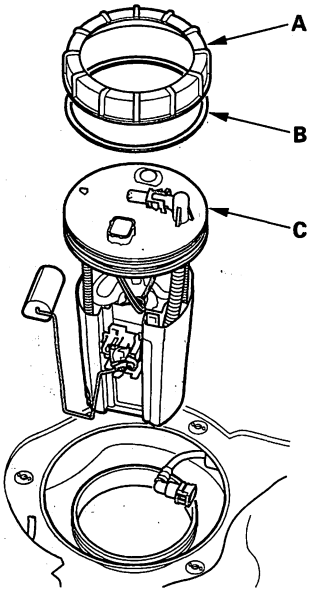
1. Relieve the fuel pressure (see page 11-330).
2. Remove the fuel fill cap.
3. Remove the second row seat (see page 20-156).
4. Remove the access panel (A) from the floor.



5. Disconnect the fuel tank unit 4P connector (B).
6. Disconnect the quick-connect fittings (C) from the fuel tank unit.
7. Using the fuel sender wrench, loosen the locknut (A).



8. Remove the locknut (A), locknut plate (B), and fuel tank unit (C).



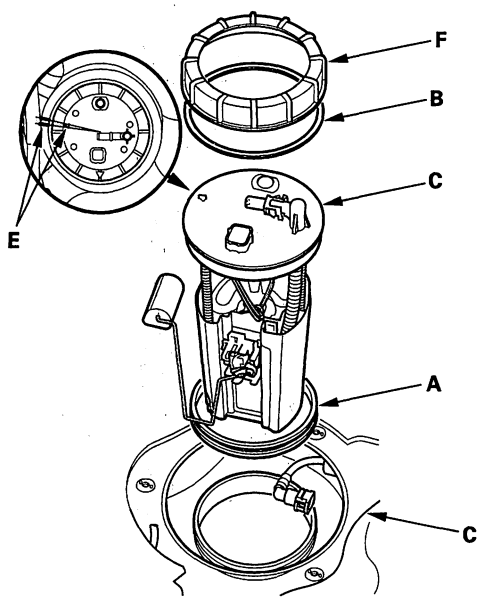
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Fuel Tank Unit Removal/Installation (cont'd)

Installation

1. Install a new base gasket (A) and locknut plate (B) on the fuel tank (C).

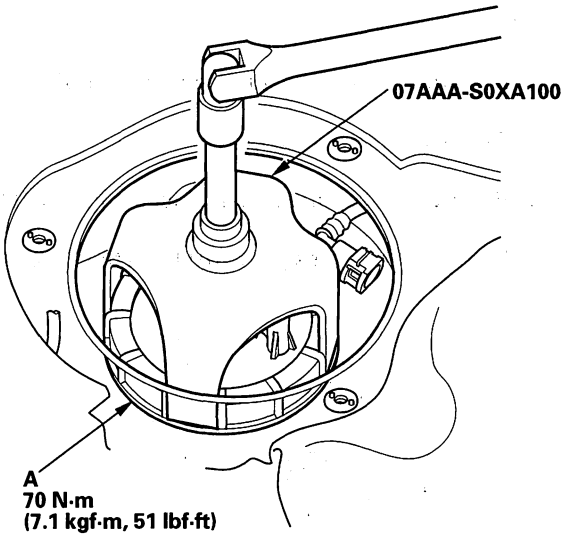


2. Insert the fuel tank unit (D) into the fuel tank. Be careful not to bend the fuel gauge sending unit.

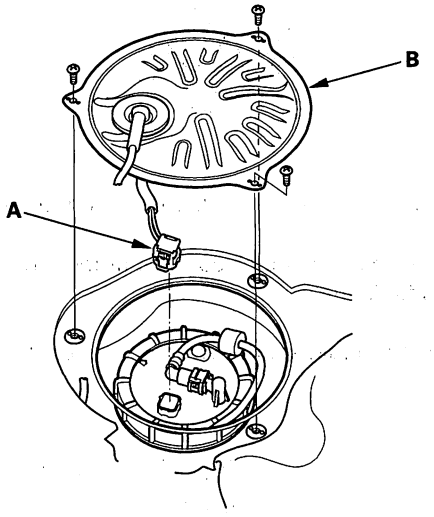
3. Align the marks (E) on the tank and the fuel tank unit, then tighten a new locknut (F) by hand.

   NOTE:
   - After tightening, make sure the marks are aligned. Check the circumference of the base gasket visually or by hand and be sure that it is not pinched.
   - Do not coat the base gasket with the engine oil.
   - After installation, check the base gasket visually or by hand to be sure it is not pinched.

4. Using the fuel sender wrench, tighten the fuel tank unit locknut (A).



5. Connect the fuel tank unit 4P connector (A).



6. Install the access panel (B) to the floor.

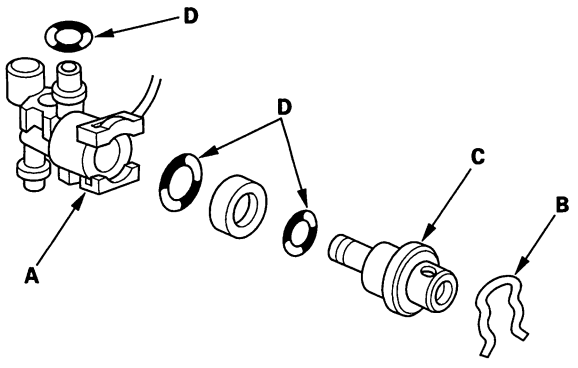
7. Install the second row seat (see page 20-156).

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BACK

Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-343).
2. Remove the bracket (A).



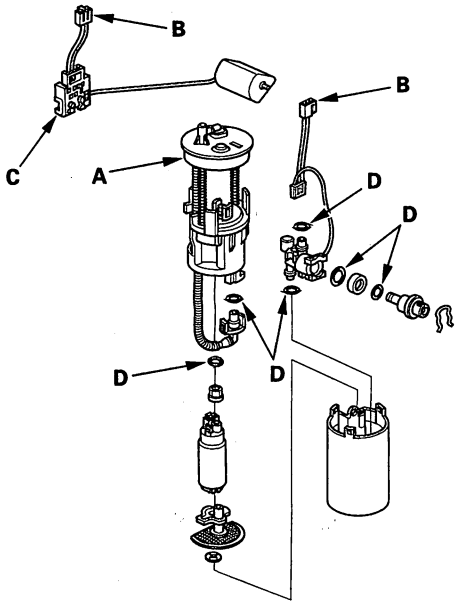
3. Remove the clip (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D).

   NOTE: Coat the O-rings with clean engine oil. Do not use any other type of oil or fluid.
   Do not pinch the O-rings during installation.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-333), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-343).
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.

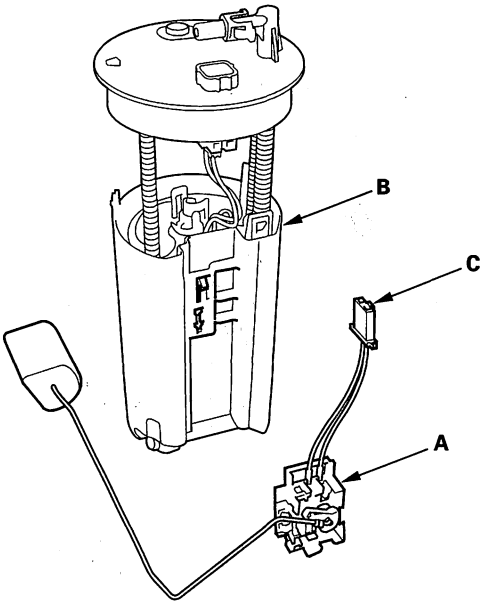
4. Install the fuel filter set in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-344).

   NOTE: Coat the O-rings with clean engine oil.

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Fuel Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit (see page 11-343).
2. Remove the fuel level sensor (fuel sending unit) (A) from the fuel tank unit (B).



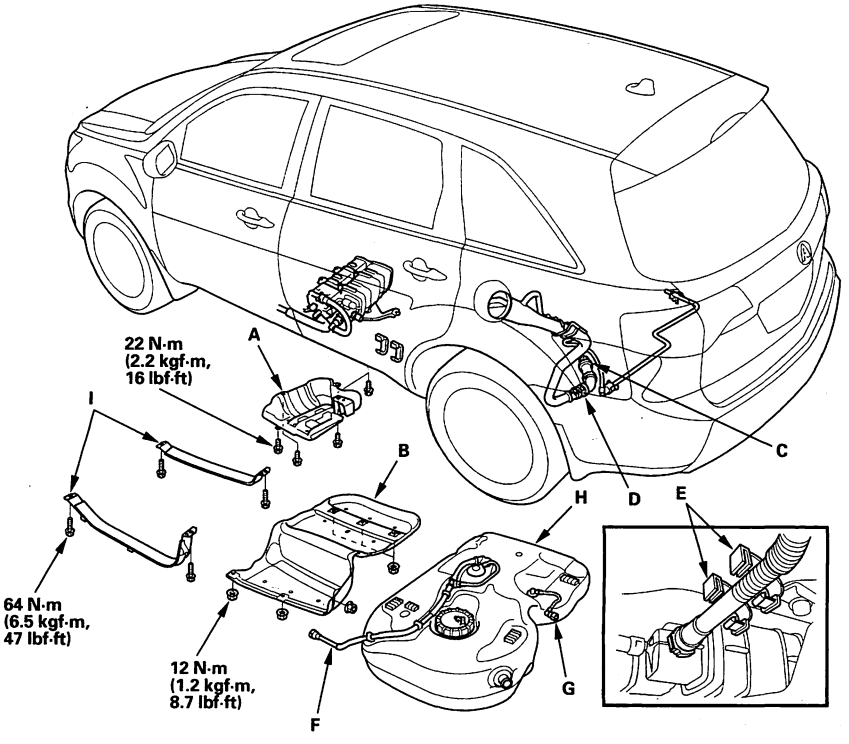
3. Check these items before installing the fuel tank.
   - When connecting the wire harness, make sure the connection is secure and the connectors (C) is firmly locked into place.
   - When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.
4. Install the parts in the reverse order of removal. When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-344).

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BACK

Fuel Tank Replacement

1. Drain the fuel tank (see page 11-333).
2. Jack up the vehicle, and support it with jackstands.
3. Remove the exhaust pipe (see page 9-9).
4. Remove the propeller shaft (see page 16-38), and support it with jackstands.
5. Remove the fuel tank guard (A) and fuel tank protector (B).

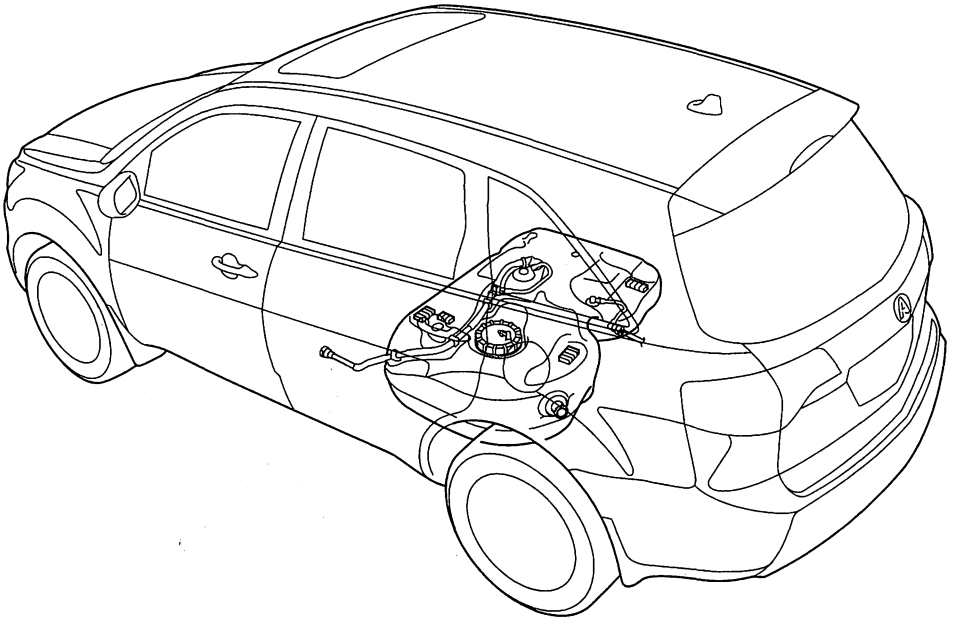


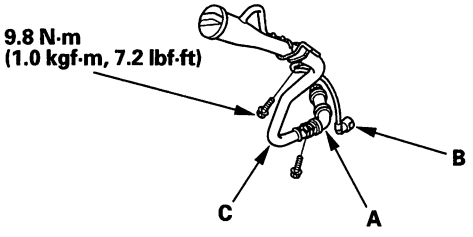
6. Loosen the clamp (C), and disconnect the tube (D).
7. Open the clamp (E).
8. Disconnect the hoses (F). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
9. Disconnect the hose (G).
10. Place a jack or other support under the tank (H).
11. Remove the strap bolts and the straps (I).
12. Remove the fuel tank.
13. Install the parts in the reverse order of removal.

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Fuel Fill Pipe Removal/Installation

1. Relieve the fuel pressure (see page 11-330).
2. Drain the fuel tank (see page 11-333).
3. Remove the fuel fill cap.
4. Remove the rear fender cover (see page 20-221).
5. Disconnect the fuel fill tube (A) and the quick-connector fittings (B).





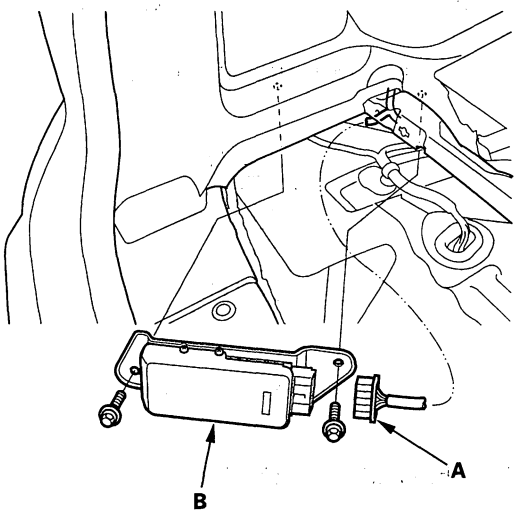
6. Remove the fuel fill pipe (C).
7. Install the parts in the reverse order of removal.

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BACK

Fuel Pump Control Module Replacement

1. Remove the cargo floor lid (see step 1 on page 20-90).
2. On models with active suspension, remove the active damper control unit (see page 18-118).
3. Disconnect the fuel pump control module connector (A).



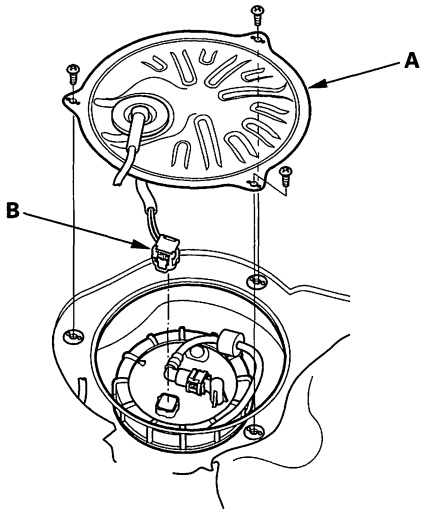
4. Remove the fuel pump control module (B).
5. Install the parts in the reverse order of removal.

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Fuel Gauge Sending Unit Test

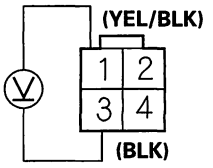
NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-318).

1. Check the No. 21 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs (see page 22-3).
   - If no problem is found, go to step 3.
   - If DTC B1175 (see page 22-328) or B1176 (see page 22-329) is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch OFF.
4. Remove the second row seat (see page 20-156).
5. Remove the access panel (A) from the floor.



6. Disconnect the fuel tank unit 4P connector (B).
7. Measure voltage between fuel tank unit 4P connector terminals No. 1 and No. 3 with the ignition switch ON (II). There should be battery voltage.
   - If the voltage is OK, go to step 8.
   - If the voltage is not as specified, check for:
     – a short in the YEL/BLK wire to ground.
     – an open in the YEL/BLK or BLK wire.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

8. Turn the ignition switch OFF.
9. Remove the fuel tank unit from the fuel tank (see page 11-343).

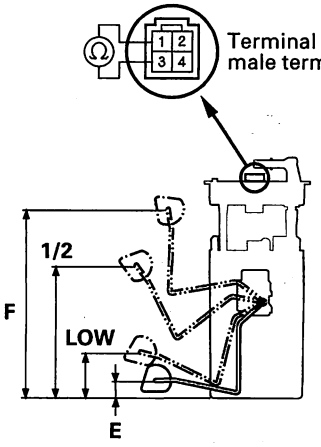
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BACK

Low Fuel Indicator Test

10. Measure resistance between fuel tank unit 4P connector terminals No. 1 and No. 3 with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), 1/2 (HALF FULL), and F (FULL) positions.
If you do not get the following readings, replace the fuel gauge sending unit (see page 11-346).

Float Position	F	1/2	LOW	E
	8.4 in. (214.2 mm)	5.9 in. (149.4 mm)	2.0 in. (50.8 mm)	0.8 in. (19.1 mm)
Resistance (Ω)	19 to 21	203.3 to 213.3	516.4 to 629	772 to 788



11. Reconnect the fuel tank unit 4P connector.

12. Remove the No. 7 BACK UP (10 A) fuse from the under-dash fuse/relay box for at least 10 seconds, then reinstall it.

13. Turn the ignition switch ON (II).

14. Check that the pointer of the fuel gauge indicates "F" with the float at F.

- If the pointer of the fuel gauge does not indicate "F", replace the gauge assembly.
- If the gauge is OK, the test is complete.

NOTE:
- The pointer of the fuel gauge returns to the bottom of the gauge dial when the ignition switch is OFF, regardless of the fuel level.
- Remove the No. 7 BACK UP (10 A) fuse from the under-dash 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.

1. Do the gauge self-diagnostic test (see page 22-315).

- If the low fuel indicator flashes, go to step 2.
- If the low fuel indicator does not flash, replace the gauge control module (see page 22-337).

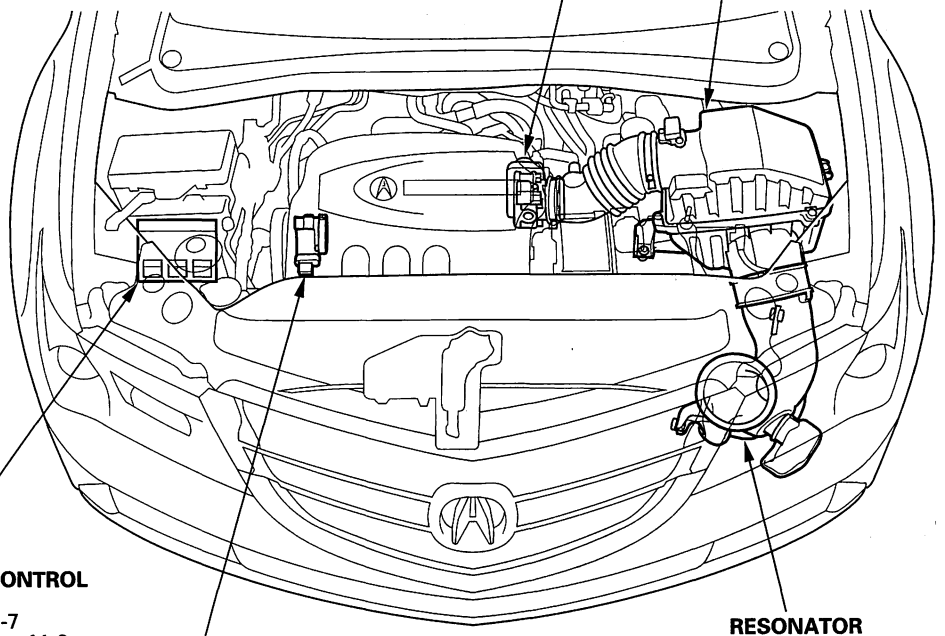
2. Check for body electrical system DTCs.

- If any DTCs are indicated, do the indicated DTC's troubleshooting.
- If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-350).

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Component Location Index



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BACK

DTC P1077: IMT Valve Stuck in High RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and then let it idle without load (in Park or neutral) until the radiator fan comes on.
4. Start the engine, and hold the engine speed above 3,800 rpm.
5. Check the IMT VALVE CMD in the DATA LIST with the HDS.

   Is OPEN indicated?

   YES—Go to step 6.

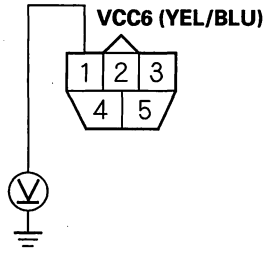
   NO—Go to step 35.
6. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM.■
7. Let the engine idle, then turn the ignition switch OFF.
8. Disconnect the IMT actuator 5P connector.
9. Turn the ignition switch ON (II).
10. Measure voltage between IMT actuator 5P connector terminal No. 1 and body ground.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

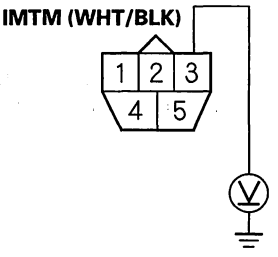
Is there about 5 V?

YES—Go to step 11.

NO—Repair open in the wire between the PCM (C11) and the IMT actuator, then go to step 26.

11. 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 12.

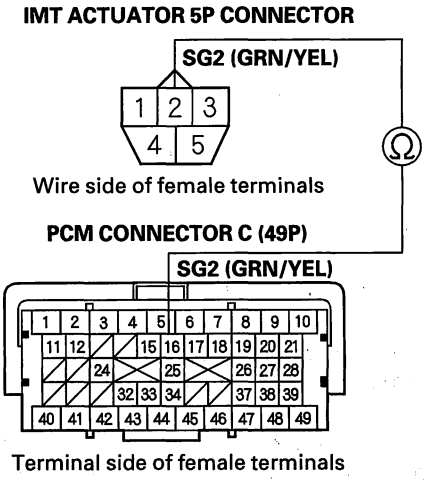
NO—Go to step 16.

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (49P).
15. Check for continuity between PCM connector terminal C16 and IMT actuator 5P connector terminal No. 2.

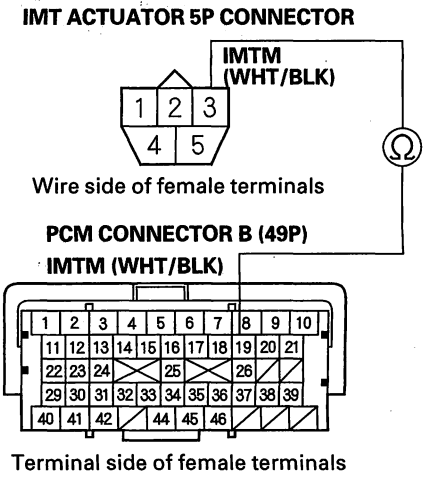


Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the PCM (C16) and the IMT actuator, then go to step 26.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector B (49P).
19. Check for continuity between PCM connector terminal B19 and IMT actuator 5P connector terminal No. 3.



Is there continuity?

YES—Go to step 34.

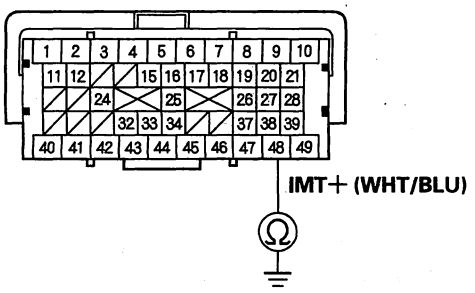
NO—Repair open in the wire between the PCM (B19) and the IMT actuator, then go to step 26.

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BACK

20. Check for continuity between PCM connector terminal C48 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

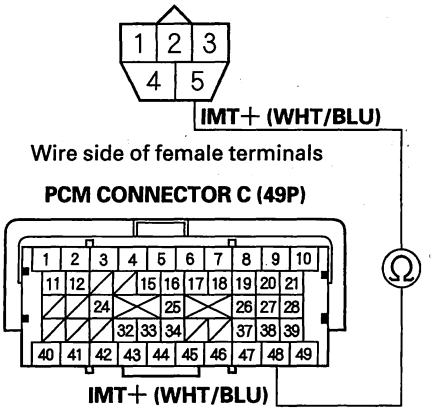
Is there continuity?

YES—Repair short in the wire between the PCM (C48) and the IMT actuator, then go to step 26.

NO—Go to step 21.

21. Check for continuity between PCM connector terminal C48 and IMT actuator 5P connector terminal No. 5.

IMT ACTUATOR 5P CONNECTOR



Wire side of female terminals

Terminal side of female terminals

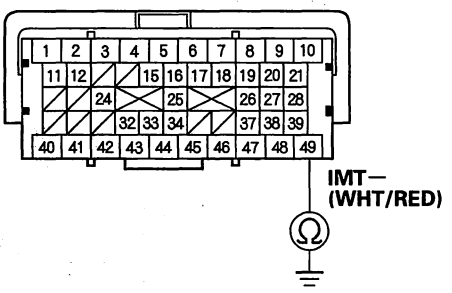
Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the PCM (C48) and the IMT actuator, then go to step 26.

22. Check for continuity between PCM connector terminal C49 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C49) and the IMT actuator, then go to step 26.

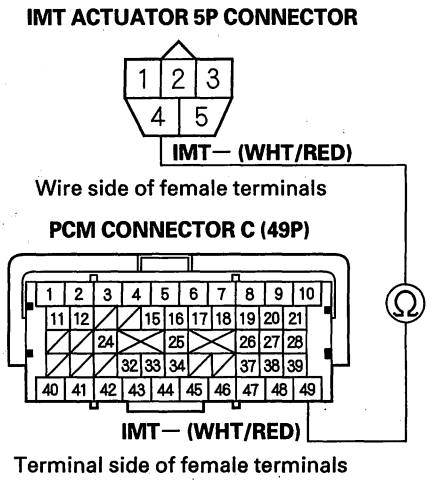
NO—Go to step 23.

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DTC Troubleshooting (cont'd)

23. Check for continuity between PCM connector terminal C49 and IMT actuator 5P connector terminal No. 4.



Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the PCM (C49) and the IMT actuator, then go to step 26.

24. Remove the IMT actuator (see page 11-365).

25. Move the IMT valve by hand.

Does it move smoothly?

YES—Substitute a known-good IMT actuator (see page 11-365), then go to step 26 and recheck. If DTC P1078 is not indicated, replace the IMT actuator (see page 11-365), then go to step 26. If DTC P1078 is indicated, go to step 35.

NO—Remove the engine 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 26.

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 11-311).

30. Start the engine, and then let it idle without load (in Park or neutral) until the radiator fan comes on.

31. Start the engine, and hold the engine speed at 3,800 rpm for 10 seconds, then let it idle.

32. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P1077 indicated?

YES—Check for poor connections or loose terminals at the IMT actuator and the PCM, then go to step 1.

NO—Go to step 33.

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BACK

33. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.■

    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 31.

34. Reconnect all connectors.

35. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

36. Start the engine, and then let it idle without load (in Park or neutral) until the radiator fan comes on.

37. Start the engine, and hold the engine speed at 3,800 rpm for 10 seconds, then let it idle.

38. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1077 indicated?

    YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 37. If the PCM was substituted, go to step 1.

    NO—Go to step 39.

39. Monitor the OBD STATUS for DTC P1077 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 38, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 37. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 37.

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DTC Troubleshooting (cont'd)

DTC P1078: IMT Valve Stuck in Low RPM Position

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle.
4. Check the IMT VALVE CMD in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES—Go to step 5.

   NO—Go to step 29.
5. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is OPEN indicated?

   YES—Go to step 6.

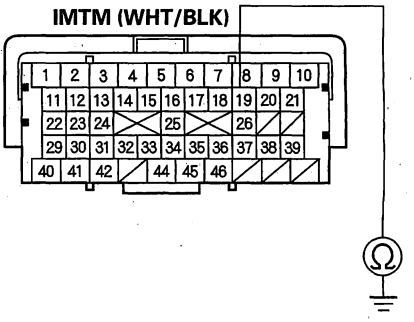
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the IMT actuator and the PCM. ■
6. Turn the ignition switch OFF.
7. Disconnect the IMT actuator 5P connector.
8. Turn the ignition switch ON (II).
9. Check the IMT VALVE SW in the DATA LIST with the HDS.

   Is CLOSE indicated?

   YES—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 B (49P).
13. Check for continuity between PCM connector terminal B19 and body ground.

PCM CONNECTOR B (49P)



Terminal side of female terminals

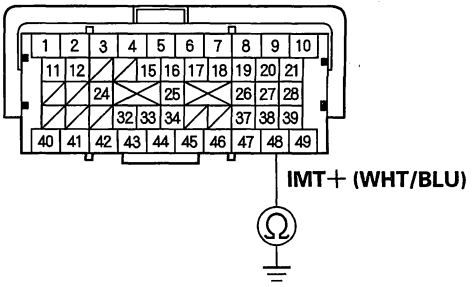
Is there continuity?

YES—Repair short in the wire between the PCM (B19) and the IMT actuator, then go to step 23.

NO—Go to step 30.

14. Turn the ignition switch OFF.
15. Jump the SCS line with the HDS.
16. Disconnect PCM connector C (49P).
17. Check for continuity between PCM connector terminal C48 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

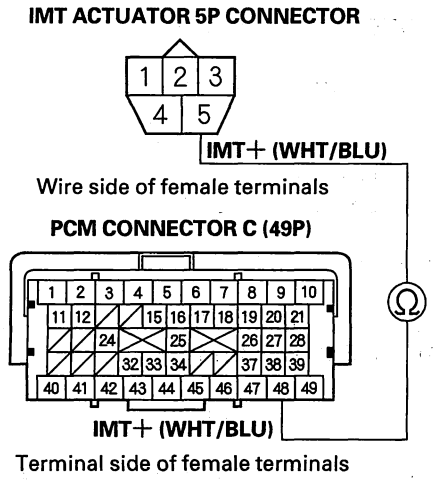
YES—Repair short in the wire between the PCM (C48) and the IMT actuator, then go to step 23.

NO—Go to step 18.

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BACK

18. Check for continuity between PCM connector terminal C48 and IMT actuator 5P connector terminal No. 5.

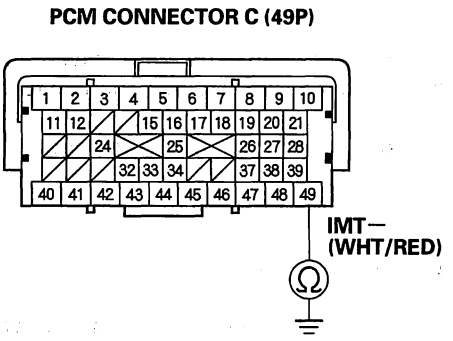


Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the PCM (C48) and the IMT actuator, then go to step 23.

19. Check for continuity between PCM connector terminal C49 and body ground.

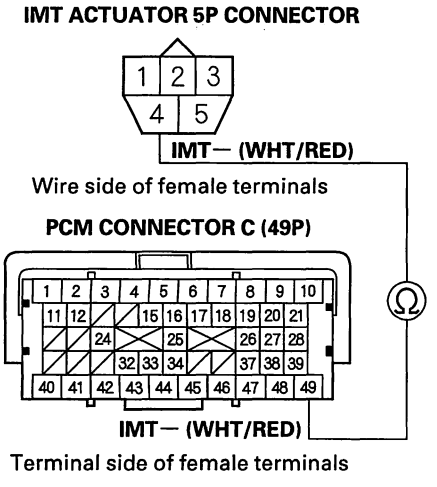


Is there continuity?

YES—Repair short in the wire between the PCM (C49) and the IMT actuator, then go to step 23.

NO—Go to step 20.

20. Check for continuity between PCM connector terminal C49 and IMT actuator 5P connector terminal No. 4.



(cont'd)

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DTC Troubleshooting (cont'd)

Is there continuity?

YES—Go to step 21.

NO—Repair open in the wire between the PCM (C49) and the IMT actuator, then go to step 23.

21. Remove the IMT actuator (see page 11-365).
22. Move the IMT valve by hand.

    Does it move smoothly?

    YES—Substitute a known-good IMT actuator (see page 11-365), then go to step 23 and recheck. If DTC P1077 is not indicated, replace the IMT actuator (see page 11-365), then go to step 23. If DTC P1077 is indicated, go to step 31.

    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 11-311).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1077 indicated?

    YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 28.
28. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
29. Turn the ignition switch OFF.
30. Reconnect all connectors.
31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

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32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1078 indicated?

    YES—Check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P1078 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the IMT actuator and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

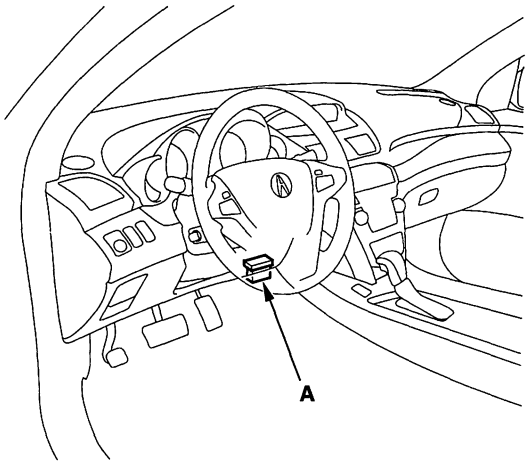
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Throttle Body Test

Carbon Accumulation Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

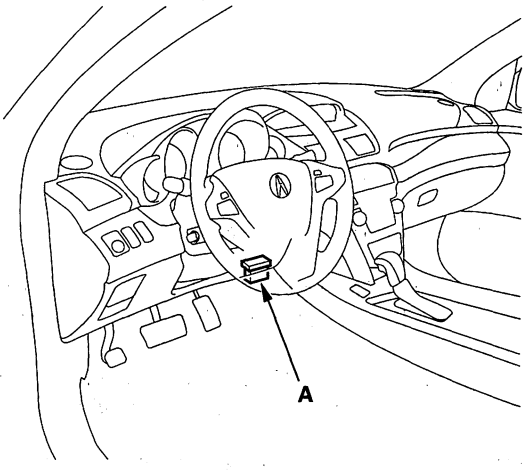


2. Turn the ignition switch ON (II).
3. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 4.3 deg. If it is not, clean the throttle body (see page 11-363).

Throttle Position Learning Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble codes (DTCs).

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. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP LEARNING CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-363).

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BACK

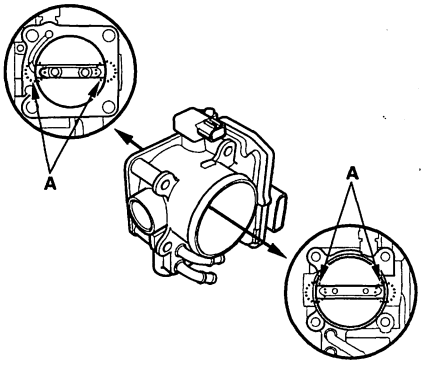
Throttle Body Cleaning

⚠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 fingers if the throttle valve is activated.

1. Check for damage to the air cleaner. If the air cleaner is damaged, replace it (see page 11-363).
2. Remove the throttle body (see page 11-366).
3. Clean off the carbon from the throttle valve and inside the throttle body with a paper towel soaked in throttle plate and induction cleaner.

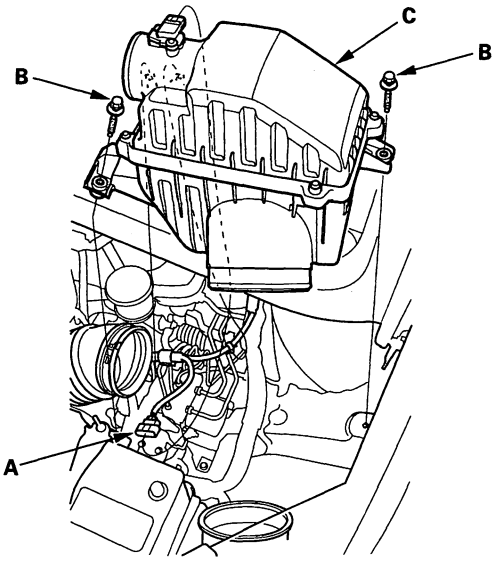
   NOTE:
   - Remove the throttle body to clean it.
   - Be careful not to pinch your fingers.
   - To avoid removing the molybdenum coating, do not clean the bearing area of the throttle shaft (A).
   - Do not spray throttle plate and induction cleaner directly on the throttle body.
   - Use Acura genuine throttle plate and induction cleaner.



4. Install the throttle body (see page 11-366).
5. Reset the PCM with the HDS (see page 11-4).
6. Turn the ignition switch ON (II), and wait for 2 seconds.
7. Do the PCM idle learn procedure (see page 11-311).

Air Cleaner Removal/Installation

1. Disconnect the MAF sensor/IAT sensor 5P connector (A).

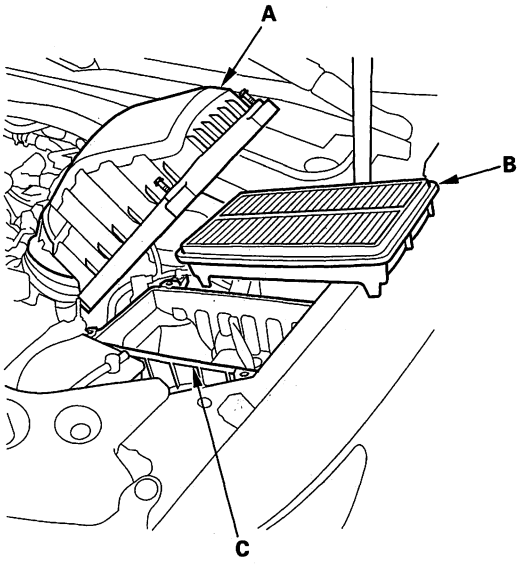


2. Remove the bolts (B).
3. Remove the air cleaner (C).
4. Install the parts in the reverse order of removal.

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Air Cleaner Element Inspection/Replacement

1. Open the air cleaner housing cover (A).



2. Remove the air cleaner element (B) from the air cleaner housing (C).

3. Check the air cleaner element for damage or clogging. If there is damage or clogging, replace the air cleaner element.

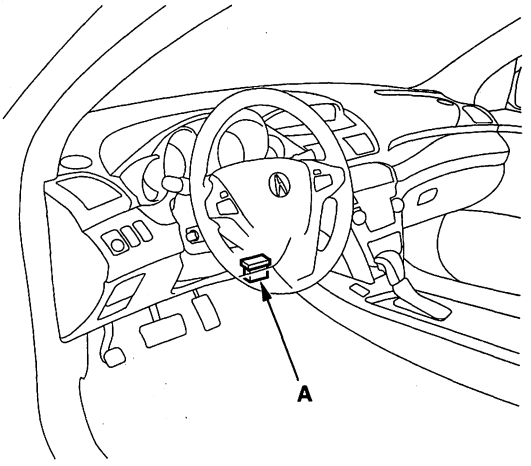
   NOTE: Do not use compressed air to clean the air cleaner element.

4. Clean and remove any debris from inside the air cleaner housing.

5. Install the parts in the reverse order of removal.

6. If the maintenance minder required to the air cleaner element, reset the maintenance minder (see page 3-4) and this procedure is complete. If the maintenance minder did not require to replace the air cleaner element, go to step 8.

7. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



8. Turn the ignition switch ON (II).

9. Make sure the HDS communicates with the PCM and other vehicle systems. If it does not, go to the DLC circuit troubleshooting (see page 11-223).

10. Select BODY ELECTRICAL with the HDS.

11. Select ADJUSTMENT in the GAUGES MENU with the HDS.

12. Select RESET in the MAINTENANCE MINDER with the HDS.

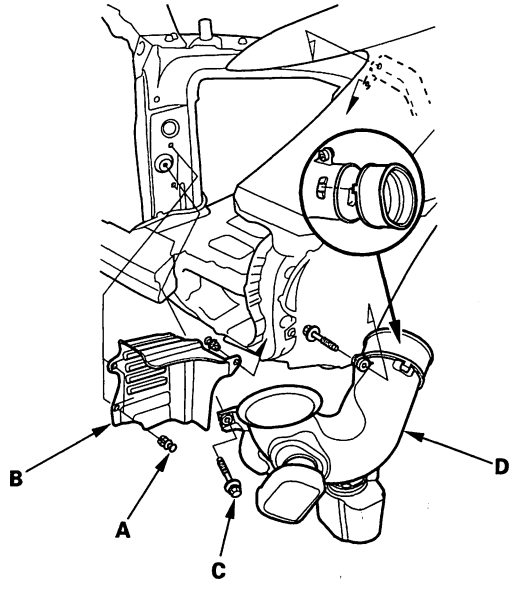
13. Select MAINTENANCE SUB ITEM 2 RESET with the HDS.

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Resonator Removal/Installation

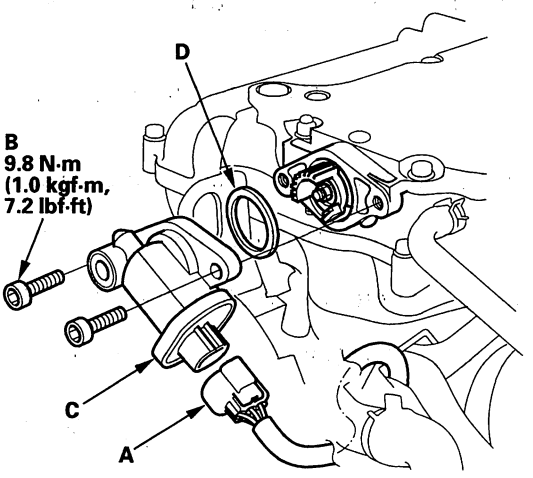
1. Make sure you have anti-theft codes for the audio system and the navigation system (if equipped).
2. Remove the air cleaner (see page 11-363).
3. Remove the battery.
4. Remove the front bumper (see page 20-188).
5. Remove the left side headlight (see page 22-205).
6. Remove the clips (A) and cover (B).



7. Remove the bolts (C), and resonator (D).
8. Install the parts in the reverse order of removal.
9. Reconnect the negative cable to the battery, then do this:
   - Enter the anti-theft codes for the audio system and the navigation system (if equipped).
   - Set the clock.
10. Adjust the headlight to local requirements (see page 22-204).
11. Do the steering column position memorization (see page 17-28).

IMT Actuator Replacement

1. Remove the engine cover (see step 1 on page 9-3).
2. Disconnect the IMT actuator 5P connector (A).



3. Remove the bolts (B) and the IMT actuator (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

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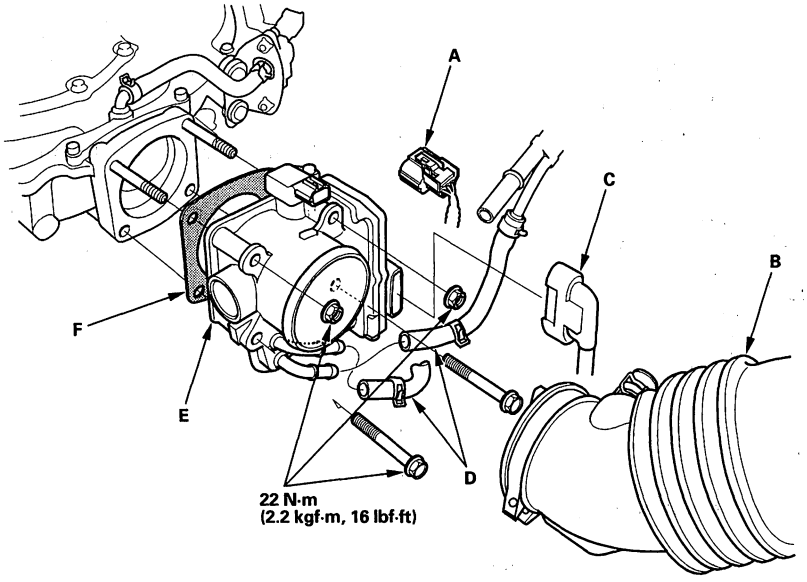
Throttle Body Removal/Installation

⚠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 fingers 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, 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).



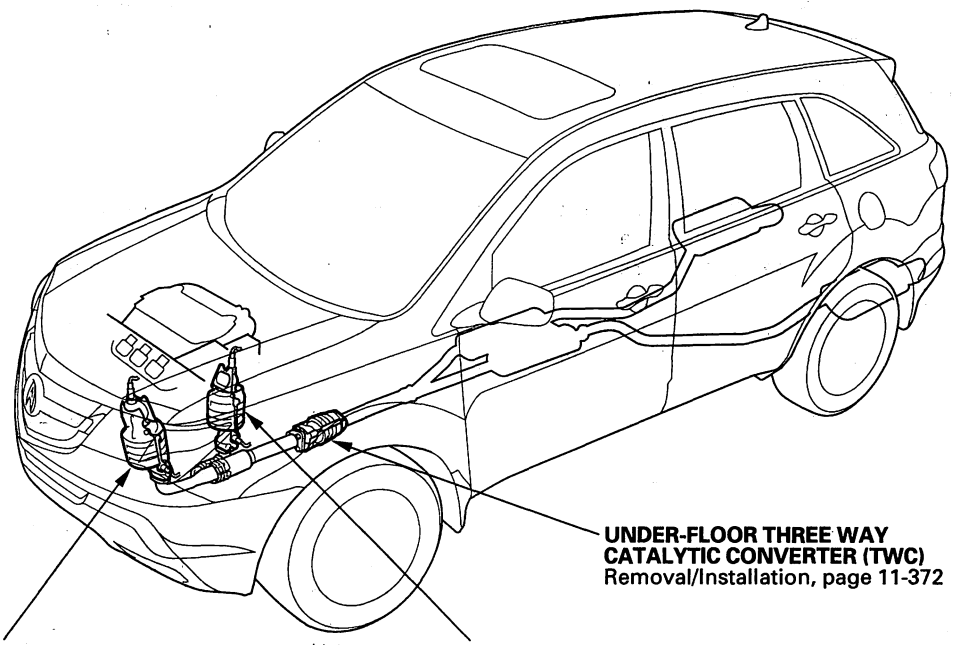
5. Remove the intake air duct (B).
6. Disconnect the throttle body connector (C).
7. Disconnect and plug the water bypass hoses (D).
8. Remove the throttle body (E).
9. Install the parts in the reverse order of removal with a new gasket (F).

NOTE:
- Do the PCM idle learn procedure after the throttle body has been replaced (see page 11-311).
- Refill the radiator with engine coolant (see page 10-6).

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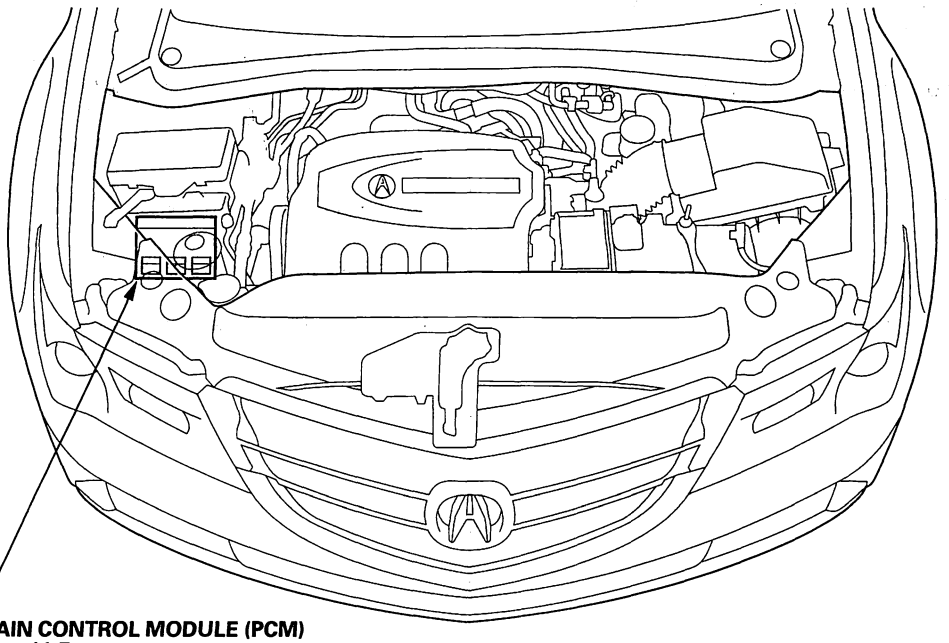
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UNDER-FLOOR THREE WAY CATALYTIC CONVERTER (TWC)
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FRONT WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 2)
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REAR WARM UP THREE WAY CATALYTIC CONVERTER (WU-TWC) (BANK 1)
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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:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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 (ECT SENSOR 1) above 158 °F (70 °C)
   - Transmission in D position
   - Vehicle speed between 45—75 mph (72—120 km/h) for 5 minutes or more
   - Maintain the vehicle speed at 55 mph (88 km/h) for 1 minute 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, the 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:
   - For DTC P0420, replace the rear WU-TWC (Bank 1) (see page 11-371).
   - For DTC P0430, replace the front WU-TWC (Bank 2) (see page 11-370).
10. Turn the ignition switch ON (II).
11. Reset the PCM with the HDS.
12. Do the PCM idle learn procedure (see page 11-311).

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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 CAT MONITOR CONDITION B1 (B2)* in the DATA LIST with the HDS.

    Is the condition OK?

    YES—Go to step 16.

    NO—Go to step 13 and recheck.

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 158 °F (70 °C)
    - Transmission in D position
    - Vehicle speed between 45—75 mph (72—120 km/h) for 5 minutes or more
    - Maintain the vehicle speed at 55 mph (88 km/h) for 1 minute 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.

    Is DTC P0420 and/or P0430 indicated?*

    YES—Check for poor connections or loose terminals at the secondary HO2S (sensor 2) and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 19, go to the indicated DTC's troubleshooting.■

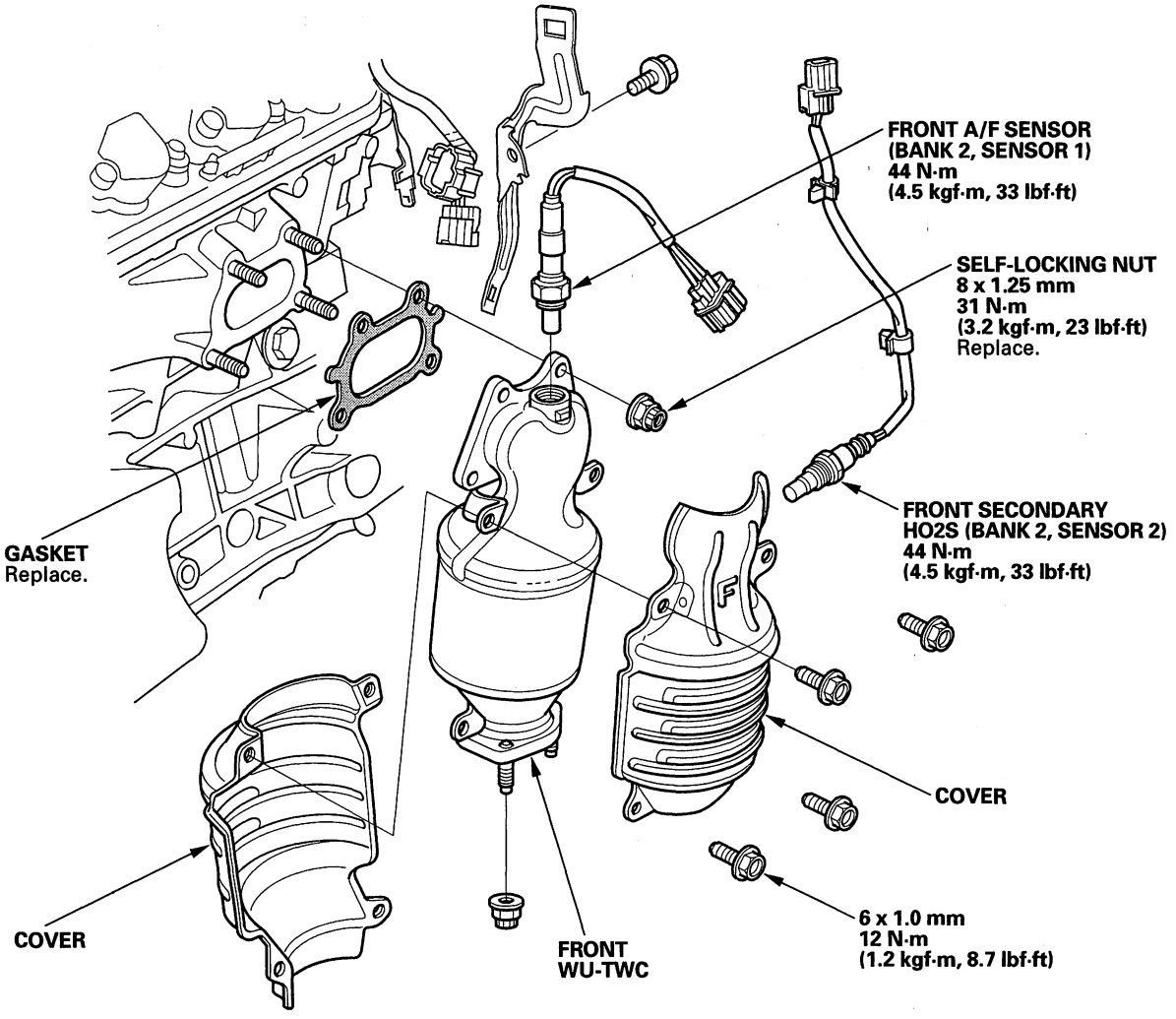
    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the PCM, then go to step 1. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 16.

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Warm Up TWC Removal/Installation

FRONT

1. Remove the radiator and A/C condenser fan assemblies (see page 10-10).
2. Disconnect the front air fuel ratio (A/F) sensor connector and front secondary heated oxygen sensor (secondary HO2S) connector.
3. Carefully remove the front WU-TWC.



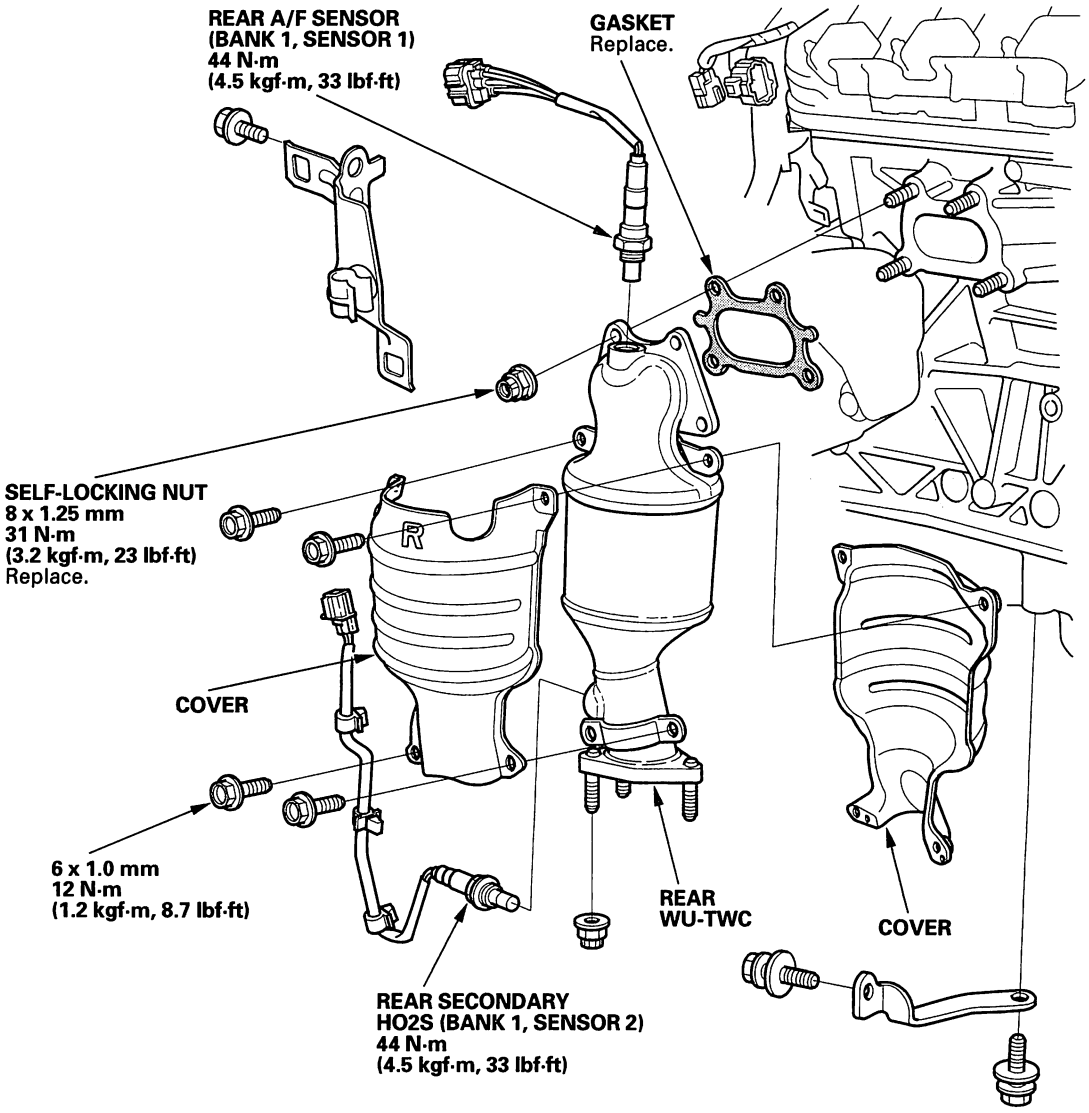
4. Carefully install the front WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
5. Install the parts in the reverse order of removal.

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REAR

1. Remove exhaust pipe A (see page 9-9).
2. Remove the intermediate shaft (see page 16-21).
3. Disconnect the rear air fuel ratio (A/F) sensor connector and the rear secondary heated oxygen sensor (secondary HO2S) connector.
4. Remove the rear WU-TWC bracket, then remove the rear WU-TWC.

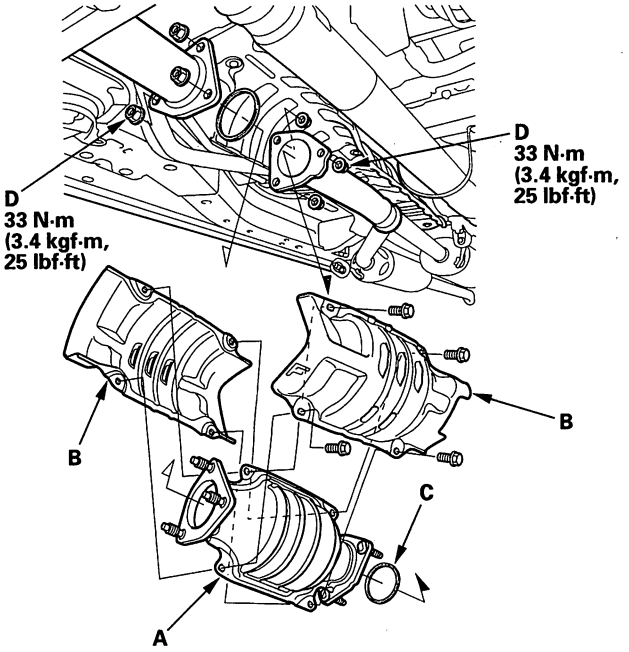


5. Install the rear WU-TWC, and tighten the nuts in a crisscross pattern in two or three steps.
6. Install the parts in the reverse order of removal.

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Under-floor TWC Removal/Installation

1. Remove the under-floor TWC (A).



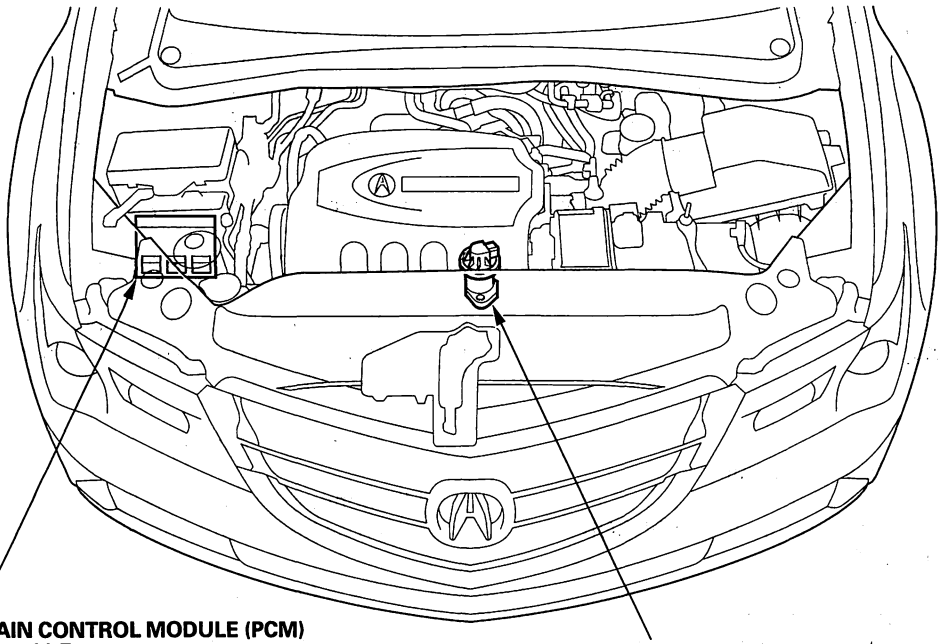
2. Remove the converter cover (B).

3. Install the parts in the reverse order of removal with new gaskets (C) and new self-locking nuts (D).

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EXHAUST GAS RECIRCULATION (EGR) VALVE
Replacement, page 11-388

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DTC Troubleshooting

DTC P0401: EGR Insufficient Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 (ECT SENSOR 1) 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 engine cover (see step 1 on page 9-3), clean the intake manifold, and EGR ports with throttle plate and induction cleaner, then go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the 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 11-388).
9. Turn the ignition switch ON (II).
10. Reset the PCM with the HDS.
11. Do the PCM idle learn procedure (see page 11-311).
12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) 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.

    Is DTC P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 15.

    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. If any other Temporary DTCs or DTCs were indicated in step 13, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve 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 12.

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15. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) 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.

    Is DTC P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 16. If the PCM was substituted, go to step 1.

    NO—Go to step 18.

18. Monitor the OBD STATUS for DTC P0401 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 16. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 16.

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DTC Troubleshooting (cont'd)

DTC P0404: EGR Control Circuit Range/ Performance Problem

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

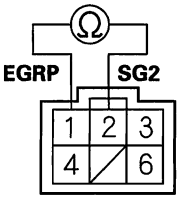
1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Do the EGR TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the 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

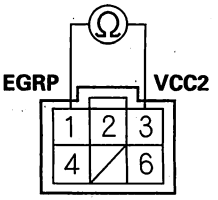
Is there 100 kΩ or more?

YES—Go to step 25.

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

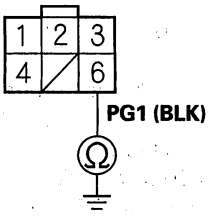
Is there 100 kΩ or more?

YES—Go to step 25.

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 26.

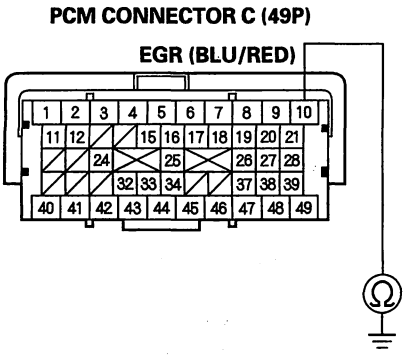
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BACK

10. Jump the SCS line with the HDS.

11. Disconnect PCM connector C (49P).

12. Check for continuity between PCM connector terminal C10 and body ground.



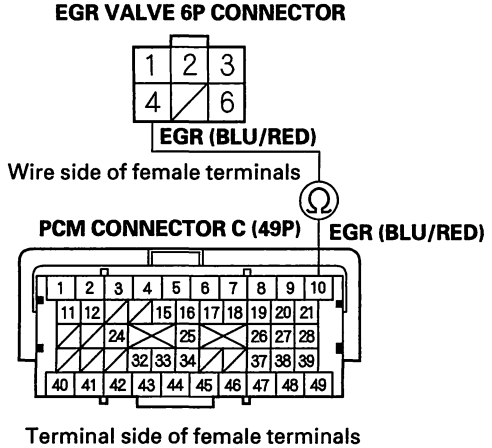
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C10) and the EGR valve, then go to step 26.

NO—Go to step 13.

13. Check for continuity between PCM connector terminal C10 and EGR valve 6P connector terminal No. 4.



Terminal side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the PCM (C10) and the EGR valve, then go to step 26.

14. Remove the EGR valve (see page 11-388).

15. Clean the intake manifold EGR port and the passage inside the EGR valve with throttle plate and induction cleaner.

16. Install the EGR valve (see page 11-388).

17. Reconnect the EGR valve 6P connector.

18. Reconnect PCM connector C (49P).

19. Turn the ignition switch ON (II).

20. Reset the PCM with the HDS.

21. Do the PCM idle learn procedure (see page 11-311).

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. Do the EGR TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 32.

NO—Go to step 24.

24. Turn the ignition switch OFF.

25. Replace the EGR valve (see page 11-388).

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 11-311).

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. Do the EGR TEST in the INSPECTION MENU with the HDS.

(cont'd)

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DTC Troubleshooting (cont'd)

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 34.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve 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 30.

34. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

35. 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.

36. Do the EGR TEST in the INSPECTION MENU with the HDS.

37. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0404 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 37, go to the indicated DTC's troubleshooting.■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then go to step 35. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 35.

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BACK

DTC P0406: EGR Valve Position Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

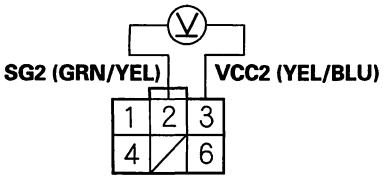
1. Turn the ignition switch ON (II).
2. Check the EGR VLS in the DATA LIST with the HDS.

   Is 4.88 V or more indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the 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

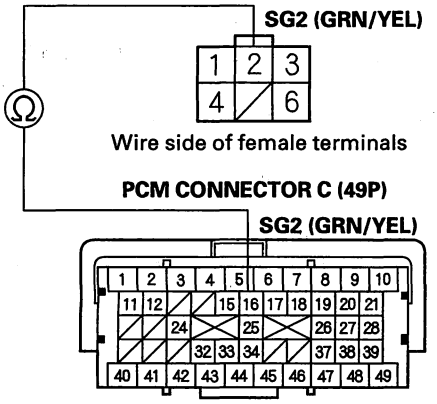
Is there about 5 V?

YES—Go to step 11.

NO—Go to step 7.

7. Turn the ignition switch OFF.
8. Jump the SCS line with the HDS.
9. Disconnect PCM connector C (49P).
10. Check for continuity between PCM connector terminal C16 and EGR valve 6P connector terminal No. 2.

EGR VALVE 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the EGR valve and the PCM (C16), then go to step 13.

11. Turn the ignition switch OFF.
12. Replace the EGR valve (see page 11-388).
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 11-311).

(cont'd)

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DTC Troubleshooting (cont'd)

17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

18. Reconnect all connectors.

19. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0406 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P2413: EGR System Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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?

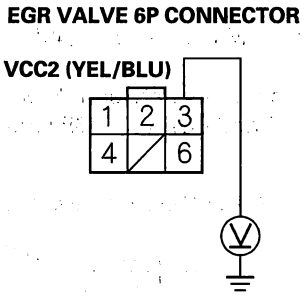
   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EGR valve and the PCM. ■

   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 21.
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.



Wire side of female terminals

Is there about 5 V?

YES—Go to step 16.

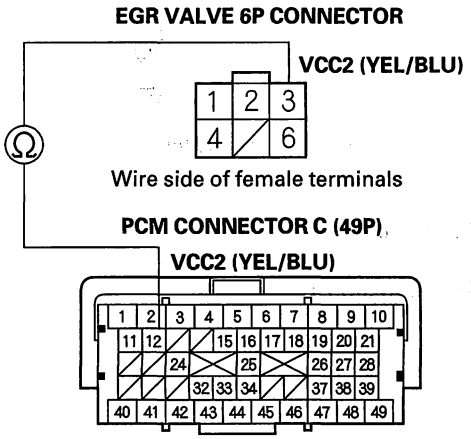
NO—Go to step 12.

(cont'd)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector C (49P).
15. Check for continuity between PCM connector terminal C12 and EGR valve 6P connector terminal No. 3.

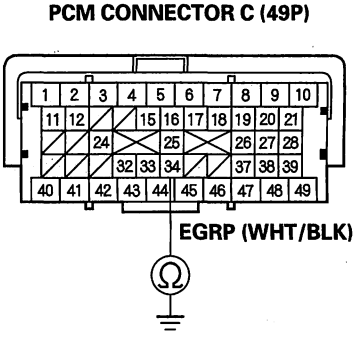


Is there continuity?

YES—Go to step 52.

NO—Repair open in the wire between the EGR valve and the PCM (C12), then go to step 44.

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector C (49P).
19. Check for continuity between PCM connector terminal C34 and body ground.



Is there continuity?

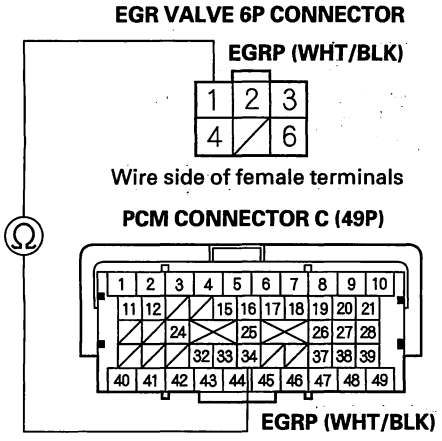
YES—Repair short in the wire between the PCM (C34) and the EGR valve, then go to step 44.

NO—Go to step 20.

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BACK

20. Check for continuity between PCM connector terminal C34 and EGR valve 6P connector terminal No. 1.



Is there continuity?

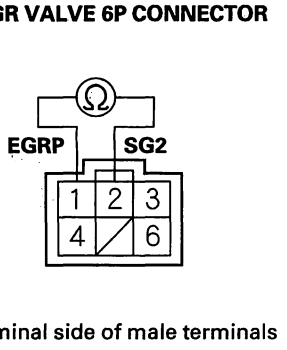
YES—Go to step 21.

NO—Repair open in the wire between the PCM (C34) and the EGR valve, then go to step 44.

21. Turn the ignition switch OFF.

22. Disconnect the EGR valve 6P connector.

23. At the EGR valve side, measure resistance between EGR valve 6P connector terminals No. 1 and No. 2.



Is there 100 kΩ or more?

YES—Go to step 43.

NO—Go to step 24.

(cont'd)

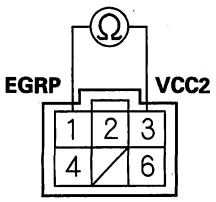
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DTC Troubleshooting (cont'd)

24. At the EGR valve side, 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 kΩ or more?

YES—Go to step 43.

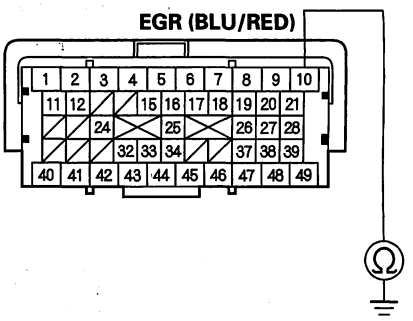
NO—Go to step 25.

25. Jump the SCS line with the HDS.

26. Disconnect PCM connector C (49P).

27. Check for continuity between PCM connector terminal C10 and body ground.

PCM CONNECTOR C (49P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (C10) and the EGR valve, then go to step 44.

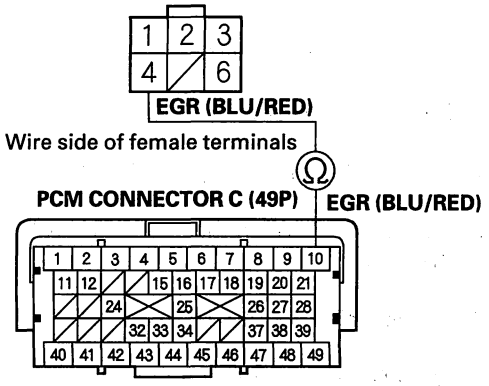
NO—Go to step 28.

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28. Check for continuity between PCM connector terminal C10 and EGR valve 6P connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of female terminals

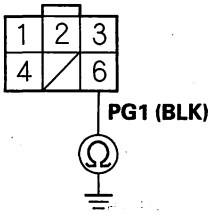
Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the PCM (C10) and the EGR valve, then go to step 44.

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?

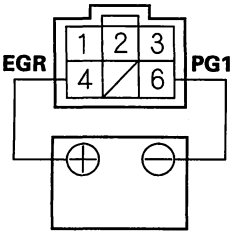
YES—Go to step 30.

NO—Repair open in the wire between the EGR valve and G101, then go to step 44.

30. Reconnect PCM connector C (49P).

31. Connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

(cont'd)

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DTC Troubleshooting (cont'd)

32. Start the engine and let it idle, then connect the battery negative 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 11-388).

35. Clean the intake manifold EGR port at the passage inside the EGR valve with throttle plate and induction cleaner.

36. Install the EGR valve (see page 11-388).

37. Reconnect all connectors.

38. Turn the ignition switch ON (II).

39. Reset the PCM with the HDS.

40. Do the PCM idle learn procedure (see page 11-311).

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 11-388).

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 11-311).

48. Do the EGR TEST in the INSPECTION MENU with the HDS.

49. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 49, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

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51. Turn the ignition switch OFF.

52. Reconnect all connectors.

53. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

54. Do the EGR TEST in the INSPECTION MENU with the HDS.

55. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 54.

56. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

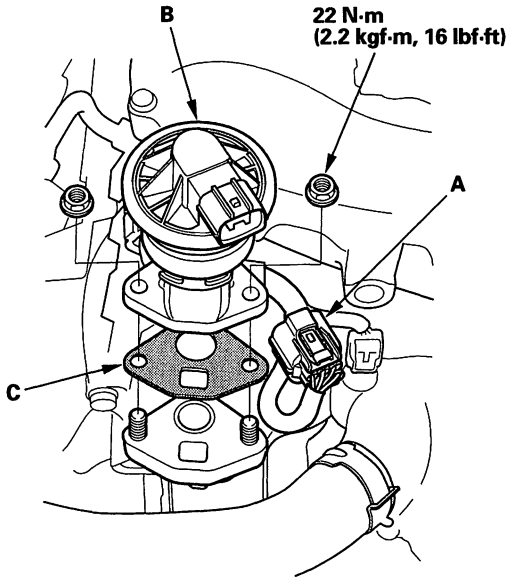
    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 55, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EGR valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

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EGR Valve Replacement

1. Remove the engine cover (see step 1 on page 9-3).
2. Remove the main under-hood fuse box.
3. Disconnect the EGR valve 6P connector (A).

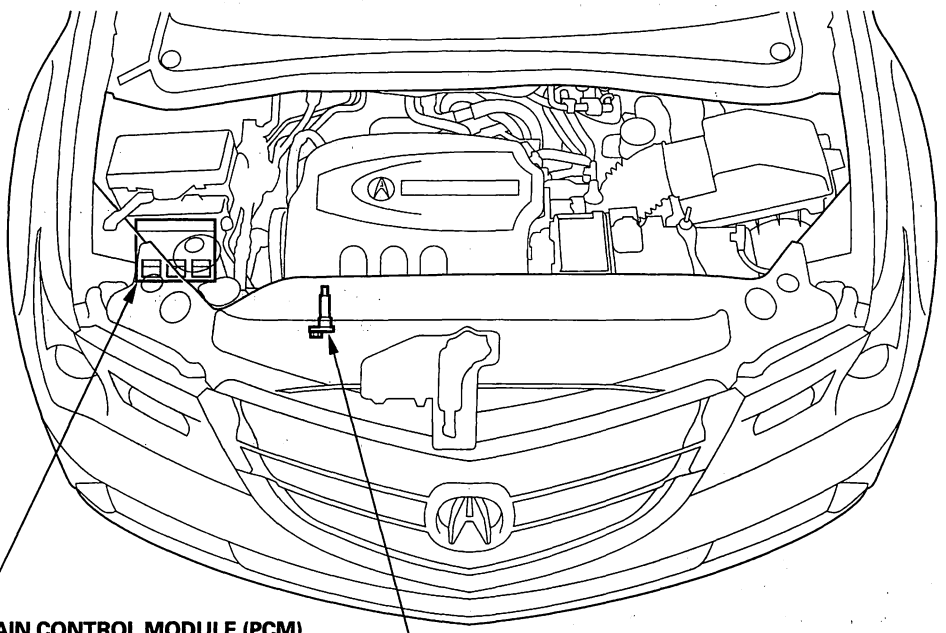


4. Remove the EGR valve (B).
5. Install the parts in the reverse order of removal with a new gasket (C).

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PCV VALVE
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Replacement, page 11-391

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DTC Troubleshooting

DTC P2279: Intake Air System Leak

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P0443 is stored at the same time as DTC P2279, troubleshoot DTC P0443 first, then recheck for DTC P2279.

1. Check for vacuum leaks at these parts:

   - PCV valve
   - PCV hose
   - Purge (PCS) line
   - Throttle body
   - Intake manifold
   - Brake booster hose

   Are the parts OK?

   YES—Go to step 2.

   NO—Repair or replace any damaged parts, then go to step 4.

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 1 minute.

3. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Check the camshaft timing (see page 6-16), then go to step 4.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 2 and recheck.

4. Reset the PCM with the HDS.

5. Do the PCM idle learn procedure (see page 11-311).

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 1 minute.

7. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2279 indicated?

   YES—Check for vacuum leaks at the PCV valve, the PCV hose, the purge (PCS) line, the throttle body, the intake manifold, and the brake booster hose, then go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P2279 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 7, go to the indicated DTC's troubleshooting. ■

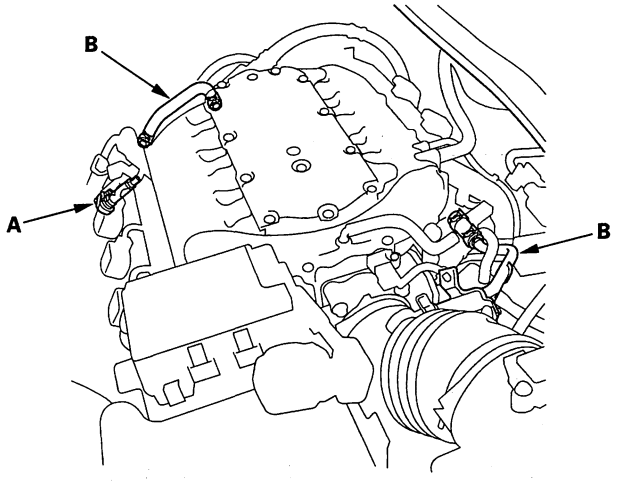
   NO—If the screen indicates FAILED, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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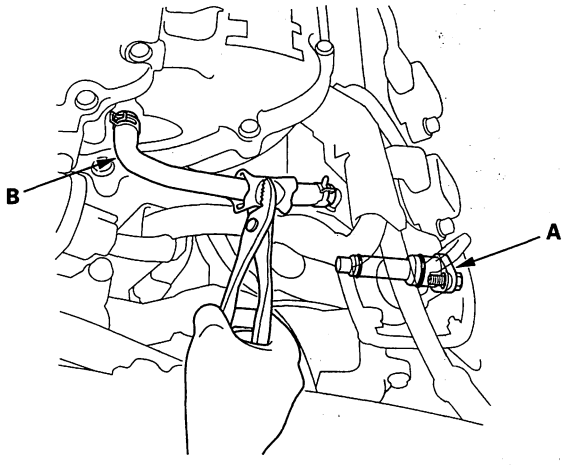
PCV Valve Inspection

1. Remove the engine 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.

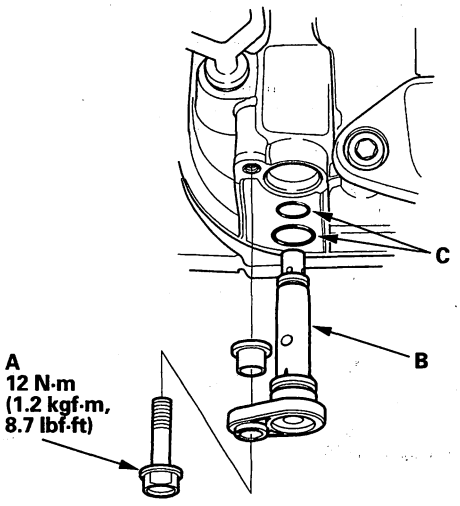
   If there is no clicking sound, check the PCV valve grommet for cracks or damage. If the grommet is OK, replace the PCV valve and recheck.



PCV Valve Replacement

1. Remove the engine 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.

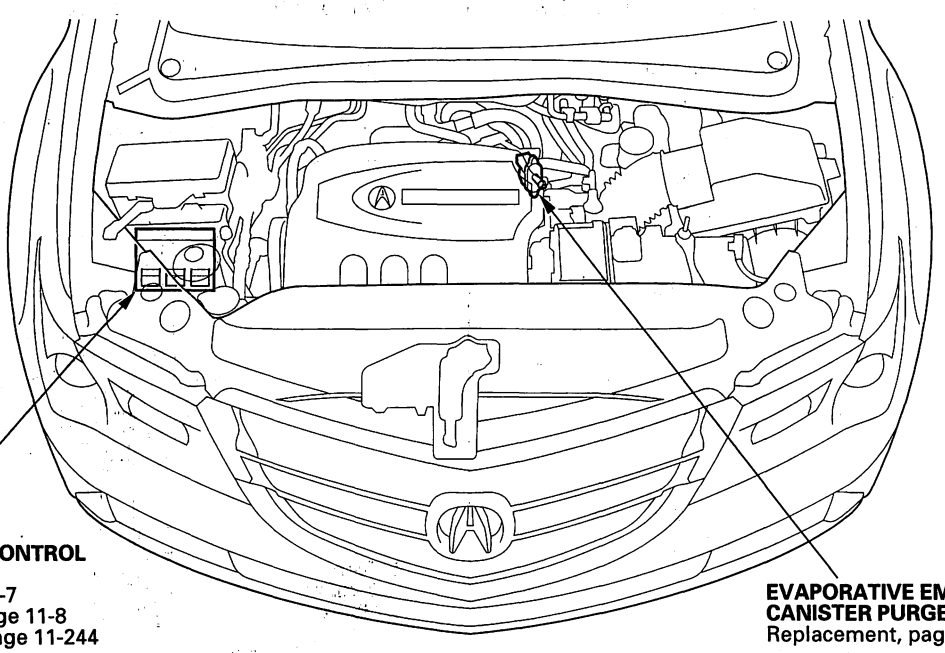


3. Remove the PCV valve (B).
4. Install the parts in the reverse order of removal.

   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.

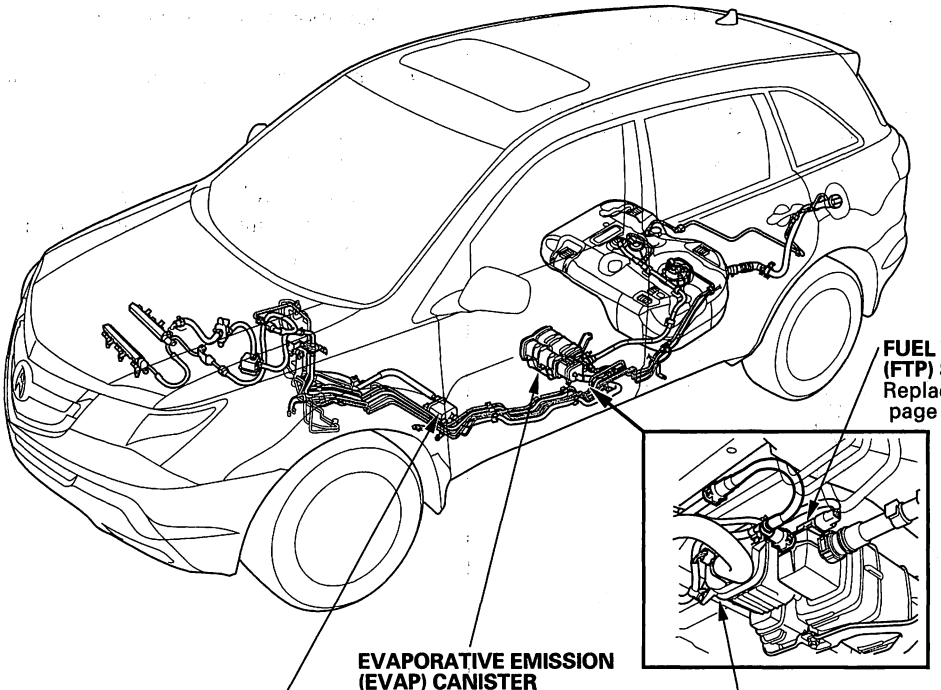
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FUEL TANK PRESSURE (FTP) SENSOR
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DTC P0443: Evap Canister Purge Valve Circuit Malfunction

Special Tools Required
Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

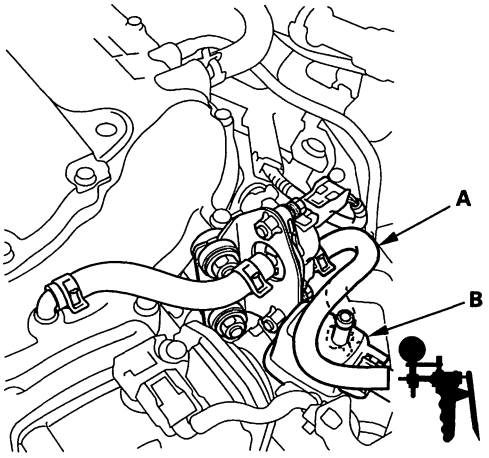
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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, the 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 purge joint (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



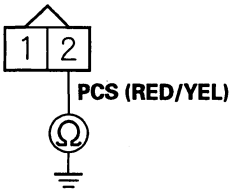
7. Start the engine, and let it idle.

   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. 2 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 23.

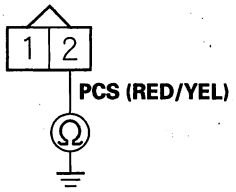
(cont'd)

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DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector C (49P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

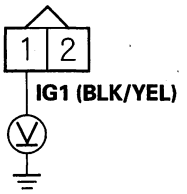
Is there continuity?

YES—Repair short in the wire between the EVAP canister purge valve and the PCM (C40), then go to step 24.

NO—Go to step 30.

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. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 18.

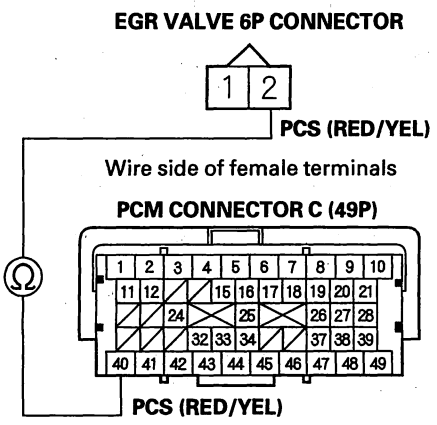
NO—Repair open in the wire between the EVAP canister purge valve and the No. 18 ACG (10 A) fuse in the under-dash fuse/relay box, then go to step 24.

18. Turn the ignition switch OFF.
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector C (49P).

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BACK

21. Check for continuity between PCM connector terminal C40 and EVAP canister purge valve 2P connector terminal No. 2.



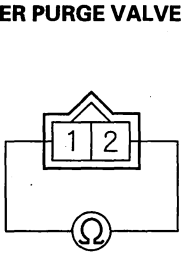
Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the EVAP canister purge valve and the PCM (C40), then go to step 24.

22. At the valve side, measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.



Terminal side of male terminals

Is there about 33 Ω at room temperature?

YES—Go to step 30.

NO—Go to step 23.

23. Replace the EVAP canister purge valve (see page 11-423).
24. Reconnect all connectors.
25. Turn the ignition switch ON (II).
26. Reset the PCM with the HDS.
27. Do the PCM idle learn procedure (see page 11-311).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1.

NO—Go to step 29.

(cont'd)

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DTC Troubleshooting (cont'd)

29. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 28, go to the indicated DTC's troubleshooting. ■

    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 NOT COMPLETED, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0443 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC P0451: FTP Sensor Circuit Range/ Performance Problem

NOTE:
- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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 without load (in Park or neutral) until the radiator fan comes on.
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, the 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 11-423).
7. Turn the ignition switch ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-311).
10. Start the engine, and let it idle without load (in Park or neutral) until the radiator fan comes on.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0451 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    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. If any other Temporary DTCs or DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

    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.

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DTC Troubleshooting (cont'd)

DTC P0452: FTP Sensor Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

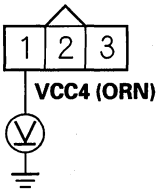
   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.
10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
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 24.

    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 20.

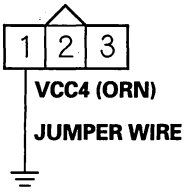
NO—Go to step 15.

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BACK

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector A (49P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

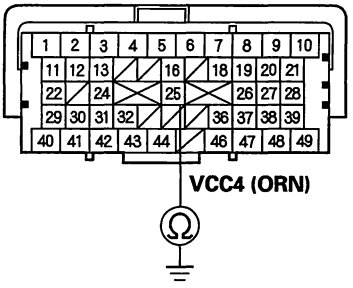
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal A25 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

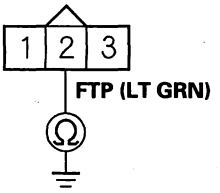
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the PCM (A25) and the FTP sensor, then go to step 26.

20. Turn the ignition switch OFF.
21. Jump the SCS line with the HDS.
22. Disconnect PCM connector A (49P).
23. 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 (A39) and the FTP sensor, then go to step 26.

NO—Go to step 32.

24. Turn the ignition switch OFF.
25. Replace the FTP sensor (see page 11-423).
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 11-311).

(cont'd)

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DTC Troubleshooting (cont'd)

30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

    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, keep idling until a result comes on.

32. Reconnect all connectors.

33. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

34. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0452 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 34.

35. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 34, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC P0453: FTP Sensor Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

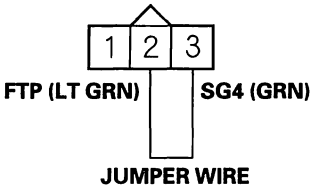
   NO—Go to step 7.
7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 10.

   NO—If the screen indicates PASSED, intermittent failure, the 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

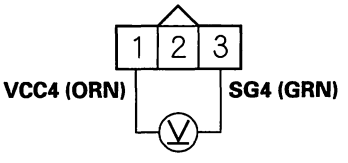
13. Turn the ignition switch ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

    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 26.
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.

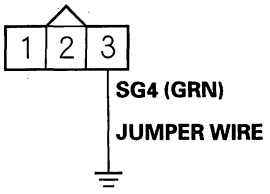
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DTC Troubleshooting (cont'd)

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect PCM connector A (49P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

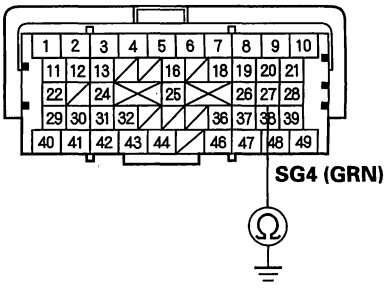
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between PCM connector terminal A27 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

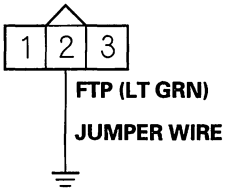
Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the PCM (A27) and the FTP sensor, then go to step 28.

21. Turn the ignition switch OFF.
22. Jump the SCS line with the HDS.
23. Disconnect PCM connector A (49P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

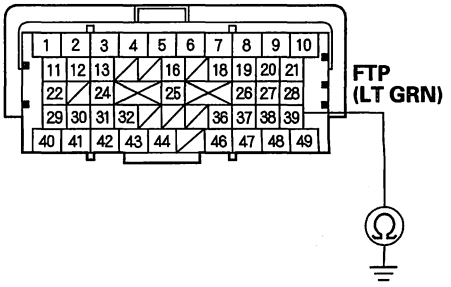
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between PCM connector terminal A39 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the PCM (A39) and the FTP sensor, then go to step 28.

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26. Turn the ignition switch OFF.

27. Replace the FTP sensor (see page 11-423).

28. Reconnect all connectors.

29. Turn the ignition switch ON (II).

30. Reset the PCM with the HDS.

31. Do the PCM idle learn procedure (see page 11-311).

32. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 32, go to the indicated DTC's troubleshooting. ■

    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, keep idling until a result comes on.

34. Reconnect all connectors.

35. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).

36. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0453 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—Go to step 37.

37. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P0455: EVAP System Very 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:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- 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.

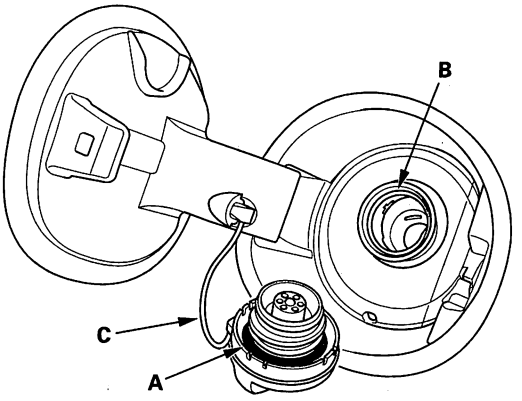
1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

   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 22.

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 (see page 11-348), then go to step 22.

   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, the 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.

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6. Turn the ignition switch OFF.

7. Turn the ignition switch ON (II).

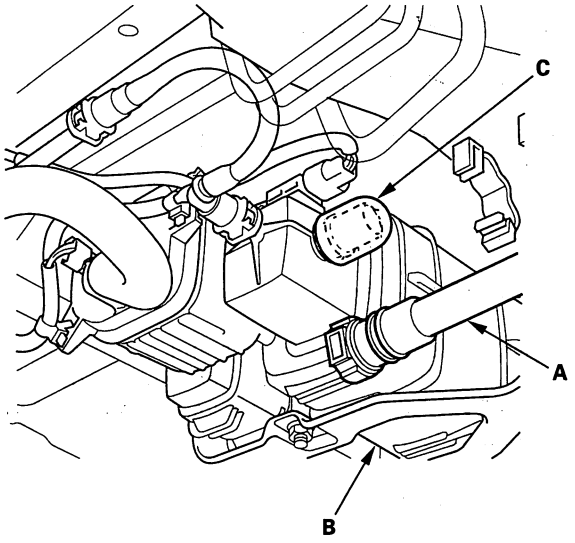
8. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

   Is the tube OK?

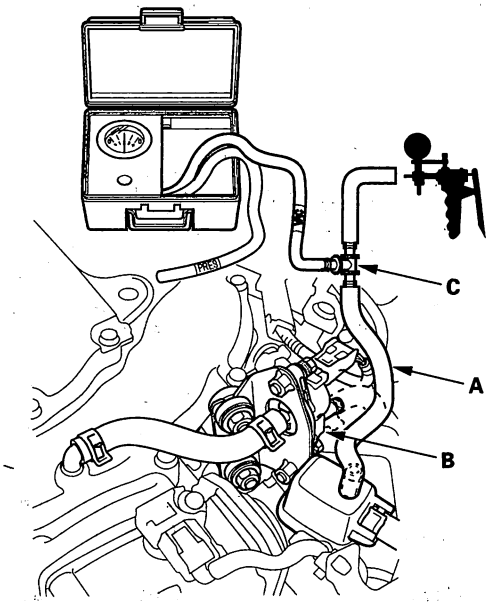
   YES—Go to step 9.

   NO—
   - Replace the fuel tank vapor recirculation tube, then go to step 22.
   - If necessary, replace the fuel tank (see page 11-347), then go to step 22.

9. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).



10. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (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 vacuum hose (A) as shown.



11. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

12. Apply vacuum to the hose until the FTP reads 1.90 V —2.0 kPa (—0.59 in.Hg, —15.1 mmHg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

13. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V 0.3 kPa (0.1 in.Hg, 2.5 mmHg)?

    YES—Go to step 14.

    NO—Go to step 19.

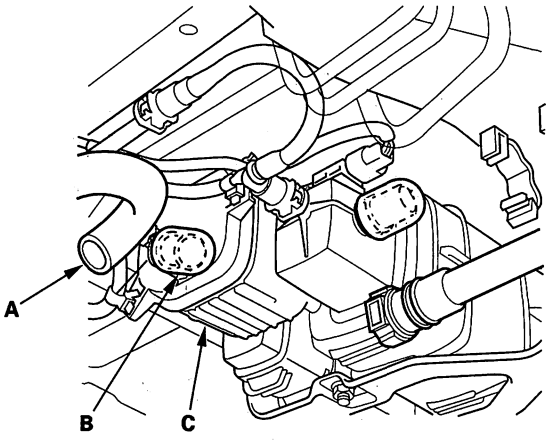
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DTC Troubleshooting (cont'd)

14. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

15. Disconnect the fresh air hose (A) from the EVAP canister vent shut valve (B), and plug the EVAP canister vent shut valve port (C).



16. Apply vacuum to the EVAP system until the FTP reads 1.90 V —2.0 kPa (—0.59 in.Hg, —15.1 mmHg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

17. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V 0.3 kPa (0.1 in.Hg, 2.5 mmHg)?

    YES—Go to step 18.

    NO—Replace the EVAP canister vent shut valve, then go to step 21.

18. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve.

    Is the line OK?

    YES—Replace these parts, then go to step 21:

    - FTP sensor O-ring
    - EVAP canister vent shut valve case and O-ring
    - EVAP canister

    NO—Reconnect or repair the EVAP canister purge hose, then go to step 21.

19. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

20. 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 11-343), and check the fuel tank, then go to step 21.

    NO—Repair or replace the damaged parts, then go to step 21.

21. Reconnect all hoses and connectors.

22. Turn the ignition switch ON (II).

23. Reset the PCM with the HDS.

24. Do the PCM idle learn procedure (see page 11-311).

25. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 26.

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0455 and/or P0456 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P0457: EVAP System Leak Detected/Fuel Fill Cap Loose or Missing

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

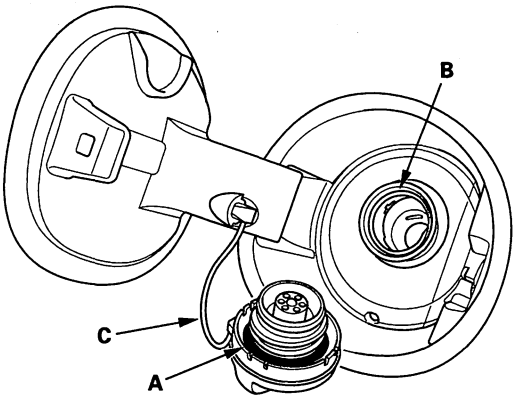
1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 turn after it's tight, then it clicks.

   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 (see page 11-348), 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, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM.■

   NO—Go to step 6.

6. Turn the ignition switch OFF.

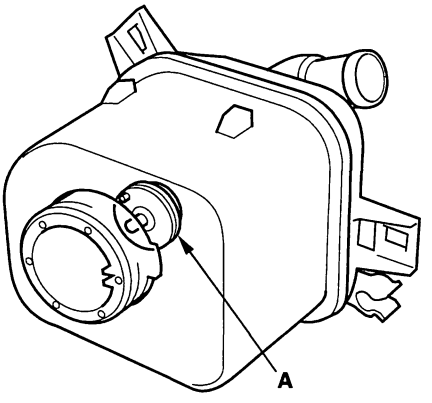
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-424).

8. Connect the 2P connector to the EVAP canister vent shut valve.

9. Turn the ignition switch ON (II).

10. Select 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)

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DTC Troubleshooting (cont'd)

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see page 11-424).
14. Turn the ignition switch ON (II).
15. Reset the PCM with the HDS.
16. Do the PCM idle learn procedure (see page 11-311).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 23.

    NO—Check for poor connections or loose terminals at the FTP sensor, 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 11-311).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Go to step 23.

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0457 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P0496: EVAP System High Purge Flow

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, 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 11-423).
6. Turn the ignition switch ON (II).
7. Reset the PCM with the HDS.
8. Do the PCM idle learn procedure (see page 11-311).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 10.

   NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0496 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P0497: EVAP System Low Purge Flow

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: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Select EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. ■

   NO—Go to step 4.

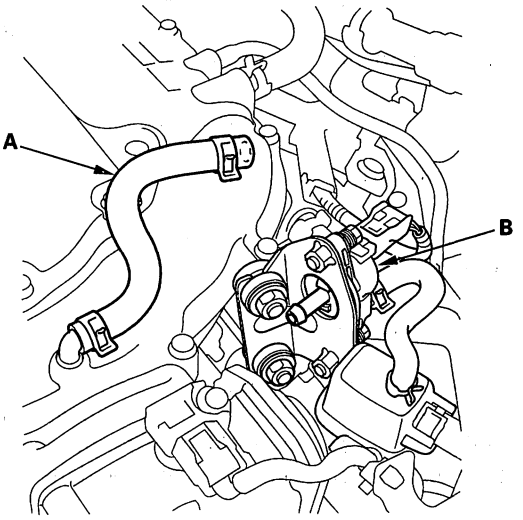
4. Check for poor connection, blockage, or damage at the EVAP canister purge line between the throttle body and the EVAP canister.

   Is the line OK?

   YES—Go to step 5.

   NO—Reconnect or repair the EVAP canister purge line, then go to step 23.

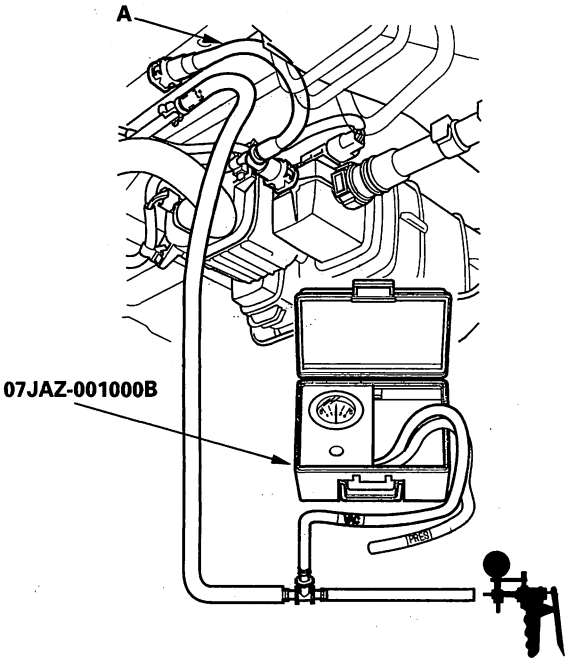
5. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).



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BACK

6. Disconnect the vacuum hose (A) from the purge line (at the EVAP canister side), and connect the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



7. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

8. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

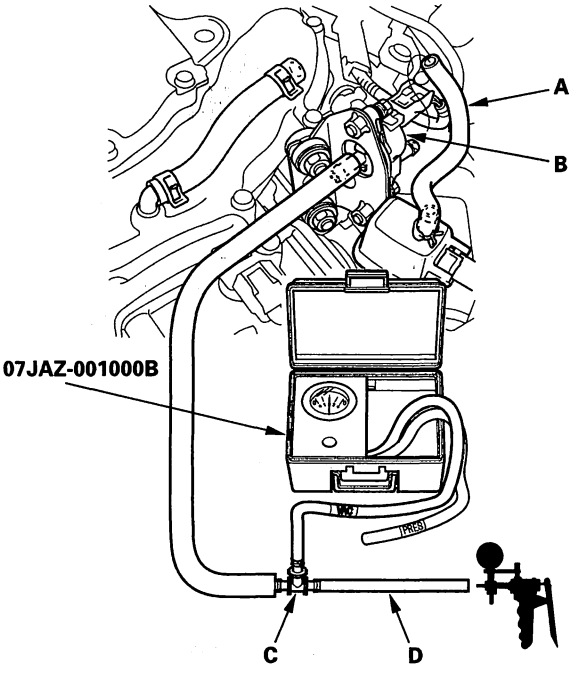
   Does the vacuum release immediately?

   YES—Go to step 14.

   NO—Go to step 9.

9. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

10. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect the T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose (D) as shown.



11. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.

12. Turn the ignition switch ON (II).

13. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release immediately?

    YES—Check for blockage in the vacuum hose between the EVAP canister purge valve and the EVAP canister, then go to step 23.

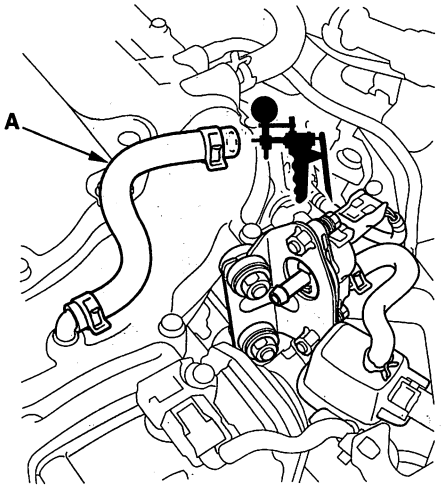
    NO—Replace the EVAP canister purge valve (see page 11-423), then go to step 23.

(cont'd)

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DTC Troubleshooting (cont'd)

14. Connect the vacuum pump/gauge, 0—30 in.Hg, to the vacuum hose (A) as shown.



15. Start the engine, and let it idle.

    Is there vacuum?

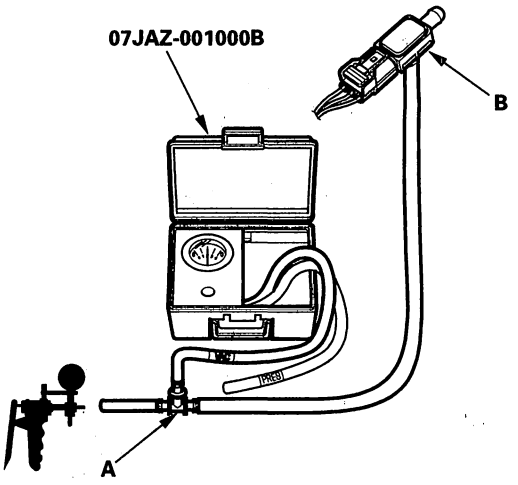
    YES—Go to step 16.

    NO—Check for blockage in the vacuum hose between the EVAP canister purge valve and the throttle body, then go to step 23.

16. Turn the ignition switch OFF.

17. Remove the FTP sensor with its connector connected (see page 11-423).

18. Connect a T-fitting (A) from the vacuum pump/gauge, 0—30 in.Hg, and the vacuum pump to the FTP sensor (B) as shown.



19. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.

20. Slowly apply about 1.3 kPa (0.4 in.Hg, 10 mmHg) of vacuum to the hose.

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

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21. Check the FTP SENSOR in the DATA LIST with the HDS.

    Does the value change?

    YES—Check for debris or blockage at the EVAP canister port, then go to step 23.

    NO—Go to step 22.

22. Replace the FTP sensor (see page 11-423).

23. Reconnect all hose.

24. Turn the ignition switch ON (II).

25. Reset the PCM with the HDS.

26. Do the PCM idle learn procedure (see page 11-311).

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 and the PCM, then go to step 1.

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DTC Troubleshooting (cont'd)

DTC P0498: EVAP Canister Vent Shut Valve Control Circuit Low Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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.

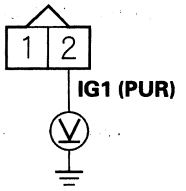
   NO—Go to step 4.
4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0498 indicated?

   YES—Go to step 6.

   NO—Intermittent failure, the 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

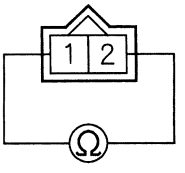
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the under-hood fuse/relay box (PGM-FI relay), then go to step 18.

10. Turn the ignition switch OFF.
11. At the valve side, 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 17.

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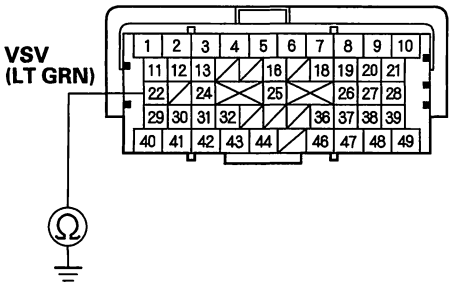
BACK

12. Jump the SCS line with the HDS.

13. Disconnect PCM connector A (49P).

14. Check for continuity between PCM connector terminal A22 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

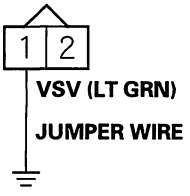
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the PCM (A22), then go to step 18.

NO—Go to step 15.

15. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

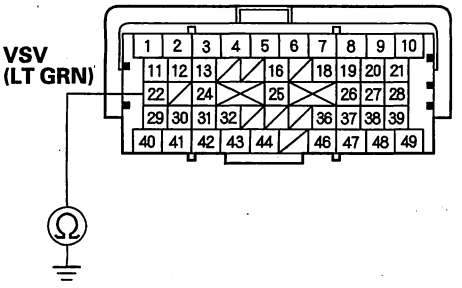
EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

16. Check for continuity between PCM connector terminal A22 and body ground.

PCM CONNECTOR A (49P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 24.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PCM (A22), then go to step 18.

17. Replace the EVAP canister vent shut valve (see page 11-424).

18. Reconnect all connectors.

(cont'd)

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DTC Troubleshooting (cont'd)

19. Turn the ignition switch ON (II).
20. Reset the PCM with the HDS.
21. Do the PCM idle learn procedure (see page 11-311).
22. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
23. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1.

    NO—Troubleshooting is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■
24. Update the PCM if it does not have the latest software (see page 11-7), or substitute a known-good PCM (see page 11-8).
25. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
26. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0498 indicated?

    YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

    NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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BACK

DTC P0499: EVAP Canister Vent Shut Valve Control Circuit High Voltage

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Select 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—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-8), then recheck. If the PCM was substituted, go to step 1.

   NO—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-244). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC Troubleshooting (cont'd)

DTC P1454: FTP Sensor Circuit Range/ Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Close Malfunction

NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

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 and 0.67 kPa (−0.2 and 0.2 in.Hg, −5 and 5 mmHg), or 2.4 and 2.6 V?

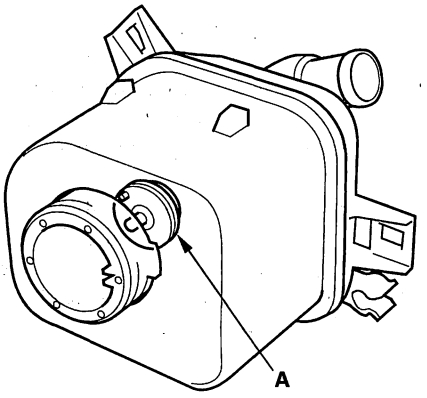
   YES—Go to step 6.

   NO—Go to step 17.
6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine, and then let it idle without load (in Park on neutral) until the radiator fan comes on.
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, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, 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 11-424).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.



Does the valve operate?

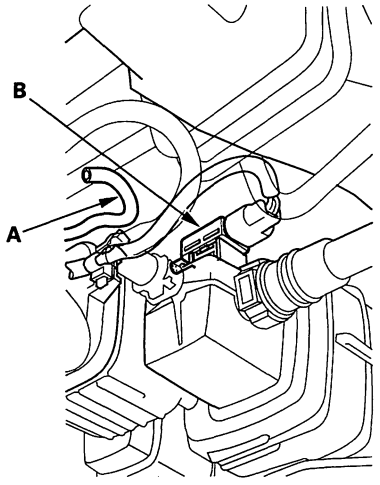
YES—Check for a blockage in the EVAP canister, canister filter, vent hoses, and drain joint, then install the EVAP canister vent shut valve, and go to step 23.

NO—Replace the EVAP canister vent shut valve (see page 11-424), then go to step 23.

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BACK

17. Disconnect the air tube (A) from the FTP sensor (B).



18. Check the FTP SENSOR in the DATA LIST with the HDS.

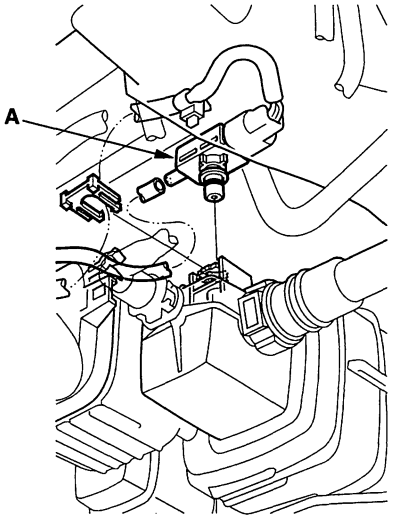
    Is it between −0.67 and 0.67 kPa (−0.2 and 0.2 in.Hg, −5 and 5 mmHg), or 2.4 and 2.6 V?

    YES—Check for a blockage in the FTP sensor air tube or vent, then go to step 23.

    NO—Go to step 19.

19. Turn the ignition switch OFF.

20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-423).



21. Turn the ignition switch ON (II).

22. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between −0.67 kPa and 0.67 kPa (−0.2 and 0.2 in.Hg, −5 and 5 mmHg), or 2.4 and 2.6 V?

    YES—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 23.

    NO—Replace the FTP sensor (see page 11-423), then go to step 23.

23. Turn the ignition switch ON (II).

24. Reset the PCM with the HDS.

25. Do the PCM idle learn procedure (see page 11-311).

26. Start the engine, and then let it idle without load (in Park or neutral) until the radiator fan comes on.

27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1454 and/or P2422 indicated?

    YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P1454 and/or P2422 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. If any other Temporary DTCs or DTCs were indicated in step 27, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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DTC Troubleshooting (cont'd)

DTC P145C: EVAP System Purge Flow Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P145C is indicated alone, do the troubleshooting for DTC P0496 and P0497 using freeze data from P145C.
- If DTC P0497 and P145C stored at the same time, check for poor connection, blockage, or damage at EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, and EVAP canister purge valve closed stuck.
- If any of the DTCs listed below are indicated at the same time as DTC P145C, troubleshoot those DTCs first, then recheck for P145C.

  P0496, P0497: EVAP system purge flow

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BACK

Fuel Cap Warning Message System Troubleshooting

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

When the fuel fill cap warning message does not go off after fuel fill cap tightened, or the message turned on frequently, do this troubleshooting procedure.

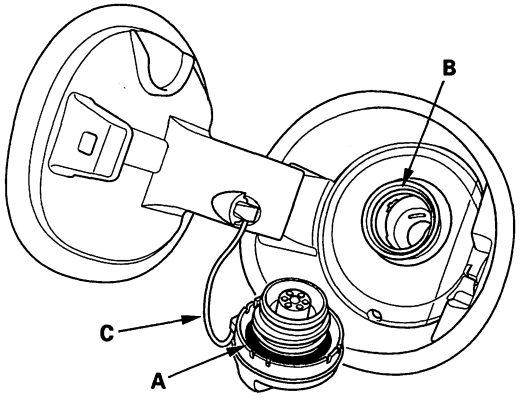
1. Check the fuel fill cap (the cap must say "TIGHTEN TO CLICK"). It should turn 1/4 after it's tight, then it clicks.

   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 13.

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 (see page 11-348), then go to step 13.

   NO—Go to step 3.

3. Reinstall and tighten the fuel fill cap.

4. Clear the DTC with the HDS.

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 for 1 minute.

6. Test-drive at 45 mph (72 km/h) 1 minute or more.

   Does the fuel cap message come on?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time.■

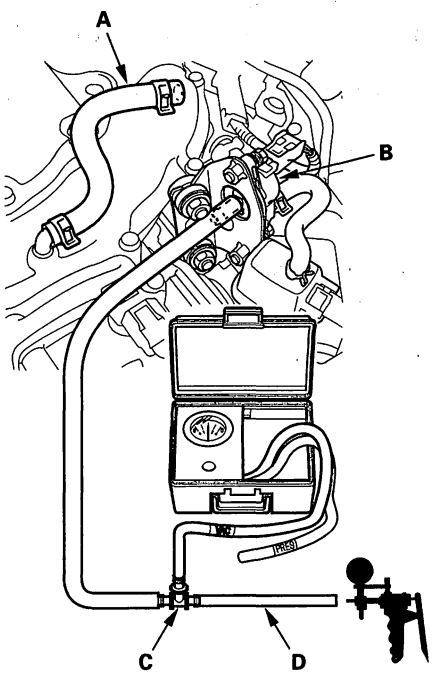
7. Turn the ignition switch OFF.

(cont'd)

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Fuel Cap Warning Message System Troubleshooting (cont'd)

8. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment. Connect the T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the vacuum hose (D) as shown.



9. Apply vacuum to the hose about 2 kPa (0.6 in.Hg, 15 mmHg).

   NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

10. Turn the ignition switch ON (II).

11. Select the EVAP PCS ON in the INSPECTION MENU with the HDS.

    Release the vacuum immediately?

    YES—Check for vacuum hose blockage between the EVAP canister purge valve and the EVAP canister, then go to step 12.

    NO—Replace the EVAP canister purge valve (see page 11-423), then go to step 12.

12. Install the parts in the reverse order of removal.

13. Turn the ignition switch ON (II).

14. Reset the PCM with the HDS.

15. Do the PCM idle learn procedure (see page 11-311).

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 for 1 minute.

17. Test-drive at 45 mph (72 km/h) for 1 minute or more.

    Does the fuel fill cap message come on?

    YES—Go to step 1 and recheck.

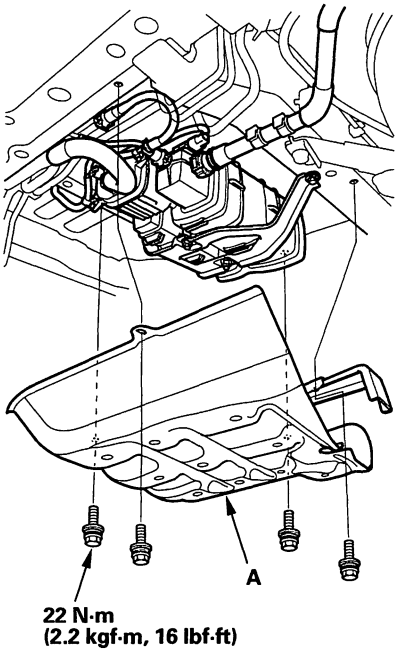
    NO—Troubleshooting is complete. ■

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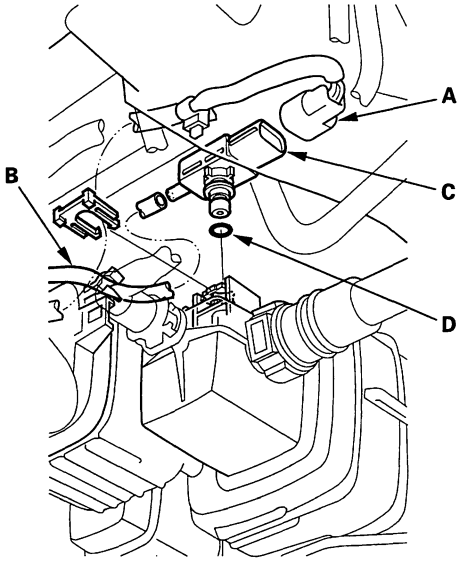
BACK

FTP Sensor Replacement

1. Remove the EVAP canister cover (A).



2. Disconnect the FTP sensor 3P connector (A) and tube (B).

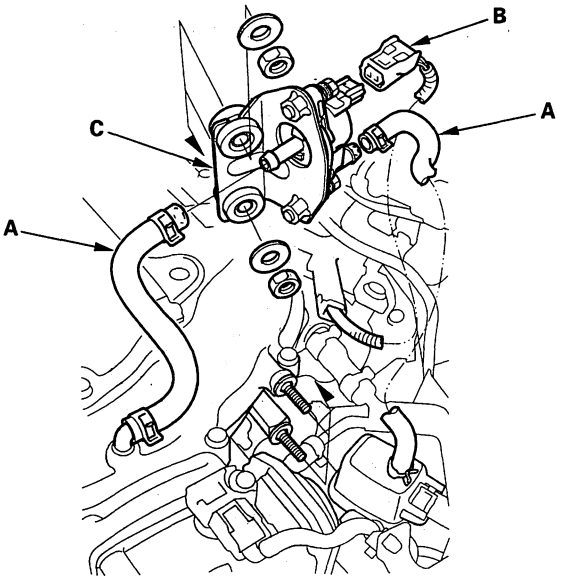


3. Remove the FTP sensor (C).

4. Install the parts in the reverse order of removal with a new O-ring (D).

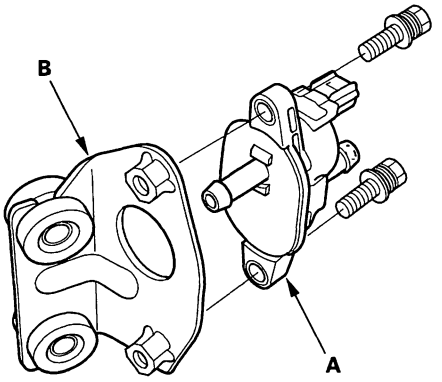
EVAP Canister Purge Valve Replacement

1. Disconnect the hoses (A) and EVAP canister purge valve 2P connector (B).



2. Remove the EVAP canister purge valve and the bracket (C).

3. Remove the EVAP canister purge valve (A) from the bracket (B).



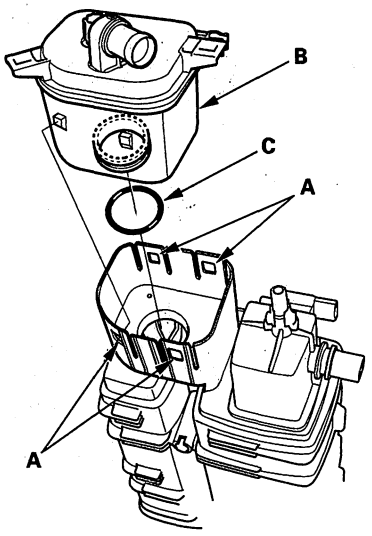
4. Install the parts in the reverse order of removal.

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EVAP Canister Vent Shut Valve Replacement

1. Remove the EVAP canister (see page 11-425).
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 parts in the reverse order of removal with a new O-ring (C).

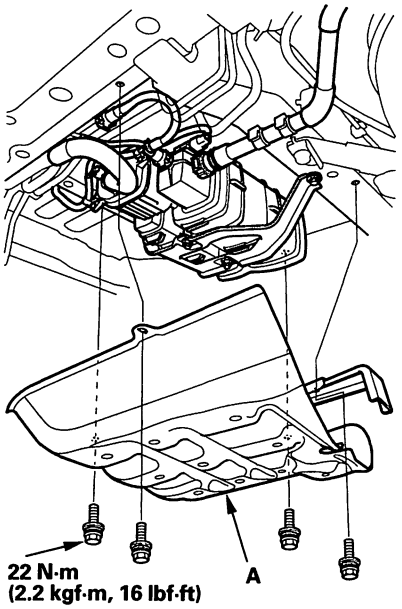
   NOTE: Do not coat the O-ring with oil.

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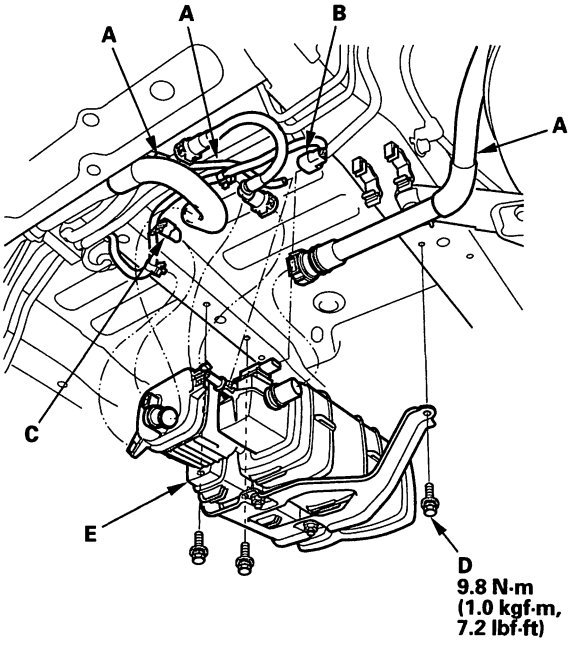
BACK

EVAP Canister Replacement

1. Remove the fuel tank guard (A).



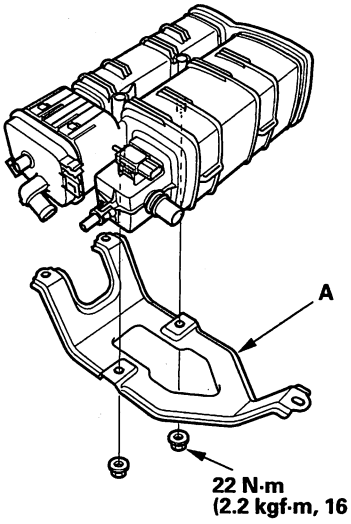
2. Remove the hoses (A), the FTP sensor 3P connector (B), and the EVAP canister vent shut valve 2P connector (C).



3. Remove the bolts (D).

4. Remove the EVAP canister assembly (E).

5. Remove the EVAP canister bracket (A).

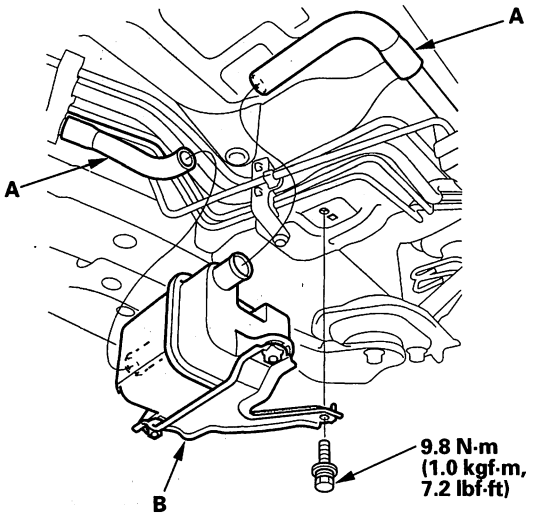


6. Install the parts in the reverse order of removal.

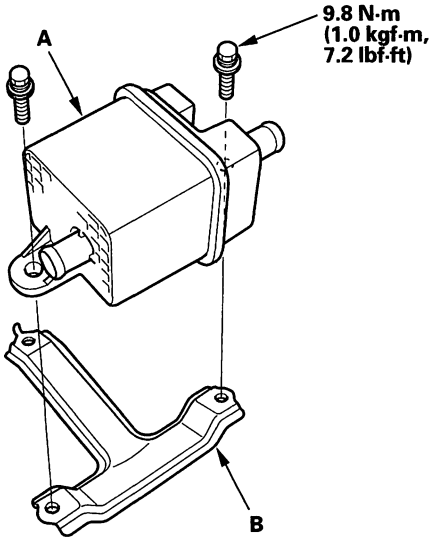
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EVAP Canister Filter Replacement

1. Disconnect the hoses (A).



2. Remove the EVAP canister filter and bracket (B).
3. Remove the EVAP canister filter (A) from the bracket (B).



4. Install the parts in the reverse order of removal.

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