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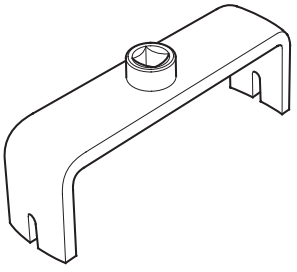
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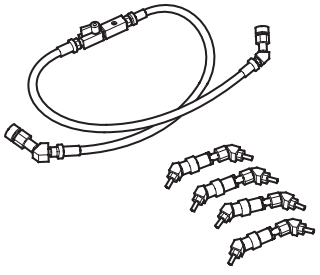
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Special Tools

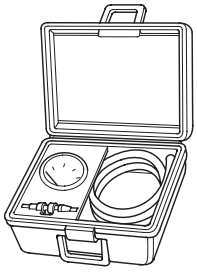
Ref. No.	Tool Number	Description	Qty
①	07AAA-SNAA100	Fuel Pump Module Locknut Wrench	1
②	07AAJ-S6MA150	Fuel Pressure Gauge Attachment Set	1
③	07JAZ-001000B	Vacuum/Pressure Gauge, 0—4 in.Hg	1
④	07NAJ-P07010A	Pressure Gauge Adapter	1
⑤	07ZAJ-S5AA200	Oil Pressure Hose	1
⑥-1	07406-0020201	A/T Pressure Hose	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 Adapter	1
⑦	07406-004000B	Fuel Pressure Gauge	1



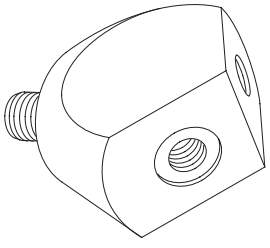
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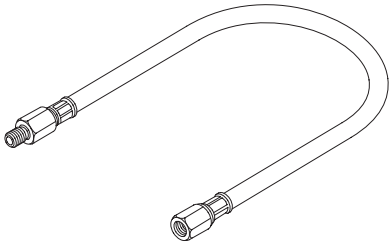
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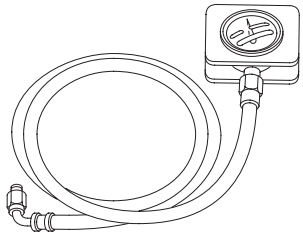
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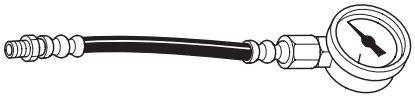
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⑤



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 terminals 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

Periodically, new ECM/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

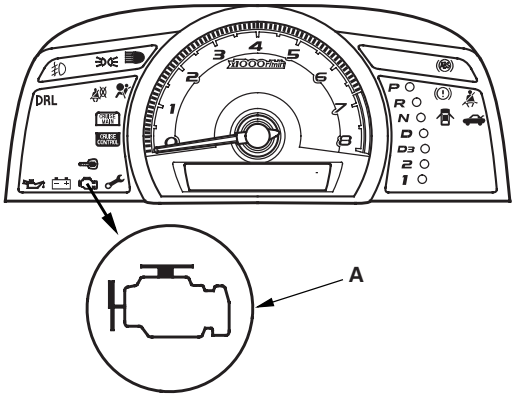
Open and short are common electrical terms. An open is a break in a wire or at a connection. A short is an accidental connection of a wire to ground or to another wire. In simple electronics, this usually means something won't work at all. With complex electronics (such as ECMs or PCMs) this can sometimes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

How to Use the HDS (Honda Diagnostic System)

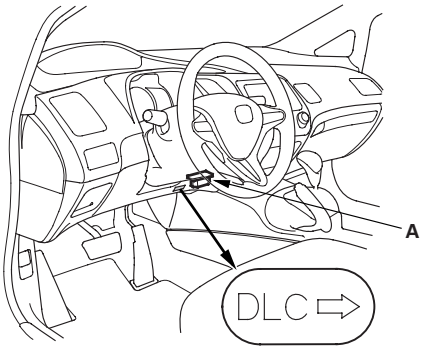
If the MIL (malfunction indicator lamp) has come on

1. Start the engine, and check the MIL (A).

   NOTE: If the ignition switch is turned to ON (II), and the engine is not started, the MIL stays on for 15—20 seconds (see page 11-69).



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 to ON (II).

4. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

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 that activated the MIL was detected.
   - The HDS can read the DTC, freeze data, on-board snapshot, current data, and other engine control module (ECM) or 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 troubleshooting (see page 11-203).

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 ECM/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 ECM/PCM.

(cont'd)

General Troubleshooting Information (cont'd)

HDS Clear Command

The ECM/PCM stores various specific data to correct the system even if there is no electrical power, such as when the battery negative terminal or the No. 19 FI MAIN (15 A) fuse is 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, ECM/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 ECM/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 ECM/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 ECM/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: ECM/PCM idle learn procedure (see page 11-310); CKP pattern learn procedure;
Test-drive to set readiness codes to complete (see page 11-69).

DTC Clear

1. Clear the DTC with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch to ON (II), and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.

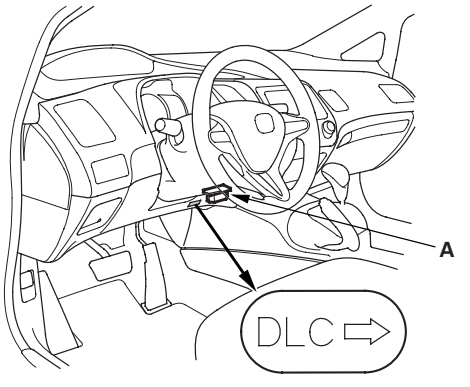
ECM/PCM Reset

1. Reset the ECM/PCM with the HDS while the engine is stopped.
2. Turn the ignition switch to LOCK (0).
3. Turn the ignition switch to ON (II), and wait 30 seconds.
4. Turn the ignition switch to LOCK (0), and disconnect the HDS from the DLC.
5. Do the ECM/PCM idle learn procedure (see page 11-310).

CKP Pattern Clear/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 to ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
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 (A/T in P or N, M/T in 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 A/T in S in 1st or 2nd, or M/T in 1st.
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 A/T in S in 1st or 2nd, or M/T in 1st.
4. Repeat step 2 and 3 several times.
5. Turn the ignition switch to LOCK (0).
6. Turn the ignition switch to ON (II), and wait 30 seconds.

How to End a Troubleshooting Session (required after any troubleshooting)

1. Reset the ECM/PCM with the HDS.
2. Do the ECM/PCM idle learn procedure (see page 11-310).
3. Turn the ignition switch to LOCK (0).
4. Disconnect the HDS from the DLC.

   NOTE: The ECM/PCM is part of the immobilizer system. If you replace the ECM/PCM, it will have a different immobilizer code. For the engine to start, you must rewrite the immobilizer code with the HDS.

(cont'd)

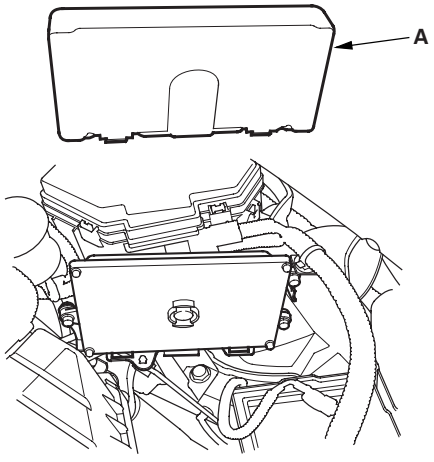
General Troubleshooting Information (cont'd)

How to Troubleshoot Circuits at the ECM/PCM Connectors

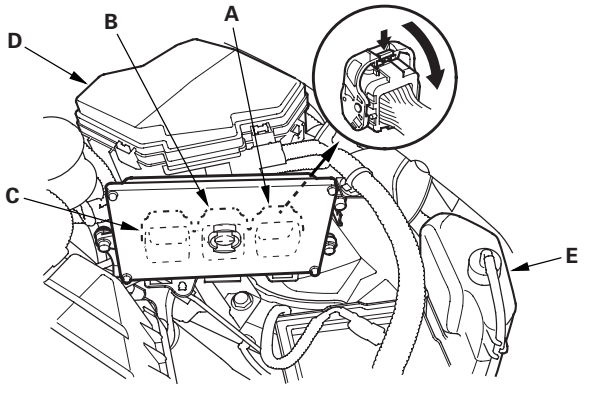
NOTE: The ECM/PCM overwrites data and monitors the EVAP system for about 30 minutes after the ignition switch is turned to LOCK (0) or ACC (I). Jumping the SCS line after turning the ignition switch to LOCK (0) or ACC (I) cancels this function. Disconnecting the ECM/PCM during this function, without jumping the SCS line first, can damage the ECM/PCM.

1. Make sure the ignition switch is turned to LOCK (0), then jump the SCS line with the HDS.

2. Remove the cover (A).



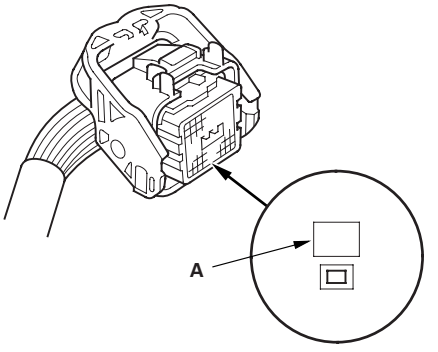
3. Lift up the under-hood fuse/relay box (D).



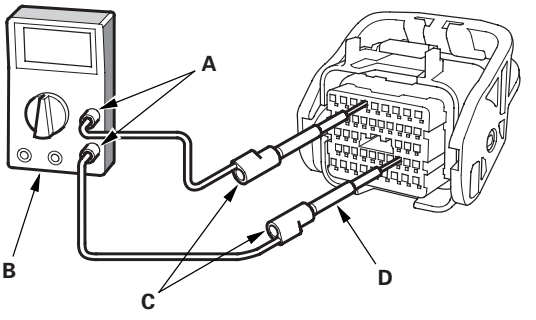
4. Remove the coolant reservoir (E). Disconnect ECM/PCM connectors A, B, and C, and probe the terminals from the terminal side of the connectors.

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

5. When diagnosis/troubleshooting is done at the ECM/PCM connector, use the terminal test port (A) above the terminal you need to check.



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



7. 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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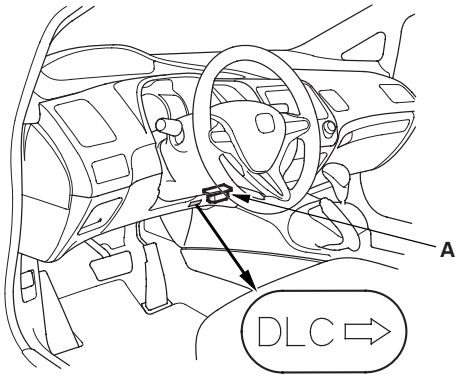
Substituting the ECM/PCM

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

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

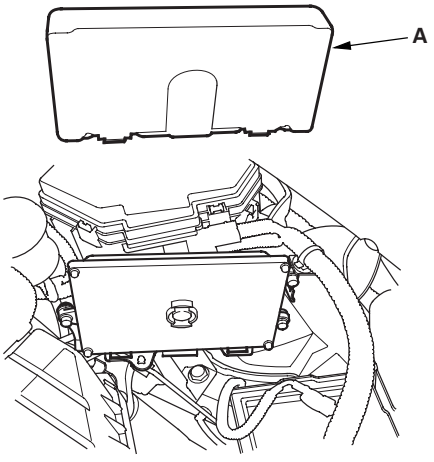
1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



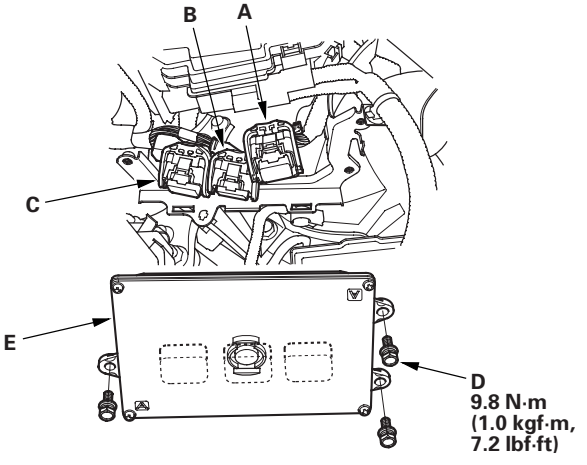
2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204). If you are returning from DLC circuit troubleshooting, skip step 4 and 5, and clean the throttle body after substituting the ECM/PCM (see page 11-344).
4. Select the INSPECTION MENU with the HDS.
5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

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

6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Do the battery removal procedure (see page 22-69).
9. Remove the cover (A).



10. Remove the bolts (D), then remove the ECM/PCM (E).



11. Disconnect ECM/PCM connectors A, B, and C.

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

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

(cont'd)

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General Troubleshooting Information (cont'd)

13. Do the battery installation procedure (see page 22-69).

14. Turn the ignition switch to ON (II).

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

15. Manually input the VIN to the ECM/PCM with the HDS.

16. Select the IMMOBI SYSTEM with the HDS.

17. Enter the immobilizer code that you got from the iN, or use the ECM/PCM replacement procedure in the HDS; this allows you to start the engine.

18. Reset the ECM/PCM with the HDS.

19. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-344).

20. Update the ECM/PCM if it does not have the latest software (see page 11-227).

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Do the CKP pattern clear/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 *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0010 (56)	———	Variable Valve Timing Control (VTC) Oil Control Solenoid Valve Malfunction	ON	(see page 11-274)
P0011 (56)	○	Variable Valve Timing Control (VTC) System Malfunction	ON	(see page 11-276)
P0101 (50)	○	Mass Air Flow (MAF) Sensor Circuit Range/Performance Problem	ON	(see page 11-74)
P0102 (50)	———	Mass Air Flow (MAF) Sensor Circuit Low Voltage	ON	(see page 11-75)
P0103 (50)	———	Mass Air Flow (MAF) Sensor Circuit High Voltage	ON	(see page 11-78)
P0107 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit Low Voltage	ON	(see page 11-80)
P0108 (3)	———	Manifold Absolute Pressure (MAP) Sensor Circuit High Voltage	ON	(see page 11-82)
P0111 (10)	○	Intake Air Temperature (IAT) Sensor Circuit Range/Performance Problem	ON	(see page 11-85)
P0112 (10)	———	Intake Air Temperature (IAT) Sensor Circuit Low Voltage	ON	(see page 11-86)
P0113 (10)	———	Intake Air Temperature (IAT) Sensor Circuit High Voltage	ON	(see page 11-87)
P0116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/ Performance Problem	ON	(see page 11-90)
P0117 (6)	———	Engine Coolant Temperature (ECT) Sensor 1 Circuit Low Voltage	ON	(see page 11-91)
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 11-232)
P0123 (7)	———	Throttle Position (TP) Sensor A Circuit High Voltage	ON	(see page 11-234)
P0125 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Malfunction/Slow Responce	ON	(see page 11-95)
P0128 (87)	○	Cooling System Malfunction	ON	(see page 11-96)
P0133 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Malfunction/Slow Response	ON	(see page 11-97)
P0134 (41)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater System Malfunction	ON	(see page 11-98)
P0135 (41)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) Heater Circuit Malfunction	ON	(see page 11-99)
P0137 (63)	———*4 ○*5	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Low Voltage	ON	(see page 11-104)
P0138 (63)	———*4 ○*5	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit High Voltage	ON	(see page 11-106)
P0139 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Slow Response	ON	(see page 11-109)
P0141 (65)	———	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Heater Circuit Malfunction	ON	(see page 11-110)
P0171 (45)	○	Fuel System Too Lean	ON	(see page 11-113)
P0172 (45)	○	Fuel System Too Rich	ON	(see page 11-113)
P0222 (7)	———	Throttle Position (TP) Sensor B Circuit Low Voltage	ON	(see page 11-236)
P0223 (7)	———	Throttle Position (TP) Sensor B Circuit High Voltage	ON	(see page 11-239)
P0300 (75) and any combination of the following: P0301 (71) P0302 (72) P0303 (73) P0304 (74)	○	Random Misfire Detected	ON	(see page 11-115)
P0301 (71)	○	No. 1 Cylinder Misfire Detected	ON	(see page 11-118)
P0302 (72)	○	No. 2 Cylinder Misfire Detected	ON	(see page 11-118)
P0303 (73)	○	No. 3 Cylinder Misfire Detected	ON	(see page 11-118)
P0304 (74)	○	No. 4 Cylinder Misfire Detected	ON	(see page 11-118)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with 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.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*4: K20Z2 engine
*5: K20Z3 engine

(cont'd)

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DTC Troubleshooting Index (cont'd)

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0325 (23)	———	Knock Sensor Circuit Malfunction	ON	(see page 11-126)
P0335 (4)	———	Crankshaft Position (CKP) Sensor No Signal	ON	(see page 11-128)
P0339 (4)	———	Crankshaft Position (CKP) Sensor Circuit Intermittent Interruption	ON	(see page 11-131)
P0340 (57)	———	Camshaft Position (CMP) Sensor A No Signal	ON	(see page 11-278)
P0341 (57)	———	Camshaft Position (CMP) Sensor A and Crankshaft Position (CKP) Sensor Incorrect Phase Detected	ON	(see page 11-281)
P0344 (57)	———	Camshaft Position (CMP) Sensor A Circuit Intermittent Interruption	ON	(see page 11-282)
P0365 (8)	———	Camshaft Position (CMP) Sensor B No Signal	ON	(see page 11-132)
P0369 (8)	———	Camshaft Position (CMP) Sensor B Circuit Intermittent Interruption	ON	(see page 11-134)
P0401 (80) *4	○	Exhaust Gas Recirculation (EGR) Insufficient Flow	ON	(see page 11-357)
P0404 (12) *4	○	Exhaust Gas Recirculation (EGR) Valve Circuit Range/Performance Problem	ON	(see page 11-358)
P0406 (12) *4	———	Exhaust Gas Recirculation (EGR) Valve Position Sensor Circuit High Voltage	ON	(see page 11-361)
P0420 (67)	○	Catalyst System Efficiency Below Threshold	ON	(see page 11-353)
P0443 (92)	———	Evaporative Emission (EVAP) Canister Purge Valve Circuit Malfunction	ON	(see page 11-375)
P0451 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-379)
P0452 (91)	———*6 ○*7	Fuel Tank Pressure (FTP) Sensor Circuit Low Voltage	ON	(see page 11-380)
P0453 (91)	———*6 ○*7	Fuel Tank Pressure (FTP) Sensor Circuit High Voltage	ON	(see page 11-383)
P0455 (90)	○	Evaporative Emission (EVAP) System Large Leak Detected	ON	(see page 11-386)
P0456 (90)	○	Evaporative Emission (EVAP) System Very Small Leak Detected	ON	(see page 11-386)
P0457 (90) *4	○	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	ON	(see page 11-390)
P0457 (90) *5	———	Evaporative Emission (EVAP) System Leak Detected/Fuel Fill Cap Loose or Missing	OFF	(see page 11-390)
P0461 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/ Performance Problem	OFF	(see page 11-313)
P0462 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Low Voltage	OFF	(see page 11-313)
P0463 (121)	———	Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit High Voltage	OFF	(see page 11-315)
P0496 (92)	○	Evaporative Emission (EVAP) System High Purge Flow Detected	ON	(see page 11-391)
P0497 (90) *4	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see page 11-392)
P0497 (90) *5	○	Evaporative Emission (EVAP) System Low Purge Flow Detected	ON	(see page 11-395)
P0498 (117)	———	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit Low Voltage	ON	(see page 11-398)
P0499 (117)	———	Evaporative Emission (EVAP) Canister Vent Shut Valve Circuit High Voltage	ON	(see page 11-401)
P0506 (14)	○	Idle Control System RPM Lower Than Expected	ON	(see page 11-298)
P0507 (14)	○	Idle Control System RPM Higher Than Expected	ON	(see page 11-300)
P050A (167)	○	Cold Start Idle Air Control System Performance Problem	ON	(see page 11-135)
P050B (167)	○	Cold Start Ignition Timing Control System Performance Problem	ON	(see page 11-137)
P0532 (191)	———	A/C Pressure Sensor Circuit Low Voltage	OFF	(see page 11-301)
P0533 (191)	———	A/C Pressure Sensor Circuit High Voltage	OFF	(see page 11-303)
P0562 (34)	———	Charging System Low Voltage	OFF	(see page 11-140)
P0563 (34)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Source Circuit Unexpected Voltage	OFF	(see page 11-141)
P0602 (196)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Programming Error	ON	(see page 11-144)
P0603 (131) *8	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-144)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with 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.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*4: K20Z2 engine
*5: K20Z3 engine
*6: '06 model
*7: '07-09 models
*8: '06-08 models

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DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P0606 (0)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Processor Malfunction	ON	(see page 11-145)
P060A (131) *1	———	Powertrain Control Module (PCM) (A/T System) Internal Control Module Malfunction	ON	(see page 11-145)
P062F (131) *9	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Internal Control Module Keep Alive Memory (KAM) Error	ON	(see page 11-144)
P0630 (139)	———	VIN Not Programmed or Mismatch	ON	(see page 11-146)
P0685 (135)	○	Engine Control Module (ECM)/Powertrain Control Module (PCM) Power Control Circuit/Internal Circuit Malfunction	ON	(see page 11-147)
P0720 (122) *1, *2	———	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see page 11-148)
P0720 (122) *3	———	Output Shaft (Countershaft) Speed Sensor Circuit Malfunction	ON	(see page 11-149)
P1009 (56)	———	Variable Valve Timing Control (VTC) Advance Malfunction	ON	(see page 11-283)
P1109 (13)	———	Barometric Pressure (BARO) Sensor Circuit Out of Range High	ON	(see page 11-152)
P1116 (86)	○	Engine Coolant Temperature (ECT) Sensor 1 Circuit Range/ Performance Problem	ON	(see page 11-153)
P1128 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Lower Than Expected	ON	(see page 11-155)
P1129 (5)	○	Manifold Absolute Pressure (MAP) Sensor Signal Higher Than Expected	ON	(see page 11-156)
P1157 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS Circuit High Voltage	ON	(see page 11-157)
P1172 (61)	———*4 ○*5	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Out of Range High	ON	(see page 11-159)
P1297 (20)	———	Electrical Load Detector (ELD) Circuit Low Voltage	OFF	(see page 11-160)
P1298 (20)	———	Electrical Load Detector (ELD) Circuit High Voltage	OFF	(see page 11-162)
P1454 (91)	○	Fuel Tank Pressure (FTP) Sensor Circuit Range/Performance Problem	ON	(see page 11-402)
P145C (90) *5	○	Evaporative Emission (EVAP) System Purge Flow Malfunction	ON	(see page 11-404)
P1549 (34)	———	Charging System High Voltage	OFF	(see page 11-164)
P1658 (40)	———	Electronic Throttle Control System (ETCS) Control Relay ON Malfunction	ON	(see page 11-241)
P1659 (40)	———	Electronic Throttle Control System (ETCS) Control Relay OFF Malfunction	ON	(see page 11-243)
P1683 (40)	———	Throttle Valve Default Position Spring Performance Problem	ON	(see page 11-247)
P1684 (40)	———	Throttle Valve Return Spring Performance Problem	ON	(see page 11-248)
P16BB (116)	———	Alternator B Terminal Circuit Low Voltage	OFF	(see page 11-165)
P16BC (116)	———	Alternator FR Terminal Circuit/IGP Circuit Low Voltage	OFF	(see page 11-166)
P2101 (40)	———	Electronic Throttle Control System (ETCS) Malfunction	ON	(see page 11-249)
P2118 (40)	———	Throttle Actuator Current Range/Performance Problem	ON	(see page 11-251)
P2122 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit Low Voltage	ON	(see page 11-253)
P2123 (37)	———	Accelerator Pedal Position (APP) Sensor A (Throttle Position (TP) Sensor D) Circuit High Voltage	ON	(see page 11-256)
P2127 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit Low Voltage	ON	(see page 11-257)
P2128 (37)	———	Accelerator Pedal Position (APP) Sensor B (Throttle Position (TP) Sensor E) Circuit High Voltage	ON	(see page 11-260)
P2135 (7)	———	Throttle Position (TP) Sensor A/B Incorrect Voltage Correlation	ON	(see page 11-262)
P2138 (37)	———	Accelerator Pedal Position (APP) Sensor A/B (Throttle Position (TP) Sensor D/E) Incorrect Voltage Correlation	ON	(see page 11-264)
P2176 (40)	———	Throttle Actuator Control System Idle Position Not Learned	ON	(see page 11-266)
P2183 (192)	○	Engine Coolant Temperature (ECT) Sensor 2 Circuit Range/ Performance Problem	ON	(see page 11-168)
P2184 (192)	———	Engine Coolant Temperature (ECT) Sensor 2 Circuit Low Voltage	ON	(see page 11-170)
P2185 (192)	———	Engine Coolant Temperature (ECT) Sensor 2 Circuit High Voltage	ON	(see page 11-172)
P2195 (48)	———*3 ○*1	Air Fuel Ratio (A/F) Sensor (Sensor 1) Signal Stuck Lean	ON	(see page 11-174)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with 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.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*1: A/T
*2: The D indicator and the MIL may come on at the same time (A/T).
*3: M/T
*4: K20Z2 engine
*5: K20Z3 engine
*9: '09 model

(cont'd)

DTC Troubleshooting Index (cont'd)

DTC (MIL indication *)	Two Drive Cycle Detection	Detection Item	MIL	Note
P2227 (13)	○	Barometric Pressure (BARO) Sensor Circuit Range/Performance Problem	ON	(see page 11-176)
P2228 (13)	———	Barometric Pressure (BARO) Sensor Circuit Low Voltage	ON	(see page 11-177)
P2229 (13)	———	Barometric Pressure (BARO) Sensor Circuit High Voltage	ON	(see page 11-177)
P2238 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS+ Circuit Low Voltage	ON	(see page 11-178)
P2252 (48)	———	Air Fuel Ratio (A/F) Sensor (Sensor 1) AFS− Circuit Low Voltage	ON	(see page 11-179)
P2270 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Lean	ON	(see page 11-181)
P2271 (63)	○	Secondary Heated Oxygen Sensor (Secondary HO2S (Sensor 2)) Circuit Signal Stuck Rich	ON	(see page 11-181)
P2413 (12) *4	○	Exhaust Gas Recirculation (EGR) System Malfunction	ON	(see page 11-363)
P2422 (117)	○	Evaporative Emission (EVAP) Canister Vent Shut Valve Stuck Closed Malfunction	ON	(see page 11-402)
P2610 (132)	———	Engine Control Module (ECM)/Powertrain Control Module (PCM) Ignition Off Internal Timer Malfunction	ON	(see page 11-182)
P2646 (22)	———	Rocker Arm Oil Pressure Switch Circuit Low Voltage	ON	(see page 11-284)
P2647 (22)	———	Rocker Arm Oil Pressure Switch Circuit High Voltage	ON	(see page 11-287)
P2648 (21)	———	Rocker Arm Oil Control Solenoid Circuit Low Voltage	ON	(see page 11-289)
P2649 (21)	———	Rocker Arm Oil Control Solenoid Circuit High Voltage	ON	(see page 11-291)
P2A00 (61)	○	Air Fuel Ratio (A/F) Sensor (Sensor 1) Circuit Range/Performance Problem	ON	(see page 11-182)
U0028 (126)	———	F-CAN Malfunction (BUS-OFF (Engine Control Module (ECM)/ Powertrain Control Module (PCM)))	ON	(see page 11-183)
U0122 (126) *6	———	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Vehicle Stability Assist (VSA) Modulator-Control Unit)	OFF	(see page 11-184)
U0131 (126)	———	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Electrical Power Steering (EPS) Control Unit)	OFF	(see page 11-186)
U0155 (126)	———	F-CAN Malfunction (Engine Control Module (ECM)/Powertrain Control Module (PCM)-Gauge Control Module)	ON	(see page 11-188)
U0300 (131) *1	———	PGM-FI System and A/T System Program Version Mismatch	ON	(see page 11-190)

NOTE:
- The above DTCs are indicated when the PGM-FI system is selected with 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.

*: These DTCs are indicated by a blinking MIL when the SCS line is jumped with the HDS.
*1: A/T
*4: K20Z2 engine
*6: with VSA

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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 22-67). 2. Test the starter (see page 4-9). 3. Check the fuel pressure (see page 11-325). 4. Troubleshoot the fuel pump circuit (see page 11-318).	• Low compression • No ignition spark • Intake air leaks • Locked up engine • Broken cam chain • Fuel contamination
Engine will not start (MIL comes on and stays on, no DTCs set)	Troubleshoot the DLC circuit (see page 11-204).	
MIL comes on and stays on, or never comes on at all, no DTCs set	Troubleshoot the MIL circuit (see page 11-203).	
Engine will not start (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system (see page 22-321).	
Engine starts but stalls immediately (MIL works OK, no DTCs set, immobilizer indicator stays on or flashes)	Check the immobilizer system (see page 22-323).	
Engine is hard to start (MIL works OK, no DTCs set)	1. Test the battery (see page 22-67). 2. Check the fuel pressure (see page 11-325). 3. Clean the throttle body (see page 11-344).	• Low compression • Intake air leaks • Fuel contamination • Weak spark
Cold fast idle too low (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the idle speed (see page 11-309). 3. Clean the throttle body (see page 11-344).	
Cold fast idle too high (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the idle speed (see page 11-309). 3. Do the throttle position learning check (see page 11-343).	Intake air leaks
Idle speed fluctuates (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the idle speed (see page 11-309). 3. Do the carbon accumulation check (see page 11-343). 4. Troubleshoot the A/C signal circuit (see page 11-306).	• Incorrect valve timing or clearance adjustment • Intake air 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 11-307). 2. Do the carbon accumulation check (see page 11-343).	Incorrect valve timing or clearance 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 11-307). 2. Inspect the APP sensor (see page 11-268).	Intake air leaks

(cont'd)

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Symptom Troubleshooting Index (cont'd)

Symptom	Diagnostic procedure	Also check for
Low power (MIL works OK, no DTCs set)	Check the fuel pressure (see page 11-325).	• Low compression • Incorrect camshaft timing • Incorrect engine oil level • Exhaust restriction
Engine stalls (MIL works OK, no DTCs set)	1. Do the ECM/PCM idle learn procedure (see page 11-310). 2. Check the fuel pressure (see page 11-325). 3. Check the idle speed (see page 11-309). 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. Replace the fuel tank (see page 11-339).	• Malfunctioning gas station filling nozzle. • Filler neck restriction • Faulty fuel tank vapor control valve
Fuel overflows during refueling (No DTCs set)	Replace the fuel tank (see page 11-339).	Malfunctioning gas station filling nozzle.
HDS does not communicate with the ECM/PCM or the vehicle	Troubleshoot the DLC circuit (see page 11-204).	
Fuel cap warning message stays on (MIL works OK, no DTCs set) (K20Z3 engine)	Troubleshoot the fuel cap warning message system (see page 11-405).	

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System Description

Electronic Control Systems

The functions of the fuel and emission control systems are managed by the engine control module (ECM) on vehicles with manual transmissions or the powertrain control module (PCM) on vehicles with automatic transmissions.

Self-diagnosis
The ECM/PCM detects a failure of a signal from a sensor or another control unit and stores a Temporary DTC or a DTC. Depending on the failure, a DTC is stored in either the first or the second drive cycle (K20Z3 engine: DTC P0457, turns on the malfunction indicator lamp (MIL) during the third drive cycle). When a DTC is stored, the ECM/PCM turns on the malfunction indicator lamp (MIL) by a signal sent to the gauge via F-CAN.

- **One Drive Cycle Detection Method**
  When an abnormality occurs in the signal from a sensor or from another control unit, the ECM/PCM stores a DTC 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 ECM/PCM stores a Temporary DTC. If the failure continues in the second drive cycle, the ECM/PCM stores a DTC and turns on the MIL.

Fail-safe Function
When an abnormality occurs in the signal from a sensor or another control unit, the ECM/PCM ignores the 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 to ON (II), the ECM/PCM turns on the MIL via the F-CAN circuit for about 15 to 20 seconds to check the bulb condition. If any readiness codes are not set to complete, the MIL flashes five times. If all readiness codes are set to complete, the MIL goes off.

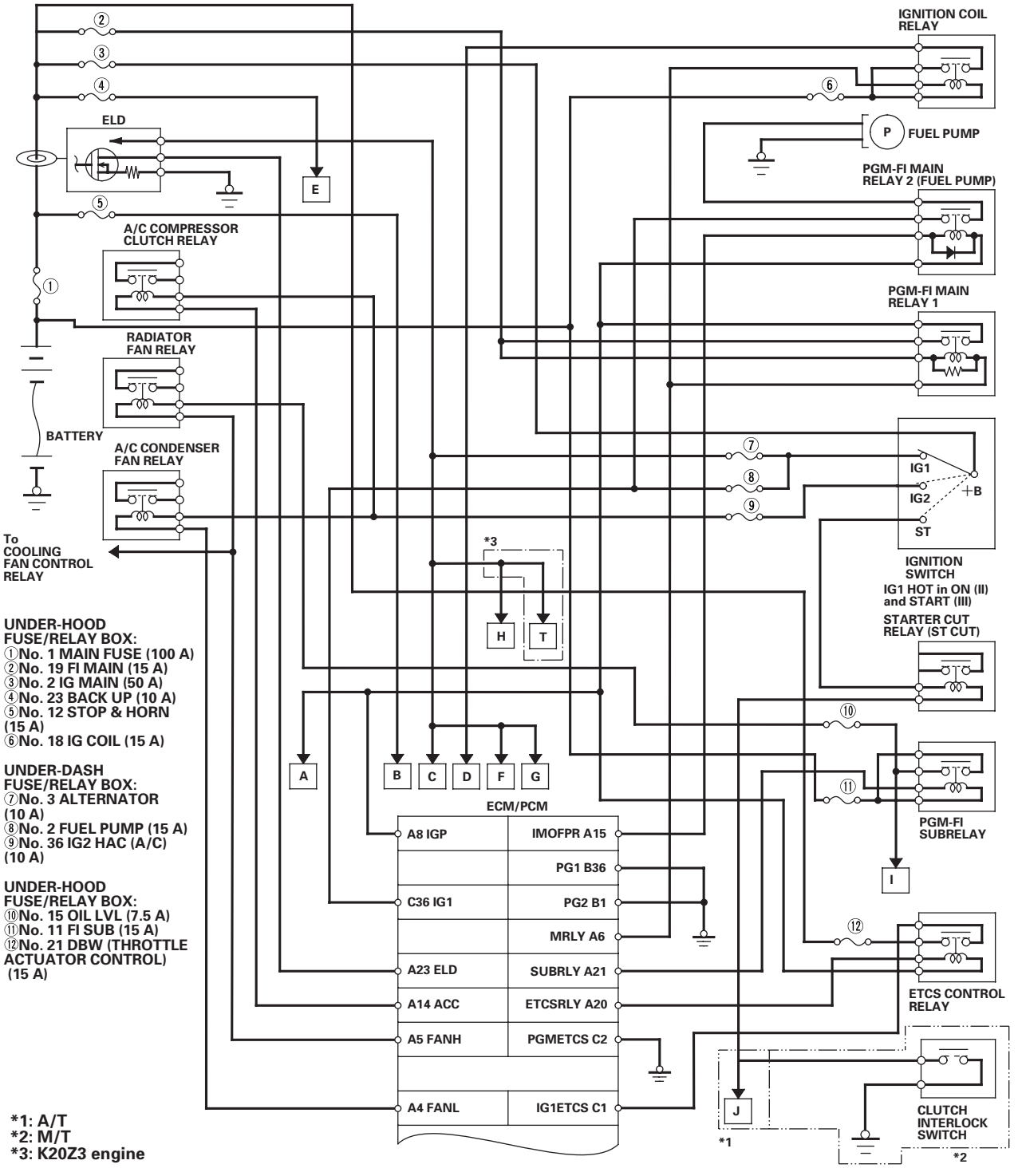
Self Shut Down (SSD) Mode
After the ignition switch is turned to LOCK (0), the ECM/PCM stays on (about 30 minutes). If the ECM/PCM connector is disconnected during this time, the ECM/PCM may be damaged. To cancel this mode, disconnect the negative cable from the battery or jump the SCS line with the HDS after the ignition switch is turned to LOCK (0).

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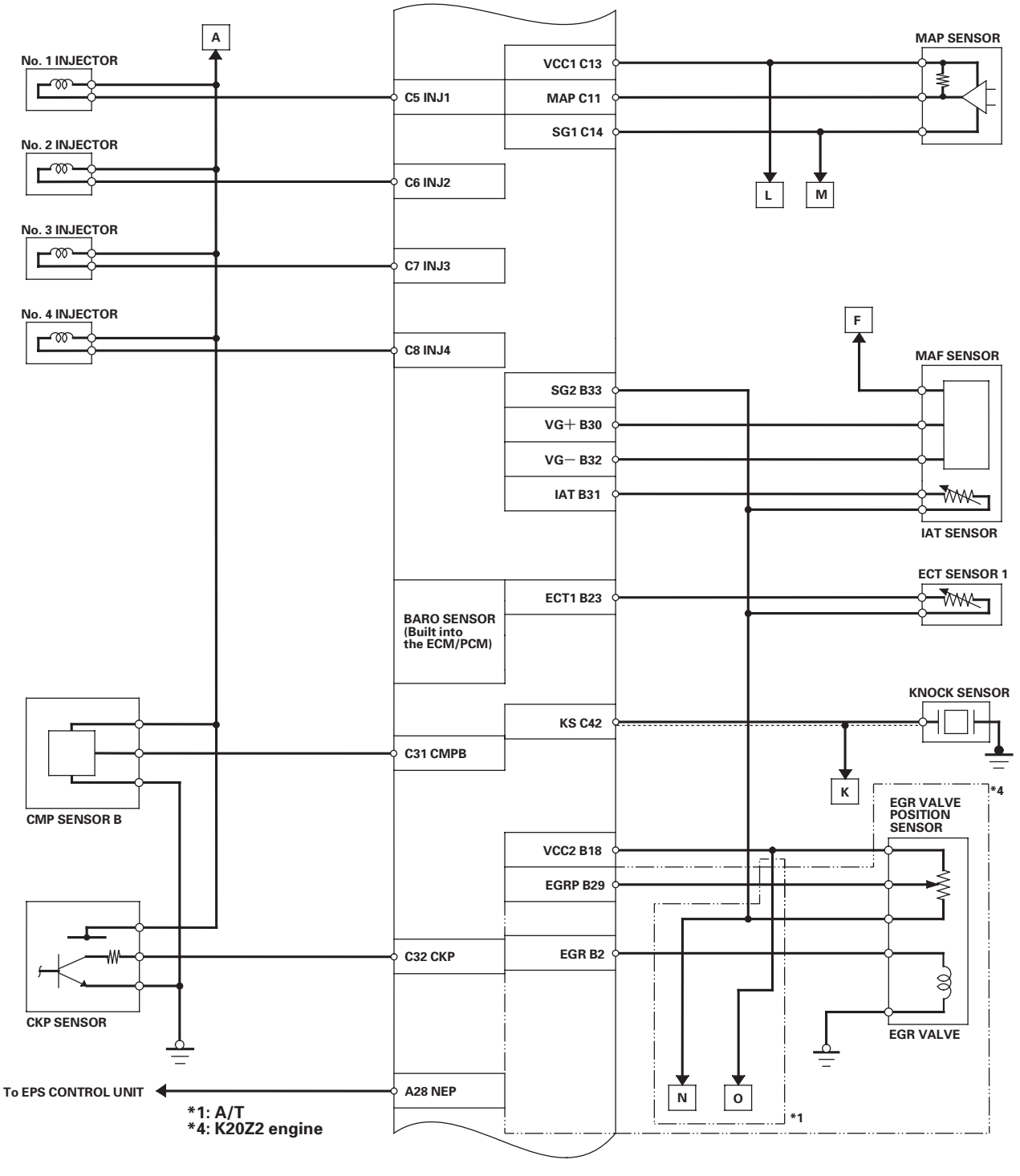
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System Description (cont'd)

ECM/PCM Electrical Connections



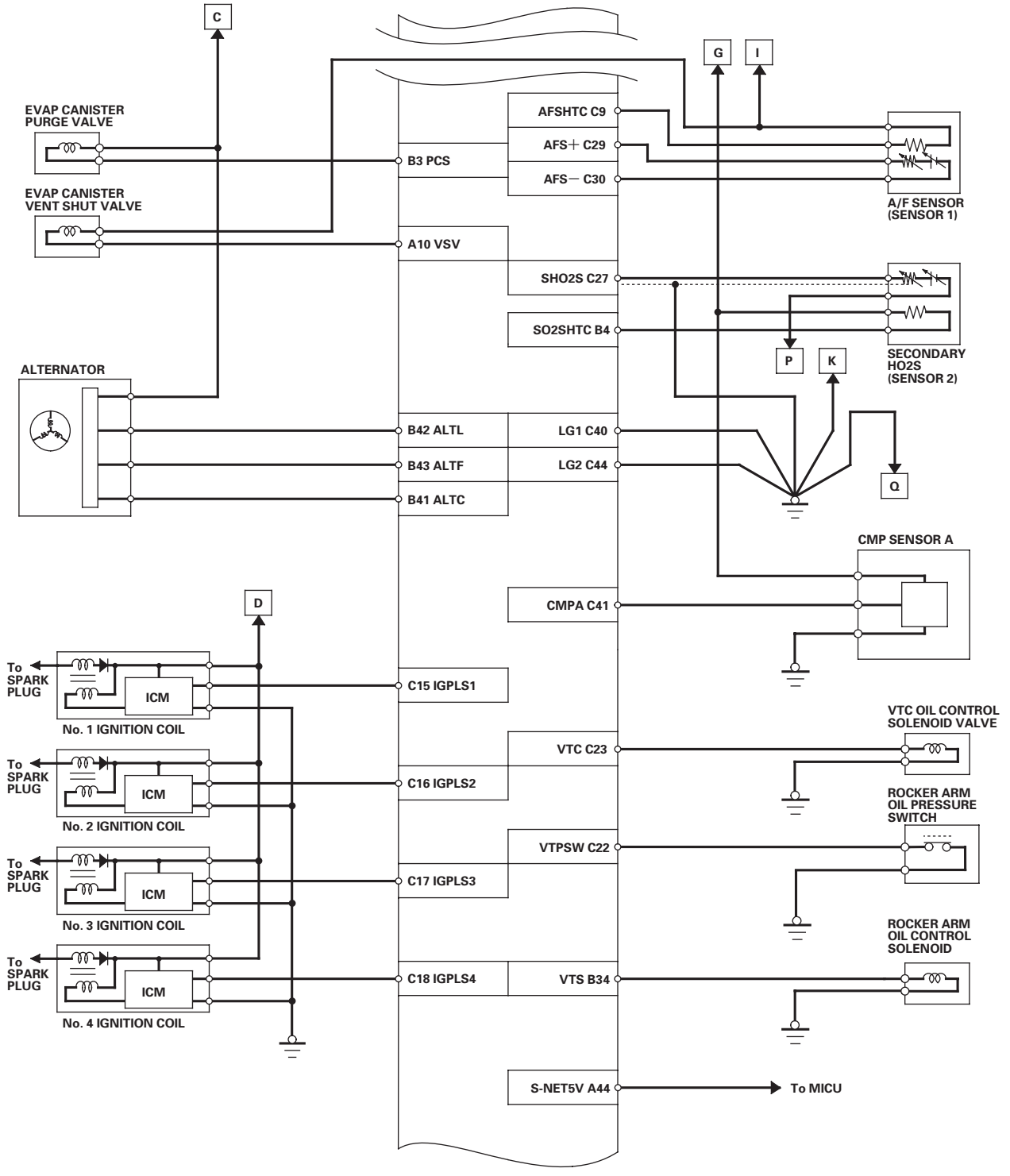
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A
No. 1 INJECTOR
No. 2 INJECTOR
No. 3 INJECTOR
No. 4 INJECTOR
C5 INJ1
C6 INJ2
C7 INJ3
C8 INJ4
VCC1 C13
MAP C11
SG1 C14
MAP SENSOR
L
M
F
MAF SENSOR
SG2 B33
VG+ B30
VG− B32
IAT B31
IAT SENSOR
ECT SENSOR 1
ECT1 B23
BARO SENSOR (Built into the ECM/PCM)
KNOCK SENSOR
KS C42
C31 CMPB
CMP SENSOR B
K
*4
EGR VALVE POSITION SENSOR
VCC2 B18
EGRP B29
EGR B2
C32 CKP
CKP SENSOR
EGR VALVE
N
O
*1
To EPS CONTROL UNIT
A28 NEP
*1: A/T
*4: K20Z2 engine

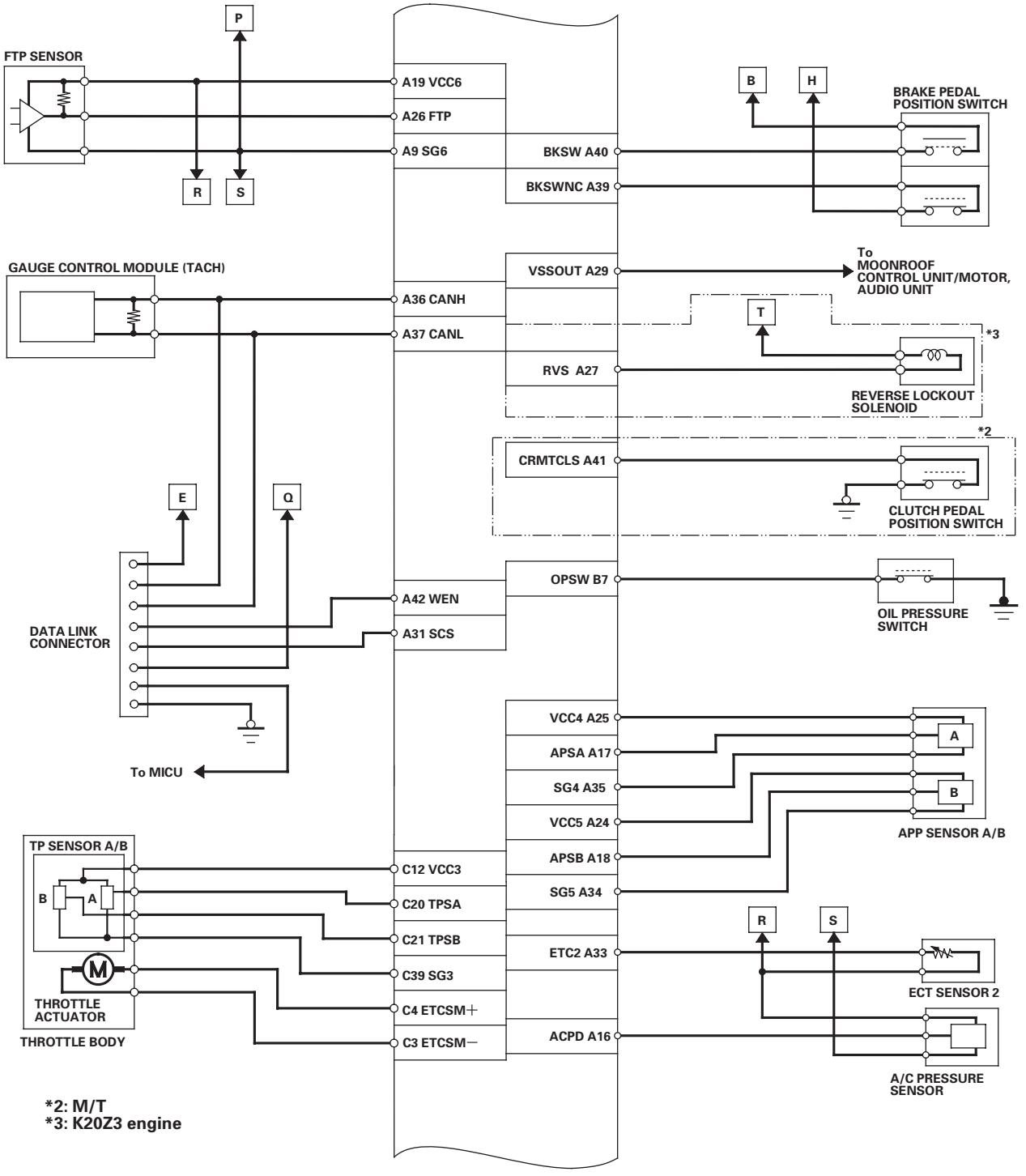
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System Description (cont'd)

ECM/PCM Electrical Connections (cont'd)



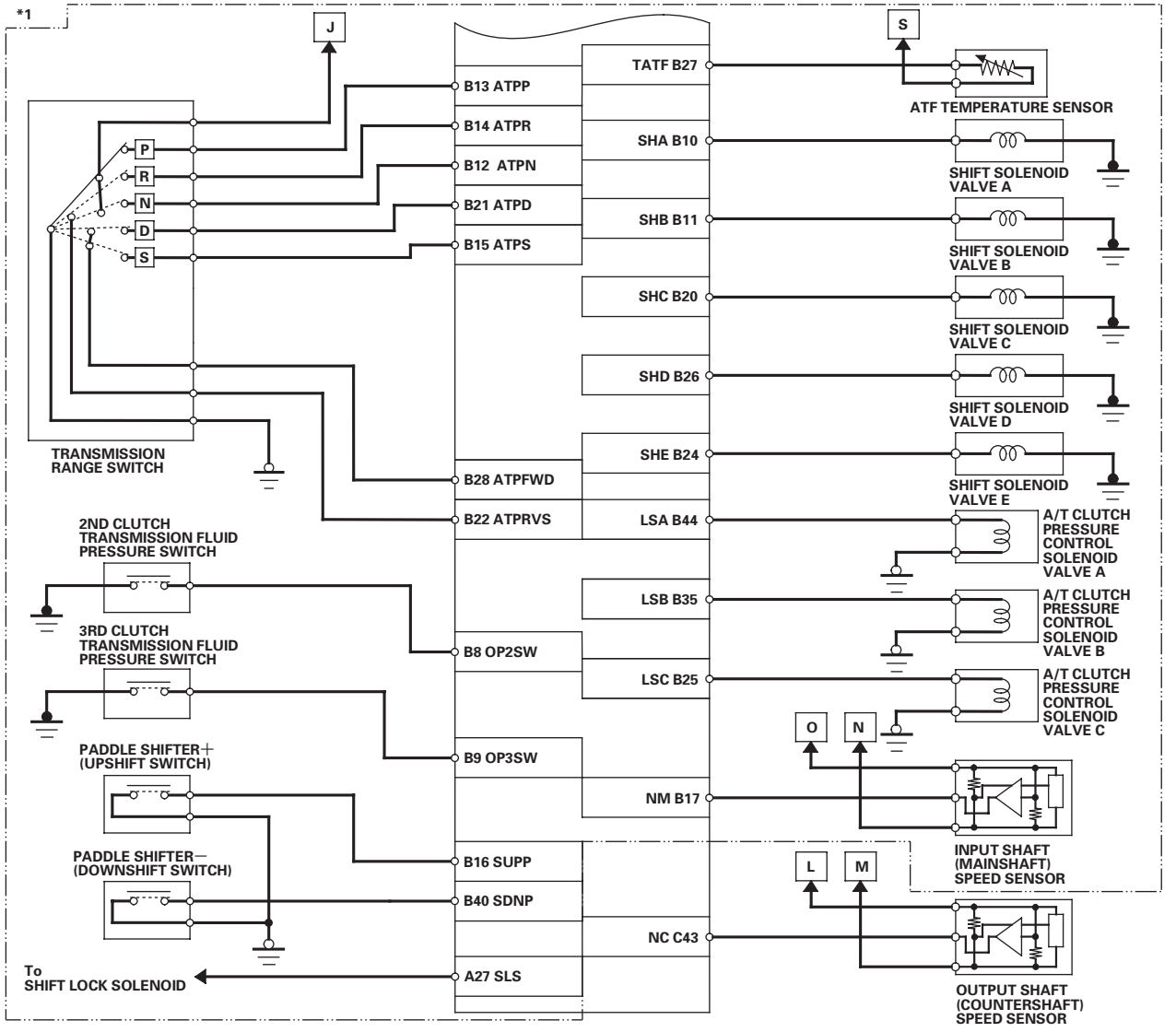
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FTP SENSOR
P
R
S
A19 VCC6
A26 FTP
A9 SG6
BKSW A40
BKSWNC A39
B
H
BRAKE PEDAL POSITION SWITCH
GAUGE CONTROL MODULE (TACH)
A36 CANH
A37 CANL
VSSOUT A29
To MOONROOF CONTROL UNIT/MOTOR, AUDIO UNIT
T
*3
RVS A27
REVERSE LOCKOUT SOLENOID
*2
CRMTCLS A41
CLUTCH PEDAL POSITION SWITCH
E
Q
DATA LINK CONNECTOR
A42 WEN
A31 SCS
OPSW B7
OIL PRESSURE SWITCH
To MICU
VCC4 A25
APSA A17
SG4 A35
VCC5 A24
APSB A18
SG5 A34
A
B
APP SENSOR A/B
TP SENSOR A/B
B
A
M
THROTTLE ACTUATOR
THROTTLE BODY
C12 VCC3
C20 TPSA
C21 TPSB
C39 SG3
C4 ETCSM+
C3 ETCSM−
ETC2 A33
ACPD A16
R
S
ECT SENSOR 2
A/C PRESSURE SENSOR
*2: M/T
*3: K20Z3 engine

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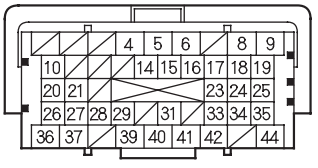
System Description (cont'd)

ECM/PCM Electrical Connections (cont'd)

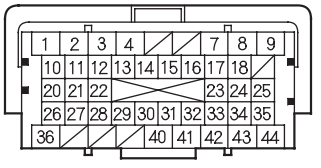


*1: A/T

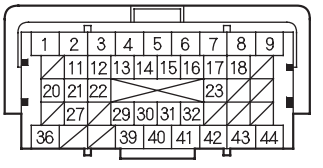
ECM/PCM A (□) (44P)



ECM/PCM B (△) (44P)



ECM/PCM C (○) (44P)

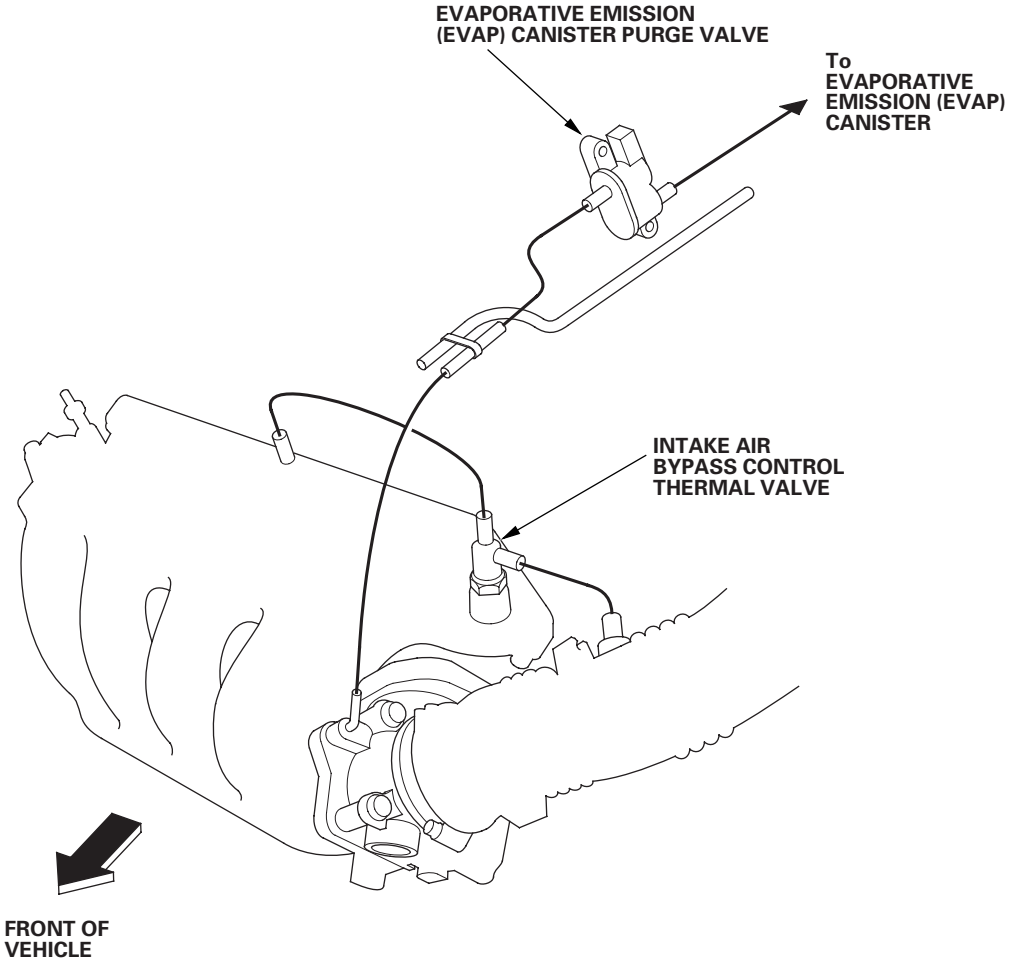


TERMINAL LOCATIONS

DYNOMITE -2009-

Vacuum Hose Routing

K20Z2 engine

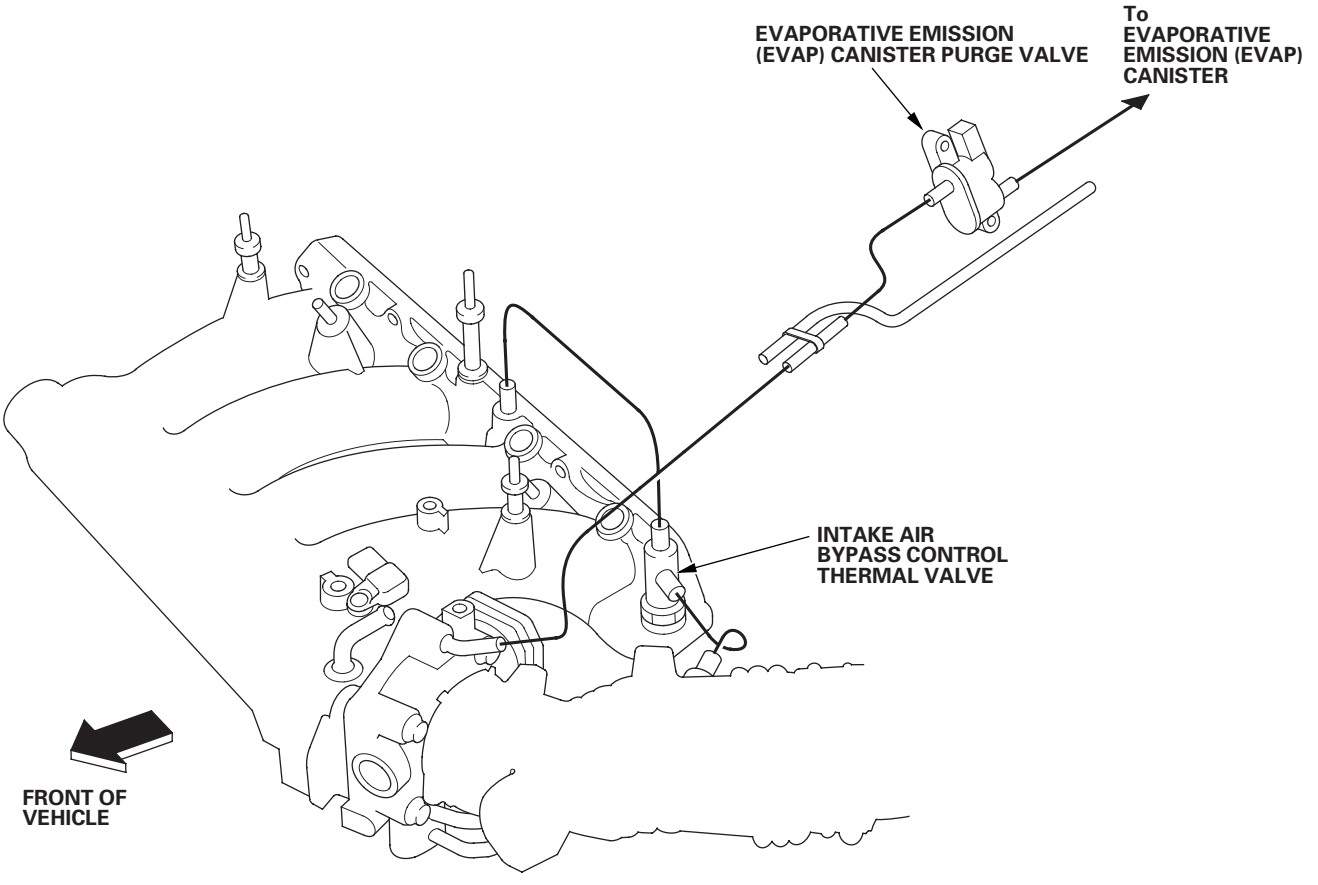


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System Description (cont'd)

Vacuum Hose Routing (cont'd)

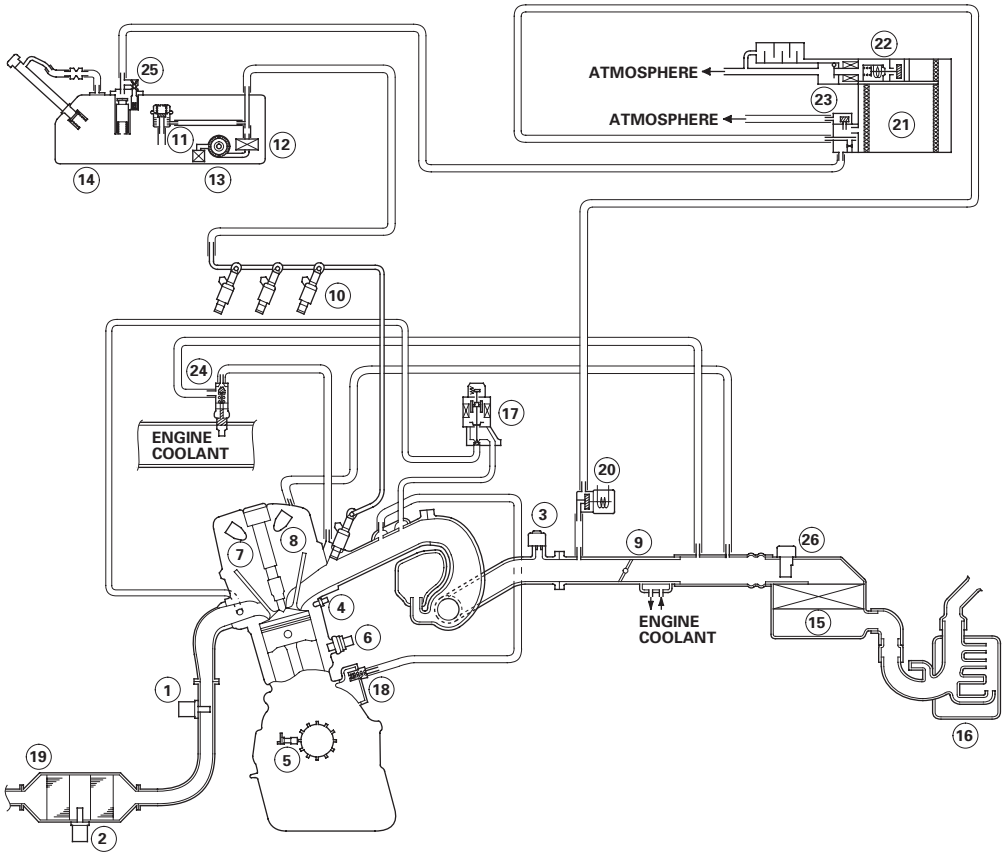
K20Z3 engine



DYNOMITE -2009-

Vacuum Distribution

K20Z2 engine



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

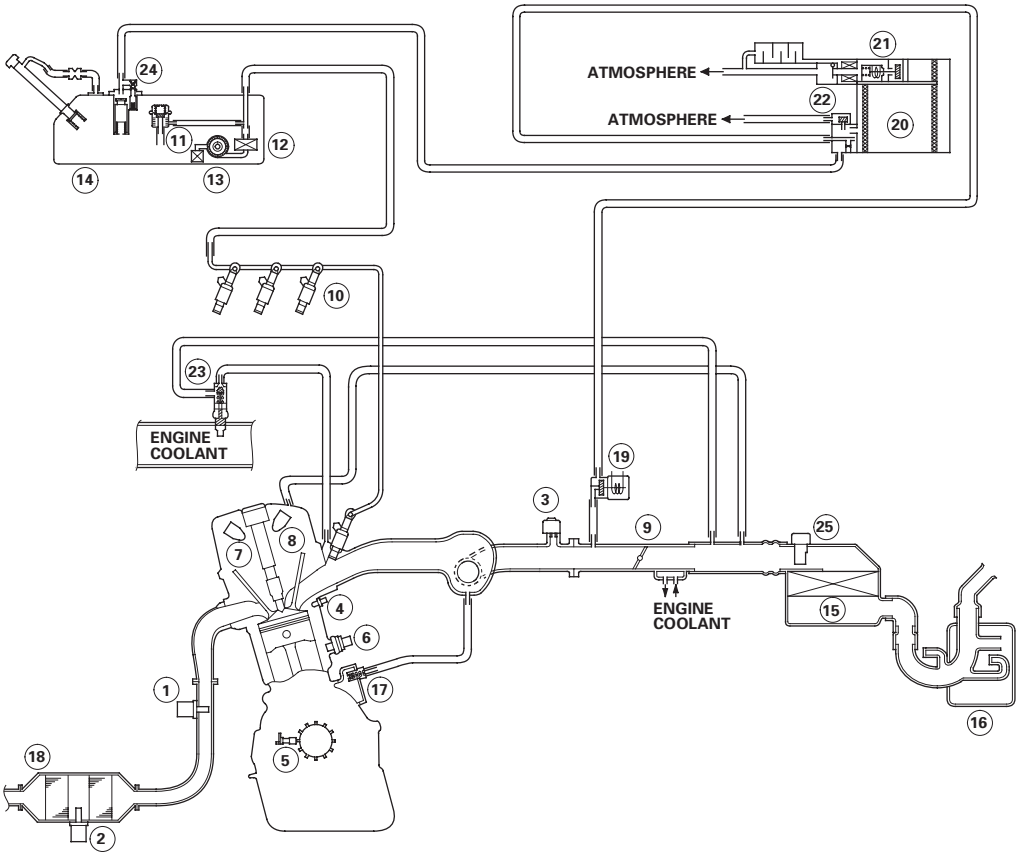
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DYNOMITE -2009-

System Description (cont'd)

Vacuum Distribution (cont'd)

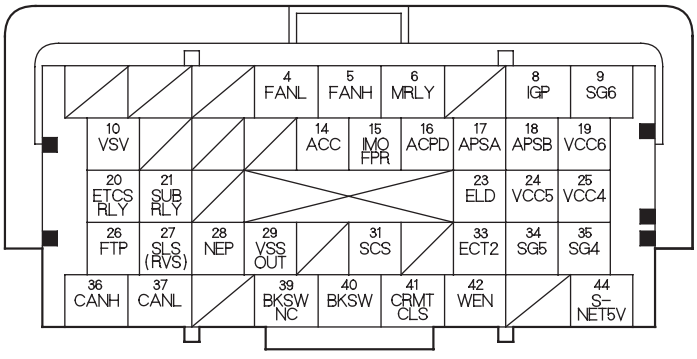
K20Z3 engine



① AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
② SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
③ MANIFOLD ABSOLUTE PRESSURE (MAP) SENSOR
④ ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1
⑤ CRANKSHAFT POSITION (CKP) SENSOR
⑥ KNOCK SENSOR
⑦ CAMSHAFT POSITION (CMP) SENSOR B
⑧ CAMSHAFT POSITION (CMP) SENSOR A
⑨ THROTTLE BODY
⑩ INJECTOR
⑪ FUEL PRESSURE REGULATOR
⑫ FUEL FILTER
⑬ FUEL PUMP
⑭ FUEL TANK
⑮ AIR CLEANER
⑯ INTAKE AIR RESONATOR
⑰ POSITIVE CRANKCASE VENTILATION (PCV) VALVE
⑱ THREE WAY CATALYTIC CONVERTER
⑲ EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE
⑳ EVAPORATIVE EMISSION (EVAP) CANISTER
㉑ EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE
㉒ FUEL TANK PRESSURE (FTP) SENSOR
㉓ INTAKE AIR BYPASS CONTROL THERMAL VALVE
㉔ FUEL TANK VAPOR CONTROL VALVE
㉕ MASS AIR FLOW (MAF) SENSOR/ INTAKE AIR TEMPERATURE (IAT) SENSOR

DYNOMITE -2009-

ECM/PCM Inputs and Outputs at Connector A (□) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

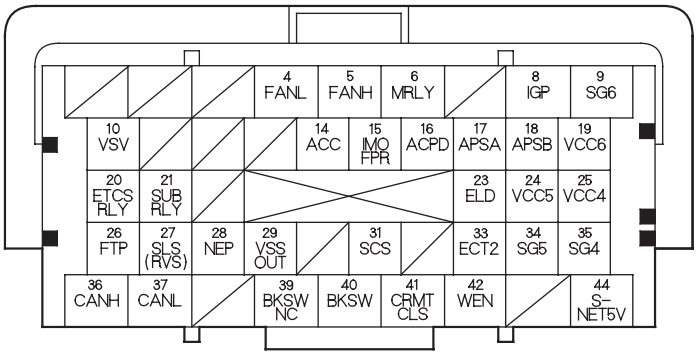
Terminal number	Wire color	Terminal name	Description	Signal
4	PUR	FANL (RADIATOR FAN CONTROL)	Drives radiator fan relay	With radiator fan running: about 0 V With radiator fan stopped: battery voltage
5	GRY	FANH (RADIATOR FAN CONTROL)	Drives A/C condenser fan relay	With A/C condenser fan running: about 0 V With A/C condenser fan stopped: battery voltage
6	GRN	MRLY (PGM-FI MAIN RELAY 1)	Drives PGM-FI main relay 1 Power source for DTC memory	With ignition switch ON (II): about 0 V With ignition switch OFF: battery voltage
8	ORN	IGP (POWER SOURCE)	Power source for ECM/PCM circuit	With ignition switch ON (II): battery voltage
9	BLK	SG6 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
10	LT GRN	VSV (EVAPORATIVE EMISSION (EVAP) CANISTER VENT SHUT VALVE)	Drives EVAP canister vent shut valve	With ignition switch ON (II): battery voltage
14	RED	ACC (A/C COMPRESSOR CLUTCH RELAY)	Drives A/C compressor clutch relay	With compressor ON: about 0 V With compressor OFF: battery voltage
15	BRN	IMOFPR (IMMOBILIZER FUEL PUMP RELAY)	Drives PGM-FI main relay 2 (FUEL PUMP)	About 0 V for 2 seconds after turning ignition switch ON (II), then battery voltage
16	LT GRN	ACPD (A/C PRESSURE SENSOR)	Detects A/C pressure sensor signal	With A/C switch ON: about 1.7—4.8 V (depending on A/C pressure)
17	YEL	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 0.5 V
18	PUR	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 0.25 V
19	RED	VCC6 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20	YEL	ETCSRLY (ELECTRONIC THROTTLE CONTROL SYSTEM (ETCS) CONTROL RELAY)	Drives electronic throttle control system (ETCS) control relay	With ignition switch ON (II): about 0 V (4.0 V momentarily)
21	PNK	SUBRLY (PGM-FI SUBRELAY)	Drives PGM-FI subrelay	With ignition switch ON (II): about 0 V
23	ORN	ELD (ELECTRICAL LOAD DETECTOR (ELD))	Detects ELD signal	With ignition switch ON (II): about 0.1—4.8 V (depending on electrical load)

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DYNOMITE -2009-

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector A (□) (44P)



Terminal side of female terminals

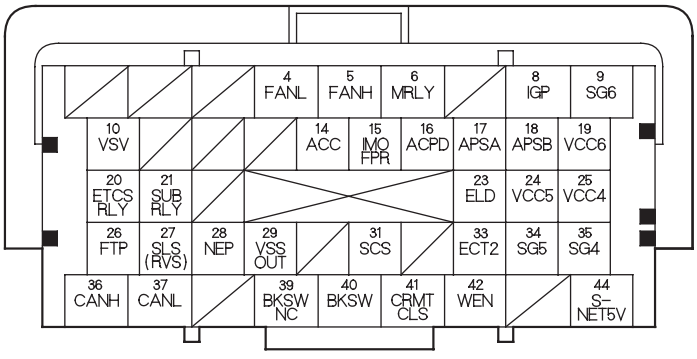
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
24	GRY	VCC5 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
25	BRN	VCC4 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
26	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
27 *1	PNK	SLS (SHIFT LOCK SOLENOID)	Drives shift lock solenoid	With ignition switch ON (II), in P, brake pedal pressed, and accelerator released: battery voltage
27 *3	GRN	RVS (REVERSE LOCKOUT SOLENOID)	Drives reverse lockout solenoid	With vehicle speed below 9 mph (15 km/h): battery voltage With vehicle speed above 13 mph (20 km/h): about 0 V
28	BLU	NEP (ENGINE SPEED PULSE)	Outputs engine speed pulse	With engine running: pulses
29	BLU	VSSOUT (VEHICLE SPEED SIGNAL OUTPUT)	Sends vehicle speed signal	Depending on vehicle speed: pulses
31	BRN	SCS (SERVICE CHECK SIGNAL)	Detects service check signal	With service check signal shorted using HDS: about 0 V With service check signal opened: about 5.0 V
33	GRN	ECT2 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 2)	Detects ECT sensor 2 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
34	LT BLU	SG5 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
35	BLU	SG4 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
36	WHT	CANH (CAN COMMUNICATION SIGNAL HIGH)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)
37	RED	CANL (CAN COMMUNICATION SIGNAL LOW)	Sends communication signal	With ignition switch ON (II): about 2.5 V (pulses)

* 1: A/T
* 3: K20Z3 engine

DYNOMITE -2009-

ECM/PCM Inputs and Outputs at Connector A (□) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
39	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
40	LT GRN	BKSW (BRAKE PEDAL POSITION SWITCH)	Detects brake pedal position switch signal	With brake pedal released: about 0 V With brake pedal pressed: battery voltage
41 *2	LT BLU	CRMTCLS (CRUISE CLUTCH PEDAL POSITION SIGNAL)	Detects clutch pedal position switch signal	With ignition switch ON (II) and clutch pedal released: about 0 V With ignition switch ON (II) and clutch pedal pressed: battery voltage
42	RED	WEN (WRITE ENABLE SIGNAL)	Detects write enable signal	With ignition switch ON (II): about 0 V
44	PNK	S-NET5V (SERIAL COMMUNICATION FOR IMMOBILIZER)	Sends serial communication signal	With ignition switch ON (II): pulses With ignition switch OFF: about 5.0 V

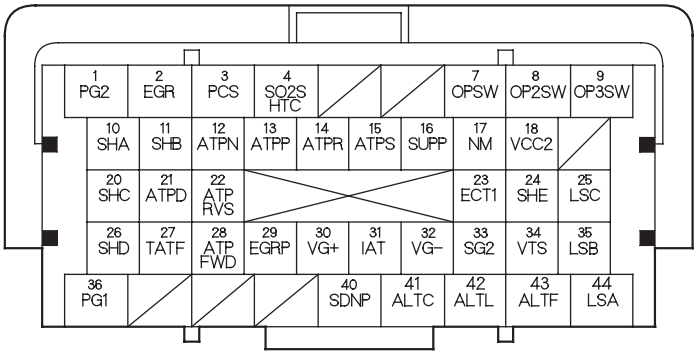
* 2: M/T

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DYNOMITE -2009-

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

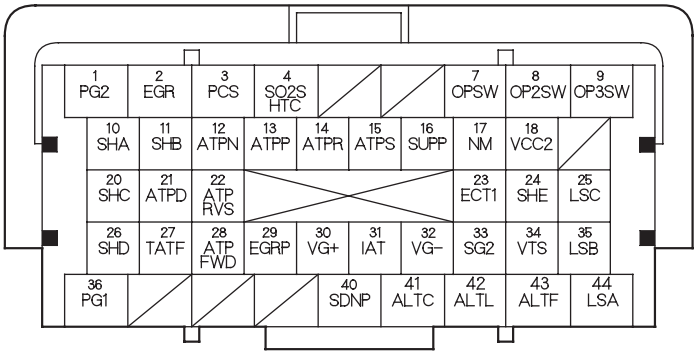
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
1	BLK/RED (BLK) *5	PG2 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times
2 *4	BLU/RED	EGR (EXHAUST GAS RECIRCULATION (EGR) VALVE)	Drives EGR valve	With EGR operating: duty controlled With EGR not operating: about 0 V
3	YEL/BLU	PCS (EVAPORATIVE EMISSION (EVAP) CANISTER PURGE VALVE)	Drives EVAP canister purge valve	With engine running, engine coolant below 60 ℃ (140 ℉): battery voltage With engine running, engine coolant above 60 ℃ (140 ℉): duty controlled
4	BLK/WHT	SO2SHTC (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) HEATER (SENSOR 2))	Drives secondary HO2S heater (sensor 2)	With ignition switch ON (II): battery voltage With warmed up engine running: duty controlled
7	YEL/RED	OPSW (OIL PRESSURE SWITCH)	Detects engine oil pressure signal	With ignition switch OFF: about 0 V With engine running: battery voltage
8 *1	BLU/RED	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
9 *1	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
10 *1	BLU/BLK	SHA (SHIFT SOLENOID VALVE A)	Drives shift solenoid valve A	With engine running in R, D, and S (in 1st, 4th, or 5th gears): battery voltage With engine running in P, N, D, and S (in 2nd and 3rd gears): about 0 V
11 *1	GRN/WHT	SHB (SHIFT SOLENOID VALVE B)	Drives shift solenoid valve B	With engine running in P, R, N, D, and S (in 1st and 2nd gears): battery voltage With engine running in D and S (in 3rd, 4th, 5th gears): about 0 V
12 *1	RED/BLK	ATPN (TRANSMISSION RANGE SWITCH N)	Detects transmission range switch N position signal input	In N: about 0 V In any position other than N: about 5.0 V
13 *1	BLU/BLK	ATPP (TRANSMISSION RANGE SWITCH P)	Detects transmission range switch P position signal input	In P: about 0 V In any position other than P: about 5.0 V
14 *1	WHT	ATPR (TRANSMISSION RANGE SWITCH R)	Detects transmission range switch R position signal input	In R: about 0 V In any position other than R: about 5.0 V
15 *1	RED	ATPS (TRANSMISSION RANGE SWITCH S)	Detects transmission range switch S position signal input	In S: about 0 V In any position other than S: battery voltage

* 1: A/T
* 4: K20Z2 engine
* 5: '07-09 models

DYNOMITE -2009-

ECM/PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
16 *1	BLU/YEL	SUPP (PADDLE SHIFTER+ (UPSHIFT SWITCH))	Detects paddle shifter+ (upshift switch)	In S: • With paddle shifter+ (upshift switch) pressed: about 0 V • With paddle shifter+ (upshift switch) released: battery voltage
17 *1	WHT/RED	NM (INPUT SHAFT (MAINSHAFT) SPEED SENSOR)	Detects input shaft (mainshaft) speed sensor signal	With ignition switch ON (II): about 0 V With engine idling in N: about 2.5 V
18	YEL/BLU (YEL) *3	VCC2 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
20 *1	GRN	SHC (SHIFT SOLENOID VALVE C)	Drives shift solenoid valve C	With engine running in N and S (in 1st, 3rd, and 5th gears): battery voltage With engine running in P, R, D, and S (in 2nd and 4th gears): about 0 V
21 *1	YEL/GRN	ATPD (TRANSMISSION RANGE SWITCH D)	Detects transmission range switch D position signal input	In D: about 0 V In any position other than D: battery voltage
22 *1	RED/WHT	ATPRVS (TRANSMISSION RANGE SWITCH RVS)	Detects transmission range switch RVS position signal input	In R: about 0 V In any position other than R: battery voltage
23	RED/WHT	ECT1 (ENGINE COOLANT TEMPERATURE (ECT) SENSOR 1)	Detects ECT sensor 1 signal	With ignition switch ON (II): about 0.1—4.8 V (depending on engine coolant temperature)
24 *1	YEL	SHE (SHIFT SOLENOID VALVE E)	Drives shift solenoid valve E	With engine running in P and R: battery voltage With engine running in N, D, and S (in 1st gear): about 0 V
25 *1	BLU/YEL	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
26 *1	GRN/RED	SHD (SHIFT SOLENOID VALVE D)	Drives shift solenoid valve D	With engine running in D and S (in 2nd and 5th gears): battery voltage With engine running in P, R, N, D, and S (in 1st, 3rd, and 4th gears): about 0 V
27 *1	RED/YEL	TATF (ATF TEMPERATURE SENSOR)	Detects ATF temperature signal	With ignition switch ON (II): about 0.2—4.0 V (about 1.8 V at operating temperature) (depending on ATF temperature)
28 *1	BLU/YEL	ATPFWD (TRANSMISSION RANGE SWITCH FWD)	Detects transmission range switch D and S positions signal	In D and S: about 0 V In any other position D and S: battery voltage
29 *4	WHT/BLK	EGRP (EXHAUST GAS RECIRCULATION (EGR) VALVE POSITION SENSOR)	Detects EGR valve position sensor signal	With engine running: about 1.2—3.0 V (depending on EGR valve lift)

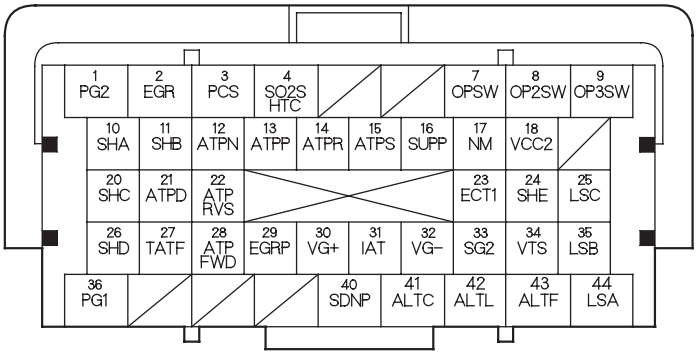
* 1: A/T
* 3: K20Z3 engine
* 4: K20Z2 engine

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DYNOMITE -2009-

System Description (cont'd)

ECM/PCM Inputs and Outputs at Connector B (△) (44P)



Terminal side of female terminals

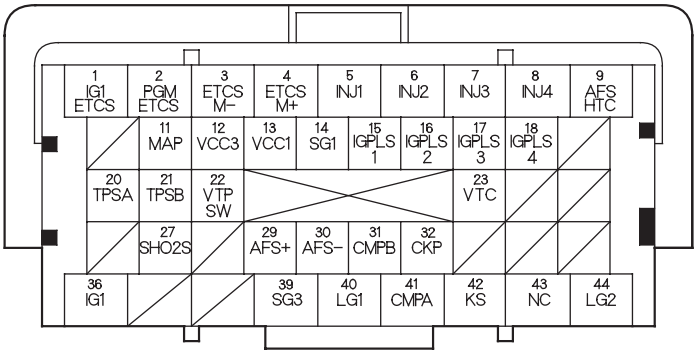
NOTE: Standard battery voltage is about 12 V.

Terminal number	Wire color	Terminal name	Description	Signal
30	RED/BLK	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)
31	RED/YEL	IAT (INTAKE AIR TEMPERATURE (IAT) SENSOR)	Detects IAT sensor signal	With ignition switch ON (II): about 0.1—4.0 V (about 1.8 V at normal operating temperature)
32	BLK/BLU	VG— (MASS AIR FLOW (MAF) SENSOR —SIDE)	Ground for MAF sensor signal	
33	GRN/BLK	SG2 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
34	GRN/YEL	VTS (ROCKER ARM OIL CONTROL SOLENOID)	Drives rocker arm oil control solenoid	At idle: about 0 V
35 *1	BRN	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
36	BLK	PG1 (POWER GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times
40 *1	BRN	SDNP (PADDLE SHIFTER— (DOWN SHIFT SWITCH))	Detects paddle shifter— (downshift switch) signal	In S: • With paddle shifter— (downshift switch) pressed: about 0 V • With paddle shifter— (downshift switch) released: about 5.0 V
41	WHT/GRN	ALTC (ALTERNATOR CONTROL)	Sends alternator control signal	With warmed up engine running: about 5.0 V (depending on electrical load)
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/RED	ALTF (ALTERNATOR FR SIGNAL)	Detects alternator FR signal	With engine running: about 2.6—3.4 V (depending on electrical load)
44 *1	RED/BLK	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

* 1: A/T

DYNOMITE -2009-

ECM/PCM Inputs and Outputs at Connector C (◯) (44P)



Terminal side of female terminals

NOTE: Standard battery voltage is about 12 V.

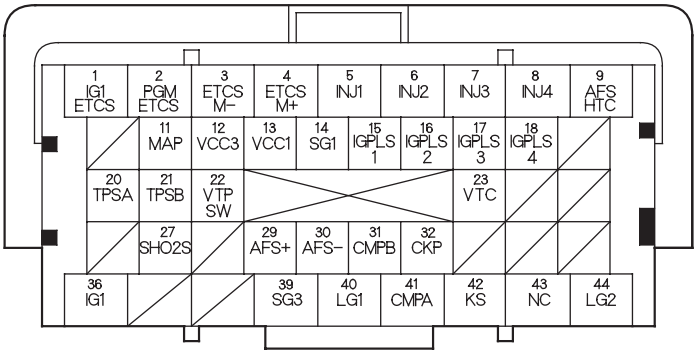
Terminal number	Wire color	Terminal name	Description	Signal
1	WHT	IG1ETCS (IGNITION SIGNAL ETCS)	Detects ignition signal	With ignition switch ON (II): battery voltage
2	BLK	PGMETCS (POWER GROUND ETCS)	Ground circuit for ECM/ PCM	Less than 1.0 V at all times
3	GRN/YEL	ETCSM− (THROTTLE ACTUATOR −SIDE)	Ground for throttle actuator	With ignition switch ON (II): about 0 V
4	BLU/RED	ETCSM+ (THROTTLE ACTUATOR +SIDE)	Drives throttle actuator	With ignition switch ON (II): about 0 V
5	BRN	INJ1 (No. 1 INJECTOR)	Drives No. 1 injector	At idle: duty controlled With ignition switch ON (II): battery voltage
6	RED	INJ2 (No. 2 INJECTOR)	Drives No. 2 injector	
7	BLU	INJ3 (No. 3 INJECTOR)	Drives No. 3 injector	
8	YEL	INJ4 (No. 4 INJECTOR)	Drives No. 4 injector	
9	WHT/GRN	AFSHTC (AIR FUEL RATIO (A/F) SENSOR HEATER CONTROL (SENSOR 1))	Drives A/F sensor heater (sensor 1)	With ignition switch ON (II): battery voltage With fully warmed up engine running: about 0 V
11	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)
12	BLU	VCC3 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
13	YEL/RED	VCC1 (SENSOR VOLTAGE)	Provides sensor reference voltage	With ignition switch ON (II): about 5.0 V
14	GRN/WHT	SG1 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
15	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
16	BLU/RED	IGPLS2 (No. 2 IGNITION COIL PULSE)	Drives No. 2 ignition coil	
17	WHT/BLU	IGPLS3 (No. 3 IGNITION COIL PULSE)	Drives No. 3 ignition coil	
18	BRN	IGPLS4 (No. 4 IGNITION COIL PULSE)	Drives No. 4 ignition coil	
20	RED/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
21	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

(cont'd)

DYNOMITE -2009-

System Description (cont'd)

ECM/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
22	BLU/BLK	VTPSW (ROCKER ARM OIL PRESSURE SWITCH)	Detects rocker arm oil pressure switch signal	With engine at low speed: about 0 V With engine at high speed: battery voltage
23	BLU/WHT	VTC (VTC OIL CONTROL SOLENOID VALVE)	Drives VTC oil control solenoid valve	with ignition switch ON (II): about 0 V
27	WHT/RED	SHO2S (SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2))	Detects secondary HO2S (sensor 2) signal	With throttle fully opened from idle and warmed up engine: about 0.6 V With throttle quickly closed: below 0.4 V
29	RED	AFS＋ (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) ＋SIDE)	Detects A/F sensor (sensor 1) signal	
30	RED/YEL	AFS− (AIR FUEL RATIO (A/F) SENSOR (SENSOR 1) −SIDE)	Detects A/F sensor (sensor 1) signal	
31	GRN	CMPB (CAMSHAFT POSITION (CMP) SENSOR B)	Detects CMP sensor B signal	With engine running: pulses
32	BLU/YEL	CKP (CRANKSHAFT POSITION (CKP) SENSOR)	Detects CKP sensor signal	With engine running: pulses
36	BLK/GRN	IG1 (IGNITION SIGNAL)	Detects ignition signal	With ignition switch ON (II): battery voltage
39	GRN	SG3 (SENSOR GROUND)	Sensor ground	Less than 1.0 V at all times
40	BRN/YEL	LG1 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times
41	BLU/WHT	CMPA (CAMSHAFT POSITION (CMP) SENSOR A)	Detects CMP sensor A signal	With engine running: pulses
42	RED/BLU	KS (KNOCK SENSOR)	Detects knock sensor signal	With engine knocking: pulses
43	BLK/WHT	NC (OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR)	Detects output shaft (countershaft) speed sensor signals	With ignition switch ON (II): pulses With vehicle moving: about 5.0 V (pulses)
44	BRN/YEL	LG2 (LOGIC GROUND)	Ground circuit for ECM/PCM	Less than 1.0 V at all times

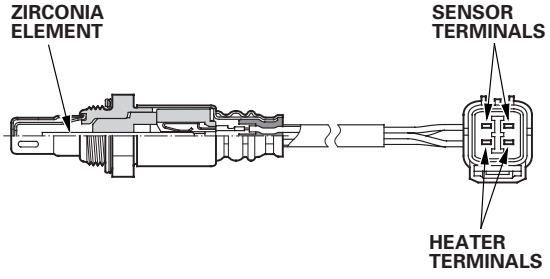
DYNOMITE -2009-

PGM-FI System

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

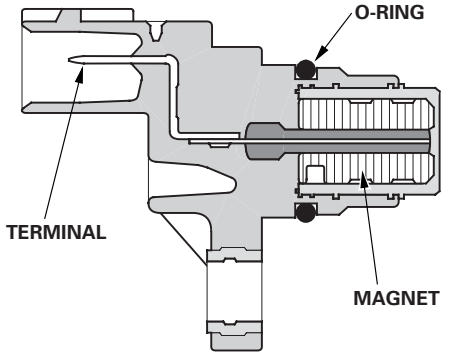
Air Conditioning (A/C) Compressor Clutch Relay
When the ECM/PCM receives a demand for cooling from the A/C system, it delays the compressor from being energized, and enriches the mixture to assure smooth transition to the A/C mode.

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 ECM/PCM which varies the duration of fuel injection accordingly.

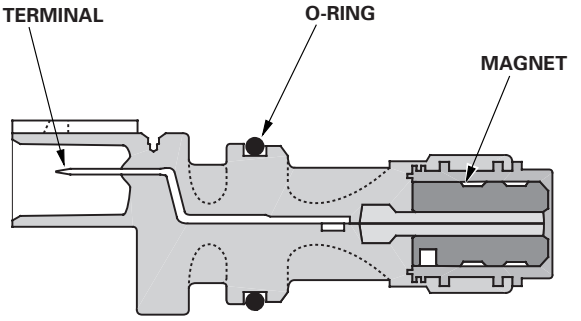


Barometric Pressure (BARO) Sensor
The BARO sensor is inside the ECM/PCM. It converts atmospheric pressure into a voltage signal that modifies the basic duration of the fuel injection discharge.

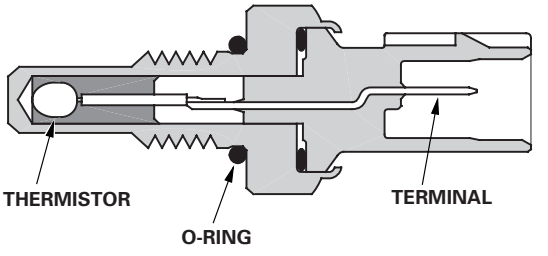
Camshaft Position (CMP) Sensor B
CMP sensor B detects the position of the No. 1 cylinder as a reference for sequential fuel injection to each cylinder.



Crankshaft Position (CKP) Sensor
The CKP sensor detects crankshaft speed and is used by the ECM/PCM to determine the ignition timing, timing for the fuel injection of each cylinder, and engine misfire detection.



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



Ignition Timing Control
The ECM/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 and intake air temperature.

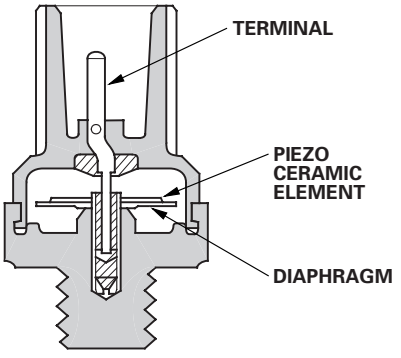
Injector Timing and Duration
The ECM/PCM contains the memory for basic discharge duration at various engine speeds and manifold pressures. The basic discharge duration, after being read out from the memory, is further modified by signals sent from various sensors to obtain the final discharge duration.
By monitoring long term fuel trim, the ECM/PCM detects long term malfunctions in the fuel system and sets diagnostic trouble codes (DTCs) if needed.

(cont'd)

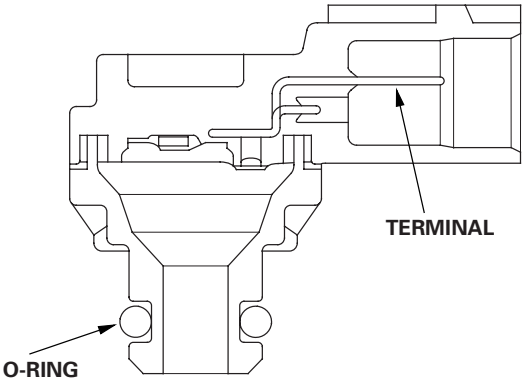
DYNOMITE -2009-

System Description (cont'd)

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



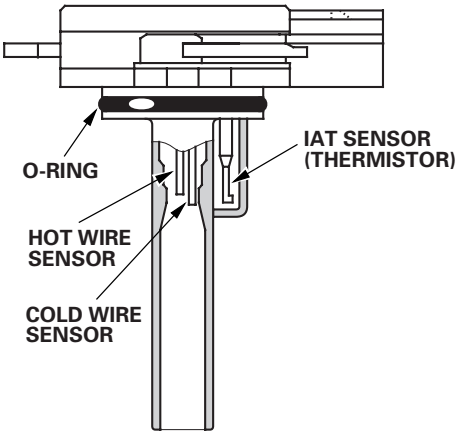
Manifold Absolute Pressure (MAP) Sensor
The MAP sensor converts manifold absolute pressure into electrical signals to the ECM/PCM.



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 ECM/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.

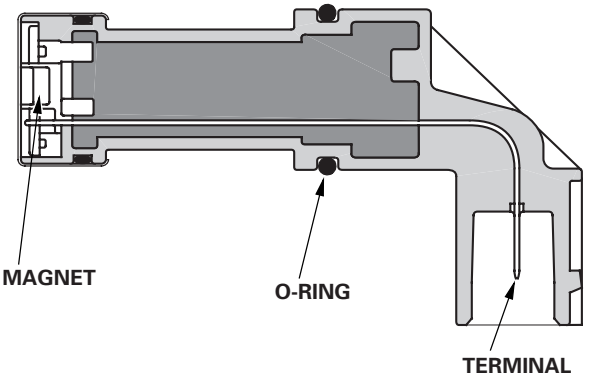
To check if the readiness codes are set to complete, turn the ignition switch to ON (II), but do not start the engine. The MIL will come on for 15—20 seconds. If it then goes off, the readiness codes are complete. If it flashes five times, one or more readiness codes are not complete. To set each code, drive the vehicle or run the engine as described in the procedures (see page 11-69).

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 sensor, a cold wire sensor, and a thermistor. It is located in the intake air passage. The resistance of the hot wire sensor, the cold wire sensor, and the 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 ECM/PCM.



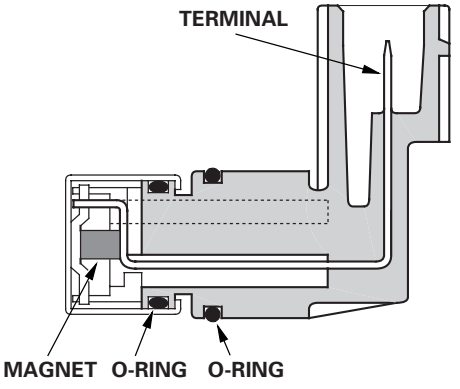
Output Shaft (Countershaft) Speed Sensor
This sensor detects countershaft speed.

A/T

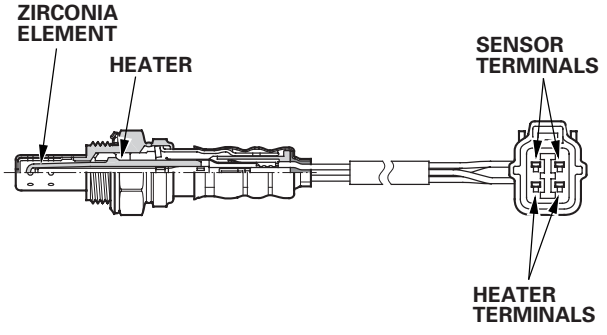


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M/T



Secondary Heated Oxygen Sensor (Secondary HO2S)
The secondary HO2S detects the oxygen content in the exhaust gas downstream of the three way catalytic converter (TWC), and sends signals to the ECM/PCM which varies the duration of fuel injection accordingly. To stabilize its output, the sensor has an internal heater. The ECM/PCM compares the HO2S output with the A/F sensor output to determine catalyst efficiency. The secondary HO2S is on the TWC.



Electronic Throttle Control System

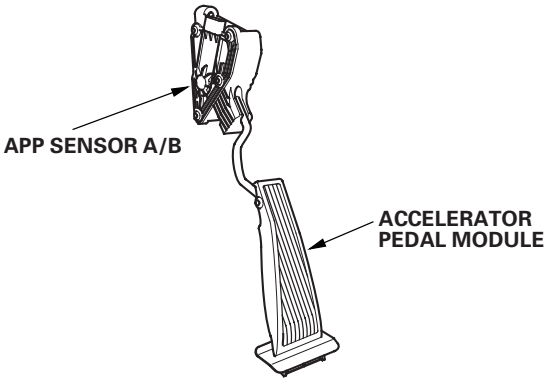
The throttle is electronically controlled by the electronic throttle control system. Refer to the system diagram to see a functional layout of the system.

Idle control: When the engine is idling, the ECM/PCM controls the throttle actuator to maintain the proper idle speed according to engine loads.

Acceleration control: When the accelerator pedal is pressed, the ECM/PCM opens the throttle valve, depending on the accelerator pedal position (APP) sensor signal.

Cruise control: The ECM/PCM controls the throttle actuator to maintain the set speed when the cruise control is operating. The throttle actuator takes the place of the cruise control actuator.

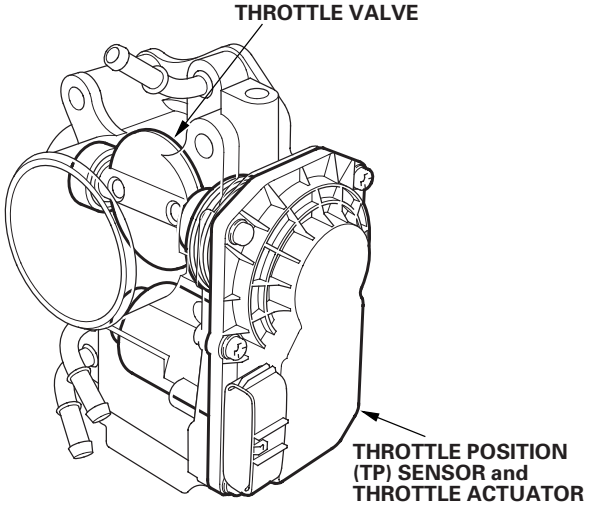
Accelerator Pedal Position (APP) Sensor
As the accelerator pedal position changes, the sensor varies the signal voltage to the ECM/PCM.



(cont'd)

System Description (cont'd)

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 ECM/PCM sends signal to the throttle position to maintain the correct idle speed.

Brake Pedal Position Switch
The brake pedal position switch signals the ECM/PCM when the brake pedal is pressed.

Electrical Power Steering (EPS) Signal
The EPS signals the ECM/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 1,000 rpm. Fuel cutoff control also occurs when the engine speed exceeds 6,900 rpm (K20Z3: 8,200 rpm), regardless of the position of the throttle valve, to protect the engine from over-revving. When the vehicle is stopped, the ECM/PCM cuts the fuel at engine speeds over 5,000 rpm (K20Z3: 7,700 rpm). On a cold engine, fuel cut occurs at a lower engine speed.

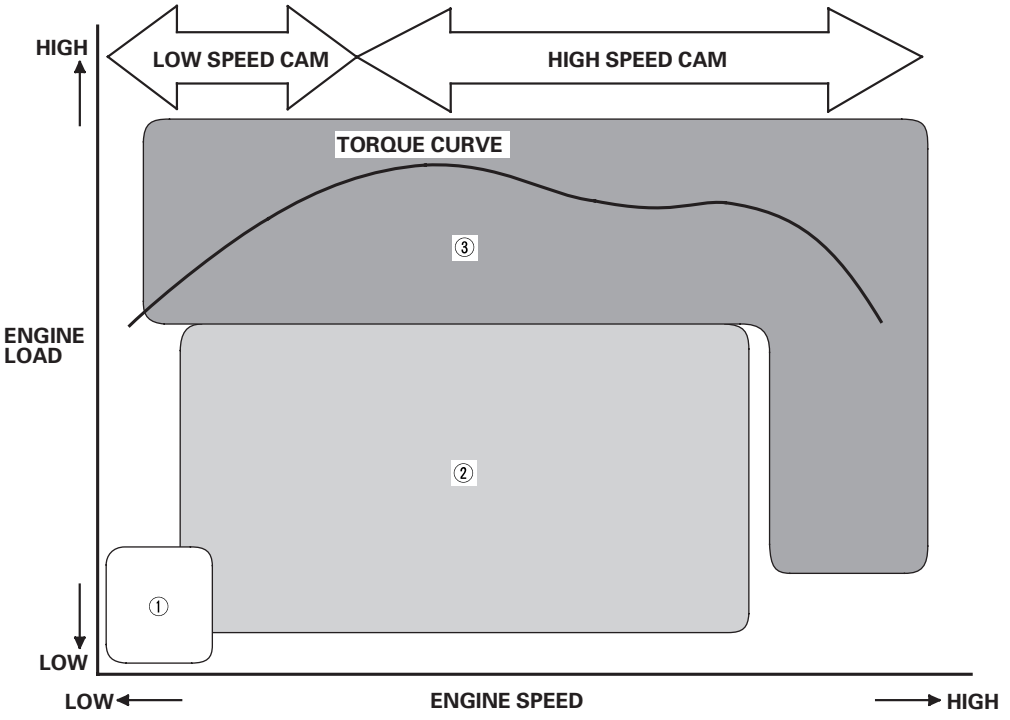
Fuel Pump Control
When the ignition switch is turned to ON (II), the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) which feeds current to the fuel pump for 2 seconds to pressurize the fuel system. With the engine running, the ECM/PCM grounds PGM-FI main relay 2 (FUEL PUMP) and feeds current to the fuel pump. When the engine is not running and the ignition is turned to ON (II), the ECM/PCM cuts ground to PGM-FI main relay 2 (FUEL PUMP) which cuts current to the fuel pump.

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 ECM/PCM, power to the injectors, and power for PGM-FI main relay 2 (FUEL PUMP). PGM-FI main relay 2 (FUEL PUMP) is energized to supply power to the fuel pump for 2 seconds when the ignition switch is turned to ON (II), and when the engine is cranking or running.

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i-VTEC

- The i-VTEC system has a variable valve timing control (VTC) mechanism on the intake camshaft in addition to the usual VTEC.
  This system improves fuel efficiency and reduces exhaust emissions at all levels of engine speed, vehicle speed, and engine load.
- The VTEC system changes the valve lift and timing by using more than one cam profile.
- The VTC system changes the phase of the intake camshaft via oil pressure. It changes the intake valve timing continuously.



Driving Condition	VTC Control	Description
① Light-load	Base Position	For stable combustion, the cam angle is retarded, and reduces the entry of exhaust gas into the cylinder.
② Medium/high-load	Advance Control	Cam phase angle is controlled to optimize valve timing, improving fuel efficiency and reducing emissions.
③ High speed	Advance-Base Position	To reduce pumping loss, the intake valve is closed quickly. This gives the air/fuel mixture a charging effect that helps to maximize engine power.

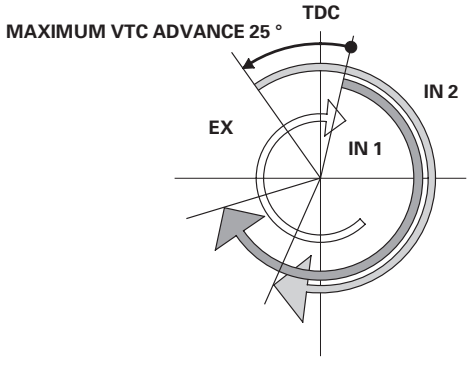
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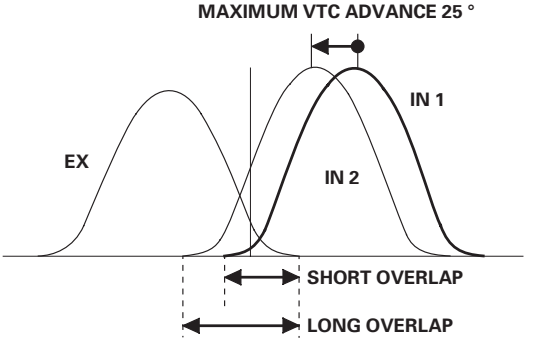
DYNOMITE -2009-

System Description (cont'd)

VTC System

- The VTC system makes continuous intake valve timing changes based on operating conditions.
- Intake valve timing is optimized to allow the engine to produce maximum power.
- Cam angle is advanced to obtain the EGR effect and reduce pumping loss. The intake valve is closed quickly to reduce the entry of the air/fuel mixture into the intake port and improve the charging effect.
- The system reduces the cam advance at idle, stabilizes combustion, and reduces engine speed.
- If a malfunction occurs, the VTC system control is disabled and the valve timing is fixed at the fully retarded position.

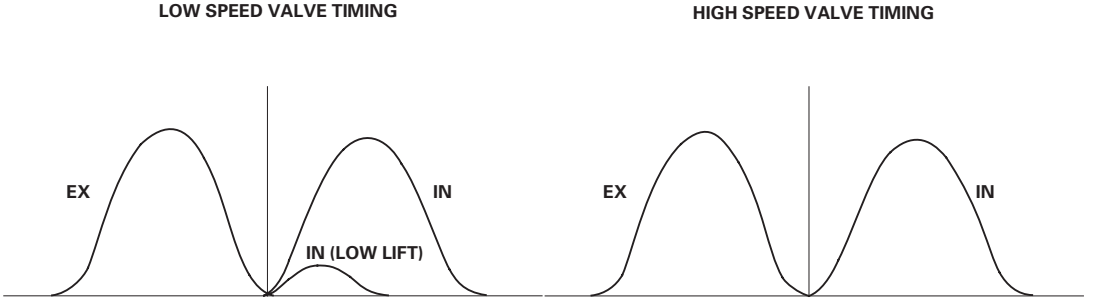




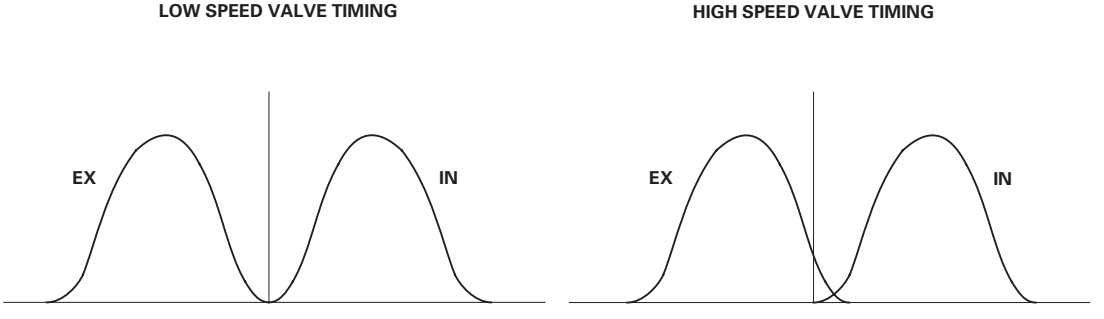
VTEC System

- The VTEC system changes the cam profile to correspond to the engine speed. It maximizes torque at low engine speed and output at high engine speed.
- The low lift cam is used at low engine speeds, and the high lift cam is used at high engine speeds.

K20Z2 engine



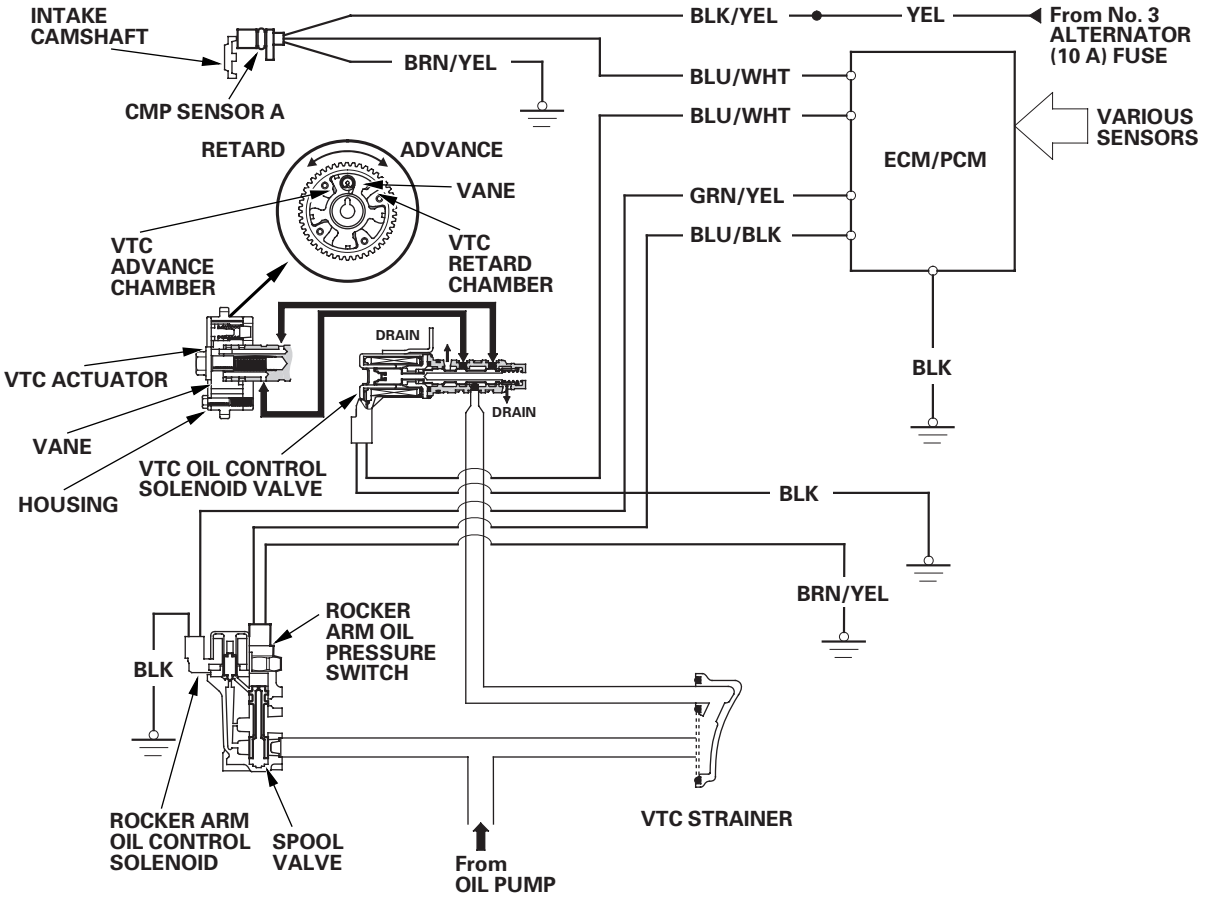
K20Z3 engine



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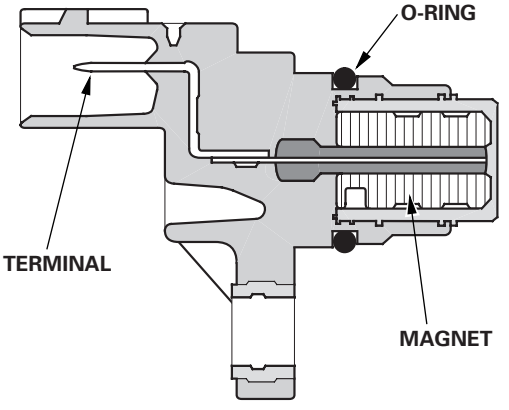
VTEC/VTC

System Diagram



Camshaft Position (CMP) Sensor A

CMP sensor A detects camshaft angle position for the VTC system.



(cont'd)

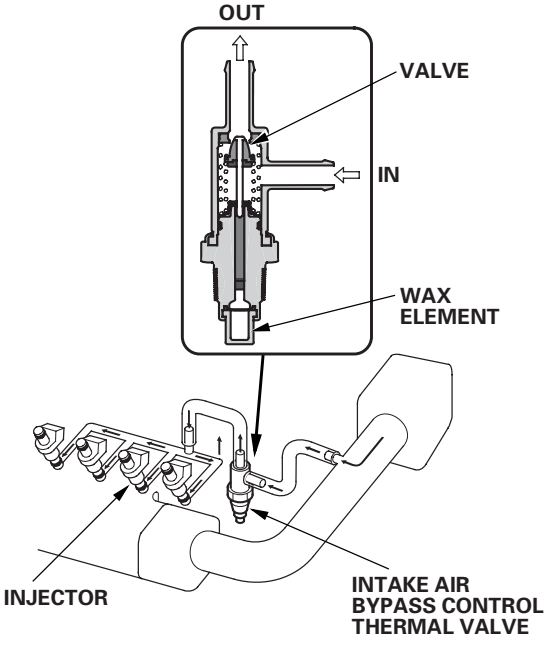
DYNOMITE -2009-

System Description (cont'd)

Intake Air System

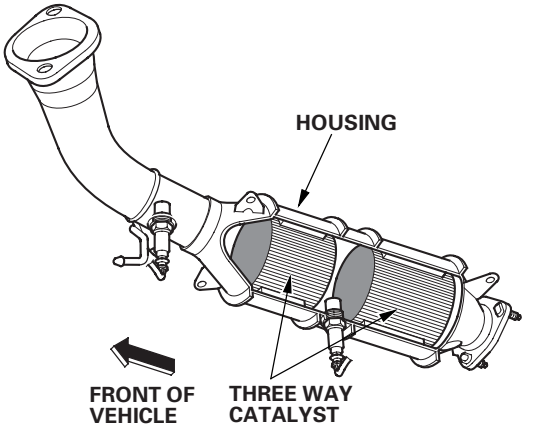
This system supplies air for engine needs.

Intake Air Bypass Control Thermal Valve
When the engine is cold, the intake air bypass control thermal valve sends air to the injector.
The amount of air is regulated by engine coolant temperature. Once the engine is hot, the intake air bypass control thermal valve closes, stopping air to the injector.



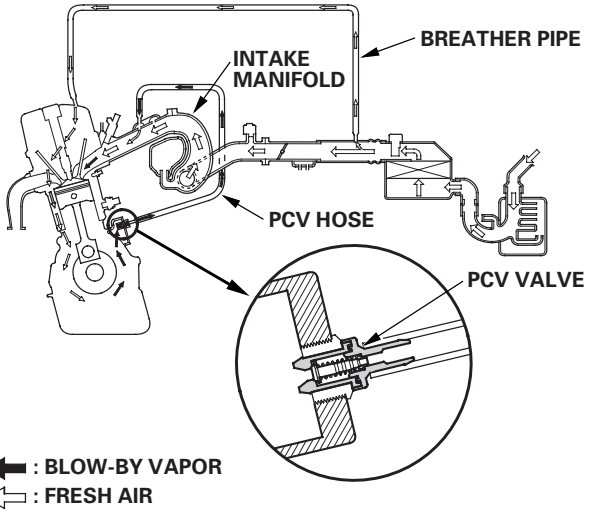
Catalytic Converter System

Three Way Catalytic Converter (TWC)
The 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.



Positive Crankcase Ventilation (PCV) System

The PCV valve prevents blow-by gasses from escaping into the atmosphere by venting them into the intake manifold.



* : This illustration shows K20Z2 engine

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Exhaust Gas Recirculation (EGR) System (K20Z2 engine)

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

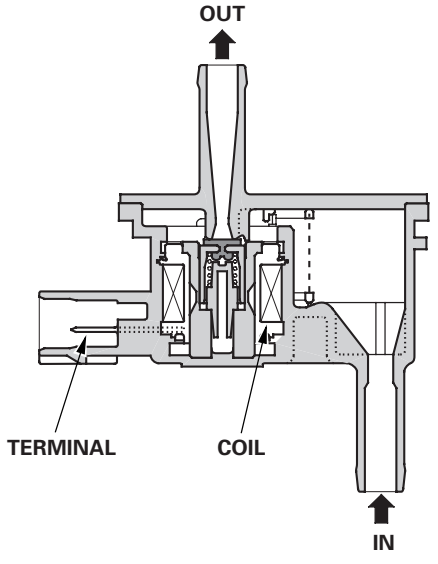
EGR Valve
The EGR valve lowers peak combustion temperatures and reduces oxides of nitrogen emissions (NOx) by recirculating exhaust gas through the intake manifold and into the combustion chambers.

Evaporative Emission (EVAP) Control System

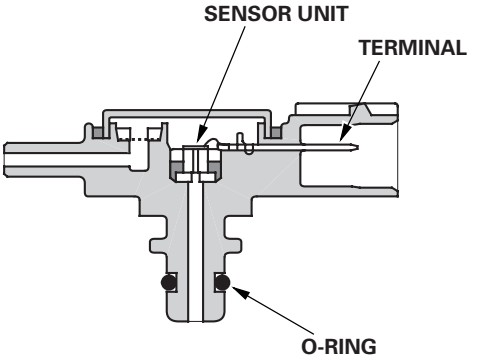
Refer to the system diagram to see a functional layout of the system.

EVAP Canister
The EVAP canister temporarily stores fuel vapor from the fuel tank until it can be purged back into the engine and burned.

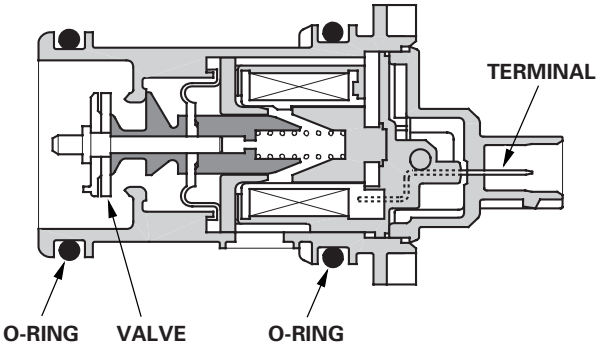
EVAP Canister Purge Valve
When the engine coolant temperature is below 60 ℃ (140 ℉), the ECM/PCM turns off the EVAP canister purge valve which cuts vacuum to the EVAP canister.



Fuel Tank Pressure (FTP) Sensor
The FTP sensor converts fuel tank absolute pressure into an electrical input to the ECM/PCM.



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.



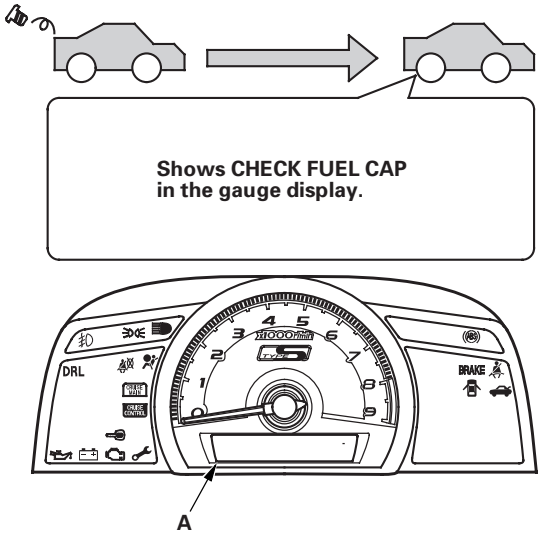
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System Description (cont'd)

Fuel Cap Warning Message

The ECM/PCM detects a loose or missing fuel fill cap as an evaporative system leak, and alarts the driver by showing a warning message in the gauge display.

First drive cycle
The first time a leak is detected a CHECK FUEL CAP message is shown in the gauge display (A). To scroll to another message, press the select/reset button. The CHECK FUEL CAP message appears 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.



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) ('06 model)

Procedure

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

To make the message go off (without the HDS) ('07-09 models)

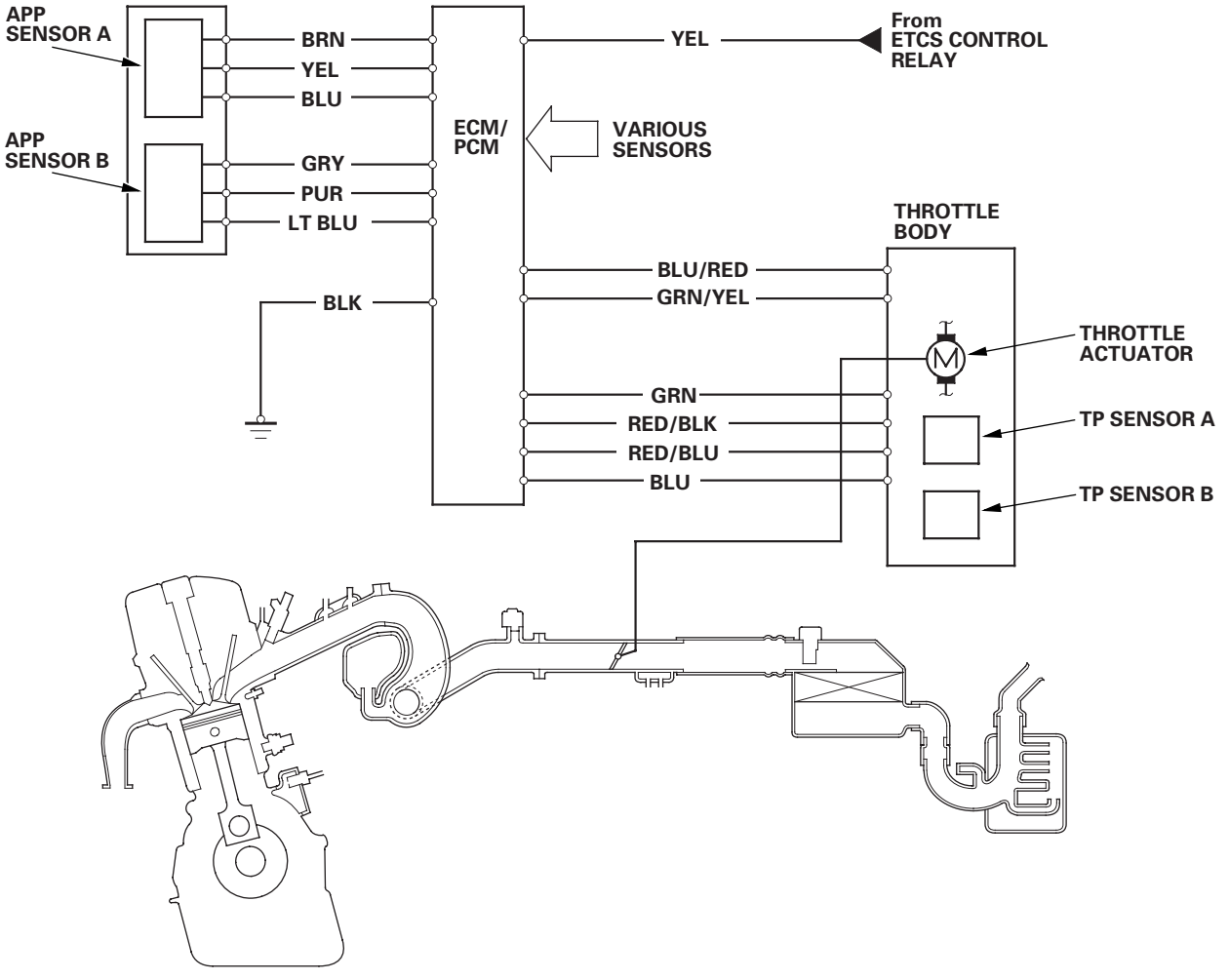
Procedure

1. Tighten the fuel fill cap until it clicks.
2. Start the engine, then turn the ignition switch to LOCK (0).
3. Repeat step 2 two more times.

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



* : This illustration shows K20Z2 engine

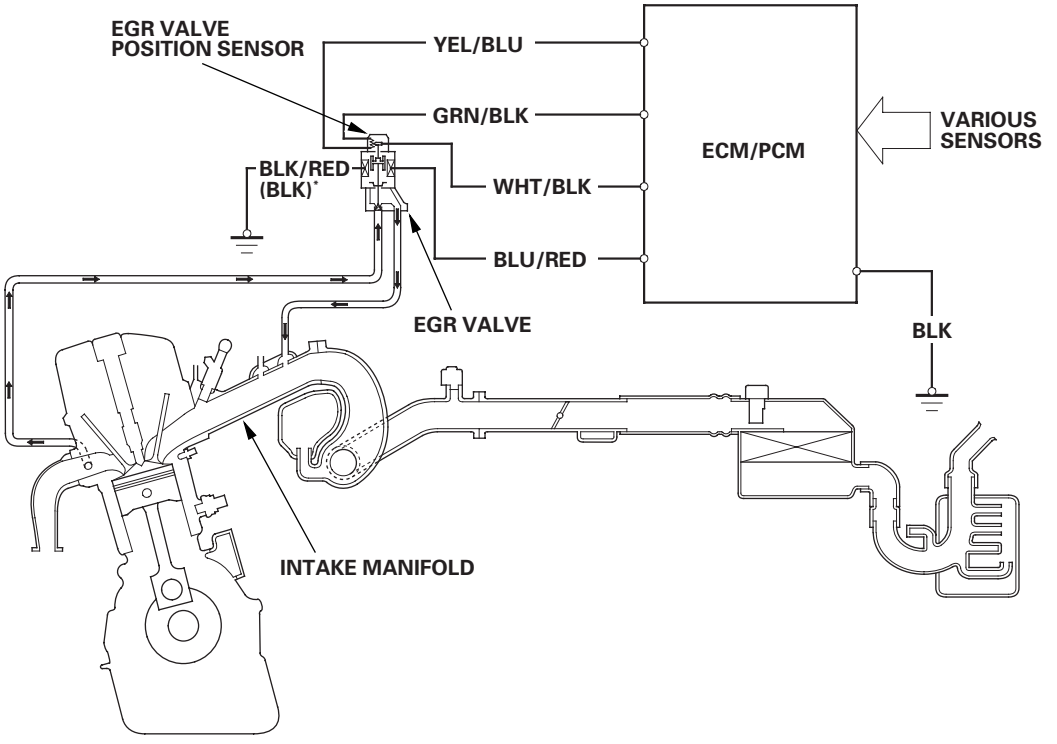
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System Description (cont'd)

Exhaust Gas Recirculation (EGR) System Diagram (K20Z2 engine)

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 ECM/PCM memory includes the ideal EGR valve position for varying operating conditions.

The EGR valve position sensor detects the amount of EGR valve lift and sends it to the ECM/PCM. The ECM/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 ECM/PCM cuts current to the EGR valve.



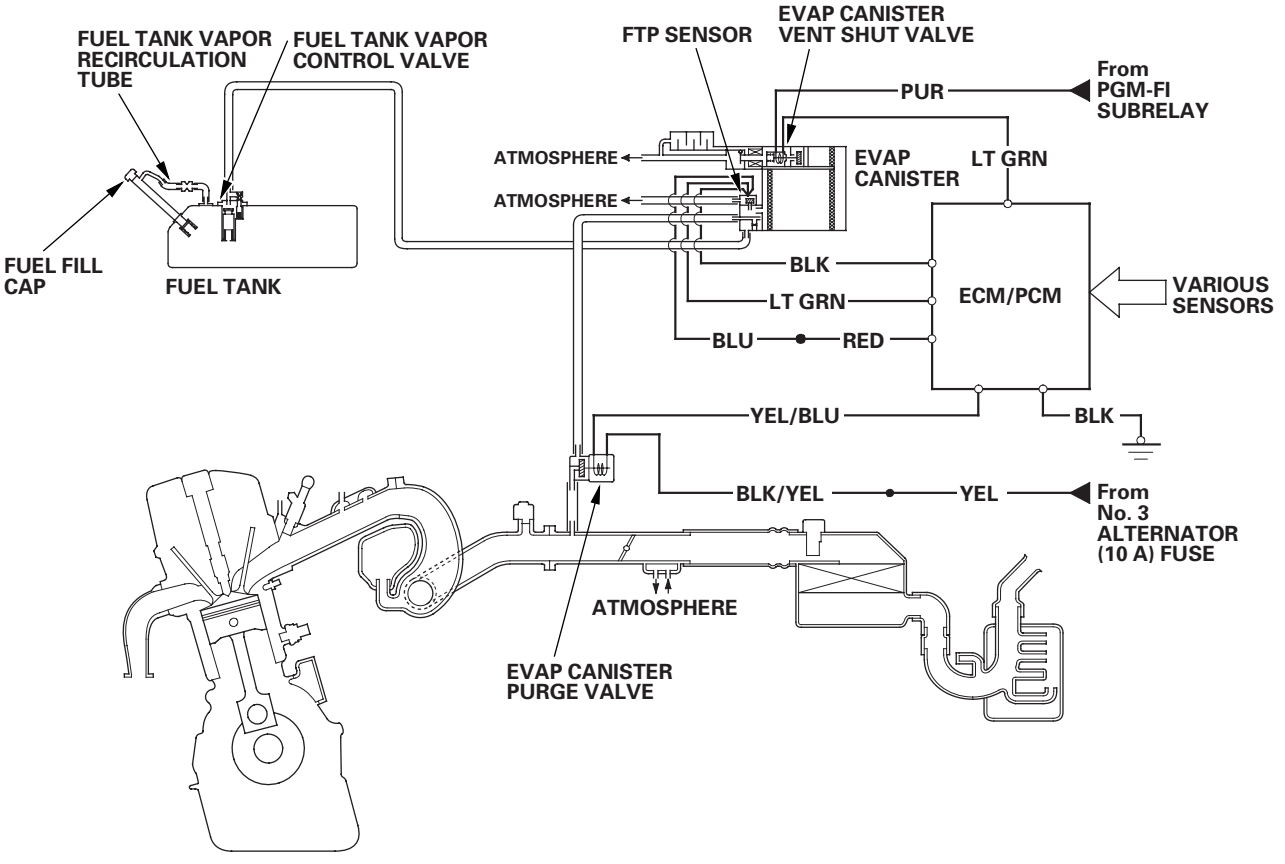
* : '07-09 models

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Evaporative Emission (EVAP) Control Diagram

The EVAP controls minimize the amount of fuel vapor escaping into 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 60 ℃ (140 ℉).

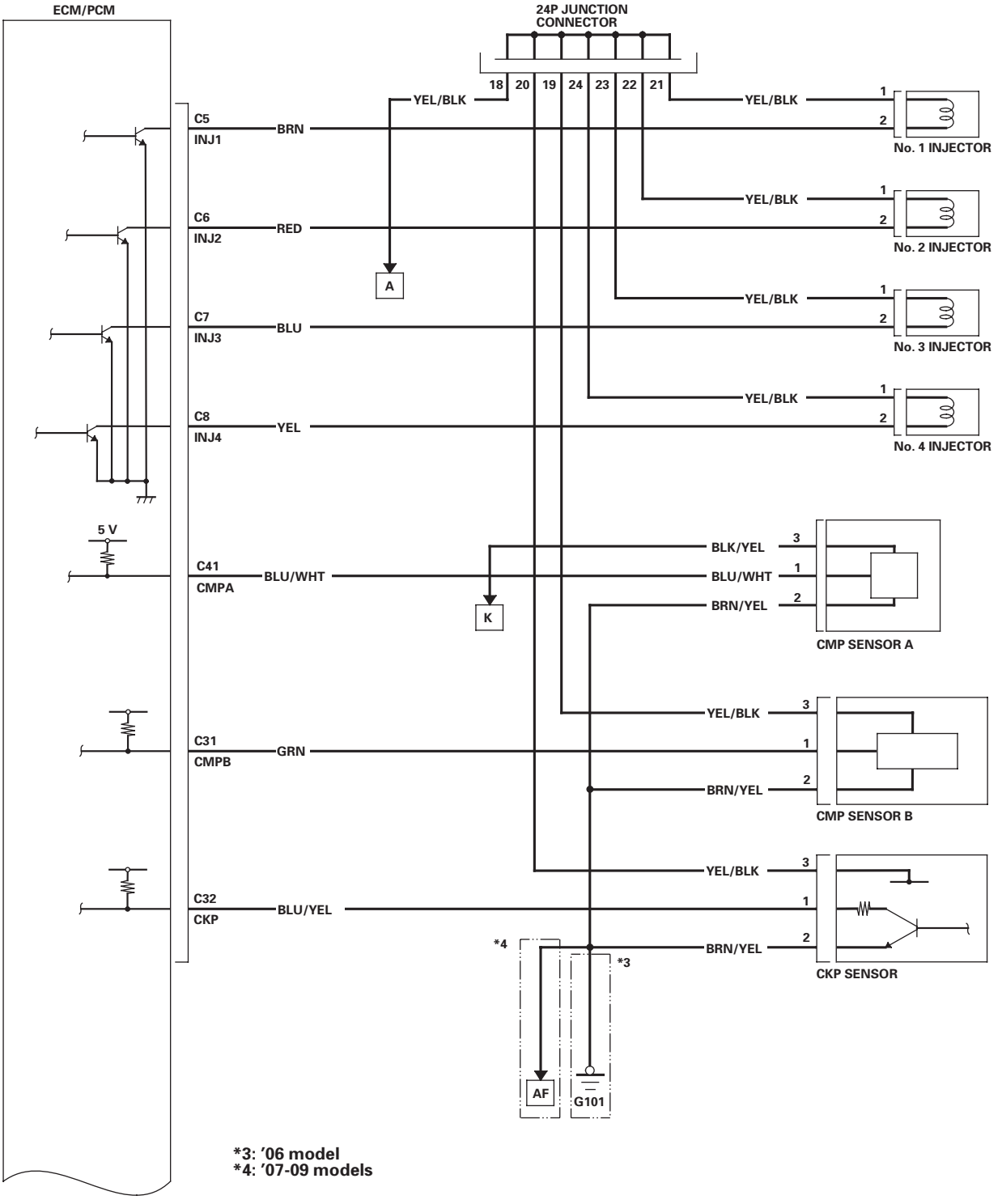


* : This illustration shows K20Z2 engine

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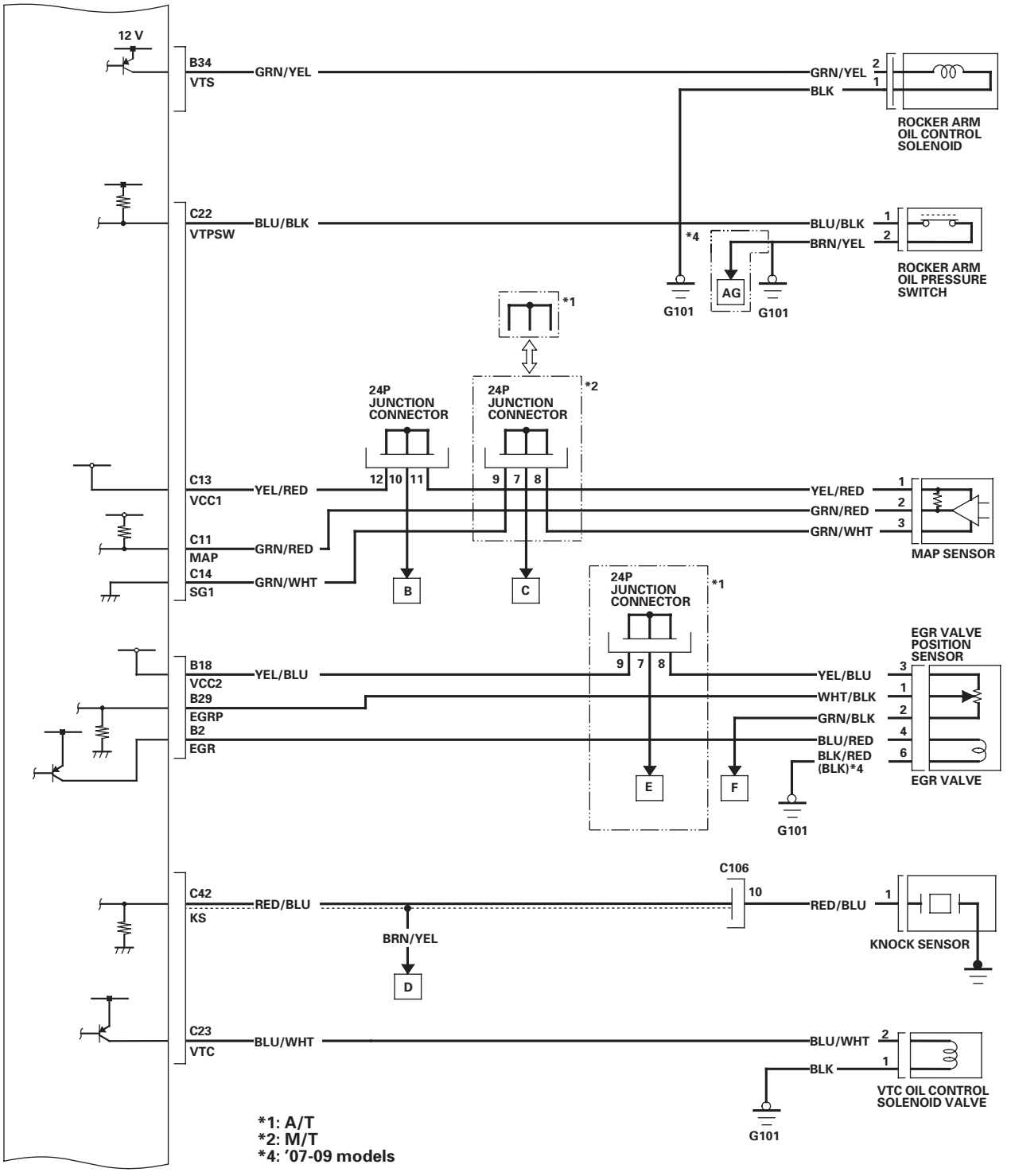
System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine)



*3: '06 model
*4: '07-09 models

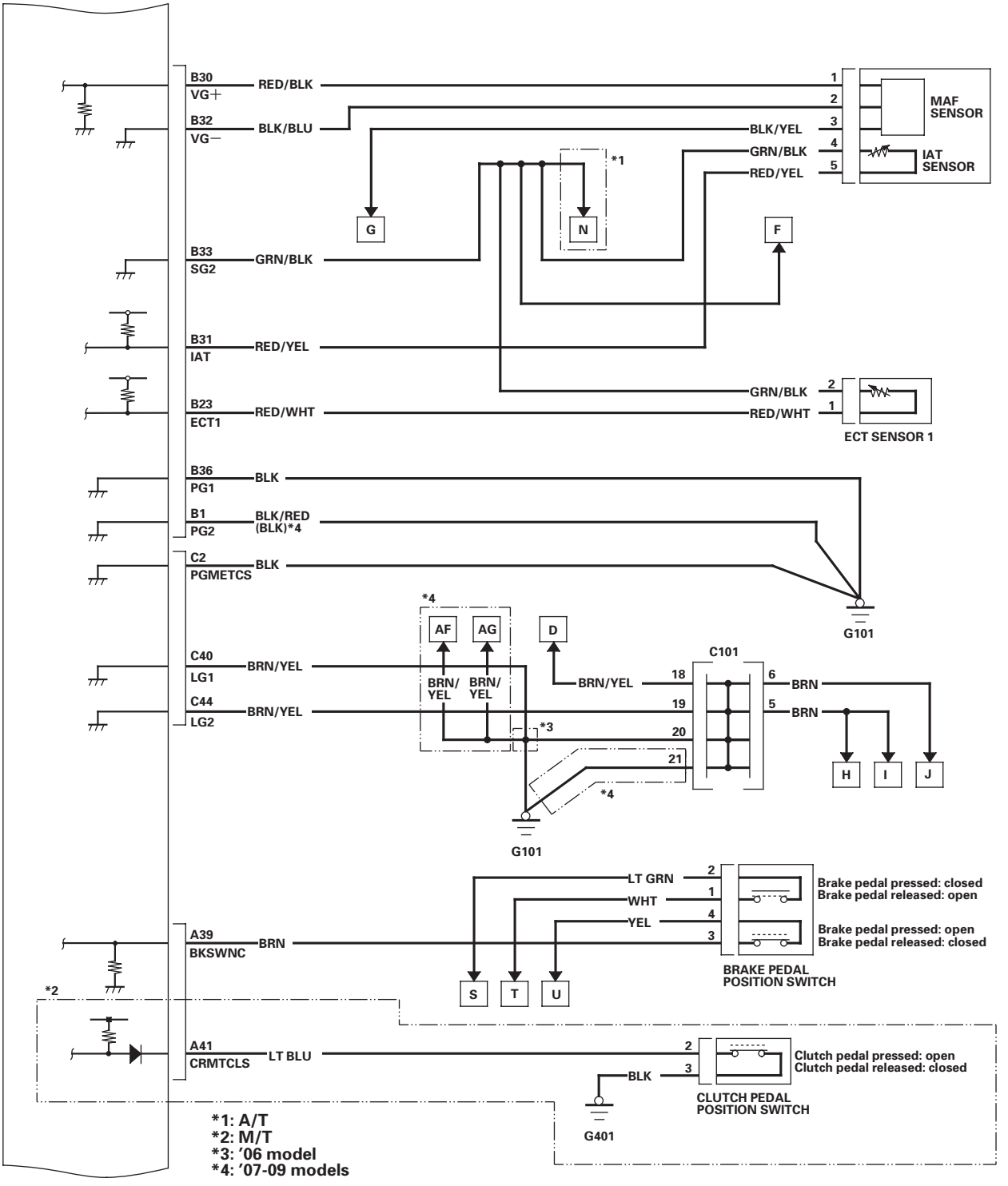
DYNOMITE -2009-


12 V
B34
VTS
GRN/YEL
GRN/YEL
BLK
ROCKER ARM OIL CONTROL SOLENOID
C22
VTPSW
BLU/BLK
BLU/BLK
BRN/YEL
ROCKER ARM OIL PRESSURE SWITCH
*4
G101
AG
G101
*1
24P JUNCTION CONNECTOR
24P JUNCTION CONNECTOR
*2
C13
VCC1
YEL/RED
C11
MAP
GRN/RED
C14
SG1
GRN/WHT
YEL/RED
GRN/RED
GRN/WHT
MAP SENSOR
B
C
24P JUNCTION CONNECTOR
*1
B18
VCC2
B29
EGRP
B2
EGR
YEL/BLU
WHT/BLK
GRN/BLK
BLU/RED
BLK/RED (BLK)*4
EGR VALVE POSITION SENSOR
EGR VALVE
E
F
G101
C42
KS
RED/BLU
BRN/YEL
D
C106
10
RED/BLU
KNOCK SENSOR
C23
VTC
BLU/WHT
BLU/WHT
BLK
VTC OIL CONTROL SOLENOID VALVE
G101
*1: A/T
*2: M/T
*4: '07-09 models

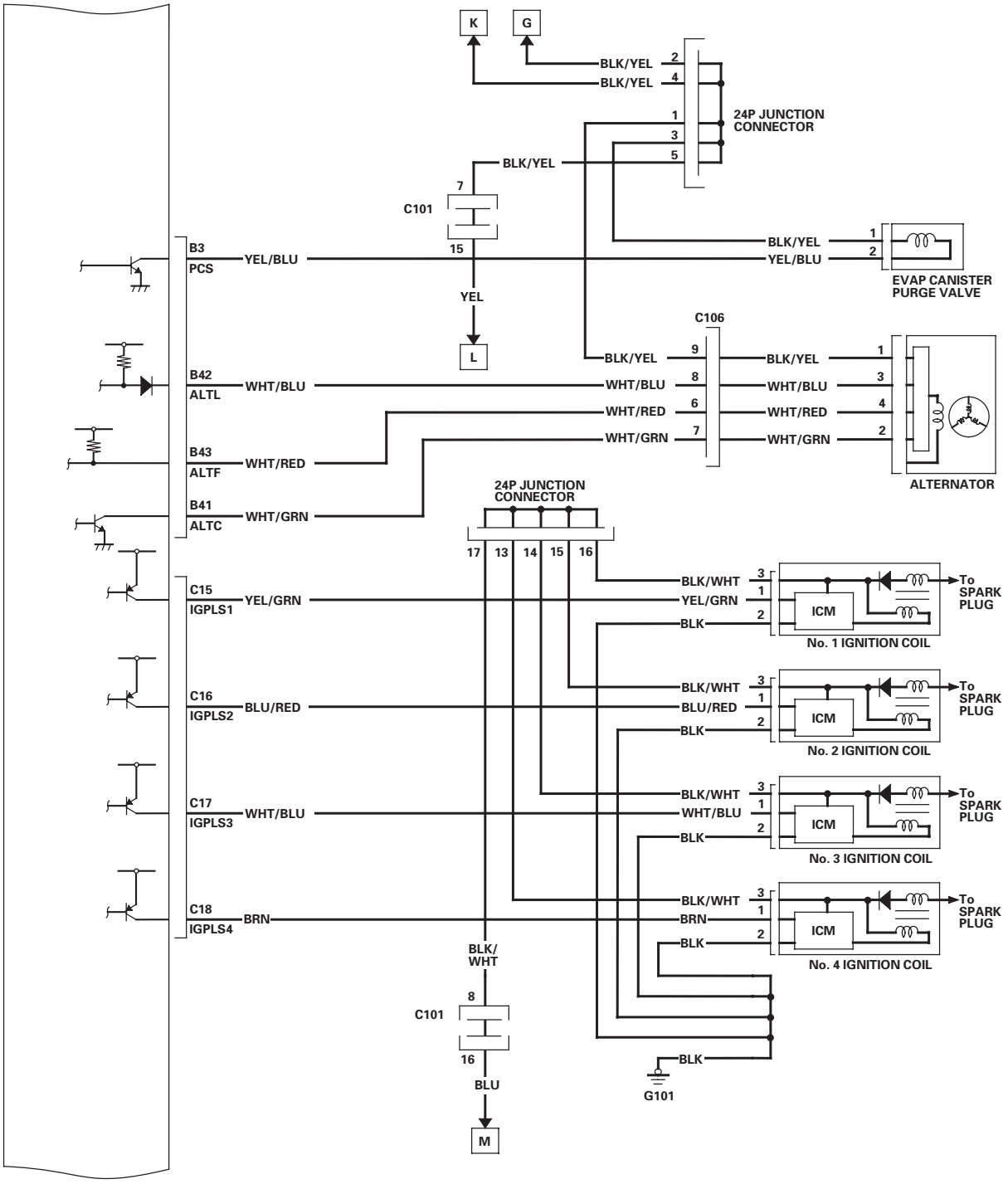
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System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



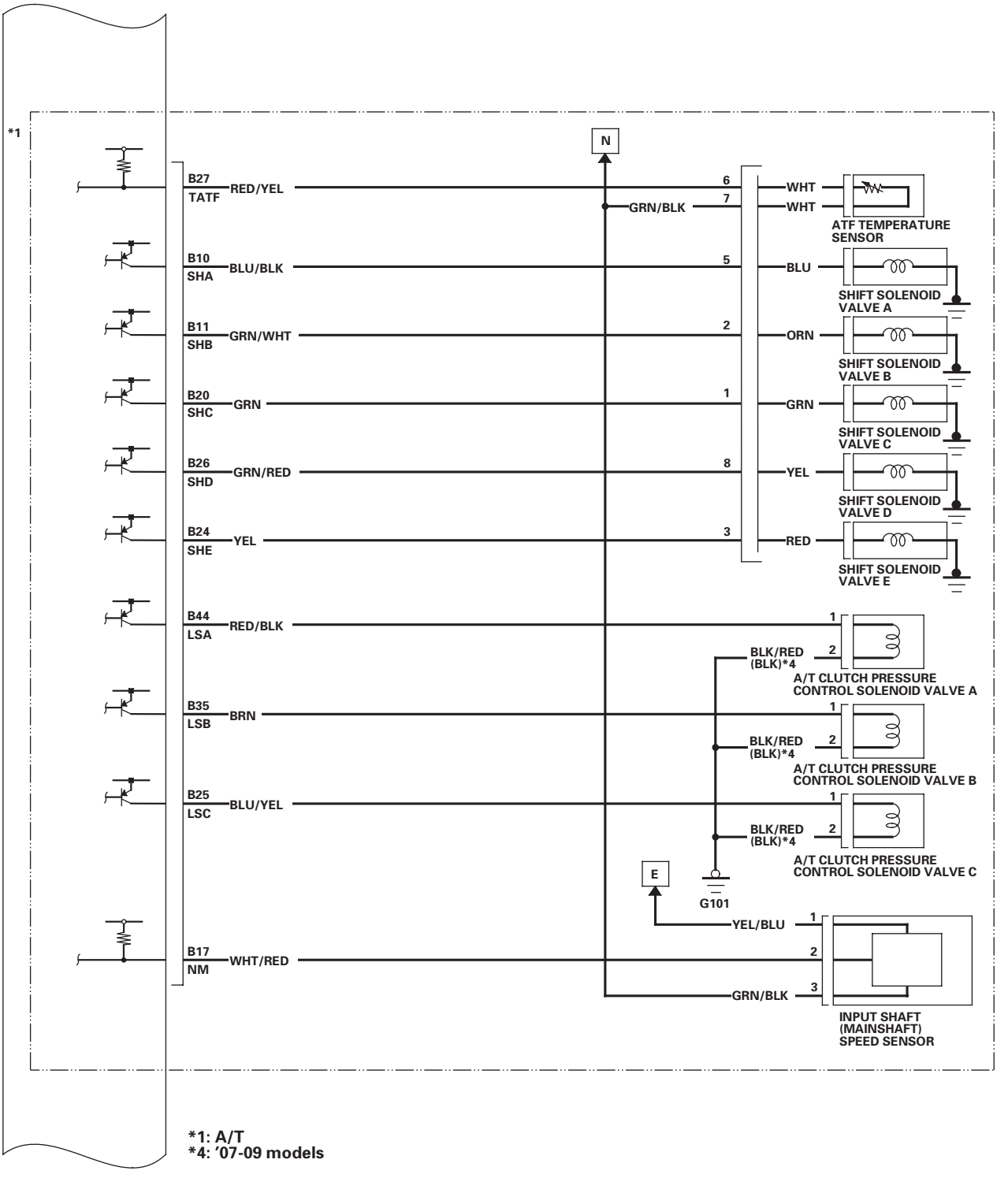
DYNOMITE -2009-


K
G
BLK/YEL
BLK/YEL
24P JUNCTION CONNECTOR
BLK/YEL
C101
7
15
YEL
L
BLK/YEL
YEL/BLU
EVAP CANISTER PURGE VALVE
B3
PCS
YEL/BLU
C106
B42
ALTL
WHT/BLU
BLK/YEL
WHT/BLU
WHT/RED
WHT/GRN
ALTERNATOR
B43
ALTF
WHT/RED
B41
ALTC
WHT/GRN
24P JUNCTION CONNECTOR
17
13
14
15
16
C15
IGPLS1
YEL/GRN
BLK/WHT
YEL/GRN
BLK
ICM
No. 1 IGNITION COIL
To SPARK PLUG
C16
IGPLS2
BLU/RED
BLK/WHT
BLU/RED
BLK
ICM
No. 2 IGNITION COIL
To SPARK PLUG
C17
IGPLS3
WHT/BLU
BLK/WHT
WHT/BLU
BLK
ICM
No. 3 IGNITION COIL
To SPARK PLUG
C18
IGPLS4
BRN
BLK/WHT
BRN
BLK
ICM
No. 4 IGNITION COIL
To SPARK PLUG
BLK/WHT
C101
8
16
BLU
M
BLK
G101

(cont'd)

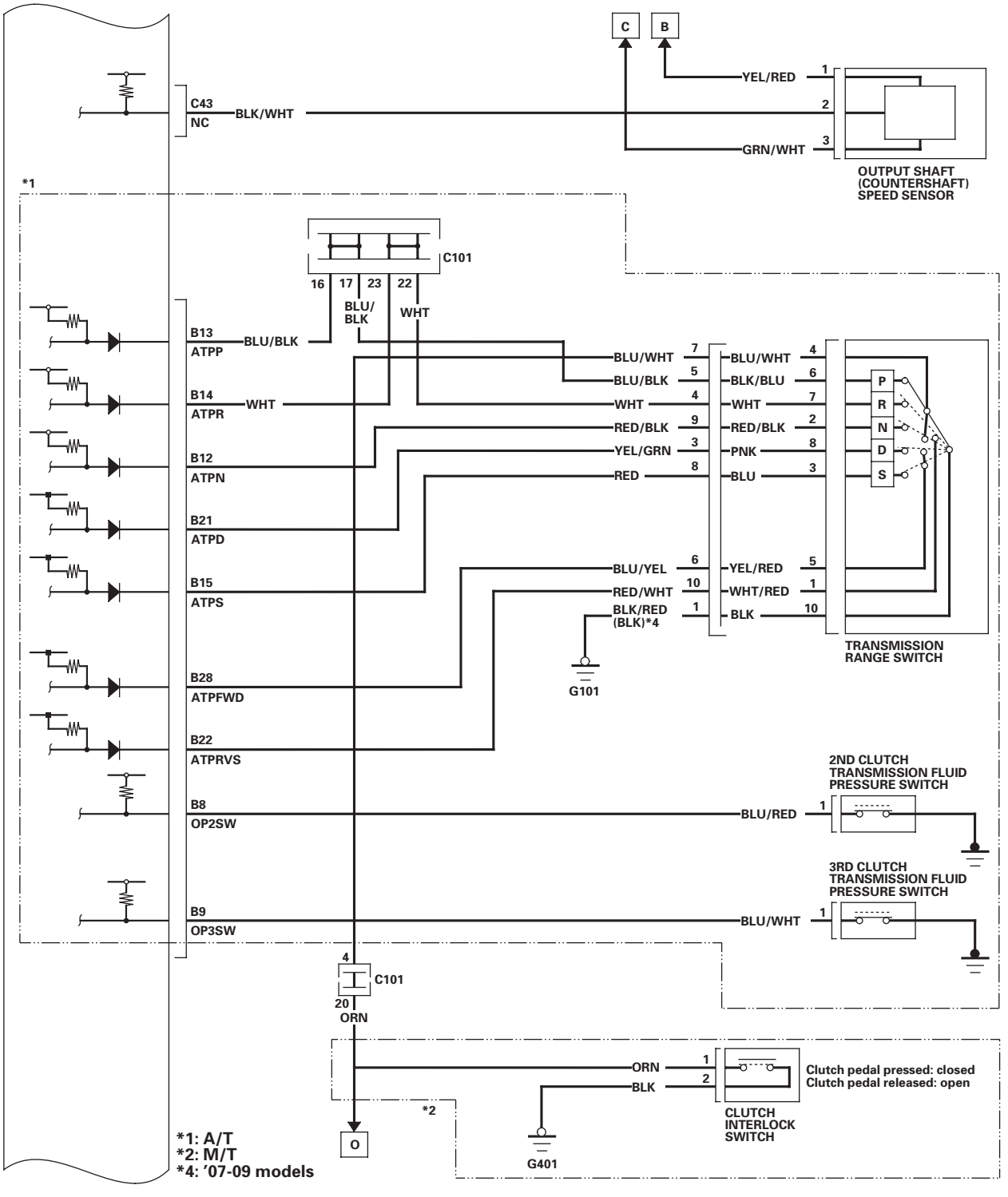
System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



*1: A/T
*4: '07-09 models

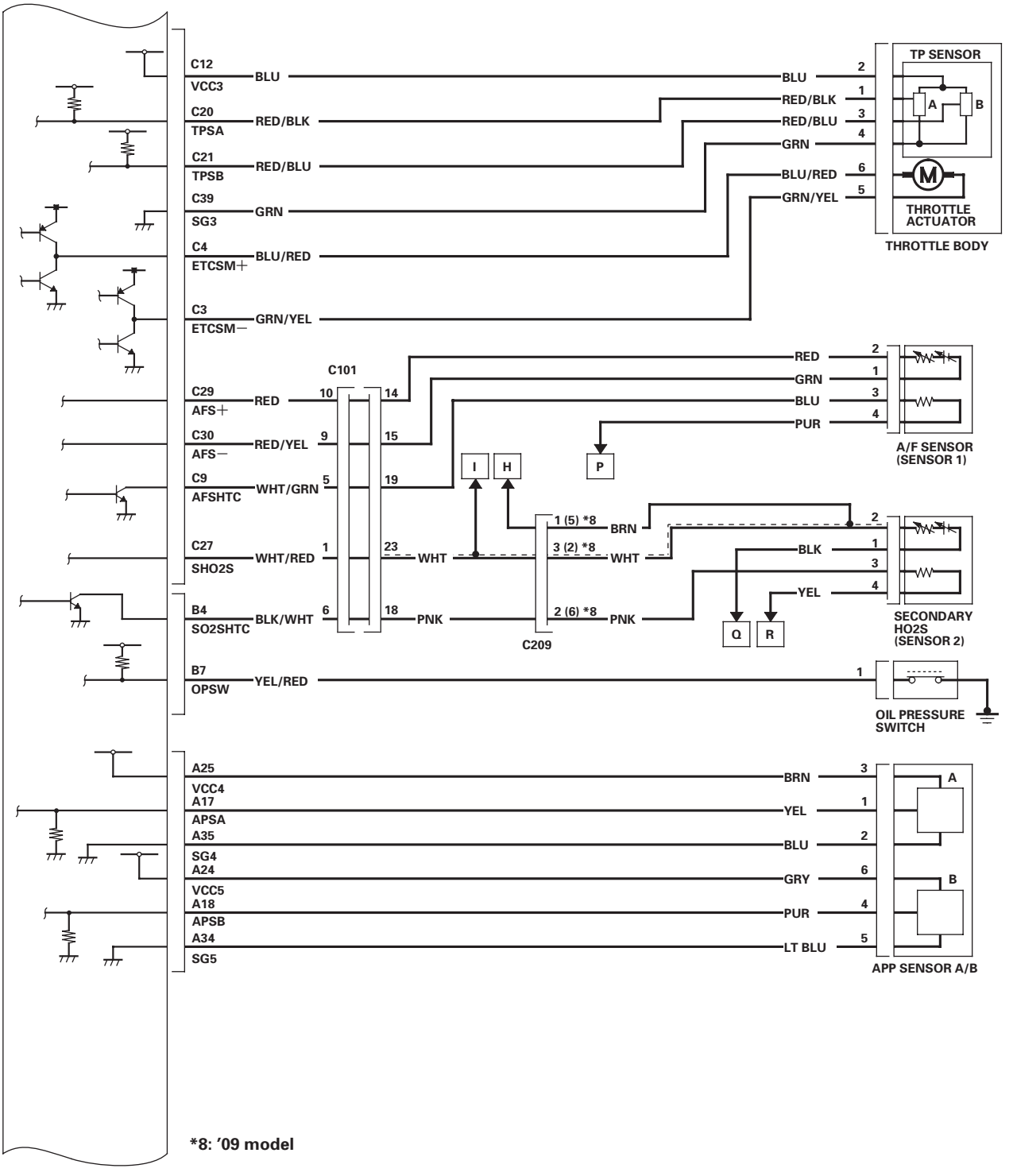
DYNOMITE -2009-


C
B
YEL/RED
1
2
3
GRN/WHT
C43
NC
BLK/WHT
OUTPUT SHAFT
(COUNTERSHAFT)
SPEED SENSOR
*1
C101
16
17
23
22
BLU/
BLK
WHT
B13
ATPP
BLU/BLK
B14
ATPR
WHT
B12
ATPN
B21
ATPD
B15
ATPS
B28
ATPFWD
B22
ATPRVS
B8
OP2SW
B9
OP3SW
BLU/WHT
BLU/BLK
WHT
RED/BLK
YEL/GRN
RED
BLU/YEL
RED/WHT
BLK/RED
(BLK)*4
BLU/WHT
BLK/BLU
WHT
RED/BLK
PNK
BLU
YEL/RED
WHT/RED
BLK
P
R
N
D
S
TRANSMISSION
RANGE SWITCH
G101
2ND CLUTCH
TRANSMISSION FLUID
PRESSURE SWITCH
BLU/RED
3RD CLUTCH
TRANSMISSION FLUID
PRESSURE SWITCH
BLU/WHT
4
C101
20
ORN
ORN
BLK
Clutch pedal pressed: closed
Clutch pedal released: open
CLUTCH
INTERLOCK
SWITCH
*2
O
G401
*1: A/T
*2: M/T
*4: '07-09 models

(cont'd)

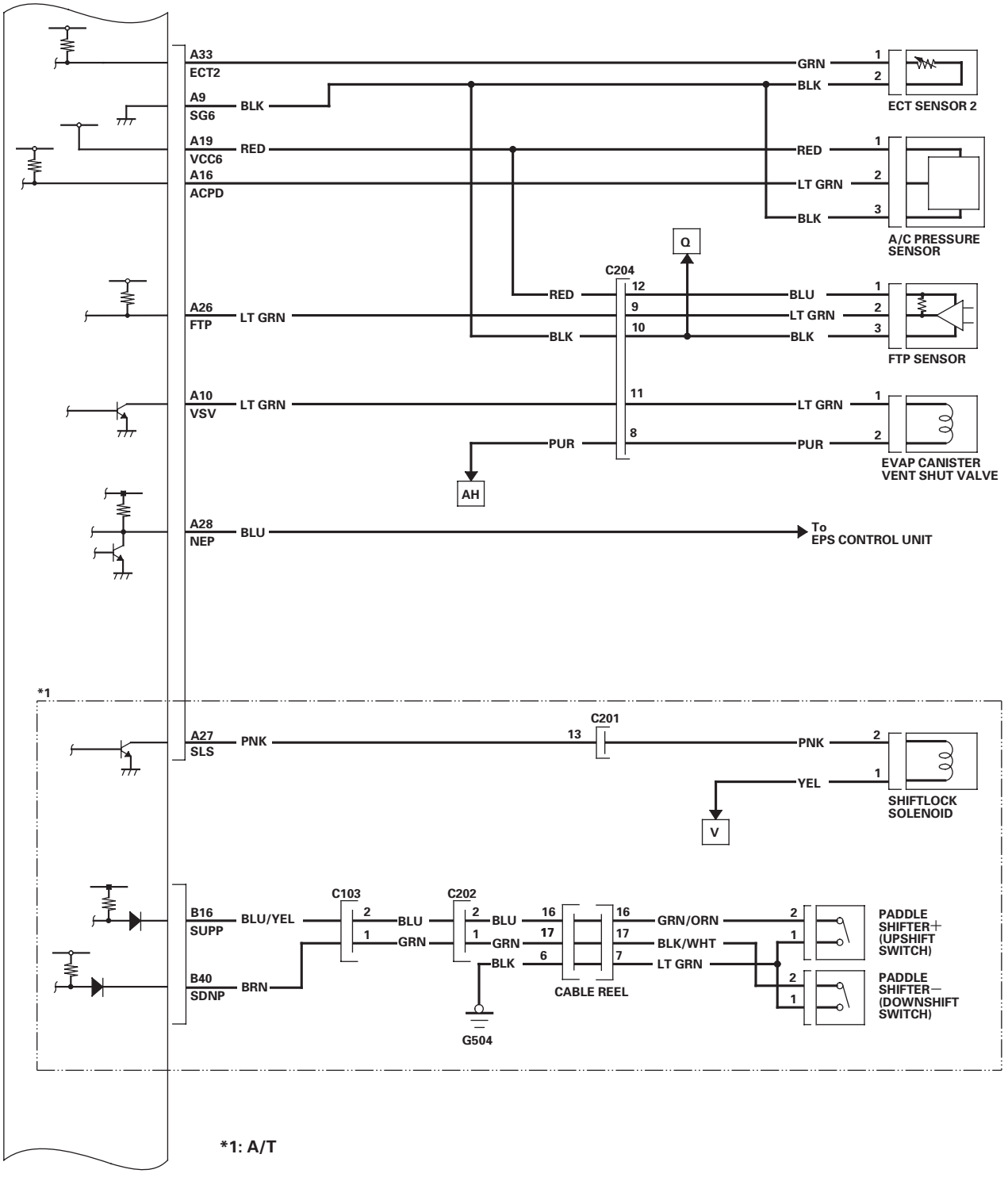
System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



*8: '09 model

DYNOMITE -2009-

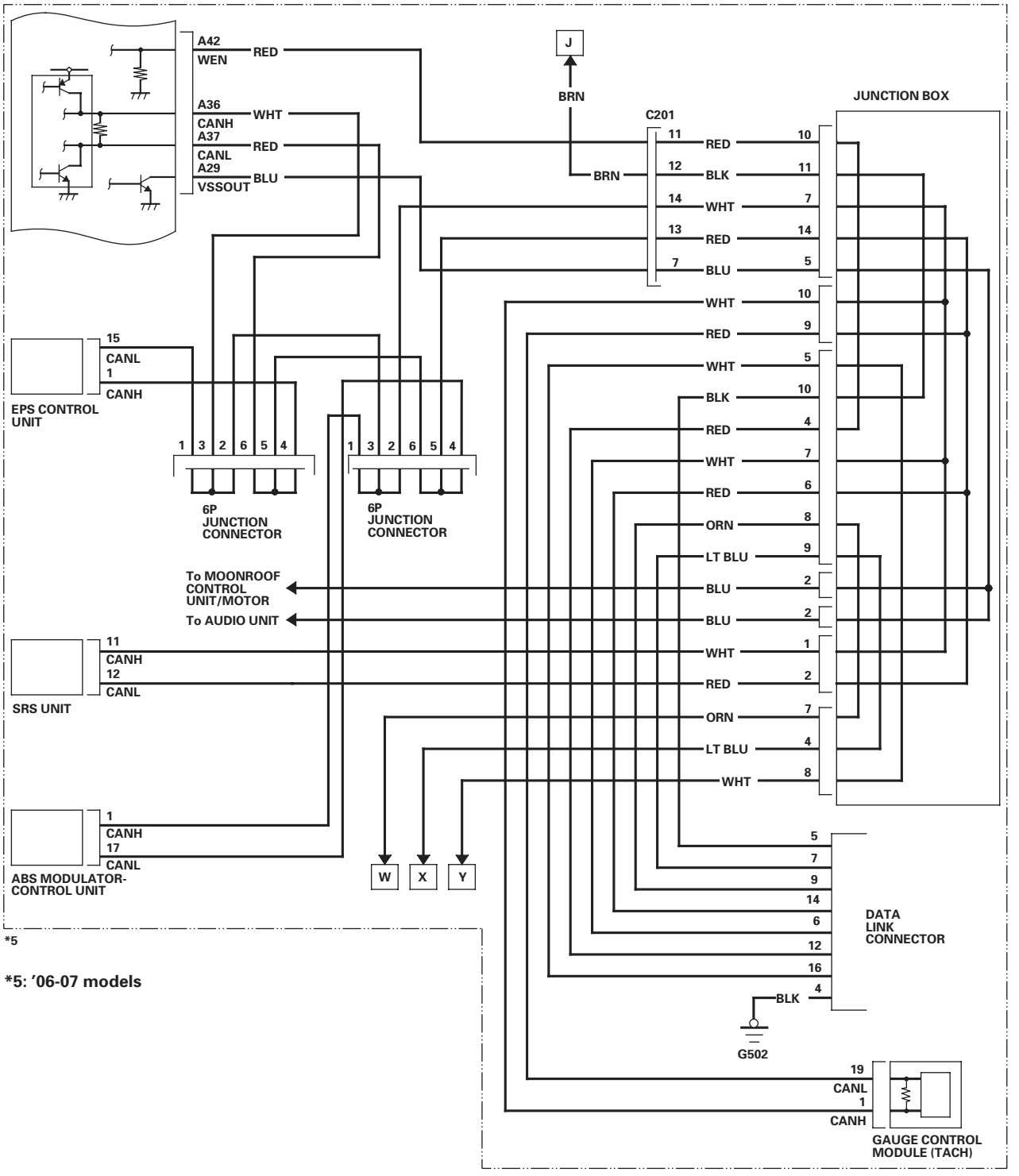

A33
ECT2
A9
SG6
BLK
A19
VCC6
RED
A16
ACPD
GRN
BLK
ECT SENSOR 2
RED
LT GRN
BLK
A/C PRESSURE SENSOR
Q
C204
A26
FTP
LT GRN
RED
BLK
12
9
10
BLU
LT GRN
BLK
FTP SENSOR
A10
VSV
LT GRN
11
8
PUR
LT GRN
PUR
EVAP CANISTER VENT SHUT VALVE
AH
A28
NEP
BLU
To EPS CONTROL UNIT
*1
A27
SLS
PNK
C201
13
PNK
YEL
SHIFTLOCK SOLENOID
V
B16
SUPP
BLU/YEL
B40
SDNP
BRN
C103
C202
BLU
GRN
BLK
CABLE REEL
GRN/ORN
BLK/WHT
LT GRN
PADDLE SHIFTER+ (UPSHIFT SWITCH)
PADDLE SHIFTER– (DOWNSHIFT SWITCH)
G504

*1: A/T

(cont'd)

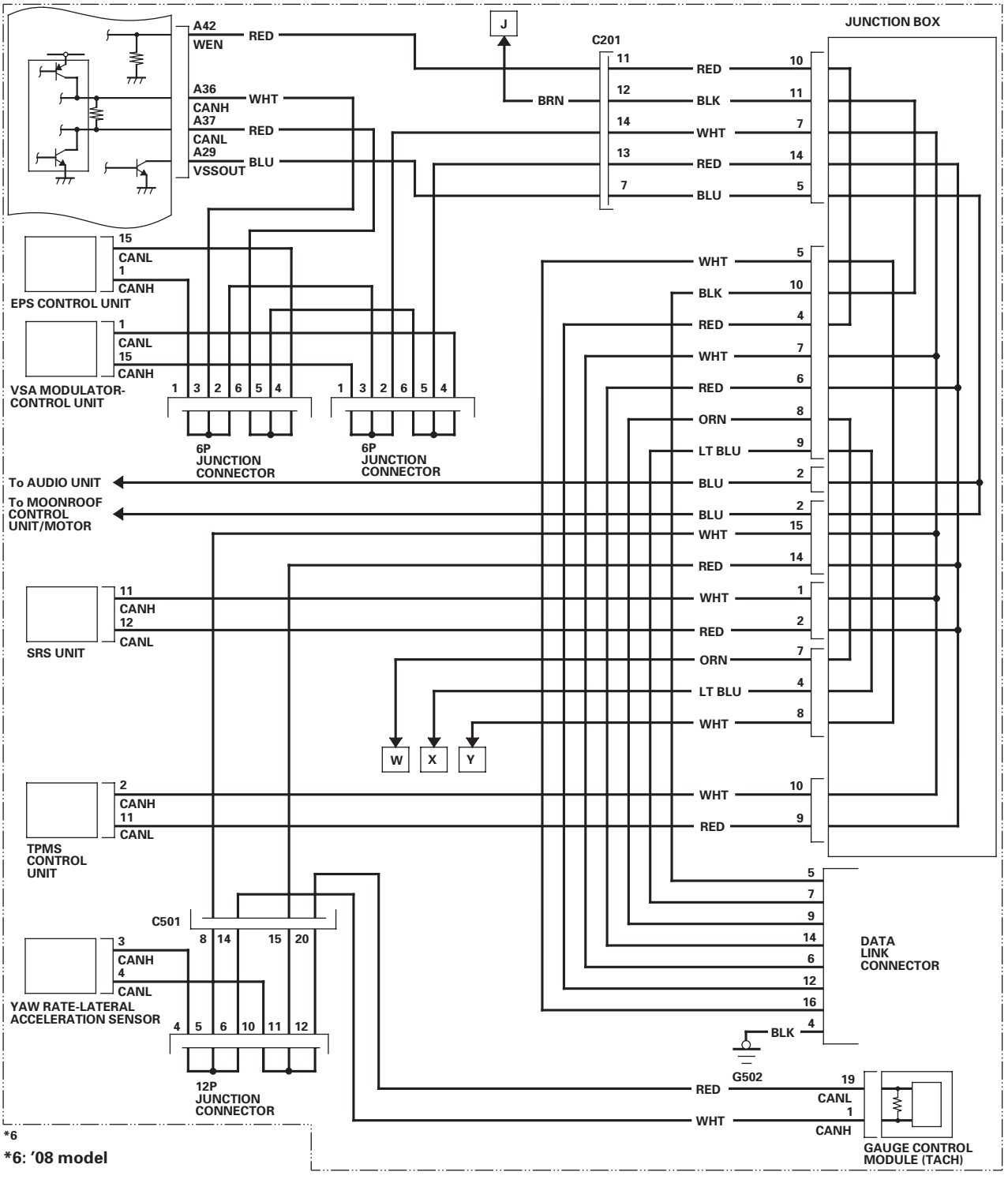
System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



*5: '06-07 models

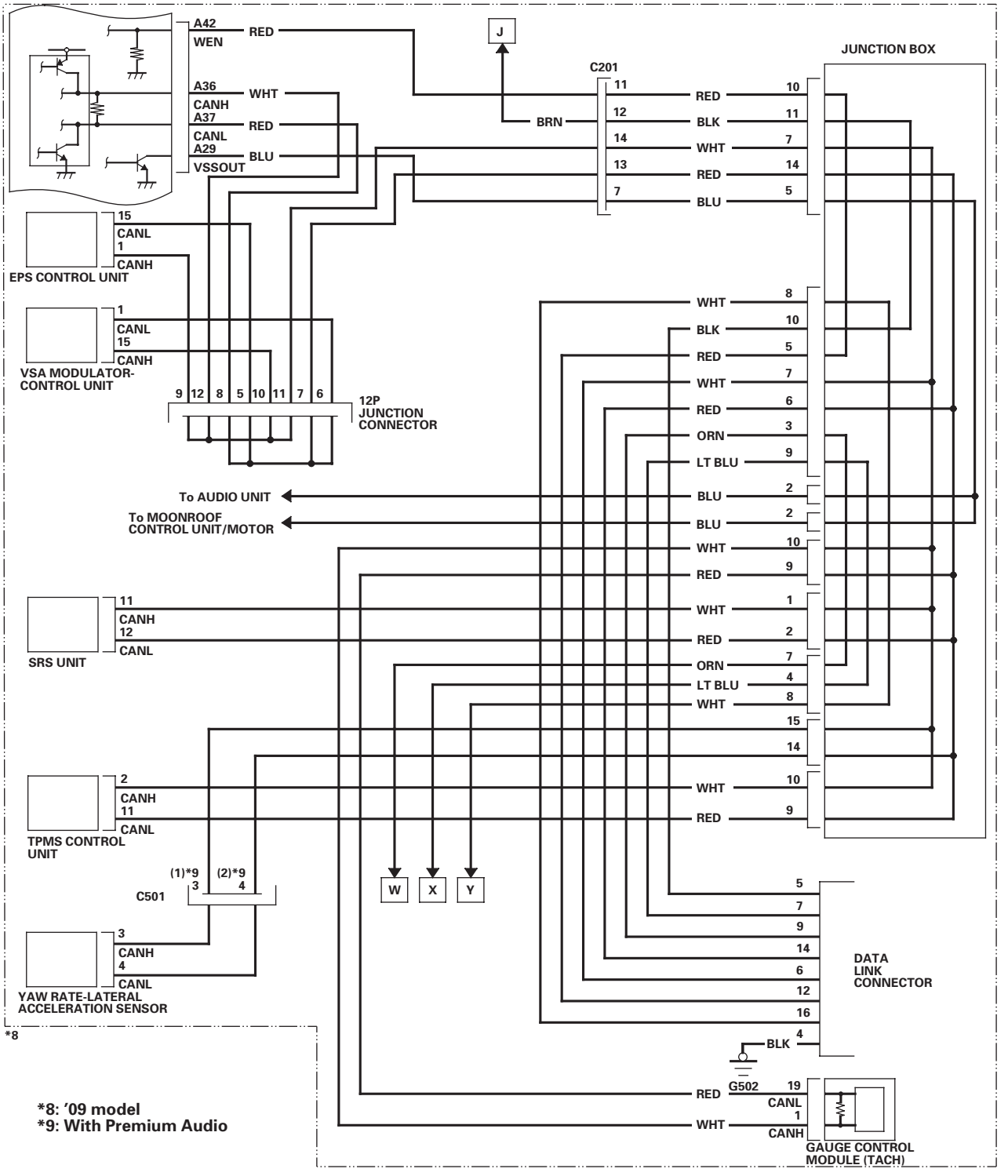
DYNOMITE -2009-


A42
WEN
RED
A36
CANH
WHT
A37
CANL
RED
A29
VSSOUT
BLU
J
BRN
C201
11
12
14
13
7
RED
BLK
WHT
RED
BLU
JUNCTION BOX
10
11
7
14
5
15
CANL
1
CANH
EPS CONTROL UNIT
1
CANL
15
CANH
VSA MODULATOR-
CONTROL UNIT
1 3 2 6 5 4
1 3 2 6 5 4
6P
JUNCTION
CONNECTOR
6P
JUNCTION
CONNECTOR
To AUDIO UNIT
To MOONROOF
CONTROL
UNIT/MOTOR
WHT
BLK
RED
WHT
RED
ORN
LT BLU
BLU
BLU
WHT
RED
WHT
RED
ORN
LT BLU
WHT
5
10
4
7
6
8
9
2
2
15
14
1
2
7
4
8
W
X
Y
11
CANH
12
CANL
SRS UNIT
2
CANH
11
CANL
TPMS
CONTROL
UNIT
WHT
RED
10
9
C501
8 14 15 20
3
CANH
4
CANL
YAW RATE-LATERAL
ACCELERATION SENSOR
4 5 6 10 11 12
12P
JUNCTION
CONNECTOR
5
7
9
14
6
12
16
4
DATA
LINK
CONNECTOR
BLK
G502
RED
WHT
19
CANL
1
CANH
GAUGE CONTROL
MODULE (TACH)
*6
*6: '08 model

(cont'd)

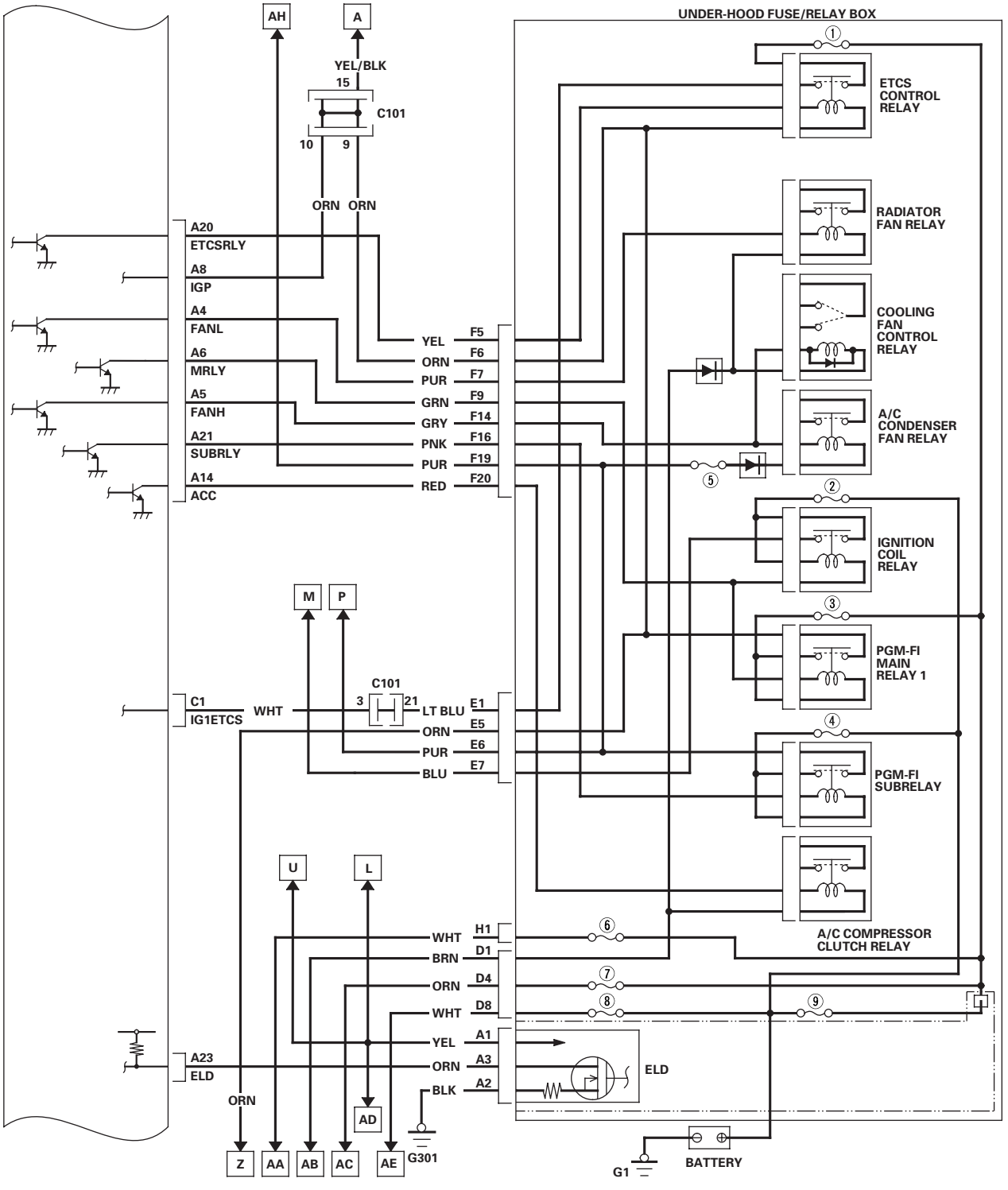
System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)



*8: '09 model
*9: With Premium Audio

DYNOMITE -2009-

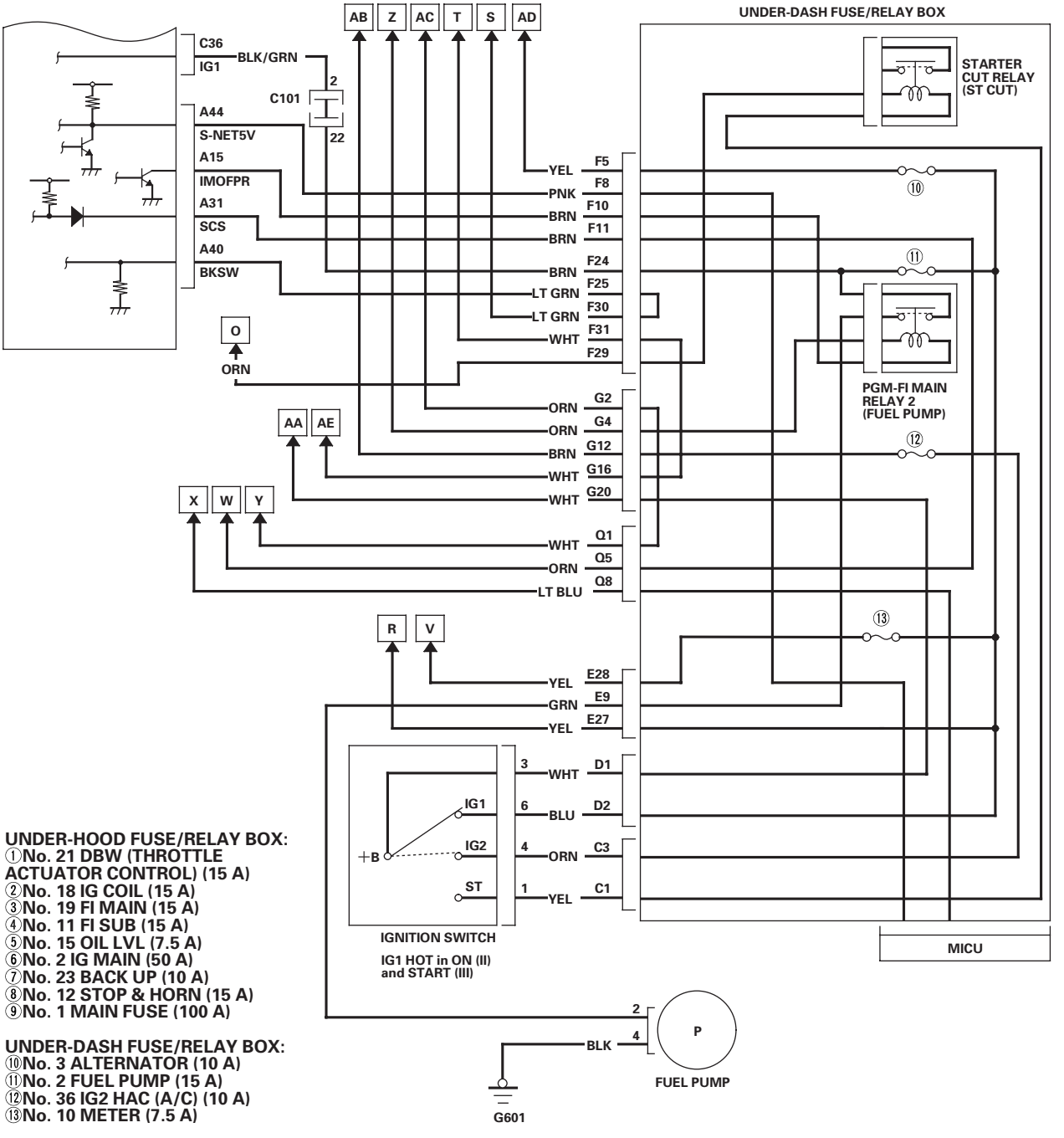


(cont'd)

DYNOMITE -2009-

System Description (cont'd)

ECM/PCM Circuit Diagram (K20Z2 engine) (cont'd)

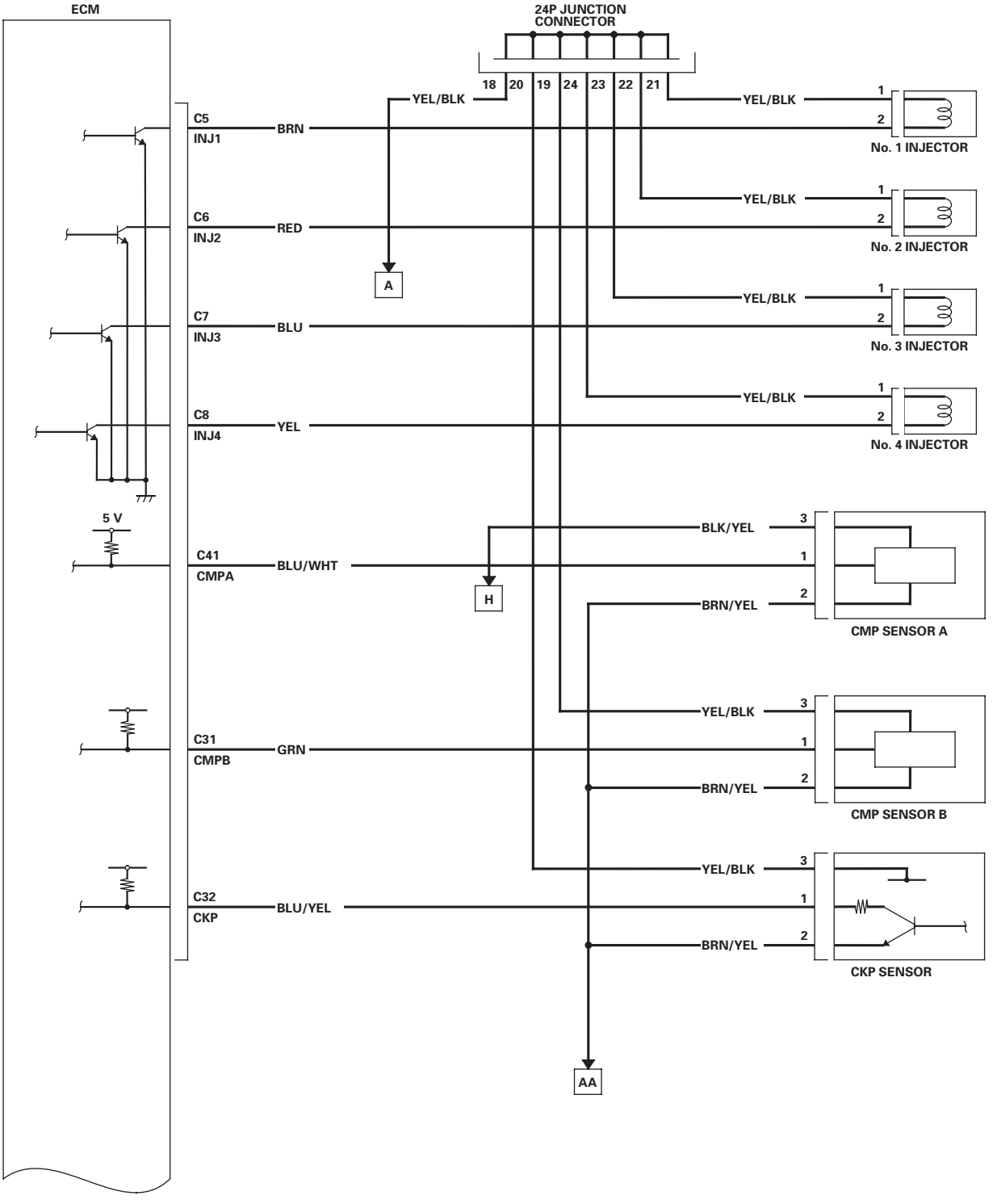


UNDER-HOOD FUSE/RELAY BOX:
①No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A)
②No. 18 IG COIL (15 A)
③No. 19 FI MAIN (15 A)
④No. 11 FI SUB (15 A)
⑤No. 15 OIL LVL (7.5 A)
⑥No. 2 IG MAIN (50 A)
⑦No. 23 BACK UP (10 A)
⑧No. 12 STOP & HORN (15 A)
⑨No. 1 MAIN FUSE (100 A)

UNDER-DASH FUSE/RELAY BOX:
⑩No. 3 ALTERNATOR (10 A)
⑪No. 2 FUEL PUMP (15 A)
⑫No. 36 IG2 HAC (A/C) (10 A)
⑬No. 10 METER (7.5 A)

DYNOMITE -2009-

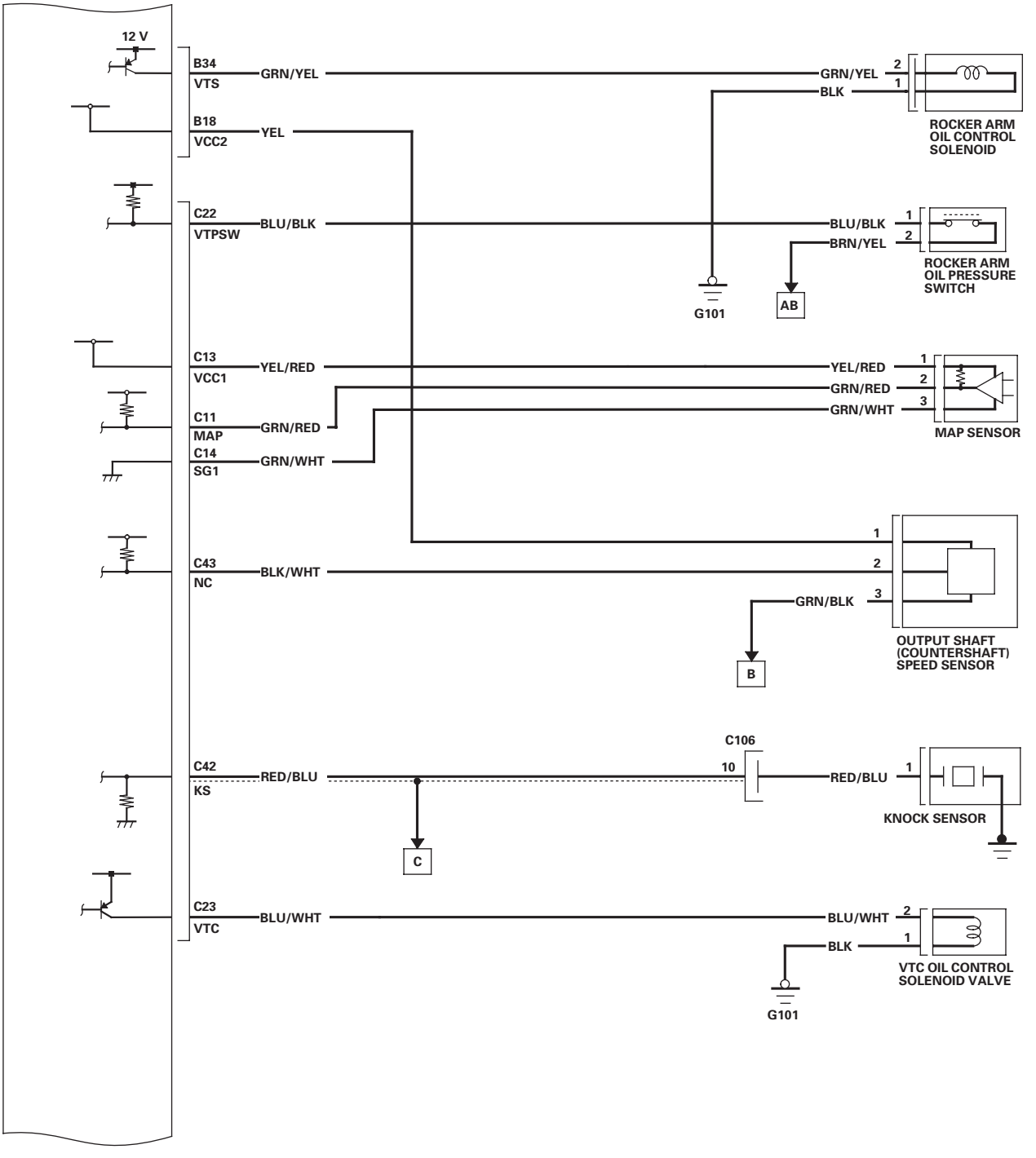
ECM Circuit Diagram (K20Z3 engine)



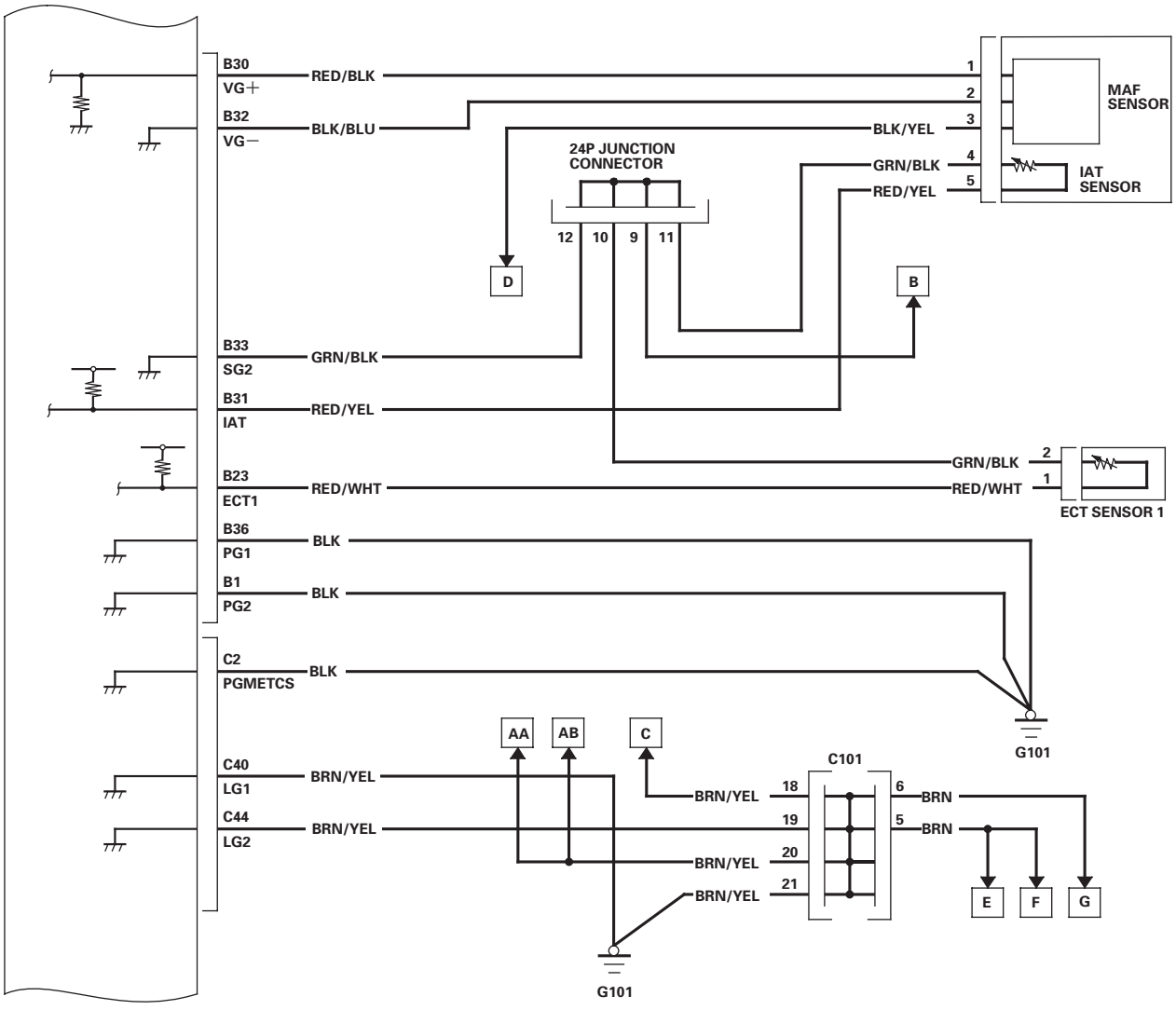
(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



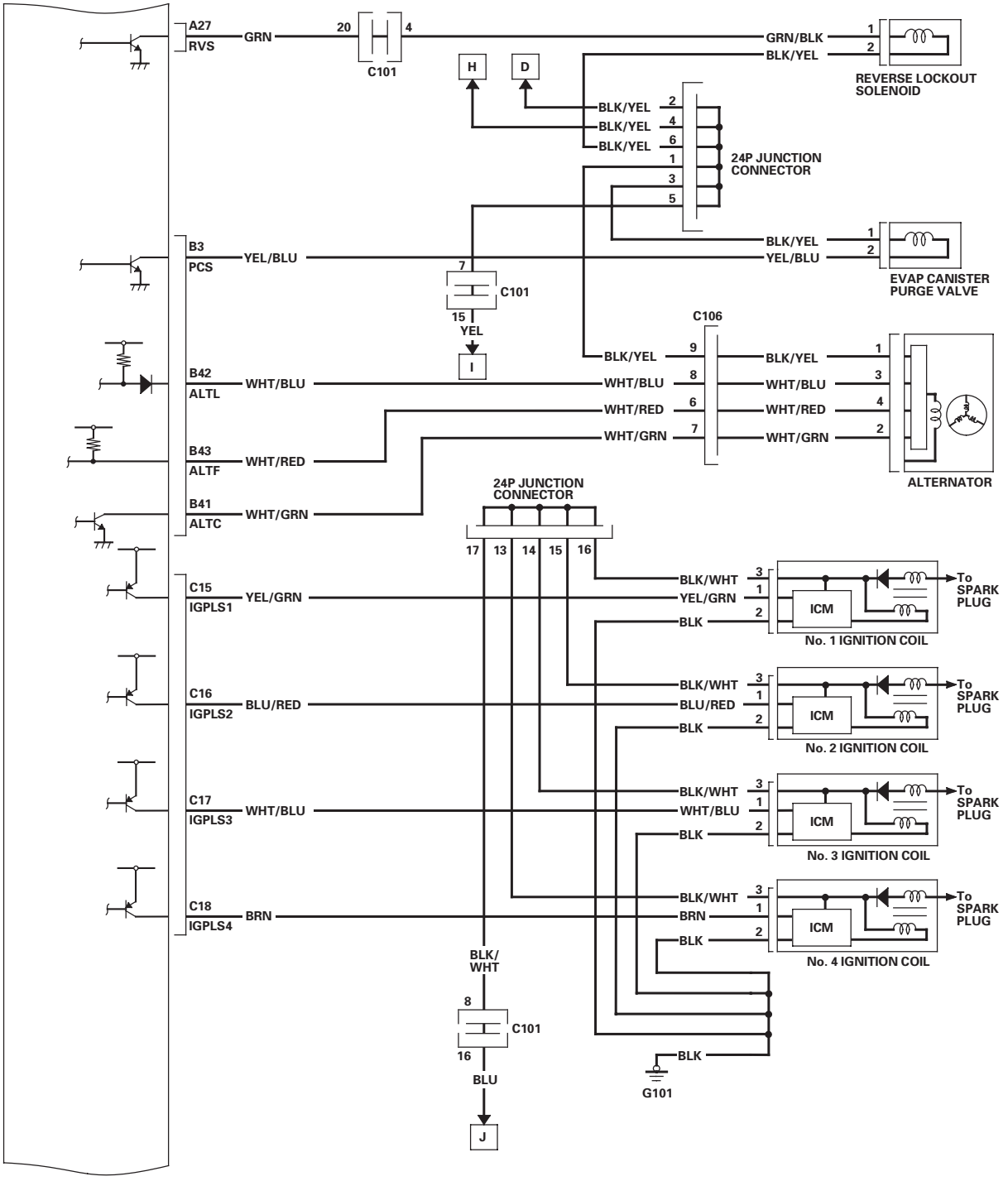
DYNOMITE -2009-


B30
VG+
RED/BLK
B32
VG−
BLK/BLU
1
2
3
4
5
MAF SENSOR
IAT SENSOR
BLK/YEL
GRN/BLK
RED/YEL
24P JUNCTION CONNECTOR
12
10
9
11
D
B
B33
SG2
GRN/BLK
B31
IAT
RED/YEL
GRN/BLK
RED/WHT
2
1
ECT SENSOR 1
B23
ECT1
RED/WHT
B36
PG1
BLK
B1
PG2
BLK
C2
PGMETCS
BLK
G101
AA
AB
C
C101
C40
LG1
BRN/YEL
C44
LG2
BRN/YEL
BRN/YEL
BRN/YEL
BRN/YEL
BRN/YEL
18
19
20
21
6
5
BRN
BRN
E
F
G
G101

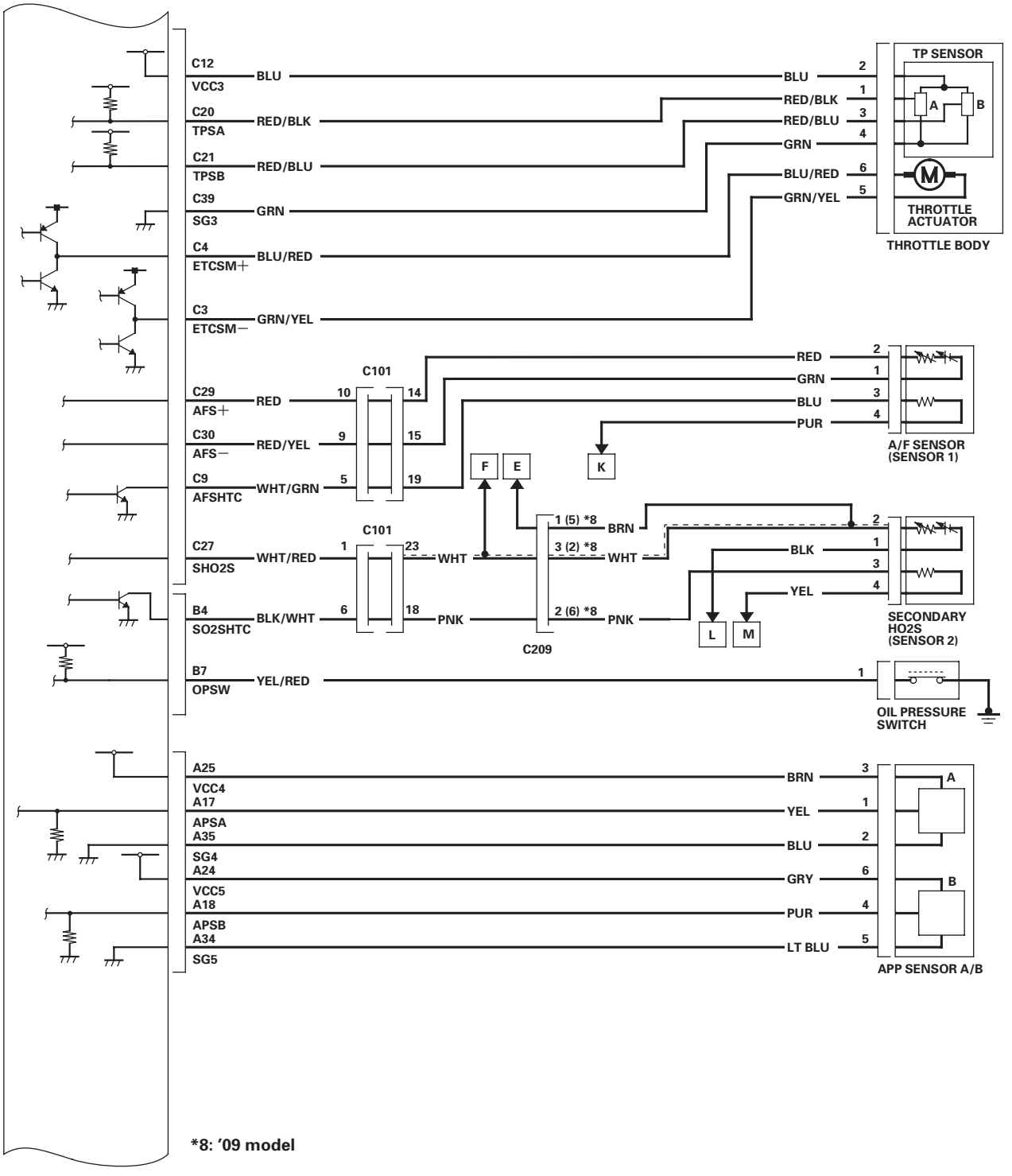
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System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



DYNOMITE -2009-

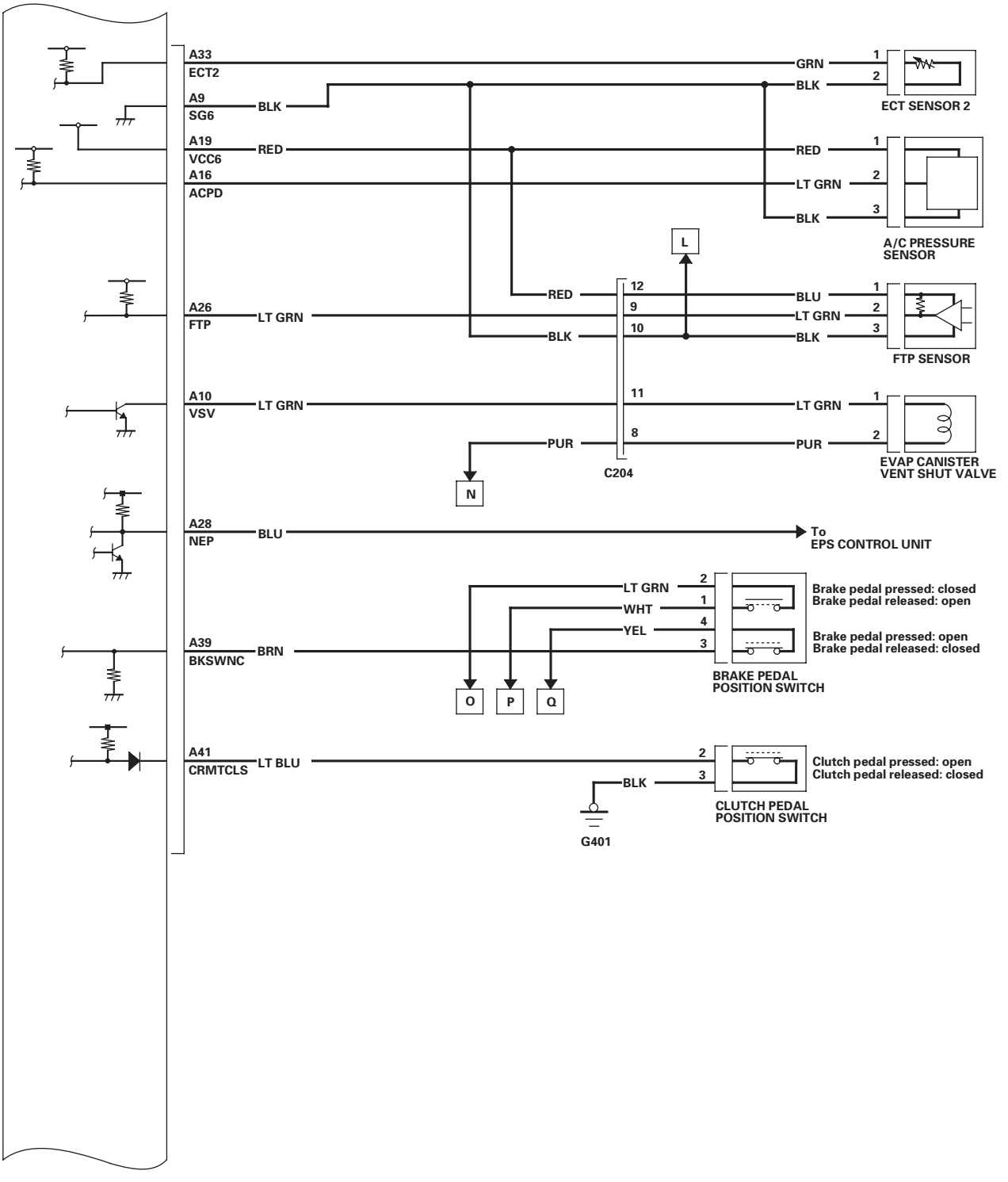


*8: '09 model

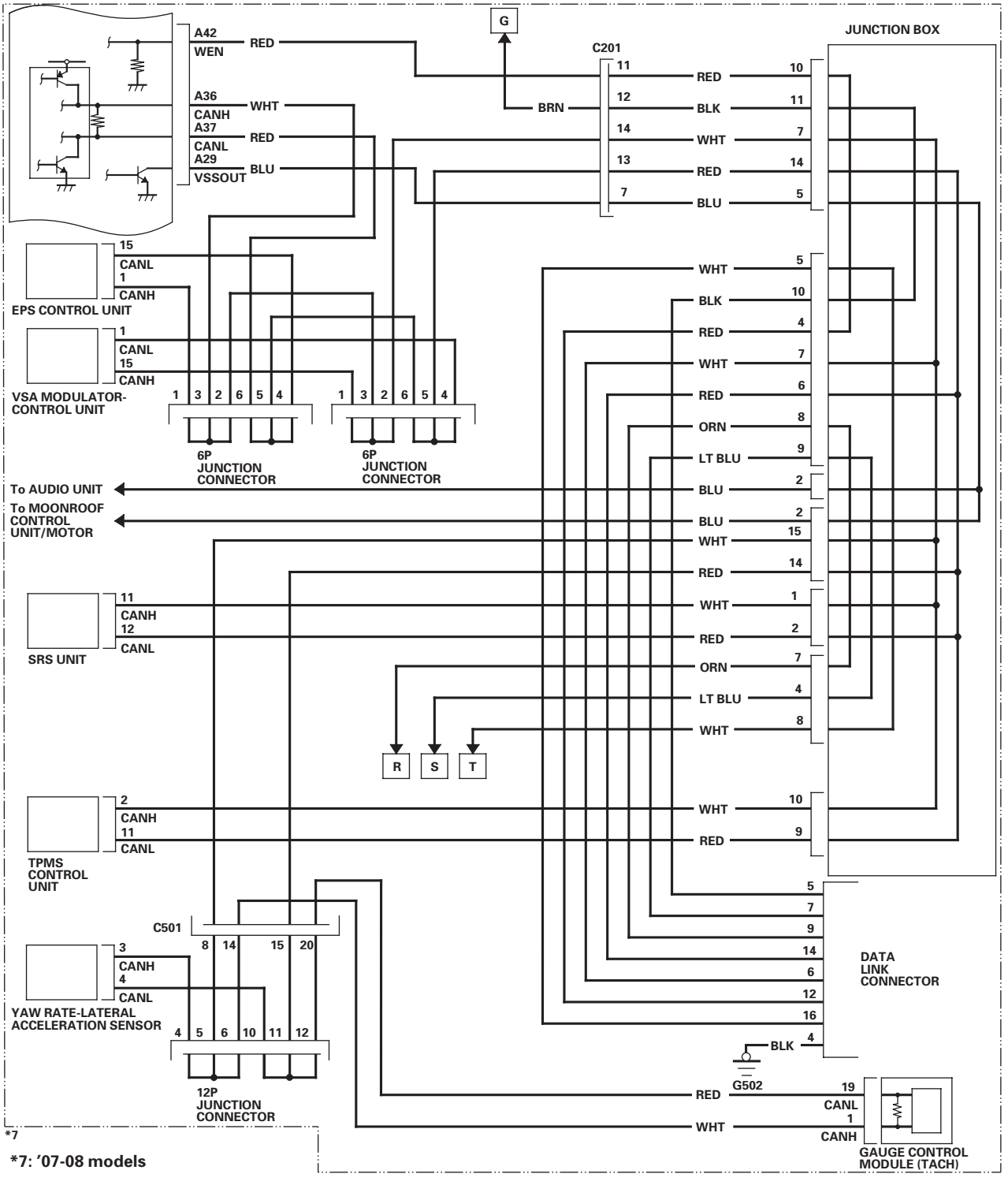
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System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



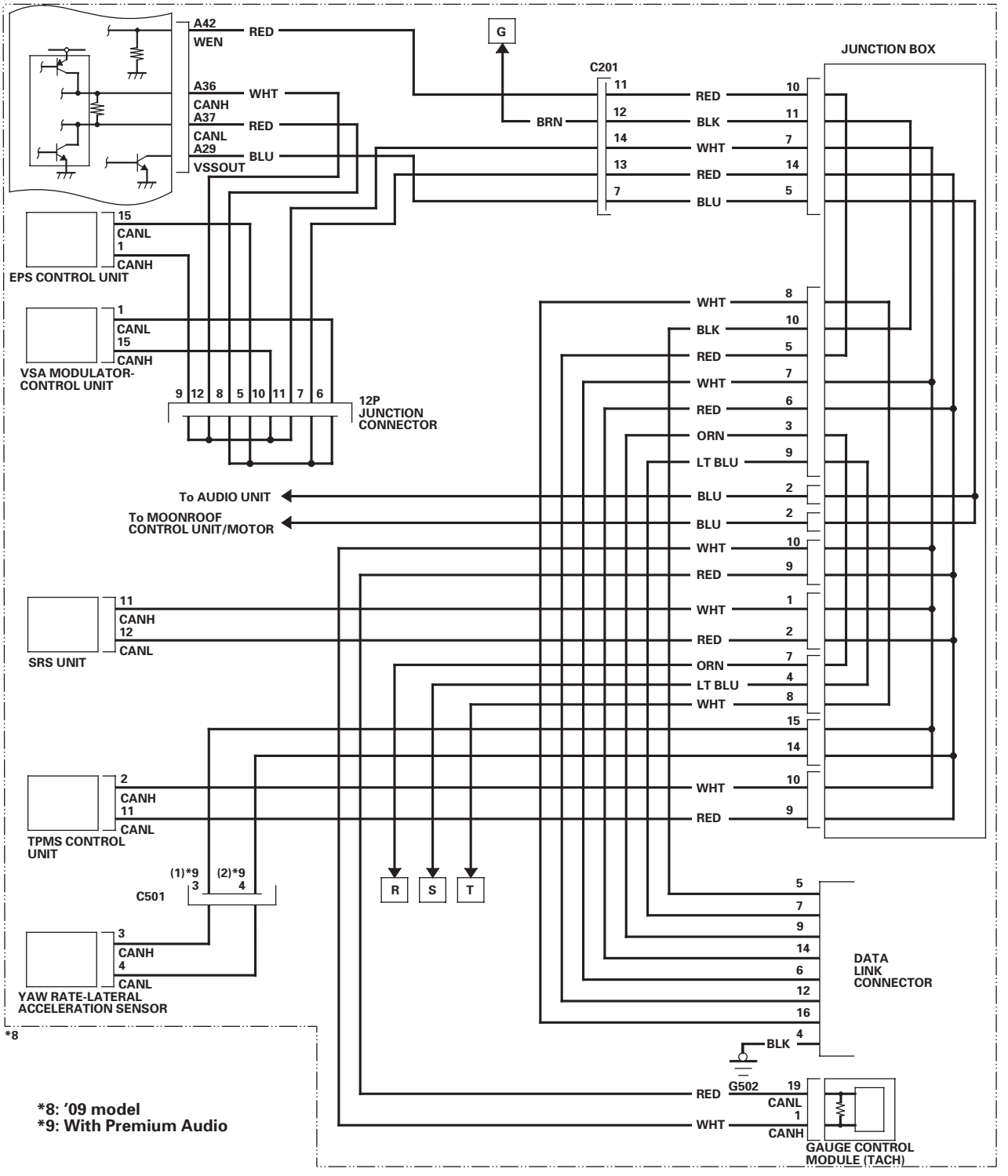
DYNOMITE -2009-


A42
WEN
RED
A36
CANH
A37
CANL
A29
VSSOUT
WHT
RED
BLU
G
BRN
C201
11
12
14
13
7
RED
BLK
WHT
RED
BLU
JUNCTION BOX
10
11
7
14
5
15
CANL
1
CANH
EPS CONTROL UNIT
1
CANL
15
CANH
VSA MODULATOR-
CONTROL UNIT
1 3 2 6 5 4
1 3 2 6 5 4
6P
JUNCTION
CONNECTOR
6P
JUNCTION
CONNECTOR
To AUDIO UNIT
To MOONROOF
CONTROL
UNIT/MOTOR
WHT
BLK
RED
WHT
RED
ORN
LT BLU
BLU
BLU
WHT
RED
WHT
RED
ORN
LT BLU
WHT
5
10
4
7
6
8
9
2
2
15
14
1
2
7
4
8
11
CANH
12
CANL
SRS UNIT
R
S
T
2
CANH
11
CANL
TPMS
CONTROL
UNIT
WHT
RED
10
9
C501
8 14 15 20
3
CANH
4
CANL
YAW RATE-LATERAL
ACCELERATION SENSOR
4 5 6 10 11 12
12P
JUNCTION
CONNECTOR
5
7
9
14
6
12
16
4
DATA
LINK
CONNECTOR
BLK
G502
RED
WHT
19
CANL
1
CANH
GAUGE CONTROL
MODULE (TACH)
*7
*7: '07-08 models

(cont'd)

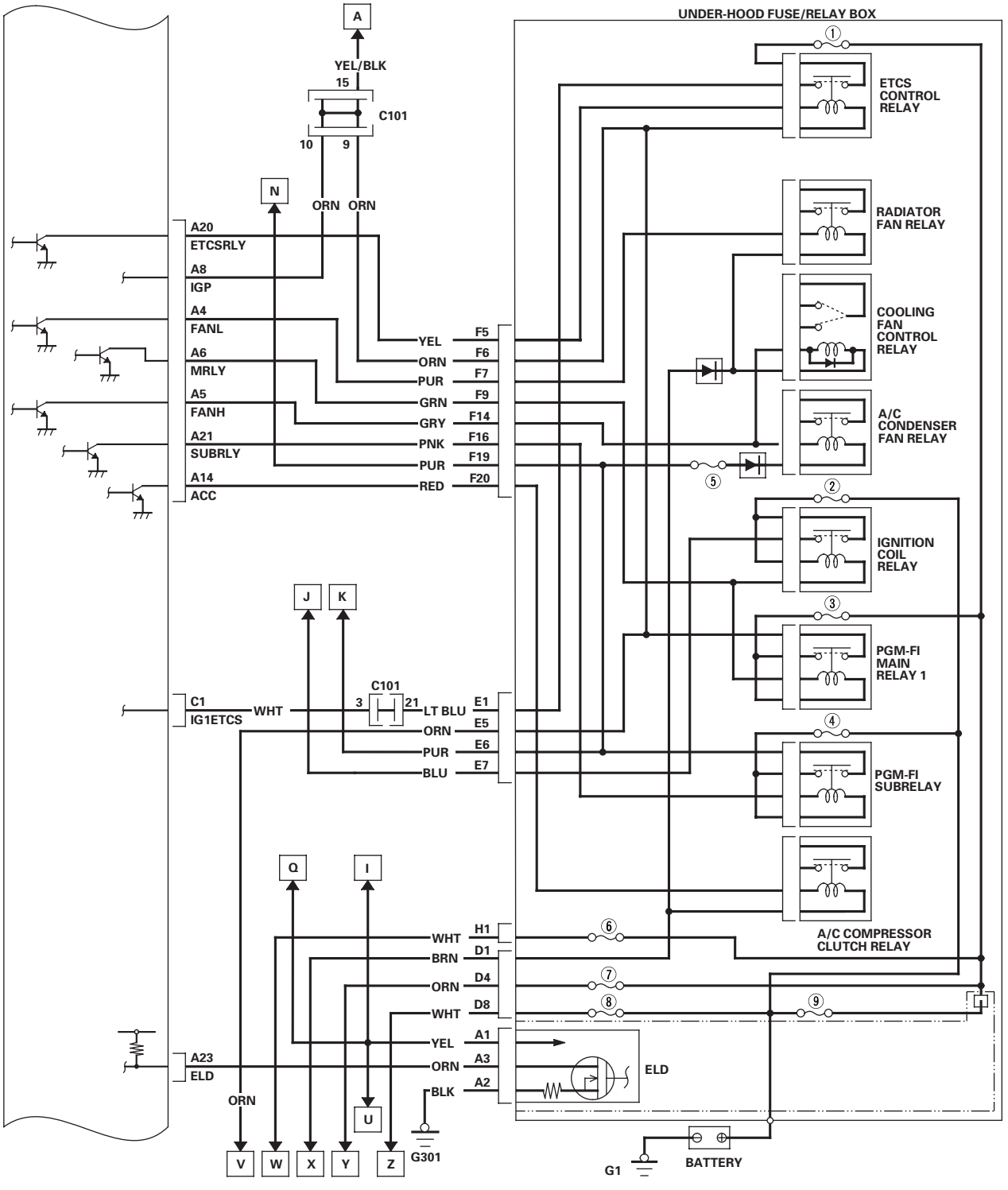
System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



*8: '09 model
*9: With Premium Audio

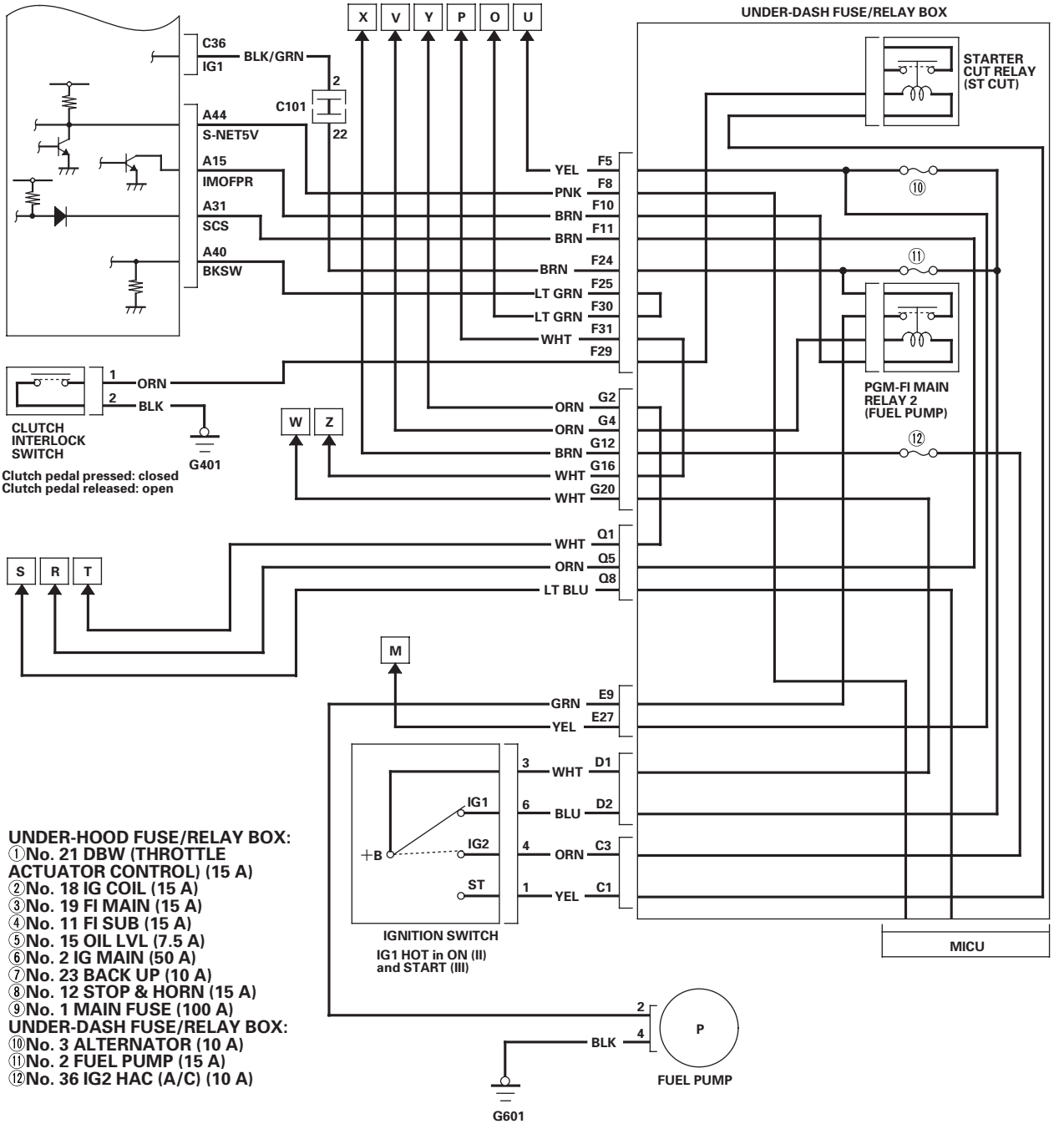
DYNOMITE -2009-


UNDER-HOOD FUSE/RELAY BOX
A
YEL/BLK
15
C101
10
9
N
ORN
ORN
A20
ETCSRLY
A8
IGP
A4
FANL
A6
MRLY
A5
FANH
A21
SUBRLY
A14
ACC
YEL
ORN
PUR
GRN
GRY
PNK
PUR
RED
F5
F6
F7
F9
F14
F16
F19
F20
ETCS CONTROL RELAY
RADIATOR FAN RELAY
COOLING FAN CONTROL RELAY
A/C CONDENSER FAN RELAY
IGNITION COIL RELAY
PGM-FI MAIN RELAY 1
PGM-FI SUBRELAY
A/C COMPRESSOR CLUTCH RELAY
J
K
C101
3
21
C1
IG1ETCS
WHT
LT BLU
ORN
PUR
BLU
E1
E5
E6
E7
Q
I
WHT
BRN
ORN
WHT
H1
D1
D4
D8
A23
ELD
YEL
ORN
BLK
A1
A3
A2
ELD
ORN
U
V
W
X
Y
Z
G301
G1
BATTERY

(cont'd)

System Description (cont'd)

ECM Circuit Diagram (K20Z3 engine) (cont'd)



DYNOMITE -2009-

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 ECM/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 to 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 11-8). This screen displays the code, the current data list of the enable criteria, and the status of the readiness testing.

Catalytic Converter Monitor and Readiness Code

NOTE:
- Do not turn the ignition switch to LOCK (0) or ACC (I) during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/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 70 ℃ (158 ℉) or more.
- IAT SENSOR at —7 ℃ (20 ℉) or more.
- Vehicle speed (VSS) above 40 km/h (25 mph).

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 8 km (5 miles), 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.

(cont'd)

DYNOMITE -2009-

How to Set Readiness Codes (cont'd)

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 ECM/PCM is reset with the HDS.

Enable Criteria

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

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 to LOCK (0) or ACC (I) during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 60 ℃ (140 ℉) 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 5.6 km (3.5 miles), 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 SENSOR 1 in the ALL DATA LIST with the HDS. If the ECT SENSOR 1 is less than 60 ℃ (140 ℉), run the engine until it is more than 60 ℃ (140 ℉), then repeat the procedure.

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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 ECM/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 to LOCK (0) or ACC (I) during the procedure.
- All readiness codes are cleared when the battery is disconnected, if the DTCs have been cleared, or if the ECM/PCM is reset with the HDS.

Enable Criteria

ECT SENSOR 1 at 80 ℃ (176 ℉) or more.

Procedure

1. Connect the HDS to the DLC.

2. Start the engine.

3. Drive at a steady speed with the A/T in D position or M/T in 4th gear, at 80—100 km/h (50—62 mph) or above for more than 10 seconds.

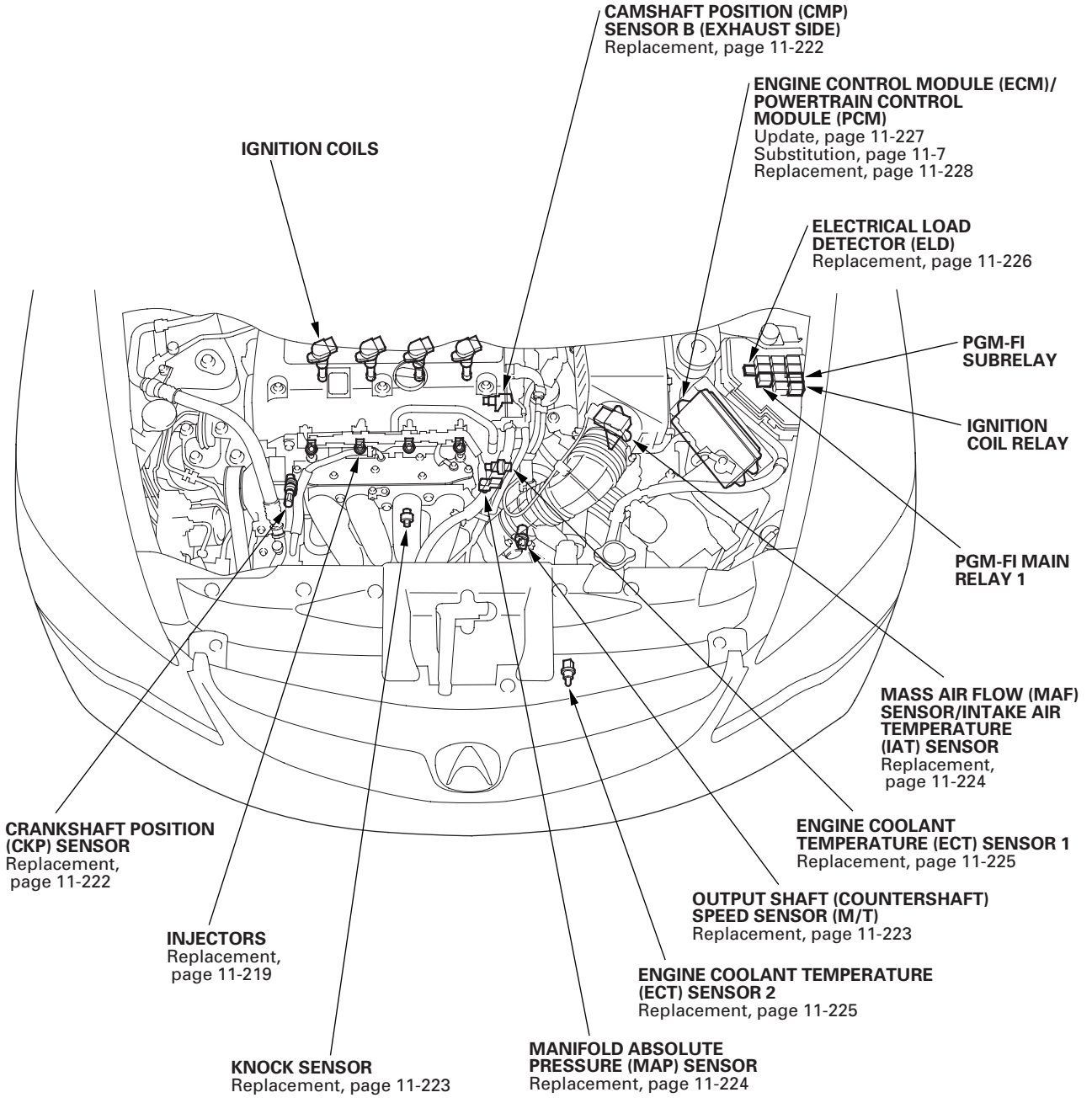
4. With the A/T in D position or M/T in 4th gear, decelerate from 100 km/h (62 mph) or above by completely releasing the throttle for at least 5 seconds. If the engine is stopped during this procedure, go to step 3 and do the procedure again.

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.

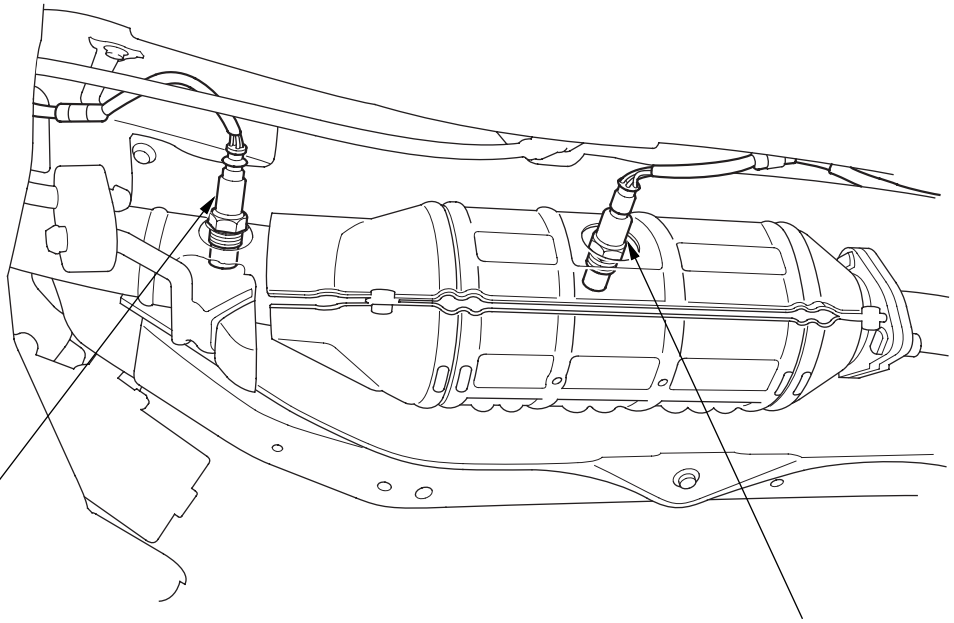
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Component Location Index



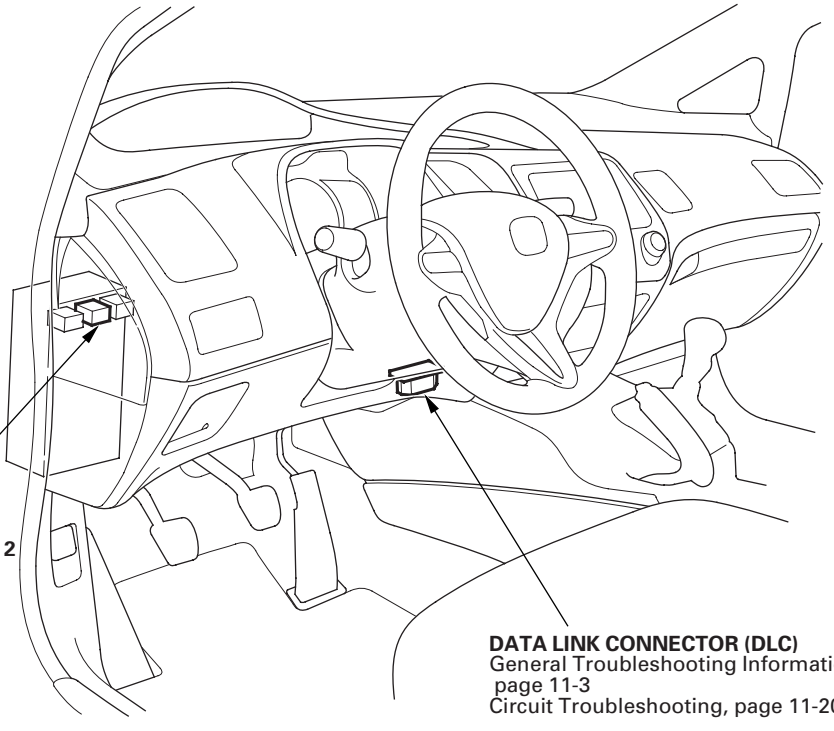
* : This illustration shows K20Z2 engine

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AIR FUEL RATIO (A/F) SENSOR (SENSOR 1)
Replacement, page 11-221

SECONDARY HEATED OXYGEN SENSOR (SECONDARY HO2S) (SENSOR 2)
Replacement, page 11-221



PGM-FI MAIN RELAY 2 (FUEL PUMP)

DATA LINK CONNECTOR (DLC)
General Troubleshooting Information, page 11-3
Circuit Troubleshooting, page 11-204

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
   - Brake booster hose

   Are the parts OK?

   YES—Go to step 2.

   NO—Repair or replace the damaged part(s), then go to step 17.

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 15.

3. Check for a dirty air cleaner element.

   Is it dirty?

   YES—Replace the air cleaner element (see page 11-346), then go to step 15.

   NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Turn the ignition switch to ON (II).

6. 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 7.

   NO—Go to step 13.

7. Start the engine.

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

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

   Does the reading change?

   YES—Go to step 10.

   NO—Go to step 13.

10. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

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

    - ENGINE SPEED
    - VSS
    - MAP SENSOR
    - MAF SENSOR

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

    Does the screen indicate FAILED?

    YES—Go to step 13.

    NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 11 and recheck.

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13. Turn the ignition switch to LOCK (0).

14. Replace the MAF sensor/IAT sensor (see page 11-224).

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    • ENGINE SPEED
    • VSS
    • MAP SENSOR
    • MAF SENSOR

19. 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/IAT sensor and the ECM/PCM, then go to step 1.

    NO—Go to step 20.

20. 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 19, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

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 to 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/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Check the No. 3 ALTERNATOR (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/IAT sensor and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 20.

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

6. Turn the ignition switch to ON (II).

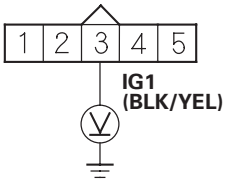
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DTC Troubleshooting (cont'd)

7. Measure the voltage 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 battery voltage?

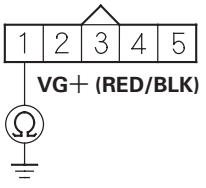
YES—Go to step 8.

NO—Repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the MAF sensor/IAT sensor, then go to step 20.

8. Turn the ignition switch to LOCK (0).

9. Measure the resistance 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 190—210 kΩ?

YES—Go to step 14.

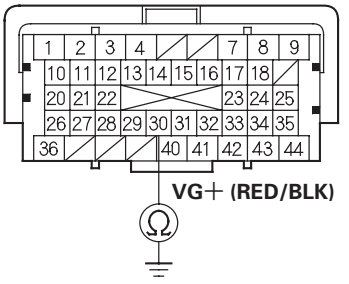
NO—Go to step 10.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector B (44P).

12. Check for continuity between ECM/PCM connector terminal B30 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

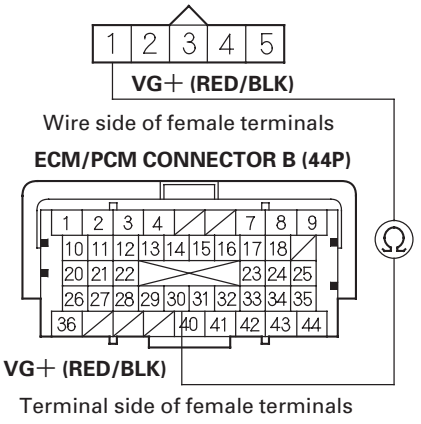
YES—Repair short in the wire between the ECM/PCM (B30) and the MAF sensor/IAT sensor, then go to step 21.

NO—Go to step 13.

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13. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 1 and ECM/PCM connector terminal B30.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the ECM/PCM (B30) and the MAF sensor/IAT sensor, then go to step 21.

14. Substitute a known-good MAF sensor/IAT sensor (see page 11-224).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Clear the DTC with the HDS.

18. Start the engine. Hold the engine speed at 2,000 rpm without load (A/T in P or N, M/T in neutral).

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

    Is DTC P0102 indicated?

    YES—Go to step 27.

    NO—Replace the original MAF sensor/IAT sensor (see page 11-224), then go to step 20.

20. Turn the ignition switch to LOCK (0).

21. Reconnect all connectors.

22. Turn the ignition switch to ON (II).

23. Reset the ECM/PCM with the HDS.

24. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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)

26. Reconnect all connectors.

27. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

28. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Jump the SCS line with the HDS.

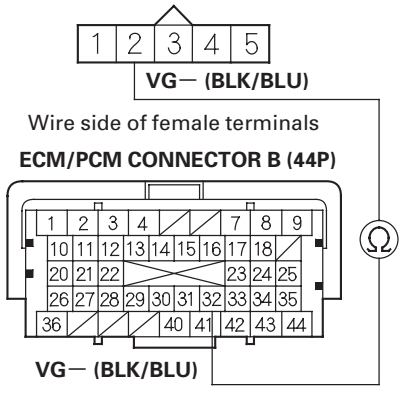
5. Disconnect the MAF sensor/IAT sensor 5P connector.

6. Disconnect ECM/PCM connector B (44P).

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7. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 2 and ECM/PCM connector terminal B32.

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Is there continuity?

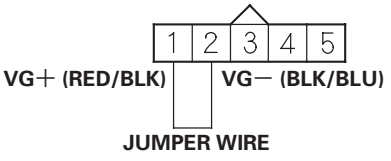
YES—Go to step 8.

NO—Repair open in the wire between the ECM/PCM (B32) and the MAF sensor/IAT sensor, then go to step 15.

8. Reconnect ECM/PCM connector B (44P).

9. 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

10. Turn the ignition switch to 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 to LOCK (0).

14. Replace the MAF sensor/IAT sensor (see page 11-224).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Reset the ECM/PCM with the HDS.

18. Do the ECM/PCM idle learn procedure (see page 11-310).

(cont'd)

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DTC Troubleshooting (cont'd)

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 ECM/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 to LOCK (0).

21. Reconnect all connectors.

22. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to ON (II).

2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 3 kPa (26 mmHg, 1.0 in.Hg), 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 ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect the MAP sensor 3P connector.

5. Turn the ignition switch to ON (II).

6. Check the MAP SENSOR in the DATA LIST with the HDS.

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

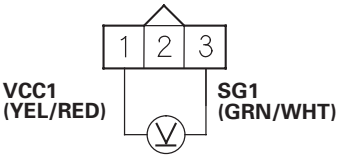
   YES—Go to step 12.

   NO—Go to step 7.

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7. Measure the voltage between MAP sensor 3P connector terminals No. 1 and No. 3.

MAP SENSOR 3P CONNECTOR



Wire side of female terminals

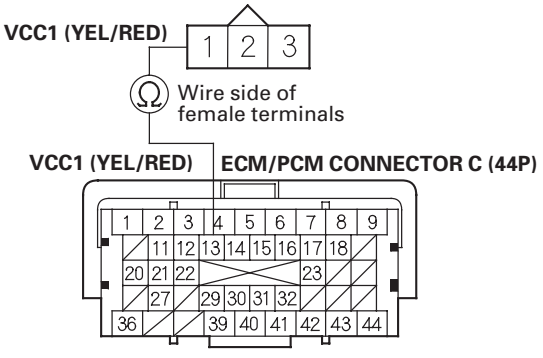
Is there about 5 V?

YES—Go to step 16.

NO—Go to step 8.

8. Turn the ignition switch to LOCK (0).
9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector C (44P).
11. Check for continuity between ECM/PCM connector terminal C13 and MAP sensor 3P connector terminal No. 1.

MAP SENSOR 3P CONNECTOR



Terminal side of female terminals

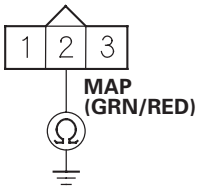
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (C13) and the MAP sensor, then go to step 18.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector C (44P).
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 ECM/PCM (C11) and the MAP sensor, then go to step 18.

NO—Go to step 23.

(cont'd)

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DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Replace the MAP sensor (see page 11-224).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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).

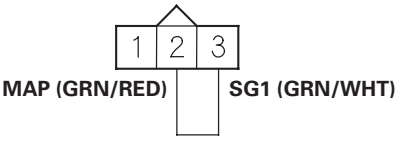
1. Turn the ignition switch to ON (II).
2. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (1,197 mmHg, 47.1 in.Hg), 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 ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
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

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6. Turn the ignition switch to ON (II).

7. Check the MAP SENSOR in the DATA LIST with the HDS.

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

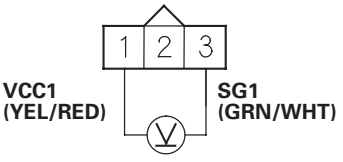
   YES—Go to step 8.

   NO—Go to step 18.

8. Remove the jumper wire from the MAP sensor 3P connector.

9. Measure the 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.

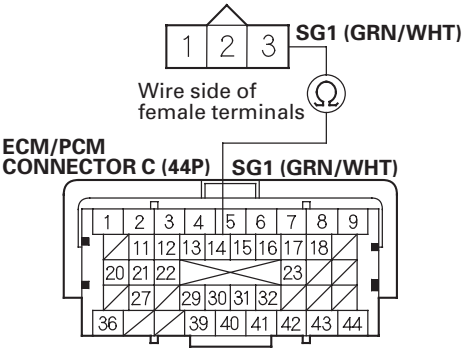
10. Turn the ignition switch to LOCK (0).

11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connector C (44P).

13. Check for continuity between ECM/PCM connector terminal C14 and MAP sensor 3P connector terminal No. 3.

MAP SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

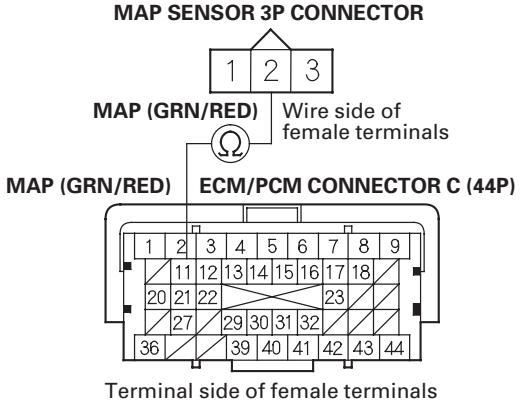
YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (C14) and the MAP sensor, then go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Check for continuity between ECM/PCM connector terminal C11 and MAP sensor 3P connector terminal No. 2.



Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM/PCM (C11) and the MAP sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the MAP sensor (see page 11-224).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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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, ECT sensor 2, and the IAT sensor.

   Are the connections and the terminals OK?

   YES—Go to step 2.

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

2. Remove the MAF sensor/IAT sensor (see page 11-224).

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 to ON (II).

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

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

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

   YES—Go to step 13.

   NO—Go to step 9.

9. Disconnect the MAF sensor/IAT sensor from its 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 33 °C (59 °F) or more from the ambient temperature?

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

    NO—Go to step 13.

13. Turn the ignition switch to LOCK (0).

14. Replace the MAF sensor/IAT sensor (see page 11-224).

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P0111 indicated?

    YES—Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/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 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 to ON (II).
2. Check the IAT SENSOR in the DATA LIST with the HDS.

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

   YES—Go to step 3.

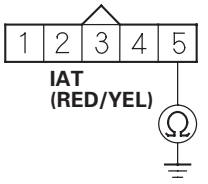
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the MAF sensor/IAT sensor 5P connector.
5. Turn the ignition switch to ON (II).
6. Check the IAT SENSOR in the DATA LIST with the HDS.

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

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity 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 continuity?

YES—Repair short in the wire between the MAF sensor/IAT sensor and the ECM/PCM (B31), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace the MAF sensor/IAT sensor (see page 11-224).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. 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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to ON (II).

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

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

   YES—Go to step 3.

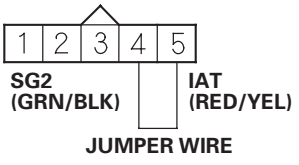
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAF sensor/IAT sensor and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect the MAF sensor/IAT sensor 5P connector.

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

MAF SENSOR/IAT SENSOR 5P CONNECTOR



Wire side of female terminals

6. Turn the ignition switch to ON (II).

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

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

   YES—Go to step 8.

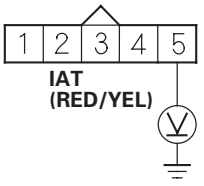
   NO—Go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from the MAF sensor/IAT sensor 5P connector.
10. Turn the ignition switch to ON (II).
11. Measure the 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

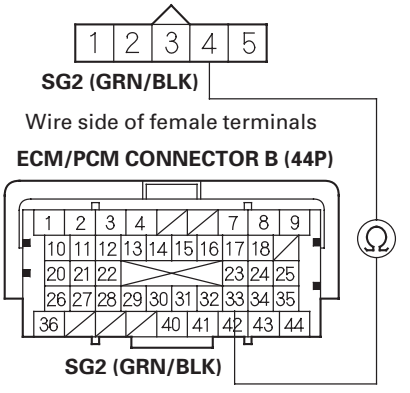
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 4 and ECM/PCM connector terminal B33.

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 ECM/PCM (B33) and the MAF sensor/IAT sensor, then go to step 22.

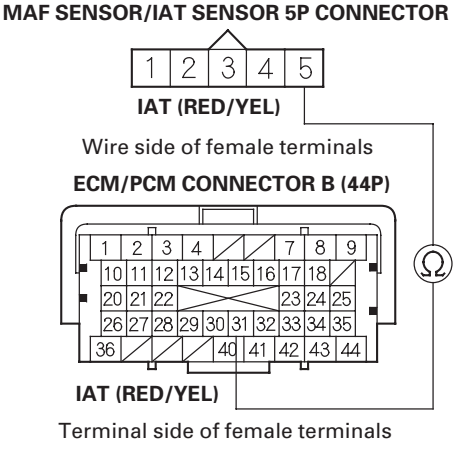
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16. Turn the ignition switch to LOCK (0).

17. Jump the SCS line with the HDS.

18. Disconnect ECM/PCM connector B (44P).

19. Check for continuity between MAF sensor/IAT sensor 5P connector terminal No. 5 and ECM/PCM connector terminal B31.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B31) and the MAF sensor/IAT sensor, then go to step 22.

20. Turn the ignition switch to LOCK (0).

21. Replace the MAF sensor/IAT sensor (see page 11-224).

22. Reconnect all connectors.

23. Turn the ignition switch to ON (II).

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 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 to ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 80 °C (176 °F) 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 (A/T in P or N, M/T in 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 10 °C (18 °F) 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 ECM/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 to LOCK (0).
8. Open the hood, and let the engine cool for 3 hours.
9. Turn the ignition switch to ON (II).
10. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Does ECT SENSOR 1 change 10 °C (18 °F) 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 ECM/PCM. ■

    NO—Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 1 (see page 11-225).
13. Turn the ignition switch to ON (II).
14. Reset the ECM/PCM with the HDS.
15. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 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 to ON (II).
2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

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

   YES—Go to step 3.

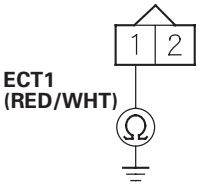
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect ECT sensor 1 2P connector.
5. Turn the ignition switch to ON (II).
6. Check ECT SENSOR 1 in the DATA LIST with the HDS.

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

   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
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 ECM/PCM (B23), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 1 (see page 11-225).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to ON (II).

2. Check ECT SENSOR 1 in the DATA LIST with the HDS.

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

   YES—Go to step 3.

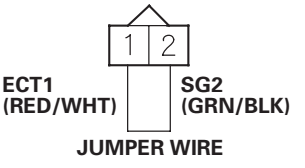
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at ECT sensor 1 and the ECM/PCM. ■

3. Turn the ignition switch to LOCK (0).

4. Disconnect ECT sensor 1 2P connector.

5. Connect ECT sensor 1 2P connector terminals No. 1 and No. 2 with a jumper wire.

ECT SENSOR 1 2P CONNECTOR



Wire side of female terminals

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6. Turn the ignition switch to ON (II).

7. Check ECT SENSOR 1 in the DATA LIST with the HDS.

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

   YES—Go to step 8.

   NO—Go to step 20.

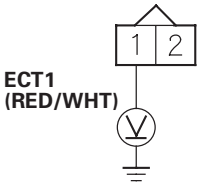
8. Turn the ignition switch to LOCK (0).

9. Remove the jumper wire from ECT sensor 1 2P connector.

10. Turn the ignition switch to ON (II).

11. Measure the 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.

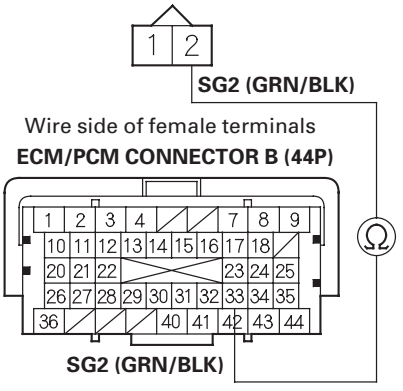
12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect ECM/PCM connector B (44P).

15. Check for continuity between ECT sensor 1 2P connector terminal No. 2 and ECM/PCM connector terminal B33.

ECT SENSOR 1 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

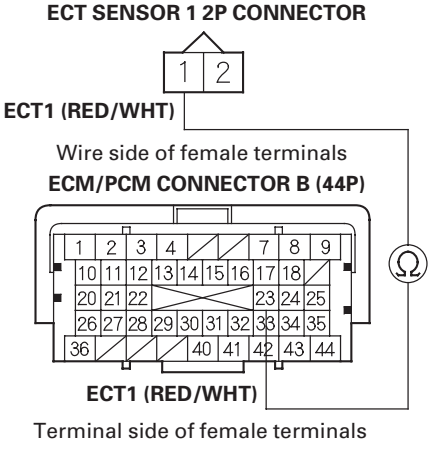
YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B33) and ECT sensor 1, then go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between ECT sensor 1 2P connector terminal No. 1 and ECM/PCM connector terminal B23.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B23) and ECT sensor 1, then go to step 22.

20. Turn the ignition switch to LOCK (0).
21. Replace ECT sensor 1 (see page 11-225).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 − 18 °C (0 °F) or less indicated?

   YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and terminals are OK, replace ECT sensor 1 (see page 11-225), then go to step 8.

   NO—Go to step 3.
3. Turn the ignition switch to LOCK (0).
4. Allow the engine to cool to 40 °C (104 °F) or less.
5. Make sure the temperature difference between ECT SENSOR 1 and ECT SENSOR 2 is about 10 °C (50 °F) in the DATA LIST with the HDS.
6. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 70 °C (158 °F).

   Does ECT SENSOR 2 also show about 70 °C (158 °F)?

   YES—Go to step 7.

   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 ECM/PCM. ■
7. Check the thermostat (see page 10-5).

   Is the thermostat OK?

   YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the connections and terminals are OK, replace ECT sensor 1 (see page 11-225), then go to step 8.

   NO—Replace the thermostat (see page 10-10), then go to step 8.
8. Turn the ignition switch to LOCK (0).
9. Allow the engine to cool to 40 °C (104 °F) or less.
10. Make sure the temperature difference between ECT SENSOR 1 and ECT SENSOR 2 is about 10 °C (50 °F) in the DATA LIST with the HDS.
11. Start the engine, and let it idle until ECT SENSOR 1 goes up to about 70 °C (158 °F).

    Does ECT SENSOR 2 also show about 70 °C (158 °F)?

    YES—Go to step 1 and recheck.

    NO—Troubleshooting is complete. ■

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 to ON (II).
2. Clear the DTC with the HDS.
3. Make sure the blower switch is OFF.
4. Check the FAN CTRL in the DATA LIST with the HDS.

   Is it OFF?

   YES—Go to step 5.

   NO—Wait until the FAN CTRL is off, then go to step 5.
5. Check the radiator fan operation.

   Does the radiator fan keep running?

   YES—Check the radiator fan high speed circuit (see page 10-26), and the radiator fan relay (see page 22-70). If the circuit and the relay are OK, go to step 19.

   NO—Go to step 6.
6. Let the engine cool until the coolant temperature is 40 ℃ (104 ℉) or less.
7. Note the value of ECT SENSOR 1 and ECT SENSOR 2 in the DATA LIST with the HDS.
8. Start the engine, and let it idle.
9. Let the engine idle until ECT SENSOR 1 goes up 22 ℃ (40 ℉) or more from the recorded temperature.
10. Check ECT SENSOR 2 in the DATA LIST with the HDS.
11. Compare the recorded value of ECT SENSOR 2 and the present value of ECT SENSOR 2.

    Did temperature rise 8 ℃ (14 ℉) or more from the recorded temperature?

    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 ECM/PCM. ■

    NO—Test the thermostat (see page 10-5), then go to step 12.
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Let the engine cool until the coolant temperature is between −6 ℃ (21 ℉) and 40 ℃ (104 ℉).
15. Do the ECM/PCM idle learn procedure (see page 11-310).
16. Test-drive at a steady speed between 24—120 km/h (15—75 mph) for 10 minutes.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0128 indicated?

    YES—Check the cooling system (see page 10-2), then go to step 1.

    NO—Go to step 18.
18. 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 17, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check the cooling system (see page 10-2), then go to step 1. If the screen indicates NOT COMPLETED, go to step 14.

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19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

20. Let the engine cool until the coolant temperature is between —6 ℃ (21 ℉) and 40 ℃ (104 ℉).

21. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

22. Test-drive at a steady speed between 24—120 km/h (15—75 mph) for 10 minutes.

23. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 24.

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

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

DTC P0133: A/F Sensor (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. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 3rd or 4th
   - Drive the vehicle at 40 km/h (25 mph) or less for 5 minutes, then drive at a steady speed between 41—130 km/h (26—81 mph).

5. Monitor the OBD STATUS for DTC P0133 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 ECM/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 to LOCK (0).

7. Replace the A/F sensor (Sensor 1) (see page 11-221).

8. Turn the ignition switch to ON (II).

9. Reset the ECM/PCM with the HDS.

(cont'd)

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DTC Troubleshooting (cont'd)

10. Do the ECM/PCM idle learn procedure (see page 11-310).

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 3rd or 4th
    - Drive the vehicle at 40 km/h (25 mph) or less for 5 minutes, then drive at a steady speed between 41—130 km/h (26—81 mph).

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

    Is DTC P0133 indicated?

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

    NO—Go to step 14.

14. Monitor the OBD STATUS for DTC P0133 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 ECM/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.

DTC P0134: A/F Sensor (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 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 P0135 is stored at the same time as DTC P0134, troubleshoot DTC P0135 first, then recheck for DTC P0134.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

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

   Is DTC P0134 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 PGM-FI subrelay, and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Replace the A/F sensor (Sensor 1) (see page 11-221).

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P0134 indicated?

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

    NO—Go to step 11.

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11. Monitor the OBD STATUS for DTC P0134 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 10, 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 PGM-FI subrelay, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0135: A/F Sensor (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).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0135 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 PGM-FI subrelay, and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 11 FI SUB (15 A) fuse in the under-hood fuse/relay box.

   Is the fuse OK?

   YES—Go to step 7.

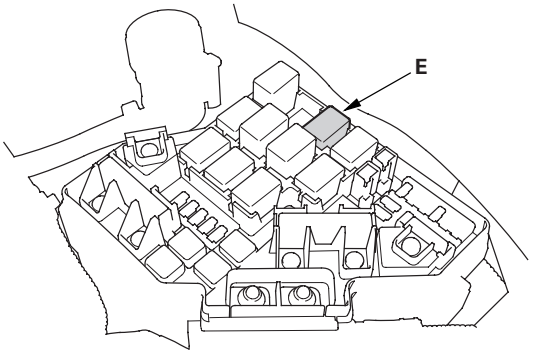
   NO—Go to step 20.

(cont'd)

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DTC Troubleshooting (cont'd)

7. Test the PGM-FI subrelay (E) in the under-hood fuse/relay box (see page 22-70).



Is the PGM-FI subrelay OK?

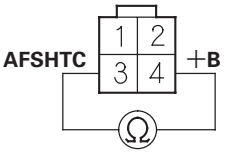
YES—Go to step 8.

NO—Replace the PGM-FI subrelay, then go to step 24.

8. Disconnect the A/F sensor (Sensor 1) 4P connector.

9. At the sensor side, measure the resistance between A/F sensor (Sensor 1) 4P connector terminals No. 3 and No. 4.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

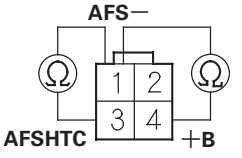
Is there 2.0—2.7 Ω at room temperature?

YES—Go to step 10.

NO—Go to step 23.

10. At the sensor side, check for continuity between A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 3, and between terminals No. 1 and No. 4 individually.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 24.

NO—Go to step 11.

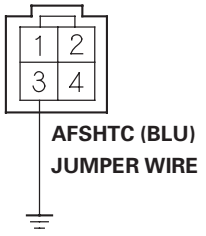
11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connector C (44P).

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13. Connect A/F sensor (Sensor 1) 4P connector terminal No. 3 to body ground with a jumper wire.

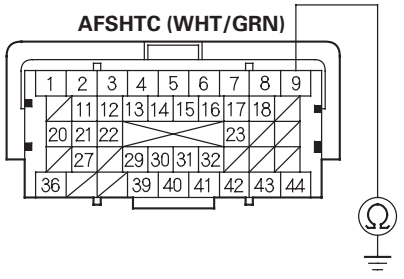
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

14. Check for continuity between ECM/PCM connector terminal C9 and body ground.

ECM/PCM CONNECTOR C (44P)



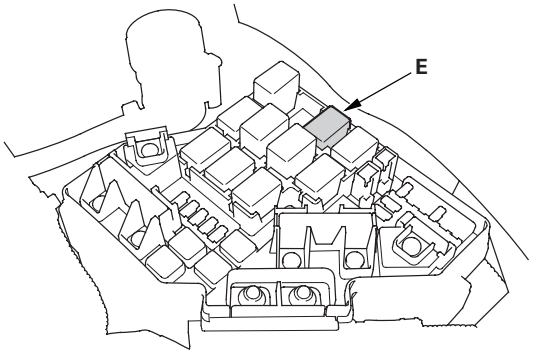
Terminal side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (C9) and the A/F sensor (Sensor 1), then go to step 25.

15. Remove the PGM-FI subrelay (E) from the under-hood fuse/relay box.

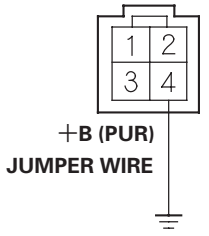


(cont'd)

DTC Troubleshooting (cont'd)

16. Connect A/F sensor (Sensor 1) 4P connector terminal No. 4 to body ground with a jumper wire.

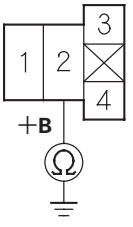
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

17. Check for continuity between PGM-FI subrelay 4P connector terminal No. 2 and body ground.

PGM-FI SUBRELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

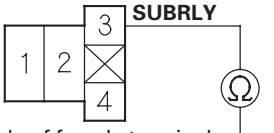
YES—Go to step 18.

NO—Repair open in the wire between the A/F sensor (Sensor 1) and the PGM-FI subrelay, then go to step 25.

18. Disconnect ECM/PCM connector A (44P).

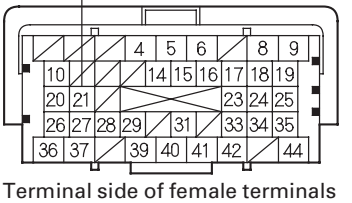
19. Check for continuity between PGM-FI subrelay 4P connector terminal No. 3 and ECM/PCM connector terminal A21.

PGM-FI SUBRELAY 4P CONNECTOR



Terminal side of female terminals

SUBRLY (PNK) **ECM/PCM CONNECTOR A (44P)**



Terminal side of female terminals

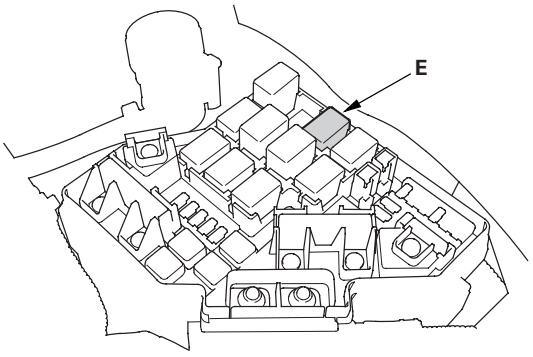
Is there continuity?

YES—Go to step 31.

NO—Repair open in the wire between the ECM/PCM (A21) and the PGM-FI subrelay, then go to step 25.

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20. Remove the PGM-FI subrelay (E) from the under-hood fuse/relay box.

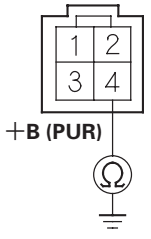


21. Disconnect the A/F sensor (Sensor 1) 4P connector.

22. Disconnect the EVAP canister vent shut valve 2P connector.

23. Check for continuity between A/F sensor (Sensor 1) 4P connector terminal No. 4 and body ground.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair short in the wire between the PGM-FI subrelay, the EVAP canister vent shut valve, and the A/F sensor (Sensor 1). Also replace the No. 11 FI SUB (15 A) fuse, then go to step 25.

NO—Replace the under-hood fuse/relay box (see page 22-65), then go to step 25.

24. Replace the A/F sensor (Sensor 1) (see page 11-221).

25. Reconnect all connectors.

26. Turn the ignition switch to ON (II).

27. Reset the ECM/PCM with the HDS.

28. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC P0135 indicated?

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

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0135 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 A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/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)

31. Reconnect all connectors.

32. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

33. Start the engine, and let it idle.

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

    Is DTC P0135 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P0135 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 A/F sensor (Sensor 1), the PGM-FI subrelay, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0137: Secondary HO2S (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 '07-09 models.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 (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 ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Remove the center console (see page 20-92).

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.

8. Turn the ignition switch to ON (II).

9. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 0.29 (0.05) V or less?*

   YES—Go to step 10.

   NO—Go to step 14.

10. Turn the ignition switch to LOCK (0).

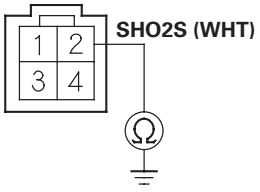
11. Jump the SCS line with the HDS.

12. Disconnect ECM/PCM connector C (44P).

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13. Check for continuity between secondary HO2S (Sensor 2) 4P connector terminal No. 2 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C27) and the secondary HO2S (Sensor 2), then go to step 16.

NO—Go to step 24.

14. Turn the ignition switch to LOCK (0).

15. Replace the secondary HO2S (Sensor 2) (see page 11-221).

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-310).

20. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

21. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
- A/T in D, M/T in 4th
- Engine speed between 1,500—3,000 rpm
- Drive about 1 minute or more

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

Is DTC P0137 indicated?

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

NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P0137 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 22, 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 ECM/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.

(cont'd)

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DTC Troubleshooting (cont'd)

24. Reconnect all connectors.

25. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

26. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

27. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Engine speed between 1,500—3,000 rpm
    - Drive 1 minute or more

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

    Is DTC P0137 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 26. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0137 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 26. If the ECM/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 26.

DTC P0138: Secondary HO2S (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 to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Check the HO2S S2 in the DATA LIST with the HDS.

   Does the voltage stay at 1.27 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 ECM/PCM. ■

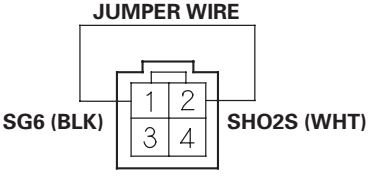
5. Turn the ignition switch to LOCK (0).

6. Remove the center console (see page 20-92).

7. Disconnect the secondary HO2S (Sensor 2) 4P connector.

8. Connect secondary HO2S (Sensor 2) 4P connector terminals No. 1 and No. 2 with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

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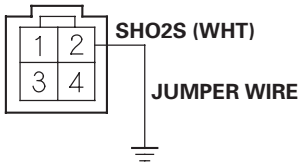
9. Turn the ignition switch to ON (II).
10. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 1.27 V or more?

    YES—Go to step 11.

    NO—Go to step 20.
11. Turn the ignition switch to LOCK (0).
12. Remove the jumper wire from the secondary HO2S (Sensor 2) 4P connector.
13. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 2 to body ground with a jumper wire.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

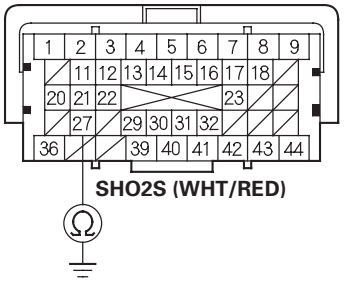
14. Turn the ignition switch to ON (II).
15. Check the HO2S S2 in the DATA LIST with the HDS.

    Does the voltage stay at 1.27 V or more?

    YES—Go to step 16.

    NO—Repair open in the wire between the ECM/PCM (A9) and the secondary HO2S (Sensor 2), then go to step 22.
16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector C (44P).
19. Check for continuity between ECM/PCM connector terminal C27 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

    Is there continuity?

    YES—Go to step 30.

    NO—Repair open in the wire between the ECM/PCM (C27) and the secondary HO2S (Sensor 2), then go to step 22.
20. Turn the ignition switch to LOCK (0).
21. Replace the secondary HO2S (Sensor 2) (see page 11-221).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-310).

(cont'd)

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DTC Troubleshooting (cont'd)

26. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.

27. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Engine speed between 1,500—3,000 rpm
    - Drive about 1 minute or more

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

    Is DTC P0138 indicated?

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

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0138 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 secondary HO2S (Sensor 2) and the ECM/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 26.

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

33. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Engine speed between 1,500—3,000 rpm
    - Drive about 1 minute or more

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

    Is DTC P0138 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P0138 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/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 P0139: Secondary HO2S (Sensor 2) 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. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - Vehicle speed at 56 km/h (35 mph)
   - Drive about 15 seconds
5. Monitor the OBD STATUS for DTC P0139 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 ECM/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 to LOCK (0).
7. Replace the secondary HO2S (Sensor 2) (see page 11-221).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Vehicle speed at 56 km/h (35 mph)
    - Drive about 15 seconds
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0139 indicated?

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

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P0139 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 ECM/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.

DTC Troubleshooting (cont'd)

DTC P0141: Secondary HO2S (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).

1. Turn the ignition switch to 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 indicated?

   YES—Go to step 5.

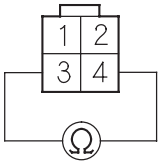
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box.

   Is the fuse OK?

   YES—Go to step 7.

   NO—Repair short in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse. Also replace the No. 3 ALTERNATOR (10 A) fuse, then go to step 23.
7. Disconnect the secondary HO2S (Sensor 2) 4P connector.
8. At the secondary HO2S (Sensor 2) side, measure the resistance between secondary HO2S (Sensor 2) 4P connector terminals No. 3 and No. 4.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Wire side of female terminals

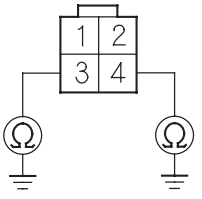
Is there 5.4— 7.3 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 22.

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



Wire side of female terminals

Is there continuity?

YES—Go to step 22.

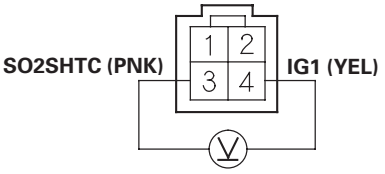
NO—Go to step 10.

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10. Turn the ignition switch to ON (II).

11. Measure the voltage 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 battery voltage?

YES—Go to step 12.

NO—Go to step 16.

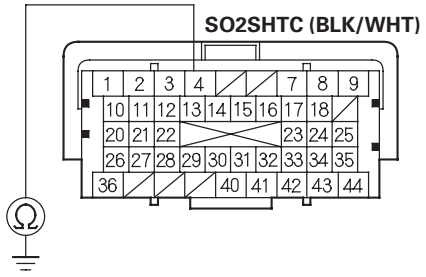
12. Turn the ignition switch to LOCK (0).

13. Jump the SCS line with the HDS.

14. Disconnect ECM/PCM connector B (44P).

15. Check for continuity between ECM/PCM connector terminal B4 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

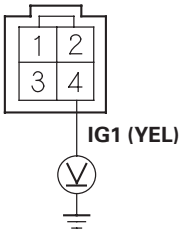
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B4) and the secondary HO2S (Sensor 2), then go to step 23.

NO—Go to step 29.

16. Measure the voltage between secondary HO2S (Sensor 2) 4P connector terminal No. 4 and body ground.

SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

Is there battery voltage?

YES—Go to step 17.

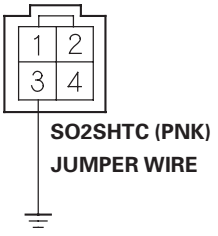
NO—Repair open in the wire between the secondary HO2S (Sensor 2) and the No. 3 ALTERNATOR (10 A) fuse, then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

17. Turn the ignition switch to LOCK (0).
18. Jump the SCS line with the HDS.
19. Disconnect ECM/PCM connector B (44P).
20. Connect secondary HO2S (Sensor 2) 4P connector terminal No. 3 to body ground with a jumper wire.

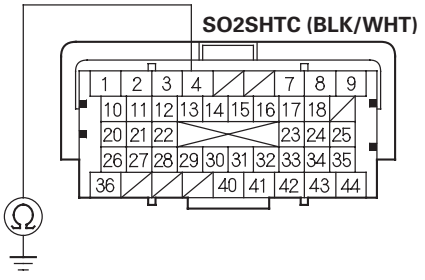
SECONDARY HO2S (SENSOR 2) 4P CONNECTOR



Terminal side of male terminals

21. Check for continuity between ECM/PCM connector terminal B4 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the ECM/PCM (B4) and the secondary HO2S (Sensor 2), then go to step 23.

22. Replace the secondary HO2S (Sensor 2) (see page 11-221).
23. Reconnect all connectors.
24. Turn the ignition switch to ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see page 11-310).
27. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0141 indicated?

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

    NO—Go to step 28.

28. Monitor the OBD STATUS for DTC P0141 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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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29. Reconnect all connectors.

30. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

31. Start the engine, and let idle.

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

    Is DTC P0141 indicated?

    YES—Check for poor connections or loose terminals at the secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 31. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 33.

33. Monitor the OBD STATUS for DTC P0141 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 secondary HO2S (Sensor 2) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 31. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0171: Fuel System Too Lean

DTC P0172: 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 any of the DTCs listed below are indicated at the same time as DTC P0171 and/or P0172, troubleshoot those DTCs first, then recheck for P0171 and/or P0172.

P0101, P0102, P0103: Mass air flow (MAF) sensor
P0107, P0108, P1128, P1129: Manifold absolute pressure (MAP) sensor
P0133, P1157, P1172, P2195, P2238, P2252, P2A00: Air fuel ratio (A/F) sensor (Sensor 1)
P0134, P0135: Air fuel ratio (A/F) sensor (Sensor 1) heater
P0137, P0138, P0139, P2270, P2271: Secondary HO2S (Sensor 2)
P0141: Secondary HO2S (Sensor 2) heater
P0401*, P0404*, P0406*, P2413*: Exhaust gas recirculation (EGR) system
P0443, P0496: EVAP canister purge valve
P2646, P2647, P2648, P2649: VTEC system
*: K20Z2 engine

1. Check the fuel pressure (see page 11-325).

   Is the fuel pressure OK?

   YES—Go to step 2.

   NO—
   - If the pressure is too high, replace the fuel pressure regulator (see page 11-337), then go to step 7.
   - If the pressure is too low, check the fuel pump, the fuel feed pipe and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-337), then go to step 7.

(cont'd)

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DTC Troubleshooting (cont'd)

2. Check for vacuum leaks at these parts:

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

   Are the parts OK?

   YES—Go to step 3.

   NO—Repair or replace the part(s) with leaks, then go to step 7.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Check for these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in N, M/T in neutral
   - All electrical loads off

5. Monitor the ENGINE SPEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

   Did the engine speed vary more than 100 rpm from 2,500 rpm?

   YES—Repeat step 5.

   NO—Go to step 6.

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

   Is there about 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

   YES—Check the engine valve clearances and adjust them if needed; K20Z2 engine (see page 6-12), K20Z3 engine (see page 6-14). If the valve clearances are OK, replace the injectors (see page 11-219), then go to step 7.

   NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 7.

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

11. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Drive at a steady speed between 24—120 km/h (15—75 mph) for 15 minutes

    NOTE: DTC P0171 and/or P0172 may take up to 80 minutes of test driving to set. Using the HDS, monitor or the air fuel feed back average (AF FB AVE). If the AF FB AVE stays within 0.80—1.25, there is no problem at this time.

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

    Is DTC P0171 or P0172 indicated?

    YES—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 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

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 hose, 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 of the combination of P0301 through P0304) 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 of the combination of P0301 through P0304) will be stored. When the misfire stops, the MIL will remain on.
- If any of the DTCs listed below are indicated at the same time as the random misfire DTCs, troubleshoot those DTCs first, then recheck for random misfire DTCs:

  P0101, P0102, P0103: Mass air flow (MAF) sensor
  P0107, P0108: Manifold absolute pressure (MAP) sensor
  P0171, P0172: Fuel system
  P0335, P0339: Crankshaft position (CKP) sensor
  P0365, P0369: Camshaft position (CMP) sensor B
  P0401*, P0404*, P0416*, P2413*: Exhaust gas recirculation (EGR) system
  P0506, P0507: Idle control system
  P2646, P2647, P2648, P2649: VTEC system
  *: K20Z2 engine

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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, then recheck.
5. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 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)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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.

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DTC Troubleshooting (cont'd)

8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■

9. Turn the ignition switch to LOCK (0).

10. Check the fuel quality.

    Is the quality good?

    YES—Go to step 11.

    NO—Drain the tank, fill it with a known-good fuel, then go to step 25.

11. Inspect the spark plugs (see page 4-21). 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)
    - APP SENSOR

13. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 14.

    NO—Go to step 25.

14. Check the fuel pressure (see page 11-325).

    Is the fuel pressure OK?

    YES—Go to step 15.

    NO—
    - If the fuel pressure is too high, replace the fuel pressure regulator (see page 11-337), then go to step 25.
    - If the fuel pressure is too low, check the fuel pump, the fuel feed pipe, and the fuel filter. If they are OK, replace the fuel pressure regulator (see page 11-337), then go to step 25.

15. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

16. Check for these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
    - A/T in P or N, M/T in neutral
    - All electrical loads off

17. Monitor the ENGINE SPDEED in the DATA LIST with the HDS, and hold the engine speed at 2,500 rpm. Once the engine speed is met, hold the accelerator pedal steady for more than 10 seconds.

    Did the engine speed vary more than 100 rpm from 2,500 rpm?

    YES—Repeat step 17.

    NO—Go to step 18.

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

    Is there about 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

    YES—Go to step 19.

    NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 25.

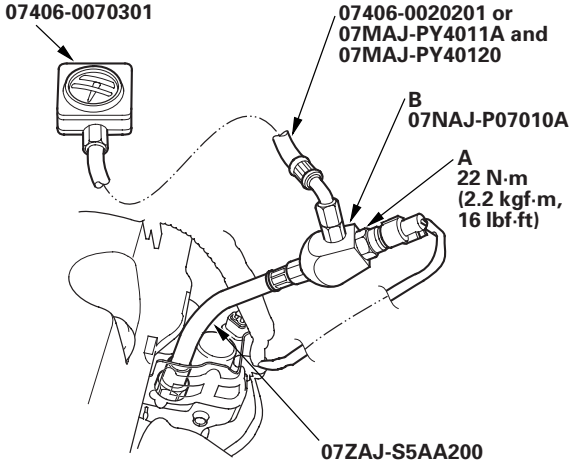
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19. Turn the ignition switch to LOCK (0).

20. Remove the cowl cover and the under cowl panel (see page 20-163).

21. Remove the rocker arm oil pressure switch (A), and attach the special tools as shown, then attach the rocker arm oil pressure switch to the pressure gauge attachment (B).

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



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

23. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

24. Check the oil pressure at engine speeds of 1,000 rpm and 2,000 rpm.

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

    YES—Check for air in the fuel line, then go to step 25.

    NO—Inspect the VTEC system, then go to step 25.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Clear the CKP pattern with the HDS.

28. Do the ECM/PCM idle learn procedure (see page 11-310).

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

30. 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)
    - APP SENSOR

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

    Is DTC P0300, P0301, P0302, P0303, or P0304 indicated?

    YES—Check for poor connections or loose terminals at the ignition coil(s), the injector(s), and the ECM/PCM, then go to troubleshooting DTC P0301, P0302, P0303, or P0304 (see page 11-118).

    NO—Go to step 32.

32. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 31, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, go to step 1 and recheck. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

DTC Troubleshooting (cont'd)

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

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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral).
4. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 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)
   - APP SENSOR
7. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 he screen indicates OUT OF CONDITION, go to step 6 and recheck.
8. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

   Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. Check for the fuel and ignition system circuit connectors for poor connections or loose terminals. ■
9. Turn the ignition switch to LOCK (0).
10. Remove the engine cover; K20Z2 engine (see step 1 on page 9-3), K20Z3 engine (see step 1 on page 9-7).
11. Start the engine, and listen for a clicking sound at the injector of the problem cylinder.

    Does the injector click?

    YES—Go to step 12.

    NO—Go to step 42.

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12. Turn the ignition switch to LOCK (0).

13. Exchange the ignition coil from the problem cylinder with one from another cylinder.

14. 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)
    • APP SENSOR

15. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 16.

    NO—Intermittent misfire due to poor contact at an ignition coil connector(s). (no misfire at this time). Check for poor connections or loose terminals at the ignition coils. ■

16. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the ignition coil was exchanged?

    YES—Replace the faulty ignition coil (see page 4-21), then go to step 60.

    NO—Go to step 17.

17. Turn the ignition switch to LOCK (0).

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

19. 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)
    • APP SENSOR

20. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 21.

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

21. Determine which cylinder had the misfire.

    Does the misfire occur in the cylinder where the spark plug was exchanged?

    YES—Replace the faulty spark plug, then go to step 60.

    NO—Go to step 22.

22. Turn the ignition switch to LOCK (0).

23. Exchange the injector from the problem cylinder with one from the another cylinder.

24. Start the engine, and let it idle for 2 minutes.

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)
    • APP SENSOR

26. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 27.

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

(cont'd)

DTC Troubleshooting (cont'd)

27. Determine which cylinder had the misfire.

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

    YES—Replace the faulty injector (see page 11-219), then go to step 60.

    NO—Go to step 28.

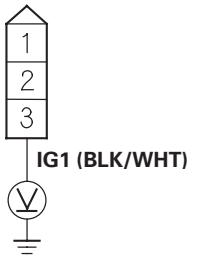
28. Turn the ignition switch to LOCK (0).

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

30. Turn the ignition switch to ON (II).

31. Measure the 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?

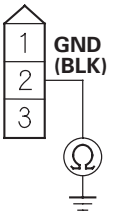
YES—Go to step 32.

NO—Repair open in the wire between the ignition coil and the ignition coil relay, then go to step 60.

32. Turn the ignition switch to LOCK (0).

33. 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 34.

NO—Repair open in the wire between the ignition coil and G101, then go to step 60.

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34. Turn the ignition switch to LOCK (0).

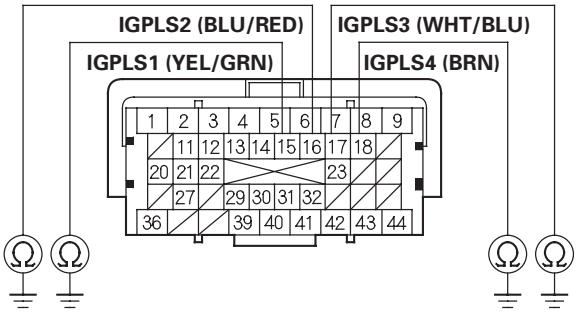
35. Jump the SCS line with the HDS.

36. Disconnect ECM/PCM connector C (44P).

37. Check for continuity between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C15	YEL/GRN
No. 2	P0302	C16	BLU/RED
No. 3	P0303	C17	WHT/BLU
No. 4	P0304	C18	BRN

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

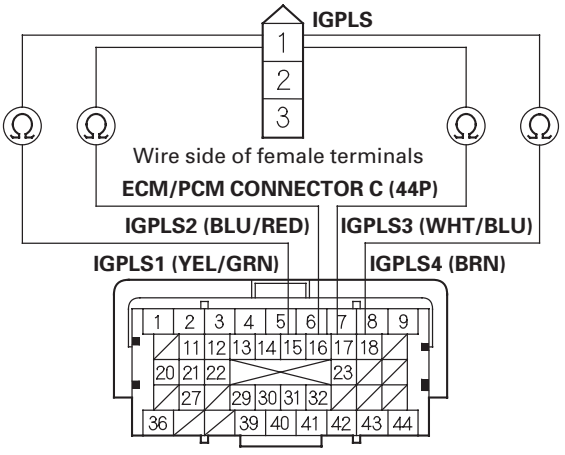
YES—Repair short in the wire between the ECM/PCM and the ignition coil, then go to step 60.

NO—Go to step 38.

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

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C15	YEL/GRN
No. 2	P0302	C16	BLU/RED
No. 3	P0303	C17	WHT/BLU
No. 4	P0304	C18	BRN

IGNITION COIL 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 39.

NO—Repair open in the wire between the ECM/PCM and the ignition coil, then go to step 60.

(cont'd)

DTC Troubleshooting (cont'd)

39. Reconnect all connectors.

40. Do an engine compression and a cylinder leakdown test (see page 6-7).

    Did the engine pass both tests?

    YES—Go to step 41.

    NO—Repair the engine, then go to step 60.

41. Do the VTEC rocker arm test; K20Z2 engine (see page 6-8), K20Z3 engine (see page 6-9).

    Did the engine pass the test?

    YES—Go to step 42.

    NO—Repair the VTEC rocker arm; K20Z2 engine (see page 6-46), K20Z3 engine (see page 6-47), then go to step 60.

42. Turn the ignition switch to LOCK (0).

43. Jump the SCS line with the HDS.

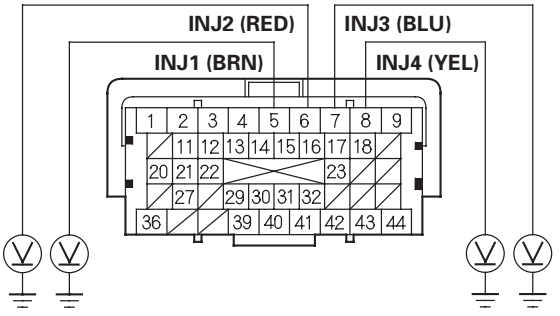
44. Disconnect ECM/PCM connector C (44P).

45. Turn the ignition switch to ON (II).

46. Measure the voltage between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 54.

NO—Go to step 47.

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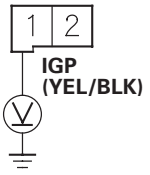
47. Turn the ignition switch to LOCK (0).

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

49. Turn the ignition switch to ON (II).

50. Measure the 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 51.

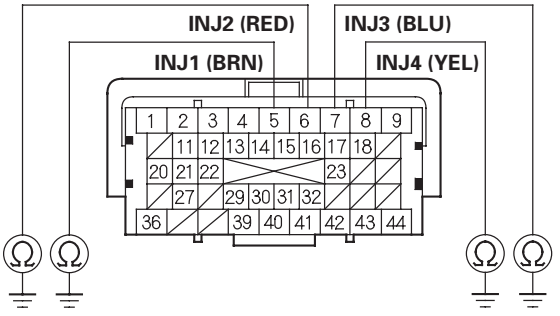
NO—Repair open in the wire between the injector and PGM-FI main relay 1, then go to step 60.

51. Turn the ignition switch to LOCK (0).

52. Check for continuity between body ground and the appropriate ECM/PCM connector terminal of the problem cylinder (see table).

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM and the injector, then go to step 60.

NO—Go to step 53.

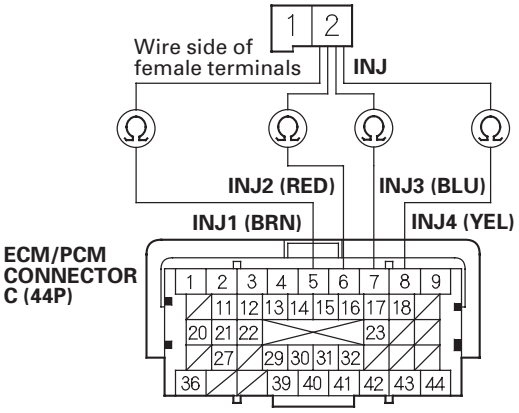
(cont'd)

DTC Troubleshooting (cont'd)

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

PROBLEM CYLINDER	DTC	ECM/PCM TERMINAL	WIRE COLOR
No. 1	P0301	C5	BRN
No. 2	P0302	C6	RED
No. 3	P0303	C7	BLU
No. 4	P0304	C8	YEL

INJECTOR 2P CONNECTOR



Terminal side of female terminals

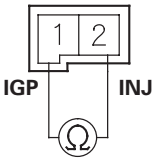
Is there continuity?

YES—Go to step 54.

NO—Repair open in the wire between the ECM/PCM and the injector, then go to step 60.

54. At injector side, measure the 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 55.

NO—Replace the injector (see page 11-219), then go to step 60.

55. Install a known-good injector from the problem cylinder.

56. Reconnect all connectors.

57. Start the engine, and let it idle for 2 minutes.

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)
- APP SENSOR

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59. Check the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE in the DATA LIST for 10 minutes with the HDS.

    Does the CYL1 MISFIRE, CYL2 MISFIRE, CYL3 MISFIRE, and/or CYL4 MISFIRE show misfire counts?

    YES—Go to step 70.

    NO—Replace the original injector (see page 11-219), then go to step 60.

60. Turn the ignition switch to LOCK (0).

61. Reconnect all connectors.

62. Turn the ignition switch to ON (II).

63. Reset the ECM/PCM with the HDS.

64. Clear the CKP pattern with the HDS (see page 11-4).

65. Do the ECM/PCM idle learn procedure (see page 11-310).

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

67. 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)
    - APP SENSOR

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

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

    YES—Check for poor connections or loose terminals at the ignition coil(s), the injector(s), and the ECM/PCM, then go to the troubleshooting DTC P0300, P0301, P0302, P0303, or P0304 (see page 11-115).

    NO—Go to step 69.

69. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 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 68, 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 ECM/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 67.

70. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

71. 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)
    - APP SENSOR

(cont'd)

DTC Troubleshooting (cont'd)

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

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

    YES—Check for poor connections or loose terminals at the ignition coil(s), the injector(s), and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 71. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 73.

73. Monitor the OBD STATUS for DTC P0301, P0302, P0303, or P0304 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 72, 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 71. If the ECM/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 71.

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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed between 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Hold the engine speed between 3,000—4,000 rpm for at least 10 seconds.
5. Check for Temporary DTCs or DTCs with the HDS.

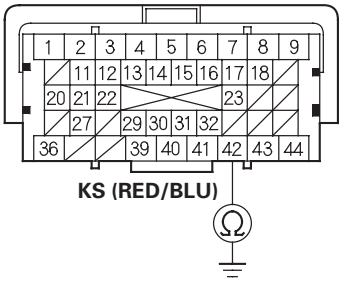
    Is DTC P0325 indicated?

    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 ECM/PCM. ■

6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect the knock sensor 1P connector (see page 11-223).
9. Disconnect ECM/PCM connector C (44P).
10. Check for continuity between ECM/PCM connector terminal C42 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

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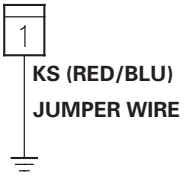
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C42) and the knock sensor, then go to step 14.

NO—Go to step 11.

11. Connect the knock sensor 1P connector terminal to body ground with a jumper wire.

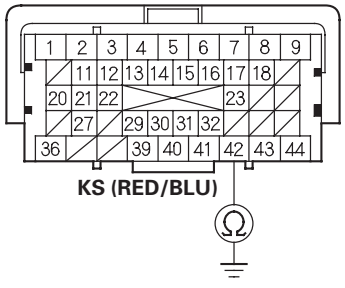
KNOCK SENSOR 1P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal C42 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (C42) and the knock sensor, then go to step 14.

13. Replace the knock sensor (see page 11-223).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

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

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

Is DTC P0325 indicated?

YES—Go to step 21.

NO—Go to step 20.

20. 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 19, 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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

21. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

23. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 24.

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

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 knock sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

DTC P0335: CKP 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 to 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 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 CKP sensor and the ECM/PCM. ■

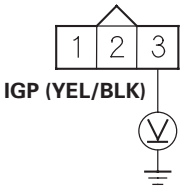
5. Turn the ignition switch to LOCK (0).

6. Disconnect the CKP sensor 3P connector.

7. Turn the ignition switch to ON (II).

8. Measure the voltage between CKP sensor 3P connector terminal No. 3 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

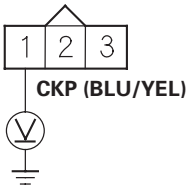
YES—Go to step 9.

NO—Repair open in the wire between the CKP sensor and PGM-FI main relay 1, then go to step 19.

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9. Measure the voltage between CKP sensor 3P connector terminal No. 1 and body ground.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

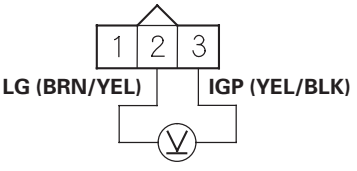
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CKP sensor 3P connector terminals No. 2 and No. 3.

CKP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 17.

NO—Repair open in the wire between the CKP sensor and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 19.

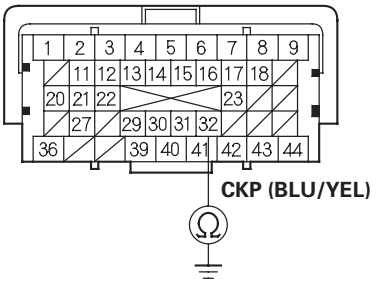
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ECM/PCM connector terminal C32 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

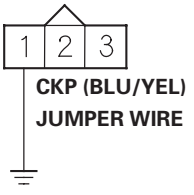
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

NO—Go to step 15.

15. Connect CKP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

CKP SENSOR 3P CONNECTOR

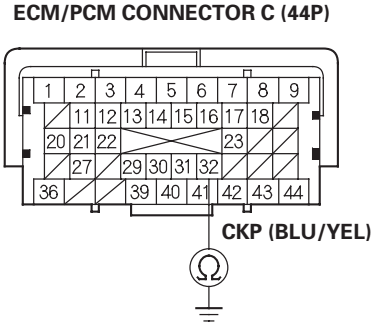


Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

16. Check for continuity between ECM/PCM connector terminal C32 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the ECM/PCM (C32) and the CKP sensor, then go to step 19.

17. Turn the ignition switch to LOCK (0).
18. Replace the CKP sensor (see page 11-222).
19. Reconnect all connectors.
20. Turn the ignition switch to ON (II).
21. Reset the ECM/PCM with the HDS.
22. Clear the CKP pattern with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-310).
24. Do the CKP pattern learn procedure (see page 11-4).
25. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0335 indicated?

YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0339: CKP 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CKP NOISE in the DATA LIST with the HDS.

   Are 0 counts indicated?

   YES—Go to step 7.

   NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

   • ENGINE SPEED
   • VSS
6. Check the CKP NOISE in the DATA LIST with the HDS.

   Are 0 counts 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 CKP sensor and the ECM/PCM. ■
7. Check for poor connections or loose terminals at these locations:

   • CKP sensor
   • ECM/PCM
   • Engine ground
   • Body ground

   Are the connections and terminals OK?

   YES—Go to step 8.

   NO—Repair or replace the connections or the terminals, then go to step 11.
8. Remove the cam chain case (see step 13 on page 6-19), then check for damage on the CKP sensor pulser plate.

   Is the pulser plate damaged?

   YES—Replace the CKP sensor pulser plate (see page 6-34), then go to step 11.

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Replace the CKP sensor (see page 11-222).
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Clear the CKP pattern with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-310).
15. Do the CKP pattern learn procedure (see page 11-4).
16. Start the engine, and let it idle for 10 seconds.
17. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0339 indicated?

    YES—Check for poor connections or loose terminals at the CKP sensor and the ECM/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 P0365: CMP 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).

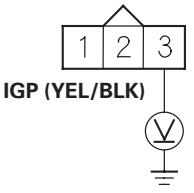
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0365 indicated?

   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the CMP sensor B 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CMP sensor B 3P connector terminal No. 3 and body ground.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

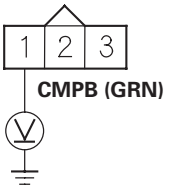
Is there battery voltage?

YES—Go to step 9.

NO—Repair open in the wire between CMP sensor B and PGM-FI main relay 1, then go to step 18.

9. Measure the voltage between CMP sensor B 3P connector terminal No. 1 and body ground.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

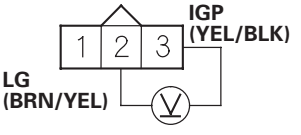
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CMP sensor 3P connector terminals No. 2 and No. 3.

CMP SENSOR B 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between CMP sensor B and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 18.

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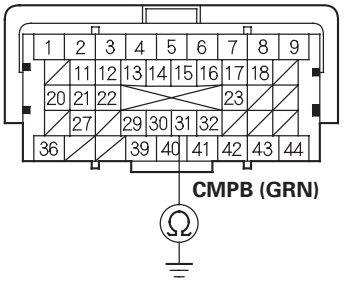
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ECM/PCM connector terminal C31 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

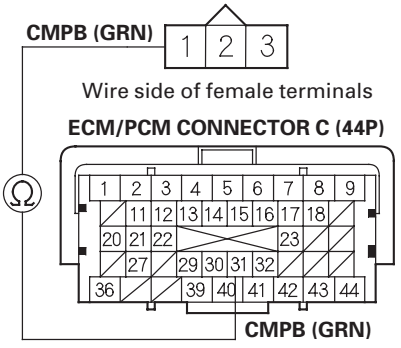
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C31) and CMP sensor B, then go to step 18.

NO—Go to step 15.

15. Check for continuity between CMP sensor B 3P connector terminal No. 1 and ECM/PCM connector terminal C31.

CMP SENSOR B 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (C31) and CMP sensor B, then go to step 18.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Replace CMP sensor B (see page 11-222).
18. Reconnect all connectors.
19. Turn the ignition switch to ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see page 11-310).
22. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0365 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor B and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
25. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0365 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0369: CMP 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).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP B NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
6. Check the CMP B NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor B and the ECM/PCM. ■
7. Check for poor connections or loose terminals at these locations:

    • CMP sensor B
    • ECM/PCM
    • Engine ground
    • Body ground

    Are the connections and terminals OK?

    YES—Go to step 8.

    NO—Repair or replace the connections or the terminals, then go to step 11.

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8. Check for damage on the CMP sensor B pulser plate (see page 6-41).

   Is the pulser plate damaged?

   YES—Replace the CMP sensor B pulser plate (see page 6-41), then go to step 11.

   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Replace CMP sensor B (see page 11-222).

11. Turn the ignition switch to ON (II).

12. Reset the ECM/PCM with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-310).

14. Start the engine, and let it idle for 10 seconds.

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

    Is DTC P0369 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor B and the ECM/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 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 to 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 a 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 to the air cleaner housing.

   Is it OK?

   YES—Go to step 5.

   NO—Replace the air cleaner housing (see page 11-345), 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 debris (see page 11-346), then go to step 20.

   NO—Go to step 6.

(cont'd)

DTC Troubleshooting (cont'd)

6. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

7. Clear the DTC with the HDS.

8. Start the engine, and let it idle for 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. Check for poor connections or loose terminals at the throttle body, the MAF sensor/IAT sensor, and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

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; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349), then go to step 20.

11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

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 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

    YES—Go to step 14.

    NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 20.

14. Turn the ignition switch to LOCK (0).

15. Allow the engine to cool to ambient temperature.

16. Note the ambient temperature.

17. Turn the ignition switch to 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 3 ℃ (5.4 ℉) or more from the ambient temperature?

    YES—Replace the MAF sensor/IAT sensor (see page 11-224), 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 11-344), then go to step 20. If there is damage in the throttle bore, replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349), then go to step 20.

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20. Turn the ignition switch to ON (II).

21. Reset the ECM/PCM with the HDS.

22. Do the ECM/PCM idle learn procedure (see page 11-310).

23. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

24. Start the engine, and let it idle for 10 seconds or more.

25. 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 ECM/PCM, then go to step 1.

    NO—Go to step 26.

26. 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 25, 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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 23.

DTC P050B: Cold Start Ignition Timing 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 to 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 a 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 to the air cleaner housing.

   Is it OK?

   YES—Go to step 5.

   NO—Replace the air cleaner housing (see page 11-345), 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 debris (see page 11-346), then go to step 25.

   NO—Go to step 6.

(cont'd)

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DTC Troubleshooting (cont'd)

6. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

7. Clear the DTC with the HDS.

8. Start the engine, and let it idle for 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. Check for poor connections or loose terminals at the throttle body, the CKP sensor, the MAF sensor/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 6.

10. Check 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 11-222) and the CKP sensor pulser plate (see page 6-34).

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

    YES—Replace the CKP sensor (see page 11-222) and/or the CKP sensor pulser plate (see page 6-34), then go to step 6.

    NO—Go to step 32.

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; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349), then go to step 25.

13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in 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 6.0—8.6 (K20Z2 engine) or 5.7—8.3 (K20Z3 engine) gm/s?

    YES—Go to step 16.

    NO—Replace the MAF sensor/IAT sensor (see page 11-224), then go to step 25.

16. Turn the ignition switch to LOCK (0).

17. Drain the coolant (see page 10-8).

18. Remove ECT sensor 1 (see page 11-225), and ECT sensor 2 (see page 11-225).

19. Allow the sensors to cool to ambient temperature.

20. Note the ambient temperature.

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

22. Turn the ignition switch to ON (II).

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

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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 3 ℃ (5.4 ℉) from the ambient temperature?

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

    NO—Check and repair any problems with the following items. Repair or replace them if needed, then go to step 25. If every item is OK, go to step 32.

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

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

28. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

29. Start the engine, and let it idle for 10 seconds or more.

30. 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 ECM/PCM, then go to step 1.

    NO—Go to step 31.

31. 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 30, 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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 28.

32. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

33. Let the engine cool until the value of ECT SENSOR 1 is 50 ℃ (122 ℉) or less.

34. Start the engine, and let it idle for 10 seconds or more.

35. 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/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 36.

(cont'd)

DTC Troubleshooting (cont'd)

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

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, 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/IAT sensor, ECT sensor 1, ECT sensor 2, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 33. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 33.

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 to 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
   - Rear window defogger on
   - Headlights on high beam

5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

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

   Is DTC P0562 indicated?

   YES—Replace the alternator (see page 4-34), 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 under-hood fuse/relay box, and check the battery performance (see page 22-67). ■

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7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Start the engine.

11. Check under these conditions:

    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam

12. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in 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 under-hood fuse/relay 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. ■

DTC P0563: ECM/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 to ON (II).

2. Clear the DTC with the HDS.

3. Turn the ignition switch to LOCK (0).

4. Wait 10 seconds.

5. Turn the ignition switch to 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 at PGM-FI main relay 1 and the ECM/PCM. ■

7. Turn the ignition switch to LOCK (0).

8. Jump the SCS line with the HDS.

9. Disconnect ECM/PCM connector A (44P).

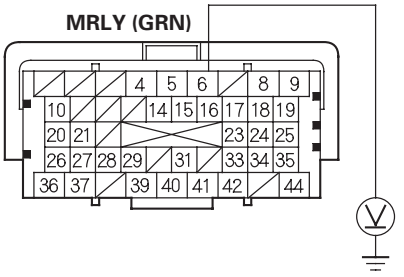
(cont'd)

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DTC Troubleshooting (cont'd)

10. Measure the voltage between ECM/PCM connector terminal A6 and body ground.

ECM/PCM CONNECTOR A (44P)



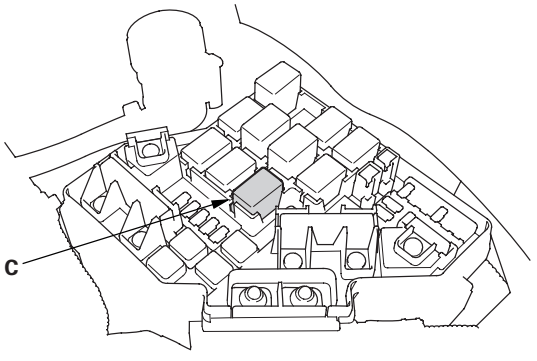
Terminal side of female terminals

Is there battery voltage?

YES—Go to step 13.

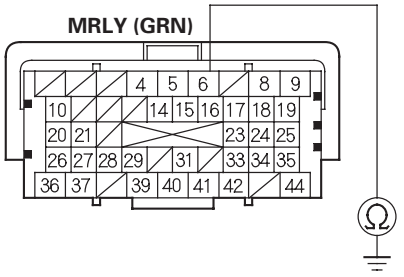
NO—Go to step 11.

11. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



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

ECM/PCM CONNECTOR A (44P)



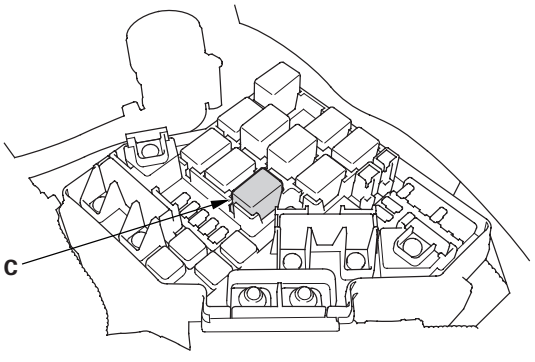
Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A6) and PGM-FI main relay 1, then go to step 16.

NO—Go to step 15.

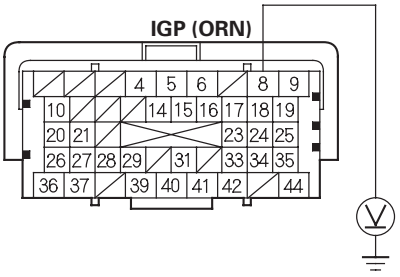
13. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



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14. Measure the voltage between ECM/PCM connector terminal A8 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM/PCM (A8) and PGM-FI main relay 1, then go to step 16.

NO—Go to step 15.

15. Test PGM-FI main relay 1 (see page 22-70).

Is PGM-FI main relay 1 OK?

YES—Go to step 23.

NO—Replace PGM-FI main relay 1, then go to step 16.

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-310).

20. Turn the ignition switch to LOCK (0).

21. Wait 10 seconds.

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

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

Is DTC P0563 indicated?

YES—Check for poor connections or loose terminals at PGM-FI main relay 1 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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: ECM/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 ECM/PCM update is not completed.
- Do not turn the ignition switch to LOCK (0) or ACC (I) while updating the ECM/PCM. If you do, the ECM/PCM can be damaged.

1. Do the ECM/PCM update procedure (see page 11-227).

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

   Is DTC P0602 indicated?

   YES—Replace the original ECM/PCM (see page 11-228). ■

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

DTC P0603: ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error ('06-08 models)

DTC P062F: ECM/PCM Internal Control Module Keep Alive Memory (KAM) Error ('09 model)

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 '06-08 models.
- Information marked with a double asterisk (**) applies to the '09 model.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

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

   Is DTC P0603 (P062F)** indicated?*

   YES—Go to step 4.

   NO—Intermittent failure, the system is OK at this time. ■

4. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

   Is DTC P0603 (P062F)** indicated?*

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0606: ECM/PCM Processor 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 to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to ON (II).
5. Wait 40 seconds.
6. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0606 indicated?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. ■
7. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
8. Turn the ignition switch to LOCK (0).
9. Turn the ignition switch to ON (II).
10. Wait 40 seconds.
11. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0606 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 11-227), or substitute a known-good PCM (see page 11-7).
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 11-7), 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 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

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 ECM/PCM does not have the VIN information of the vehicle. Use the HDS to input the missing VIN information.
- Information marked with an asterisk (*) applies to the '06-08 models.
- Information marked with a double asterisk (**) applies to the '09 model.

1. Turn the ignition switch to 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 ECM/PCM with the HDS.

   Does the screen show COMPLETE?

   YES—Go to step 5.

   NO—Go to step 4.
4. Check for DTCs with the HDS.

   Is DTC P0603 (P062F)** indicated?*

   YES—Go to the DTC P0603* (P062F)** troubleshooting (see page 11-144). ■

   NO—Go to step 9.
5. Clear the DTC with the HDS.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II), and wait 5 seconds.
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0630 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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0630 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0685: ECM/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 doesn't return after you clear the DTC, or if this DTC is stored intermittently, check for loose terminals at the IGP line connectors before replacing the ECM/PCM.

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 30 seconds.
4. Turn the ignition switch to LOCK (0).
5. Start the engine, and let it idle for 30 seconds.
6. Turn the ignition switch to LOCK (0).
7. Turn the ignition switch to ON (II).
8. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0685 indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. ■
9. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
10. Start the engine, and let it idle for 30 seconds.
11. Turn the ignition switch to LOCK (0).
12. Start the engine, and let it idle for 30 seconds.
13. Turn the ignition switch to LOCK (0).
14. Turn the ignition switch to ON (II).
15. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0685 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 10. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P0720: Output Shaft (Countershaft) Speed 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 to ON (II).
2. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0722 indicated?

   YES—Troubleshoot for DTC P0722 in the A/T system (see page 14-111).

   NO—Go to step 3.
3. Update the PCM if it does not have the latest software (see page 11-227), or substitute a known-good PCM (see page 11-7).
4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
   - Transmission in D
   - ENGINE SPEED between 2,000—4,500 rpm
   - Drive for several minutes, then decelerate (with throttle fully closed) for 5 seconds or more
5. Check for Temporary DTCs or DTCs in the PGM-FI SYSTEM with the HDS.

   Is DTC P0720 indicated?

   YES—Go to step 6.

   NO—Go to step 7.
6. Check for Temporary DTCs or DTCs in the A/T SYSTEM with the HDS.

   Is DTC P0722 indicated?

   YES—Troubleshoot for DTC P0722 in the A/T system (see page 14-111).

   NO— If the PCM was updated, substitute a known-good PCM (see page 11-7). If the PCM was substituted, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM, then go to step 1.
7. Monitor the OBD STATUS for DTC P0720 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 11-228). ■

   NO—If the screen indicates FAILED, check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 4. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 4.

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DTC P0720: Output Shaft (Countershaft) Speed 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).
- Information marked with an asterisk (*) applies to K20Z3 engine

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

2. Test-drive several minutes.

3. Check the C SHAFT SPD in the DATA LIST with the HDS.

   Is any vehicle speed indicated?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM.■

   NO—Go to step 4.

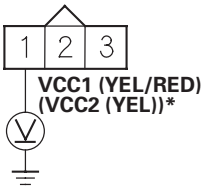
4. Turn the ignition switch to LOCK (0).

5. Disconnect the output shaft (countershaft) speed sensor 3P connector.

6. Turn the ignition switch to ON (II).

7. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 1 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

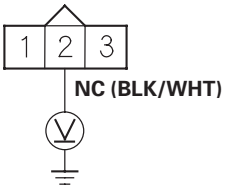
Is there about 5 V?

YES—Go to step 8.

NO—Repair open in the wire between the ECM (C13) (B18)* and the output shaft (countershaft) speed sensor, then go to step 18.

8. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminal No. 2 and body ground.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 9.

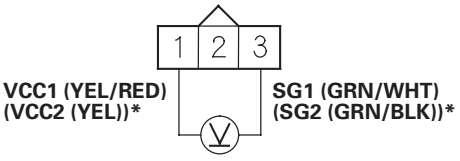
NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

9. Measure the voltage between output shaft (countershaft) speed sensor 3P connector terminals No. 1 and No. 3.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR



Wire side of female terminals

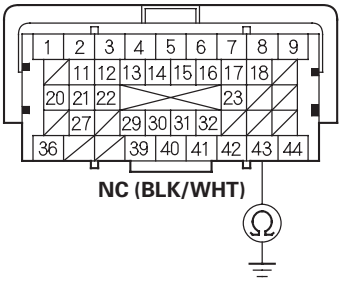
Is there about 5 V?

YES—Go to step 16.

NO—Repair open in the wire between the ECM (C14) (B33)* and the output shaft (countershaft) speed sensor, then go to step 18.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM connector C (44P).
13. Check for continuity between ECM connector terminal C43 and body ground.

ECM CONNECTOR C (44P)



Terminal side of female terminals

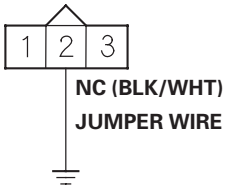
Is there continuity?

YES—Repair short in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

NO—Go to step 14.

14. Connect output shaft (countershaft) speed sensor 3P connector terminal No. 2 to body ground with a jumper wire.

OUTPUT SHAFT (COUNTERSHAFT) SPEED SENSOR 3P CONNECTOR

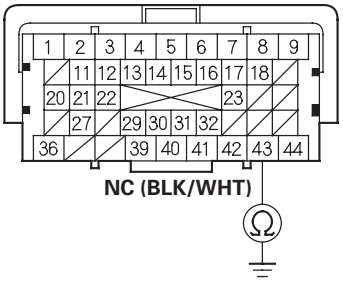


Wire side of female terminals

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15. Check for continuity between ECM connector terminal C43 and body ground.

ECM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the ECM (C43) and the output shaft (countershaft) speed sensor, then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace the output shaft (countershaft) speed sensor (see page 11-223).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM with the HDS.

21. Do the ECM idle learn procedure (see page 11-310).

22. Test-drive under these conditions:

- Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
- Transmission in 5th
- Engine speed between 2,000—3,000 rpm
- Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

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

Is DTC P0720 indicated?

YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM, then go to step 1.

NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0720 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 output shaft (countershaft) speed sensor and the ECM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

(cont'd)

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DTC Troubleshooting (cont'd)

25. Reconnect all connectors.

26. Update the ECM if it does not have the latest software (see page 11-227), or substitute a known-good ECM (see page 11-7).

27. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 80 ℃ (176 ℉)
    - Transmission in 5th
    - Engine speed between 2,000—3,000 rpm
    - Drive for several minutes, then decelerate (with the throttle fully closed) for 8 seconds

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

    Is DTC P0720 indicated?

    YES—Check for poor connections or loose terminals at the output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0720 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM was updated, troubleshooting is complete. If the ECM was substituted, replace the original ECM (see page 11-228). 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 output shaft (countershaft) speed sensor and the ECM. If the ECM was updated, substitute a known-good ECM (see page 11-7), then go to step 27. If the ECM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

   Is DTC P1109 indicated?

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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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 connections or the terminals, then go to step 27.

2. Turn the ignition switch to 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 for 10 minutes.

5. Check ECT SENSOR 1 in the DATA LIST with the HDS.

   Is about 47 °C (117 °F) or less indicated?

   YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Drain the coolant (see page 10-8).

8. Remove ECT sensor 1 (see page 11-225).

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 to 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 3 °C (5.4 °F) or more from the ambient temperature?

    YES—Replace ECT sensor 1 (see page 11-225), 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 ECM/PCM. ■

15. Start the engine, and let it idle for 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 47 °C (117 °F) or less indicated?

    YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

    NO—Go to step 17.

17. Let the engine idle for 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 60 °C (140 °F) or less indicated?

    YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

    NO—Go to step 19.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to LOCK (0).
20. Drain the coolant (see page 10-8).
21. Remove ECT sensor 1 (see page 11-225) and ECT sensor 2 (see page 11-225).
22. Allow the sensors to cool to ambient temperature.
23. Note the ambient temperature.
24. Connect ECT sensor 1 and ECT sensor 2 to their 2P connectors, but do not install them.
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 3 ℃ (5.4 ℉) from the ambient temperature?

    YES—Replace the sensor that differed more than 3 ℃ (5.4 ℉) 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 ECM/PCM. ■
27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-310).
30. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P1116 indicated?

    YES—Check for poor connections or loose terminals at ECT sensor 1, ECT sensor 2, and the ECM/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 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).
- Before you begin, check for poor connections or a blockage at the intake air duct.

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

   Is less than 54.1 kPa (406 mmHg, 16.0 in.Hg) or 1.61 V held for more than 5 seconds?

   YES—Go to step 7.

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - Engine speed between 1,200—5,400 rpm
   - A/T in D, M/T in 3rd
   - Vehicle speed accelerated from 25—50 km/h (16—31 mph) under half throttle
6. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 7.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the MAP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
7. Turn the ignition switch to LOCK (0).
8. Replace the MAP sensor (see page 11-224).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-310).
12. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
13. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - Engine speed between 1,200—5,400 rpm
    - A/T in D, M/T in 3rd
    - Vehicle speed accelerated from 25—50 km/h (16—31 mph) under half throttle
14. 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 ECM/PCM, then go to step 1.

    NO—Go to step 15.
15. Monitor the OBD STATUS for DTC P1128 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Troubleshooting is complete. 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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

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DTC Troubleshooting (cont'd)

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 in these parts:

   - PCV valve
   - PCV hose
   - EVAP canister purge valve
   - Throttle body
   - Intake manifold
   - Brake booster
   - 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 (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

3. Check the MAP SENSOR in the DATA LIST with the HDS.

   Is more than 36.9 kPa (277 mmHg, 11.0 in.Hg) or 1.1 V held for more than for 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 70 ℃ (158 ℉)
   - A/T in D, M/T in 5th
   - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds
   - During the drive, decelerate (with the throttle fully closed) for at least 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 ECM/PCM. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

7. Turn the ignition switch to LOCK (0).

8. Replace the MAP sensor (see page 11-224).

9. Turn the ignition switch to ON (II).

10. Reset the ECM/PCM with the HDS.

11. Do the ECM/PCM idle learn procedure (see page 11-310).

12. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

13. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 5th
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for at least 2 seconds

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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 ECM/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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 12.

DTC P1157: A/F Sensor (Sensor 1) AFS 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and wait 1 minute.
4. Check for Temporary DTCs or DTCs with the HDS.

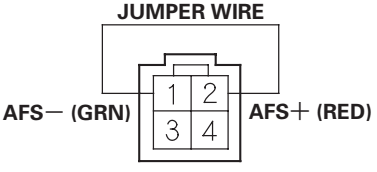
    Is DTC P1157 indicated?

    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 ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Disconnect the A/F sensor (Sensor 1) 4P connector.
8. Disconnect ECM/PCM connector C (44P).
9. Connect A/F sensor (Sensor 1) 4P connector terminals No. 1 and No. 2 with a jumper wire.

A/F SENSOR (SENSOR 1) 4P CONNECTOR



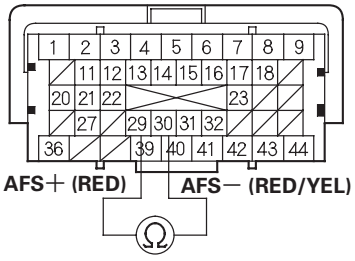
Terminal side of male terminals

(cont'd)

DTC Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminals C29 and C30.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

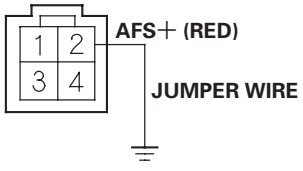
YES—Go to step 14.

NO—Go to step 11.

11. Remove the jumper wire from the A/F sensor (Sensor 1) 4P connector.

12. Connect A/F sensor (Sensor 1) 4P connector terminal No. 2 to body ground with a jumper wire.

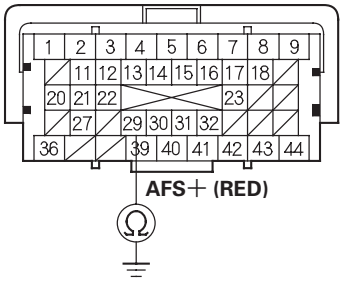
A/F SENSOR (SENSOR 1) 4P CONNECTOR



Terminal side of male terminals

13. Check for continuity between ECM/PCM connector terminal C29 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 15.

NO—Repair open in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 15.

14. Replace the A/F sensor (Sensor 1) (see page 11-221).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Reset the ECM/PCM with the HDS.

18. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC P1157 indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connections and the terminal fits are OK, go to step 21.

NO—Go to step 20.

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20. Monitor the OBD STATUS for DTC P1157 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 A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

21. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

22. Start the engine, and let it idle.

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

    Is DTC P1157 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P1157 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P1172: A/F Sensor (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).

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Monitor the OBD STATUS for DTC P1172 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 ECM/PCM. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 3 and recheck.

5. Turn the ignition switch to LOCK (0).

6. Replace the A/F sensor (Sensor 1) (see page 11-221).

7. Turn the ignition switch to ON (II).

8. Reset the ECM/PCM with the HDS.

9. Do the ECM/PCM idle learn procedure (see page 11-310).

10. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

(cont'd)

DTC Troubleshooting (cont'd)

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

    Is DTC P1172 indicated?

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

    NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P1172 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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 10.

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 to 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 ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II).
6. Check the ELD in the DATA LIST with the HDS.

   Is 72 A or more indicated?

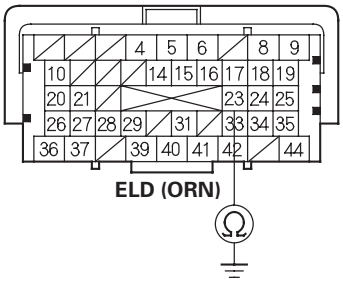
   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).

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10. Check for continuity between ECM/PCM connector terminal A23 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A23) and the ELD, then go to step 13.

NO—Go to step 20.

11. Turn the ignition switch to LOCK (0).
12. Replace the ELD (see page 11-226).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
17. Start the engine.
18. Turn on the headlights.
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 and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 22. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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).

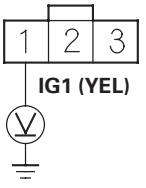
1. Turn the ignition switch to ON (II).
2. Check the ELD in the DATA LIST with the HDS.

   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 ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ELD 3P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between ELD 3P connector terminal No. 1 and body ground.

ELD 3P CONNECTOR



Wire side of female terminals

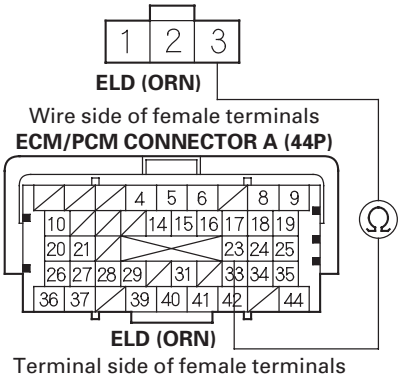
Is there battery voltage?

YES—Go to step 7.

NO—Check the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box. If the fuse is OK, repair open in the wire between the No. 3 ALTERNATOR (10 A) fuse and the ELD, then go to step 13.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ELD 3P connector terminal No. 3 and ECM/PCM connector terminal A23.

ELD 3P CONNECTOR



Is there continuity?

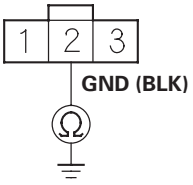
YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A23) 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 G301 (see page 22-22), then go to step 13.

12. Replace the ELD (see page 11-226).

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC P1298 indicated?

YES—Go to step 18.

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

18. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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.) connected to the vehicle, this DTC can be stored.

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

   Is DTC P1549 indicated?

   YES—Replace the alternator (see page 4-34), 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 under-hood fuse/relay box. ■
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-310).
10. Start the engine.
11. Check under these conditions:
    - A/C off
    - Headlights off
    - Rear window defogger off
12. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 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 under-hood fuse/relay 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 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 to ON (II).
2. Clear the DTC with HDS.
3. Start the engine.
4. Check under these conditions:
   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam
5. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 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 under-hood fuse/relay box, and check the battery performance (see page 22-67). ■
7. Check for poor connections or loose terminals at the alternator and the under-hood fuse/relay box (+B line).

   Are the connections and the terminals OK?

   YES—Go to step 8.

   NO—Repair the connectors or the terminals, then go to step 9.
8. Check for an open in the wire (+B line) between the alternator and the under-hood fuse/relay box (+B line).

   Is the harness OK?

   YES—Replace the alternator (see page 4-34), then go to step 9.

   NO—Repair open in the wire (+B line) between the alternator and the under-hood fuse/relay box (+B line), then go to step 9.
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-310).
12. Start the engine.
13. Check under these conditions:
    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam
14. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 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 under-hood fuse/relay 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 or loose terminals at the alternator 4P connector.

   Are the connections and the terminal OK?

   YES—Go to step 2.

   NO—Repair the connections or the terminals, then go to step 18.

2. Check the alternator mounting surfaces for corrosion.

   Are the mounting surfaces corroded?

   YES—Remove the alternator (see page 4-34). Clean all mounting surface and reinstall the alternator, then go to step 18.

   NO—Go to step 3.

3. Turn the ignition switch to ON (II).

4. Clear the DTC with the HDS.

5. Start the engine.

6. Check under these conditions:

   - A/C on
   - Temperature control at maximum cool
   - Blower fan at maximum speed
   - Rear window defogger on
   - Headlights on high beam

7. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

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

   Is DTC P16BC indicated?

   YES—Go to step 9.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the alternator. ■

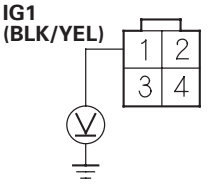
9. Turn the ignition switch to LOCK (0).

10. Disconnect the alternator 4P connector.

11. Turn the ignition switch to ON (II).

12. Measure the voltage between alternator 4P connector terminal No. 1 and body ground.

ALTERNATOR 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

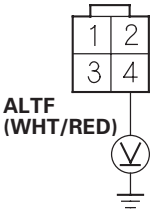
YES—Go to step 13.

NO—Repair open in the wire between the alternator (IG1 line) and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 18.

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13. Measure the 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 4-34), then go to step 18.

NO—Go to step 14.

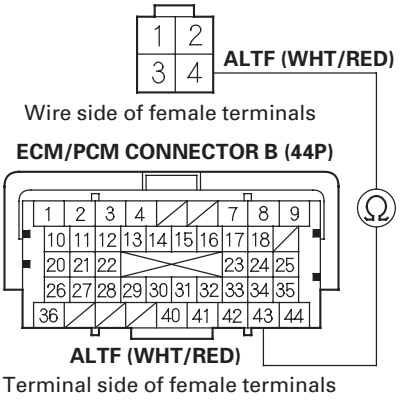
14. Turn the ignition switch to LOCK (0).

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector B (44P).

17. Check for continuity between alternator 4P connector terminal No. 4 and ECM/PCM connector terminal B43.

ALTERNATOR 4P CONNECTOR



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (B43) and the alternator, then go to step 18.

18. Turn the ignition switch to LOCK (0).

19. Reconnect all connectors.

20. Turn the ignition switch to ON (II).

21. Reset the ECM/PCM with the HDS.

22. Do the ECM/PCM idle learn procedure (see page 11-310).

23. Start the engine.

24. Check under these conditions:

- A/C on
- Temperature control at maximum cool
- Blower fan at maximum speed
- Rear window defogger on
- Headlights on high beam

(cont'd)

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DTC Troubleshooting (cont'd)

25. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

26. 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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Start the engine.

30. Check under these conditions:

    - A/C on
    - Temperature control at maximum cool
    - Blower fan at maximum speed
    - Rear window defogger on
    - Headlights on high beam

31. Hold the engine speed at 2,000 rpm (A/T in P or N, M/T in neutral) for 1 minute.

32. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 the terminals OK?

   YES—Go to step 2.

   NO—Repair the connections or the terminals, then go to step 27.

2. Turn the ignition switch to 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 for 10 minutes.

5. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 60 °C (140 °F) or less indicated?

   YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

7. Drain the coolant (see page 10-8).

8. Remove ECT sensor 2 (see page 11-225).

9. Allow ECT sensor 2 to cool to ambient temperature.

10. Note the ambient temperature.

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11. Connect ECT sensor 2 to the 2P connector, but do not install it on the radiator.

12. Turn the ignition switch to 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 3 °C (5.4 °F) or more from the ambient temperature?

    YES—Replace ECT sensor 2 (see page 11-225), 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 ECM/PCM. ■

15. Start the engine, and let it idle for 10 minutes.

16. Check ECT SENSOR 1 in the DATA LIST with the HDS.

    Is about 47 °C (117 °F) or less indicated?

    YES—Replace ECT sensor 1 (see page 11-225), then go to step 27.

    NO—Go to step 17.

17. Let the engine idle for 10 minutes.

18. Check ECT SENSOR 2 in the DATA LIST with the HDS.

    Is about 60 °C (140 °F) or less, or 1.50 V or more indicated?

    YES—Replace ECT sensor 2 (see page 11-225), then go to step 27.

    NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Drain the coolant (see page 10-8).

21. Remove ECT sensor 1 (see page 11-225) and ECT sensor 2 (see page 11-225).

22. Allow the sensors to cool to ambient temperature.

23. Note the ambient temperature.

24. Connect the ECT sensors to their 2P connectors, but do not install them.

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 3 °C (5.4 °F) from the ambient temperature?

    YES—Replace the sensor that differed more than 3 °C (5.4 °F) from the ambient temperature.

    - ECT sensor 1 (see page 11-225)
    - ECT sensor 2 (see page 11-225)

    After replacing the sensor, 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 ECM/PCM. ■

(cont'd)

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DTC Troubleshooting (cont'd)

27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 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 to ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about 180 °C (356 °F) 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 ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the ECT sensor 2 2P connector.
5. Turn the ignition switch to ON (II).
6. Check ECT SENSOR 2 in the DATA LIST with the HDS.

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

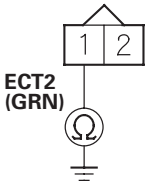
   YES—Go to step 7.

   NO—Go to step 11.
7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).

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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 ECM/PCM (A33), then go to step 13.

NO—Go to step 18.

11. Turn the ignition switch to LOCK (0).
12. Replace ECT sensor 2 (see page 11-225).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

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).

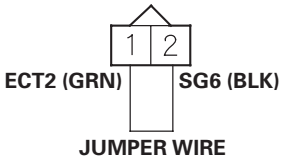
1. Turn the ignition switch to ON (II).
2. Check ECT SENSOR 2 in the DATA LIST with the HDS.

   Is about −40 °C (−40 °F) 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 ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
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

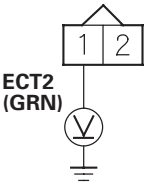
6. Turn the ignition switch to ON (II).
7. Check ECT SENSOR 2 in the DATA LIST with the HDS.

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

   YES—Go to step 8.

   NO—Go to step 20.
8. Turn the ignition switch to LOCK (0).
9. Remove the jumper wire from ECT sensor 2 2P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between ECT sensor 2 2P connector terminal No. 1 and body ground.

ECT SENSOR 2 2P CONNECTOR



Wire side of female terminals

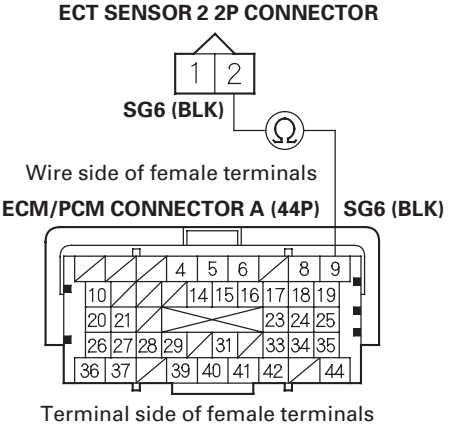
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 16.

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12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector A (44P).
15. Check for continuity between ECT sensor 2 2P connector terminal No. 2 and ECM/PCM connector terminal A9.

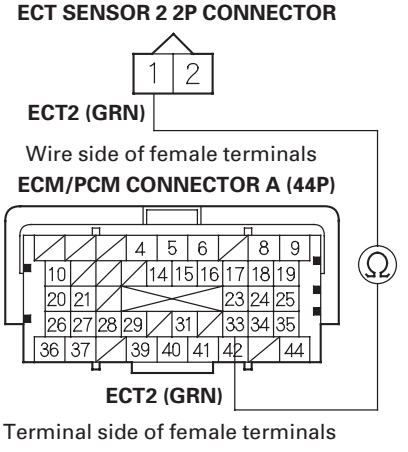


Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (A9) and ECT sensor 2, then go to step 22.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (44P).
19. Check for continuity between ECT sensor 2 2P connector terminal No. 1 and ECM/PCM connector terminal A33.



Is there continuity?

YES—Go to step 27.

NO—Repair open in the wire between the ECM/PCM (A33) and ECT sensor 2, then go to step 22.

(cont'd)

DTC Troubleshooting (cont'd)

20. Turn the ignition switch to LOCK (0).
21. Replace ECT sensor 2 (see page 11-225).
22. Reconnect all connectors.
23. Turn the ignition switch to ON (II).
24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2195: A/F Sensor (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).
- 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 are stored at the same time, troubleshoot them first, then recheck for DTC P2195.

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 to ON (II).
3. Clear the DTC with the HDS.
4. Start the engine, and let it idle for 2 minutes.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2195 indicated?

   YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/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 ECM/PCM. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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6. Turn the ignition switch to LOCK (0).

7. Reinstall the A/F sensor (Sensor 1) (see page 11-221).

8. Turn the ignition switch to ON (II).

9. Reset the ECM/PCM with the HDS.

10. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P2195 indicated?

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

    NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P2195 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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

13. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

14. Start the engine, and let it idle for 2 minutes.

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

    Is DTC P2195 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 14. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2195 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 14. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

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 to ON (II), and wait 2 seconds.

2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 101 kPa (760 mmHg, 29.9 in.Hg), or about 2.9 V at sea level indicated?

   YES—Go to step 3.

   NO—Go to step 7.

3. Clear the DTC with the HDS.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - REL TP SENSOR between 12 deg and 20 deg for at least 2 seconds

6. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 7.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 4 and recheck.

7. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

8. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

9. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - REL TP SENSOR between 12 deg and 20 deg for at least 2 seconds

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

    Is DTC P2227 indicated?

    YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 11.

11. Monitor the OBD STATUS for DTC P2227 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 8. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 8.

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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 to ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 53 kPa (397 mmHg, 15.6 in.Hg), or 1.31 V or less indicated?

   YES—Go to step 3.

   NO—Intermittent failure, the system is OK at this time. ■
3. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2228 indicated?

   YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 to ON (II).
2. Check the BARO SENSOR in the DATA LIST with the HDS.

   Is about 160 kPa (1,200 mmHg, 47.2 in.Hg), 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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2229 indicated?

   YES—Check for poor connections or loose terminals at the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC P2238: A/F Sensor (Sensor 1) AFS+ 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).

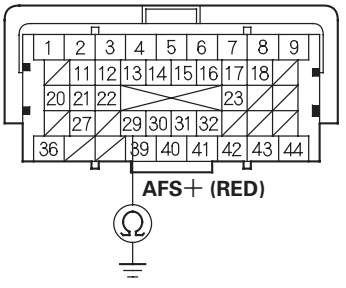
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2238 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 A/F sensor (Sensor 1) and the ECM/PCM. ■
4. Turn the ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the A/F sensor (Sensor 1) 4P connector.
7. Disconnect ECM/PCM connector C (44P).
8. Check for continuity between ECM/PCM connector terminal C29 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C29) and the A/F sensor (Sensor 1), then go to step 10.

NO—Go to step 9.

9. Replace the A/F sensor (Sensor 1) (see page 11-221).
10. Reconnect all connectors.
11. Turn the ignition switch to ON (II).
12. Reset the ECM/PCM with the HDS.
13. Do the ECM/PCM idle learn procedure (see page 11-310).
14. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2238 indicated?

    YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connector and terminal fits are OK, go to step 16.

    NO—Go to step 15.

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15. Monitor the OBD STATUS for DTC P2238 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 A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

16. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

17. Start the engine, and let it idle.

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

    Is DTC P2238 indicated?

    YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 19.

19. Monitor the OBD STATUS for DTC P2238 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 17. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P2252: A/F Sensor (Sensor 1) AFS—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 to 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 P2252 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 ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Jump the SCS line with the HDS.

7. Disconnect the A/F sensor (Sensor 1) 4P connector.

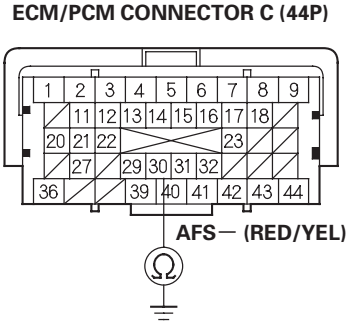
8. Disconnect ECM/PCM connector C (44P).

(cont'd)

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DTC Troubleshooting (cont'd)

9. Check for continuity between ECM/PCM connector terminal C30 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C30) and the A/F sensor (Sensor 1), then go to step 11.

NO—Go to step 10.

10. Replace the A/F sensor (Sensor 1) (see page 11-221).

11. Reconnect all connectors.

12. Turn the ignition switch to ON (II).

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC P2252 indicated?

YES—Check for poor connections or loose terminals at the A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the connections and the terminals fits are OK, go to step 17.

NO—Go to step 16.

16. Monitor the OBD STATUS for DTC P2252 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 A/F sensor (Sensor 1) and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

17. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

18. Start the engine, and let it idle.

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

Is DTC P2252 indicated?

YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 18. If the ECM/PCM was substituted, go to step 1.

NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P2252 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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, go to step 1. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 18. If the ECM/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 P2270: Secondary HO2S (Sensor 2) Circuit Signal Stuck Lean

DTC P2271: Secondary HO2S (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).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
4. Test-drive under these conditions:
   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - Vehicle speed at 56 km/h (35 mph) or more for 1 minute
5. Monitor the OBD STATUS for DTC P2270 or P2271 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 ECM/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 to LOCK (0).
7. Replace the secondary HO2S (Sensor 2) (see page 11-221).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Start the engine, and let it idle without load (A/T in P or N, M/T in neutral) until the radiator fan comes on.
12. Test-drive under these conditions:
    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - Vehicle speed at 56 km/h (35 mph) or more for 1 minute
13. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2270 or P2271 indicated?

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

    NO—Go to step 14.
14. Monitor the OBD STATUS for DTC P2270 or P2271 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 ECM/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.

DTC Troubleshooting (cont'd)

DTC P2610: ECM/PCM Ignition Off Internal 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 to 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. ■
4. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P2610 indicated?

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2A00: A/F Sensor (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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 3rd
   - Vehicle speed between 44—88 km/h (22—55 mph) for 5 minutes
   - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds, then decelerate (with the throttle fully closed) for 5 seconds
5. Monitor the OBD STATUS for DTC P2A00 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 ECM/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 to LOCK (0).
7. Replace the A/F sensor (Sensor 1) (see page 11-221).
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.

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10. Do the ECM/PCM idle learn procedure (see page 11-310).

11. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 3rd
    - Vehicle speed between 44—88 km/h (22—55 mph) for 5 minutes
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for 10 seconds, then decelerate (with the throttle fully closed) for 5 seconds

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

    Is DTC P2A00 indicated?

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

    NO—Go to step 13.

13. Monitor the OBD STATUS for DTC P2A00 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 ECM/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.

DTC U0028: F-CAN Malfunction (BUS-OFF (ECM/PCM))

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 to 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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

5. Turn the ignition switch to ON (II).

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

   Is DTC P0028 indicated?

   YES—If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

   NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC Troubleshooting (cont'd)

DTC U0122: F-CAN Malfunction (ECM/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).

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

   Are DTC U0028 and U0122 indicated at the same time?

   YES—Go to the troubleshooting for DTC U0028. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0122 indicated?

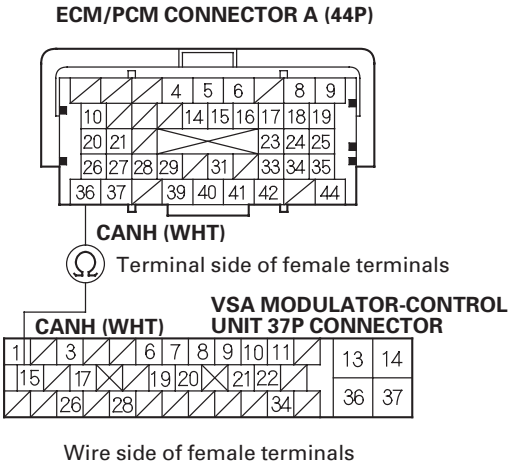
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/PCM. ■
5. Check for communication to the VSA system with the HDS.

   Does the HDS communicate with the VSA modulator-control unit?

   YES—Go to step 6.

   NO—Go to the DLC circuit troubleshooting (see page 11-204). ■
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect the VSA modulator-control unit 37P connector (see page 19-171).
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between ECM/PCM connector terminal A36 and VSA modulator-control unit 37P connector terminal No. 15.



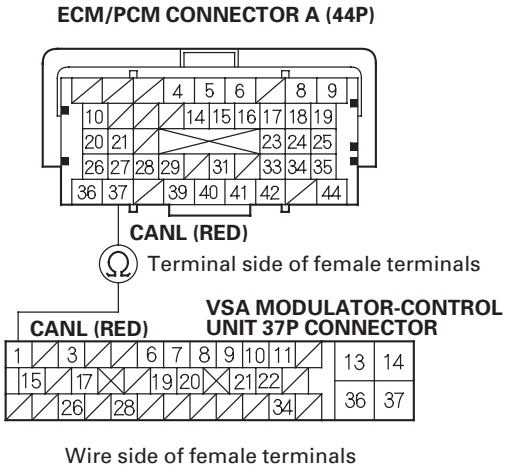
Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A36) and the VSA modulator-control unit, then go to step 12.

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11. Check for continuity between ECM/PCM connector terminal A37 and VSA modulator-control unit 37P connector terminal No. 1.



Is there continuity?

YES—Substitute a known-good VSA modulator-control unit (see page 19-171), then go to step 12 and recheck. If DTC U0122 is not indicated, replace the original VSA modulator-control unit (see page 19-171), then go to step 12.

NO—Repair open in the wire between the ECM/PCM (A37) and the VSA modulator-control unit, then go to step 12.

12. Reconnect all connectors.

13. Turn the ignition switch to ON (II).

14. Reset the ECM/PCM with the HDS.

15. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC U0122 indicated?

YES—Check for poor connections or loose terminals at the VSA modulator-control unit and the ECM/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 U0131: F-CAN Malfunction (ECM/PCM-EPS 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).

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

   Are DTC U0028 and U0131 indicated at the same time?

   YES—Go to the troubleshooting for DTC U0028. ■

   NO—Go to step 3.
3. Clear the DTC with the HDS.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC U0131 indicated?

   YES—Go to step 5.

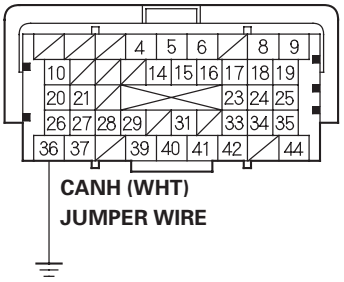
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EPS control unit and the ECM/PCM.
5. Check that the HDS communicates with the EPS system.

   Does the HDS communicate with the EPS control unit?

   YES—Go to step 6.

   NO—Go to the DLC circuit troubleshooting (see page 11-204).
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect EPS control unit connector D (28P) (see page 17-84).
9. Disconnect ECM/PCM connector A (44P)
10. Connect ECM/PCM connector terminal A36 to body ground with a jumper wire.

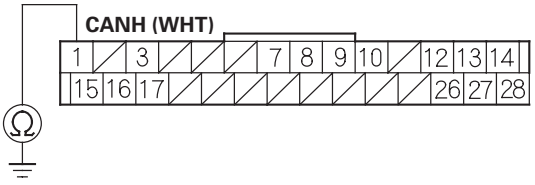
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

11. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

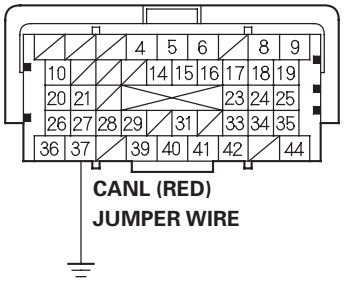
YES—Go to step 12.

NO—Repair open in the wire between the ECM/PCM (A36) and the EPS control unit, then go to step 14.

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12. Connect ECM/PCM connector terminal A37 to body ground with a jumper wire.

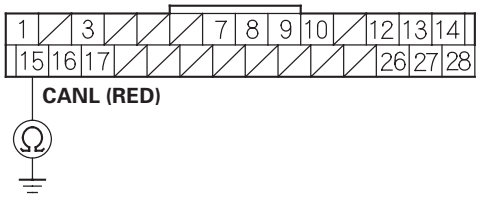
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

13. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Substitute a known-good EPS control unit (see page 17-84), then go to step 14 and recheck. If no DTCs are indicated, replace the original EPS control unit (see page 17-84), then go to step 14.

NO—Repair open in the wire between the ECM/PCM (A37) and the EPS control unit, then go to step 14.

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC U0131 indicated?

YES—Check for poor connections or loose terminals at the EPS control unit and the ECM/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 U0155: F-CAN Malfunction (ECM/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 to 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.

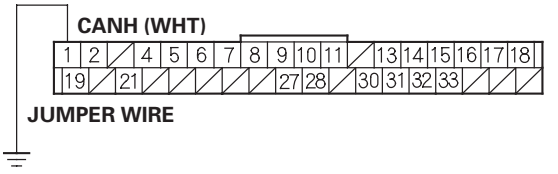
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the gauge control module (tach) and the ECM/PCM. ■
4. Check for body electrical DTCs in the DTCs MENU with the HDS.

   Is DTC B1168, B1169, and/or B1178 indicated?

   YES—Go to step 5.

   NO—Do the gauge control module (tach) input test (see page 22-271). ■
5. Turn the ignition switch to LOCK (0).
6. Jump the SCS line with the HDS.
7. Remove the gauge control module (tach) (see page 22-277).
8. Disconnect ECM/PCM connector A (44P).
9. Connect gauge control module (tach) 36P connector terminal No. 1 to body ground with a jumper wire.

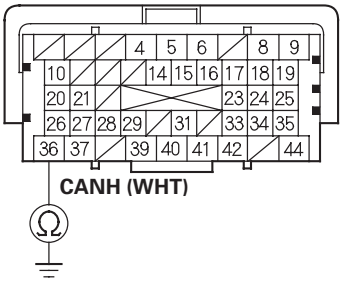
GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A36 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

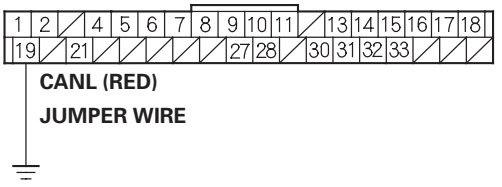
YES—Go to step 11.

NO—Repair open in the wire between the ECM/PCM (A36) and the gauge control module (tach), then go to step 13.

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11. Connect gauge control module (tach) 36P connector terminal No. 19 to body ground with a jumper wire.

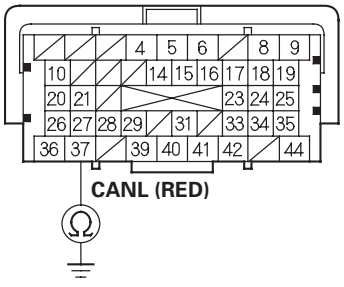
GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A37 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Substitute a known-good gauge control module (tach) (see page 22-277), then go to step 14 and recheck. If no DTCs are indicated, replace the original gauge control module (tach) (see page 22-277), then go to step 13.

NO—Repair open in the wire between the ECM/PCM (A37) and the gauge control module (tach), then go to step 13.

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. 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 (tach) and the ECM/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 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 to LOCK (0) while updating the PCM. If you turn the ignition switch to LOCK (0) before completion, the PCM will be damaged.

1. Do the PCM update procedure (PGM-FI system and A/T system) (see page 11-227).

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

   Is DTC U0300 indicated?

   YES—Replace the original PCM (see page 11-228). ■

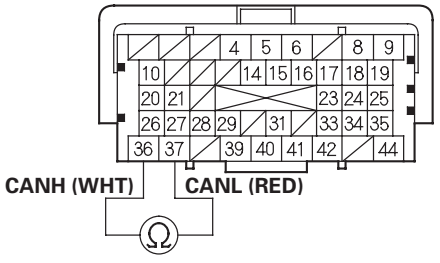
   NO—The update is complete. If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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F-CAN Circuit Troubleshooting

1. Turn the ignition switch to LOCK (0).
2. Jump the SCS line with the HDS.
3. Disconnect ECM/PCM connector A (44P), then disconnect the HDS.
4. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 95—116 Ω (with ABS) or 91—111 Ω (with VSA system), or 88—107 Ω (with VSA system and TPMS)?

YES—Go to step 41.

NO—Go to step 5.

5. Disconnect the gauge control module (tach) 36P connector (see page 22-277).
6. Disconnect the ABS modulator-control unit 25P connector (see page 19-90) (or the VSA modulator-control unit 37P connector (see page 19-171) and the yaw rate-lateral acceleration sensor 4P connector (see page 19-169)).
7. Disconnect SRS unit connector A (28P) (see page 24-203).
8. Disconnect EPS control unit connector D (28P) (see page 17-84).
9. With TPMS: Disconnect the TPMS control unit 20P connector (see page 18-75).

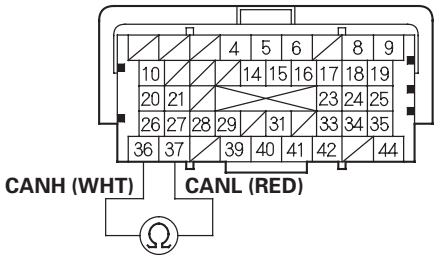
(cont'd)

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F-CAN Circuit Troubleshooting (cont'd)

10. Check for continuity between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

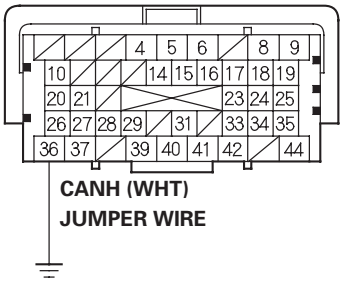
Is there continuity?

YES—Repair short in the wires between ECM/PCM connector terminals A36 and A37. ■

NO—Go to step 11.

11. Connect ECM/PCM connector terminal A36 to body ground with a jumper wire.

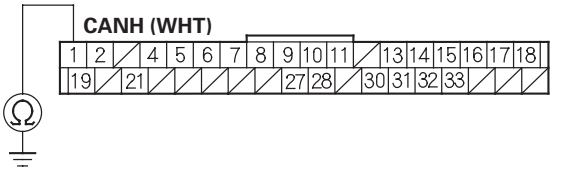
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

12. Check for continuity between gauge control module (tach) 36P connector terminal No. 1 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there continuity?

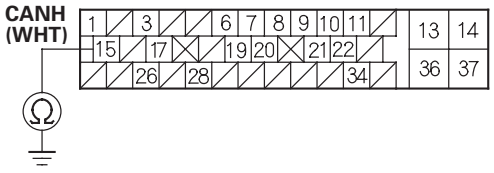
YES—
- With VSA system: Go to step 13.
- Without VSA system: Go to step 14.

NO—Repair open in the wire between the ECM/PCM (A36) and the gauge control module (tach). ■

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13. Check for continuity between VSA modulator-control unit 37P connector terminal No. 15 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

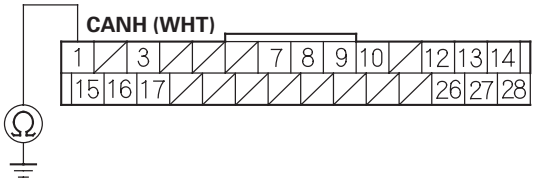
Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the ECM/PCM (A36) and the VSA modulator-control unit. ■

14. Check for continuity between EPS control unit connector D (28P) terminal No. 1 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (A36) and the EPS control unit. ■

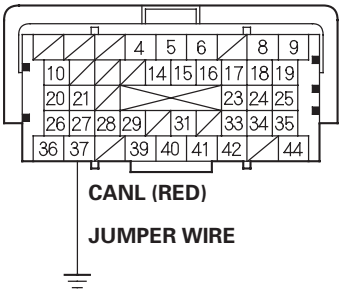
(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

15. Remove the jumper wire from ECM/PCM connector A (44P).

16. Connect ECM/PCM connector terminal A37 to body ground with a jumper wire.

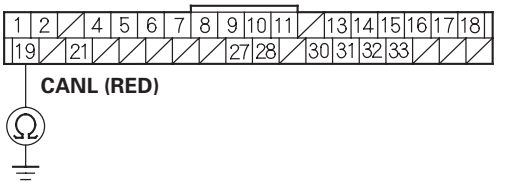
ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

17. Check for continuity between gauge control module (tach) 36P connector terminal No. 19 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there continuity?

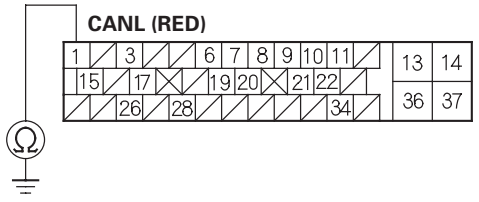
YES—
- With VSA system: Go to step 18.
- Without VSA system: Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A37) and the gauge control module (tach). ■

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18. Check for continuity between VSA modulator-control unit 37P connector terminal No. 1 and body ground.

VSA MODULATOR-CONTROL UNIT 37P CONNECTOR



Wire side of female terminals

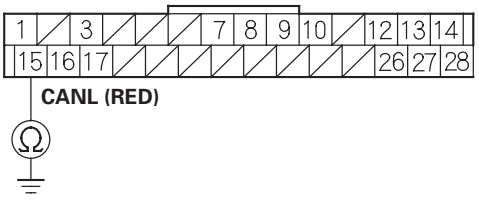
Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A37) and the VSA modulator-control unit. ■

19. Check for continuity between EPS control unit connector D (28P) terminal No. 15 and body ground.

EPS CONTROL UNIT CONNECTOR D (28P)



Wire side of female terminals

Is there continuity?

YES—Go to step 20.

NO—Repair open in the wire between the ECM/PCM (A37) and the EPS control unit. ■

(cont'd)

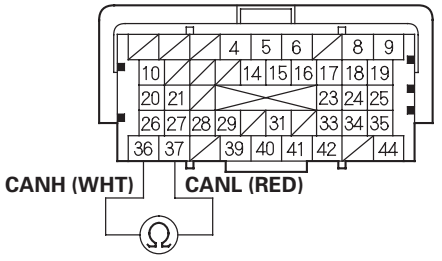
F-CAN Circuit Troubleshooting (cont'd)

20. Remove the jumper wire from ECM/PCM connector A (44P).

21. Reconnect the gauge control module (tach) 36P connector.

22. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 108 – 132 Ω ?

YES—
- With ABS: Go to step 23.
- With VSA system: Go to step 26.

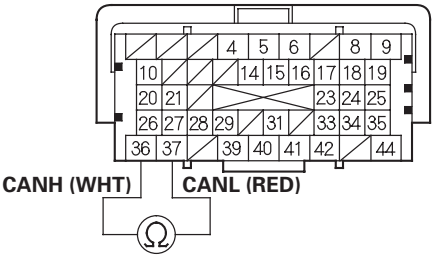
NO—Substitute a known-good gauge control module (tach) (see page 22-277). If the HDS identifies the vehicle, replace the original gauge control module (tach) (see page 22-277). ■

23. Disconnect the gauge control module (tach) 36P connector.

24. Reconnect the ABS modulator-control unit 25P connector.

25. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34 – 2.86 kΩ ?

YES—Disconnect the ABS modulator-control unit 25P connector, then go to step 33.

NO—Substitute a known-good ABS modulator-control unit (see page 19-90). If the HDS identifies the vehicle, replace the original ABS modulator-control unit (see page 19-90). ■

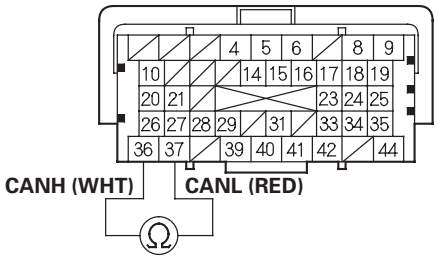
26. Disconnect the gauge control module (tach) 36P connector.

27. Reconnect the VSA modulator-control unit 37P connector.

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28. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 29.

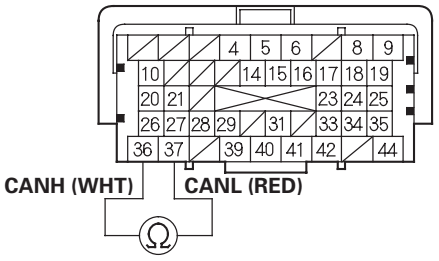
NO—Substitute a known-good VSA modulator-control unit (see page 19-171). If the HDS identifies the vehicle, replace the original VSA modulator-control unit (see page 19-171). ■

29. Disconnect the VSA modulator-control unit 37P connector.

30. Reconnect the yaw rate-lateral acceleration sensor 5P connector.

31. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 32.

NO—Substitute a known-good yaw rate-lateral acceleration sensor (see page 19-169). If the HDS identifies the vehicle, replace the original yaw rate-lateral acceleration sensor (see page 19-169). ■

32. Disconnect the yaw rate-lateral acceleration sensor 5P connector.

33. Reconnect SRS unit connector A (28P).

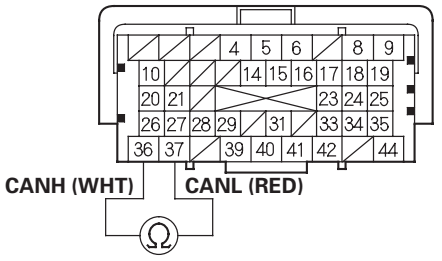
(cont'd)

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F-CAN Circuit Troubleshooting (cont'd)

34. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Go to step 35.

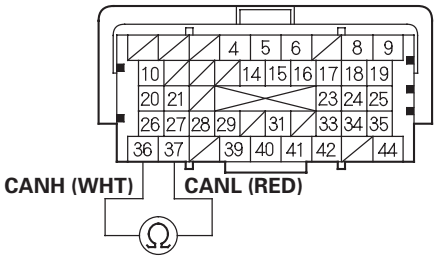
NO—Substitute a known-good SRS unit (see page 24-203). If the HDS identifies the vehicle, replace the original SRS unit (see page 24-203). ■

35. Disconnect SRS unit connector A (28P).

36. Reconnect EPS control unit connector D (28P).

37. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—
- With TPMS: Go to step 38.
- Without TPMS: Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Substitute a known-good EPS control unit (see page 17-84). If the HDS identifies the vehicle, replace the original EPS control unit (see page 17-84). ■

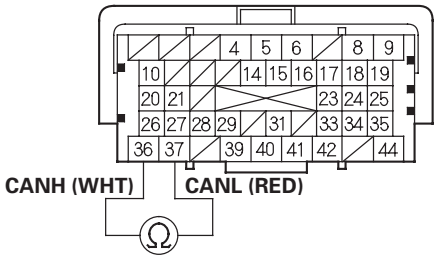
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38. Disconnect EPS control unit connector D (28P).

39. Reconnect the TPMS control unit 20P connector.

40. Measure the resistance between ECM/PCM connector terminals A36 and A37.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there about 2.34—2.86 kΩ ?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Substitute a known-good TPMS control unit (see page 18-75). If the HDS identifies the vehicle, replace the original TPMS control unit (see page 18-75). ■

41. Disconnect the gauge control module (tach) 36P connector (see page 22-277).

42. Disconnect the ABS modulator-control unit 25P connector (see page 19-90) (or the VSA modulator-control unit 37P connector (see page 19-171) and the yaw rate-lateral acceleration sensor 5P connector (see page 19-169)).

43. Disconnect SRS unit connector A (28P) (see page 24-203).

44. Disconnect EPS control unit connector D (28P) (see page 17-84).

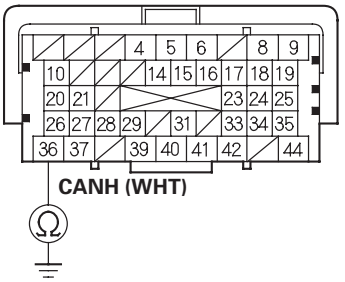
45. With TPMS: Disconnect the TPMS control unit 20P connector (see page 18-75).

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

46. Check for continuity between ECM/PCM connector terminal A36 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

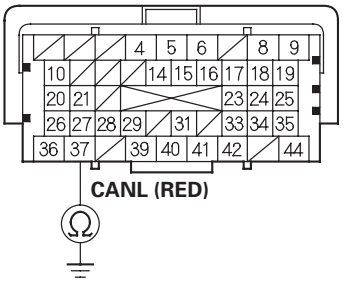
Is there continuity?

YES—Repair short in the wire between the ECM/PCM connector terminal A36 and the gauge control module (tach), the ABS modulator-control unit, the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, the SRS unit, the EPS control unit, the TPMS control unit (with TPMS), or the DLC. ■

NO—Go to step 47.

47. Check for continuity between ECM/PCM connector terminal A37 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between ECM/PCM connector terminal A37 and the gauge control module (tach), the ABS modulator-control unit, the VSA modulator-control unit, the yaw rate-lateral acceleration sensor, the SRS unit, the EPS control unit, the TPMS control unit (with TPMS), or the DLC. ■

NO—Go to step 48.

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48. Reconnect all connectors.

49. Connect the HDS to the DLC (see page 11-3).

50. Disconnect the gauge control module (tach) 36P connector.

51. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the gauge control module (tach) (see page 22-277). ■

    NO—
    • With ABS: Go to step 52.
    • With VSA system: Go to step 56.

52. Turn the ignition switch to LOCK (0).

53. Reconnect the gauge control module (tach) 36P connector.

54. Disconnect the ABS modulator-control unit 25P connector.

55. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the ABS modulator-control unit (see page 19-90). ■

    NO—Go to step 64.

56. Turn the ignition switch to LOCK (0).

57. Reconnect the gauge control module (tach) 36P connector.

58. Disconnect the VSA modulator-control unit 37P connector.

59. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the VSA modulator-control unit (see page 19-171). ■

    NO—Go to step 60.

60. Turn the ignition switch to LOCK (0).

61. Reconnect the VSA modulator-control unit 37P connector.

62. Disconnect the yaw rate-lateral acceleration sensor 5P connector.

63. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the yaw rate-lateral acceleration sensor (see page 19-169). ■

    NO—Go to step 64.

(cont'd)

F-CAN Circuit Troubleshooting (cont'd)

64. Turn the ignition switch to LOCK (0).

65. Reconnect the ABS modulator-control unit 25P connector (or the yaw rate-lateral acceleration sensor 4P connector).

66. Disconnect SRS unit connector A (28P).

67. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the SRS unit (see page 24-203). ■

    NO—Go to step 68.

68. Turn the ignition switch to LOCK (0).

69. Reconnect SRS unit connector A (28P).

70. Disconnect EPS control unit connector D (28P).

71. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the EPS control unit (see page 17-84). ■

    NO—
    - With TPMS: Go to step 72.
    - Without TPMS: Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

72. Turn the ignition switch to LOCK (0).

73. Reconnect EPS control unit connector D (28P).

74. Disconnect the TPMS control unit 20P connector.

75. Turn the ignition switch to ON (II), and read the HDS.

    Does the HDS identify the vehicle?

    YES—Replace the TPMS control unit (see page 18-75). ■

    NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

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MIL Circuit Troubleshooting

1. Turn the ignition switch to ON (II).
2. Do the gauge self-diagnostic function (see page 22-241).

   Does the MIL indicator flash?

   YES—Go to step 3.

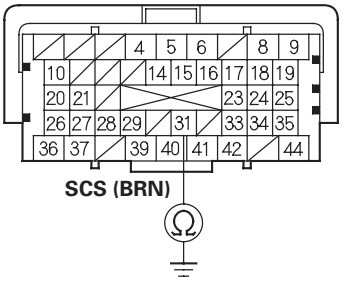
   NO—Substitute a known-good gauge control module (tach), and recheck. If the MIL circuit is OK, replace the original gauge control module (tach) (see page 22-277). ■
3. Connect the HDS to the DLC (see page 11-3).
4. Check the SCS in the DATA LIST with the HDS.

   Is a short indicated?

   YES—Go to step 5.

   NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect ECM/PCM connector A (44P), then disconnect the HDS.
7. Check for continuity between ECM/PCM connector terminal A31 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A31) and the SRS unit, the DLC. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

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DLC Circuit Troubleshooting

NOTE: Make sure the HDS and the HDS DLC cable are not detective.

1. Turn the ignition switch to LOCK (0).
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 to ON (II), and read the HDS.

   Does the HDS identify the vehicle?

   YES—Go to step 4.

   NO—Go to step 25.
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 to LOCK (0).
6. Turn the ignition switch to 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 24-22). ■

   NO—
   - With ABS: Go to step 7.
   - With VSA system: Go to step 9.
7. Turn the ignition switch to LOCK (0).
8. Turn the ignition switch to ON (II), and watch the ABS indicator.

   Does the ABS indicator stay on?

   YES—Go to the ABS's general troubleshooting information (see page 19-49). ■

   NO—Go to step 11.
9. Turn the ignition switch to LOCK (0).
10. Turn the ignition switch to 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 19-97). ■

    NO—Go to step 11.
11. Turn the ignition switch to LOCK (0).
12. Start the engine, and watch the EPS indicator.

    Does the EPS indicator stay on?

    YES—Go to the EPS system's general troubleshooting information (see page 17-19). ■

    NO—Go to step 13.

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13. Turn the ignition switch to LOCK (0).

14. Turn the ignition switch to 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 22-315). ■

    NO—
    • With TPMS: Go to step 15.
    • Without TPMS: Go to step 17.

15. Turn the ignition switch to LOCK (0).

16. Turn the ignition switch to ON (II), and watch the TPMS indicator.

    Does the TPMS indicator stay on?

    YES—Go to the TPMS's general troubleshooting information (see page 18-49). ■

    NO—Go to step 17.

17. Do the gauge self-diagnostic function (see page 22-241).

18. Check for B-CAN system DTCs without the HDS (see page 22-74).

    Are any B-CAN DTCs indicated?

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

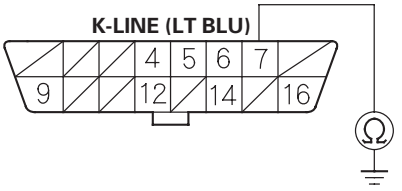
    NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Disconnect the HDS from the DLC.

21. Check for continuity between DLC terminal No. 7 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Go to step 23.

22. 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)
    • ABS modulator-control unit 25P connector (with ABS)
    • VSA modulator-control unit 37P connector (with VSA system)
    • EPS control unit connector D (28P)
    • Immobilizer-keyless control unit 7P connector
    • TPMS control unit 20P connector (with TPMS)
    • Audio unit 17P connector
    • Under-dash fuse/relay box Q (16P) connector

    Does continuity go away when one of the above connectors 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 ABS modulator-control unit (with ABS), the VSA modulator-control unit (with VSA system), the SRS unit, the EPS control unit, the immobilizer-keyless control unit, the audio unit, the TPMS control unit (with TPMS), or the under-dash fuse/relay box. ■

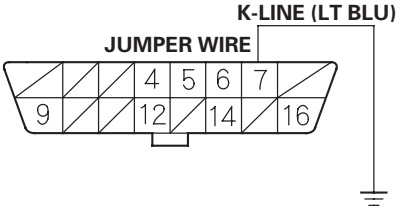
(cont'd)

DYNOMITE -2009-

DLC Circuit Troubleshooting (cont'd)

23. Connect DLC terminal No. 7 to body ground with a jumper wire.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

24. Check for continuity between body ground and these connector terminals:

Connector	Terminal
SRS unit A (28P)	No. 24 (LT BLU)
ABS modulator-control unit 25P (with ABS)	No. 10 (LT BLU)
VSA modulator-control unit 37P (with VSA system)	No. 26 (LT BLU)
EPS control unit D (28P)	No. 17 (LT BLU)
Immobilizer-keyless control unit 7P	No. 5 (LT BLU)
TPMS control unit 20P	No. 7 (LT BLU)
Audio unit 17P	No. 6 (LT BLU)
Under-dash fuse/relay box Q (16P)	No. 8 (LT BLU)

Is there continuity between the body ground and each of the terminals in the chart?

YES—Replace the part which cannot communicate with the HDS. ■

NO—Repair open in the wire between the DLC (K-line) and the appropriate connector. ■

25. Do the gauge self-diagnostic function (see page 22-241).

26. Check for B-CAN system DTCs without the HDS (see page 22-74).

Is DTC B1168, B1169, and/or B1178 indicated?

YES—Go to step 39.

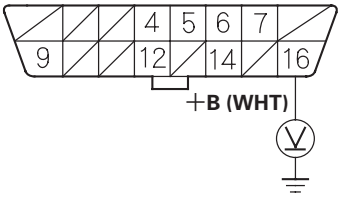
NO—Go to step 27.

27. Turn the ignition switch to LOCK (0).

28. Disconnect the HDS from the DLC.

29. Measure the voltage between DLC terminal No. 16 and body ground.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

Is there battery voltage?

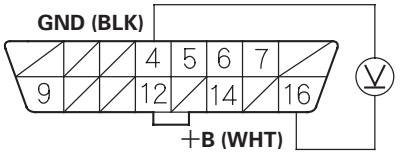
YES—Go to step 30.

NO—Repair open in the wire between DLC terminal No. 16 and the No. 23 BACK UP (10 A) fuse in the under-hood fuse/relay box. ■

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30. Measure the voltage between DLC terminals No. 4 and No. 16.

DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

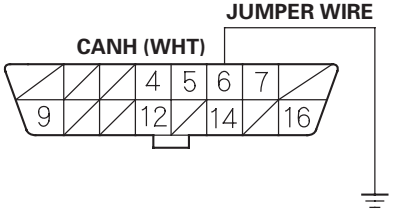
Is there battery voltage?

YES—Go to step 31.

NO—Repair open in the wire between DLC terminal No. 4 and body ground (G502) (see page 22-32). ■

31. Connect the HDS to the DLC (see page 11-3).
32. Jump the SCS line with the HDS.
33. Disconnect ECM/PCM connector A (44P).
34. Disconnect the HDS from the DLC.
35. Connect DLC terminal No. 6 to body ground with a jumper wire.

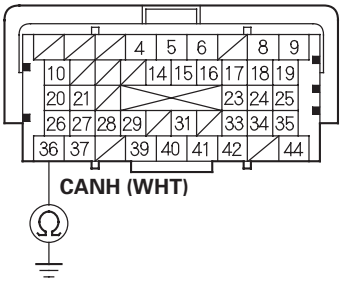
DATA LINK CONNECTOR (DLC)



Terminal side of female terminals

36. Check for continuity between ECM/PCM connector terminal A36 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

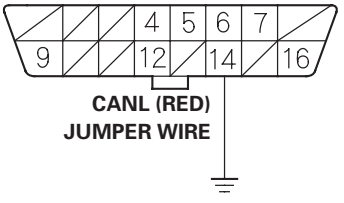
Is there continuity?

YES—Go to step 37.

NO—Repair open in the wire between the ECM/PCM (A36) and DLC terminal No. 6. ■

37. Connect DLC terminal No. 14 to body ground with a jumper wire.

DATA LINK CONNECTOR (DLC)

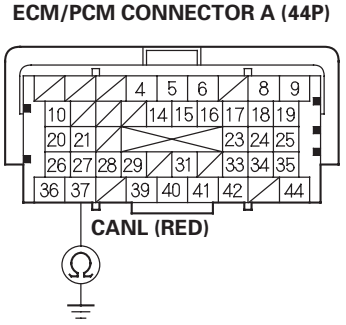


Terminal side of female terminals

(cont'd)

DLC Circuit Troubleshooting (cont'd)

38. Check for continuity between ECM/PCM connector terminal A37 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the ECM/PCM (A37) and DLC terminal No. 14. ■

39. Try to start the engine.

Does the engine start and idle smoothly?

YES—Go to the F-CAN circuit troubleshooting (see page 11-191). ■

NO—Go to step 40.

40. Turn the ignition switch to LOCK (0).

41. Check the No. 2 IG MAIN (50 A) fuse in the under-hood fuse/relay box.

Is the fuse OK?

YES—Repair open in the wire between the No. 2 IG MAIN (50 A) fuse and the ignition switch. If the wire is OK, go to step 42.

NO—Repair short in the wire between the No. 2 IG MAIN (50 A) fuse and the under-hood fuse/relay box. Also replace the No. 2 IG MAIN (50 A) fuse. ■

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42. Inspect the No. 19 FI MAIN (15 A) fuse in the under-hood fuse/relay box.

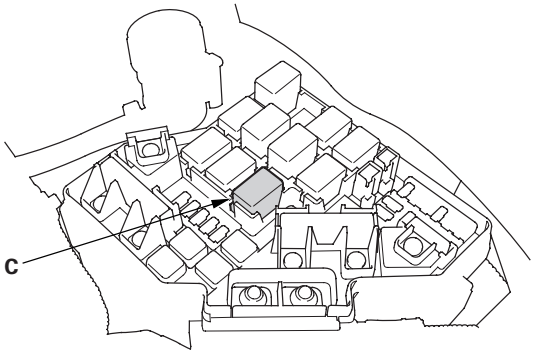
Is the fuse OK?

YES—Go to step 49.

NO—Go to step 43.

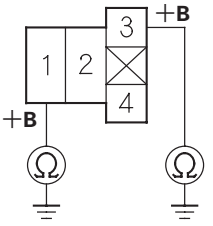
43. Remove the blown No. 19 FI MAIN (15 A) fuse from the under-hood fuse/relay box.

44. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



45. Check for continuity between body ground and PGM-FI main relay 1 4P connector terminals No. 1 and No. 3 individually.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the under-hood fuse/relay box (see page 22-65). Also replace the No. 19 FI MAIN (15 A) fuse. ■

NO—Go to step 46.

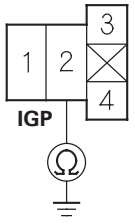
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DLC Circuit Troubleshooting (cont'd)

46. Disconnect each of the parts or connectors these parts, one at a time, while checking for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (44P)
    - Each injector 2P connector
    - Camshaft position (CMP) sensor B 3P connector
    - Crankshaft position (CKP) sensor 3P connector
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Does continuity go away when one of the above components is disconnected?

YES—Replace the part that made the short to body ground go away when disconnected. Reconnect all connectors, then update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). Also replace the No. 19 FI MAIN (15 A) fuse. ■

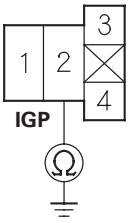
NO—Go to step 47.

47. Disconnect the connectors from these parts:

    - PGM-FI main relay 2 (FUEL PUMP)
    - ECM/PCM connector A (44P)
    - Injectors
    - Camshaft position (CMP) sensor B
    - Crankshaft position (CKP) sensor
    - Ignition coil relay
    - Electronic throttle control system (ETCS) control relay

48. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between PGM-FI main relay 1 and each part. Also replace the No. 19 FI MAIN (15 A) fuse. ■

NO—Replace PGM-FI main relay 1. Also replace the No. 19 FI MAIN (15 A) fuse. ■

49. Inspect the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box.

Is the fuse OK?

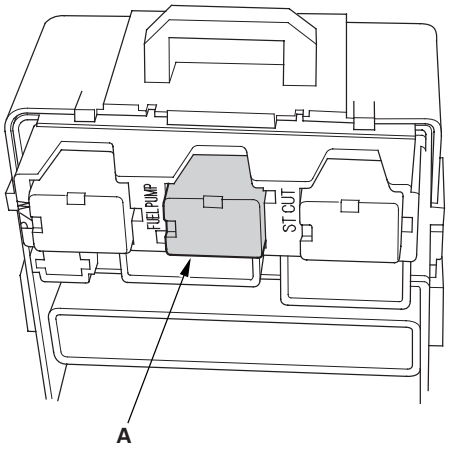
YES—Go to step 61.

NO—Go to step 50.

50. Remove the blown No. 2 FUEL PUMP (15 A) fuse from the under-dash fuse/relay box.

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51. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



52. Test PGM-FI main relay 2 (FUEL PUMP) (see page 22-70).

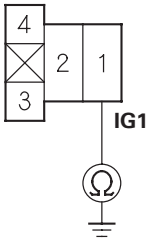
Is the relay OK?

YES—Go to step 53.

NO—Replace PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

53. Check for continuity between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 54.

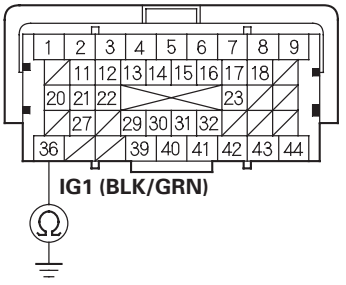
NO—Go to step 57.

54. Jump the SCS line with the HDS.

55. Disconnect ECM/PCM connector C (44P).

56. Check for continuity between ECM/PCM connector terminal C36 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM/PCM (C36), between the No. 2 FUEL PUMP (15 A) fuse and PGM-FI main relay 2 (FUEL PUMP), or between the No. 2 FUEL PUMP (15 A) fuse and the immobilizer control unit. Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

NO—Replace the No. 2 FUEL PUMP (15 A) fuse, and update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

57. Remove the rear seat cushion (see page 20-131).

58. Remove the rear floor upper cross-member and the access panel from the floor (see page 11-334).

59. Disconnect the fuel pump 4P connector.

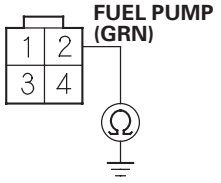
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DLC Circuit Troubleshooting (cont'd)

60. Check for continuity between fuel pump 4P connector terminal No. 2 and body ground.

FUEL PUMP 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel pump and PGM-FI main relay 2 (FUEL PUMP). Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

NO—Check the fuel pump, and replace it if needed (see page 11-338). Also replace the No. 2 FUEL PUMP (15 A) fuse. ■

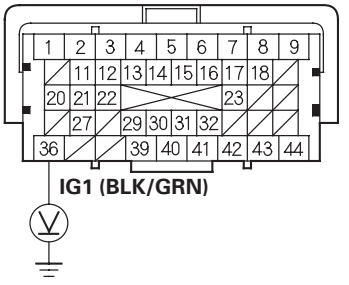
61. Jump the SCS line with the HDS.

62. Disconnect ECM/PCM connectors A (44P) and C (44P).

63. Turn the ignition switch to ON (II).

64. Measure the voltage between ECM/PCM connector terminal C36 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there battery voltage?

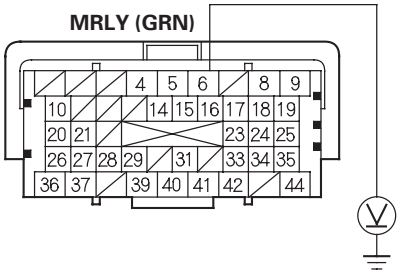
YES—Go to step 65.

NO—Repair open in the wire between the No. 2 FUEL PUMP (15 A) fuse and the ECM/PCM (C36). ■

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65. Measure the voltage between ECM/PCM connector terminal A6 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

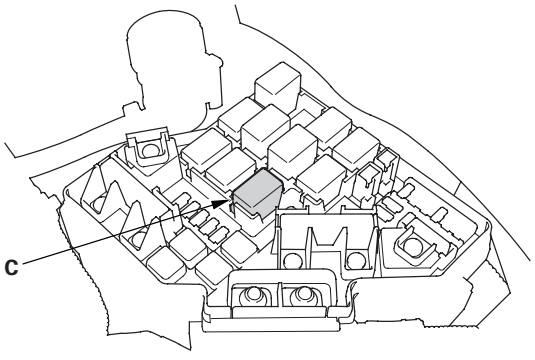
Is there battery voltage?

YES—Go to step 70.

NO—Go to step 66.

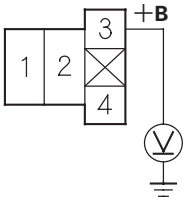
66. Turn the ignition switch to LOCK (0).

67. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



68. Measure the voltage between PGM-FI main relay 1 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 69.

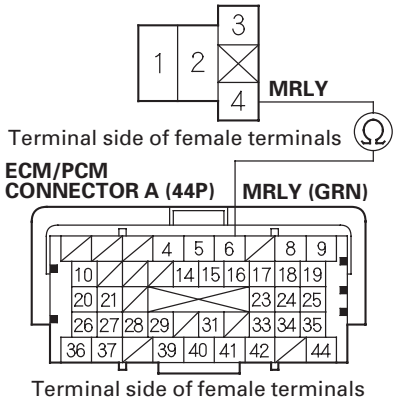
NO—Replace the under-hood fuse/relay box (see page 22-65). ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

69. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 4 and ECM/PCM connector terminal A6.

PGM-FI MAIN RELAY 1 4P CONNECTOR



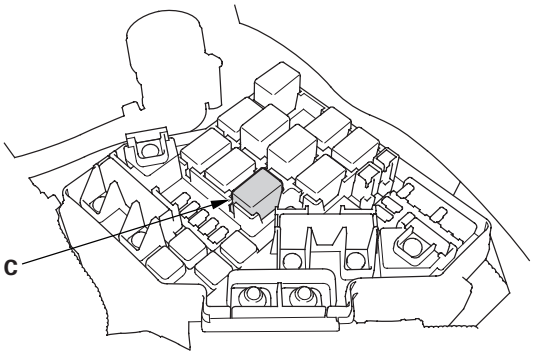
Is there continuity?

YES—Test PGM-FI main relay 1 (see page 22-70). If the relay is OK, update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Repair open in the wire between the ECM/PCM (A6) and PGM-FI main relay 1. ■

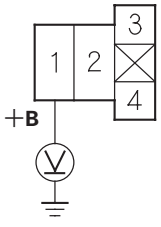
70. Turn the ignition switch to LOCK (0).

71. Remove PGM-FI main relay 1 (C) from the under-hood fuse/relay box.



72. Measure the voltage between PGM-FI main relay 1 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 1 4P CONNECTOR



Terminal side of female terminals

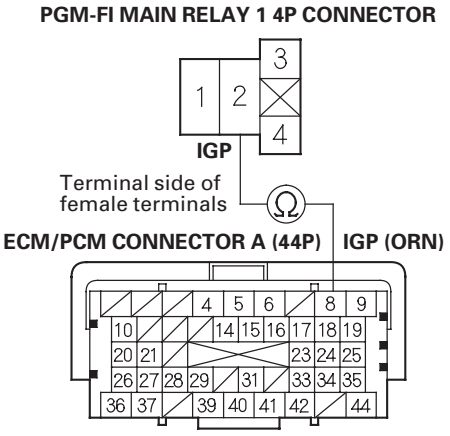
Is there battery voltage?

YES—Go to step 73.

NO—Replace the under-hood fuse/relay box (see page 22-65). ■

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73. Check for continuity between PGM-FI main relay 1 4P connector terminal No. 2 and ECM/PCM connector terminal A8.



Is there continuity?

YES—Go to step 74.

NO—Repair open in the wire between the ECM/PCM (A8) and PGM-FI main relay 1. ■

74. Test PGM-FI main relay 1 (see page 22-70).

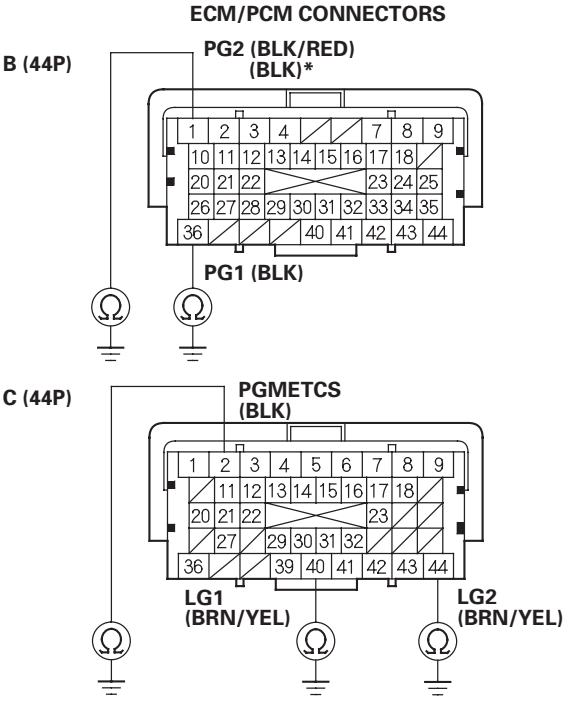
Is PGM-FI main relay 1 OK?

YES—Go to step 75.

NO—Replace PGM-FI main relay 1. ■

75. Disconnect ECM/PCM connector B (44P).

76. Check for continuity between body ground and ECM/PCM connector terminals B1, B36, C2, C40, and C44 individually.



***: '07-09 models**

Is there continuity?

YES—Go to step 77.

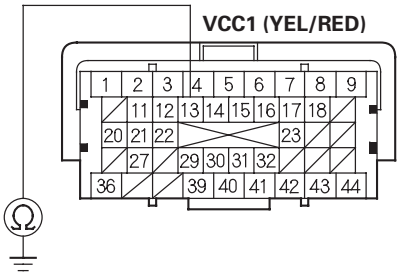
NO—Repair open in the wire between the ECM/PCM (B1, B36, C2, C40, C44) and G101; A/T model (see page 22-16), M/T model (see page 22-18). ■

(cont'd)

DLC Circuit Troubleshooting (cont'd)

77. Check for continuity between ECM/PCM connector terminal C13 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 78.

NO—Go to step 79.

78. Continue to check for continuity between ECM/PCM connector terminal C13 and body ground, while disconnecting these connectors, one at a time:

- MAP sensor 3P connector
- Output shaft (countershaft) speed sensor 3P connector (K20Z2 engine)

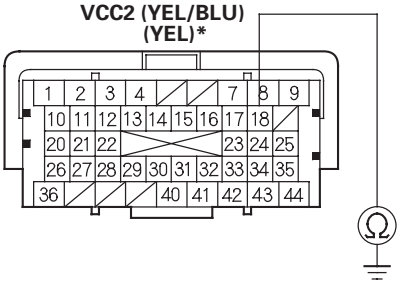
Does continuity go away when one of the above components is disconnected?

YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the ECM/PCM (C13) and the MAP sensor or the output shaft (countershaft) speed sensor (K20Z2 engine). ■

79. Check for continuity between ECM/PCM connector terminal B18 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

*** : K20Z3 engine**

Is there continuity?

YES—Go to step 80.

NO—Go to step 81.

80. Continue to check for continuity between ECM/PCM connector terminal B18 and body ground, while disconnecting these connectors, one at a time:

- EGR valve 6P connector (K20Z2 engine)
- Input shaft (mainshaft) speed sensor 3P connector (K20Z2 engine)
- Output shaft (countershaft) speed sensor 3P connector (K20Z3 engine)

Does continuity go away when one of the above parts is disconnected?

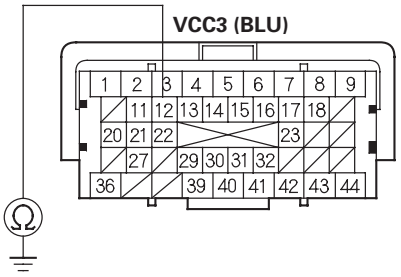
YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the ECM/PCM (B18) and the EGR valve (K20Z2 engine), the input shaft (mainshaft) speed sensor (K20Z2 engine) or the output shaft (countershaft) speed sensor (K20Z3 engine). ■

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81. Check for continuity between ECM/PCM connector terminal C12 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 82.

NO—Go to step 83.

82. Continue to check for continuity between ECM/PCM connector terminal C12 and body ground, while disconnecting the throttle body 6P connector.

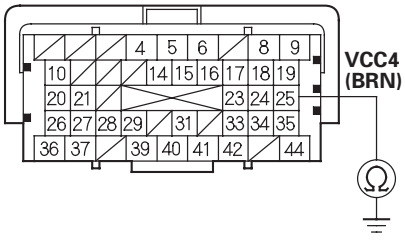
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C12) and the throttle body. ■

NO—Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349). ■

83. Check for continuity between ECM/PCM connector terminal A25 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 84.

NO—Go to step 85.

84. Continue to check for continuity between ECM/PCM connector terminal A25 and body ground, while disconnecting the APP sensor 6P connector.

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A25) and the APP sensor. ■

NO—Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270). ■

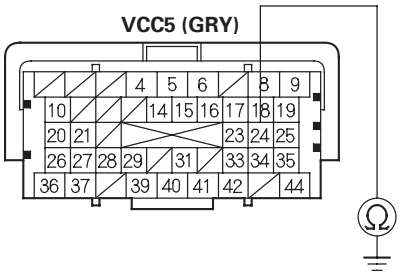
(cont'd)

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DLC Circuit Troubleshooting (cont'd)

85. Check for continuity between ECM/PCM connector terminal A24 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 86.

NO—Go to step 87.

86. Continue to check for continuity between ECM/PCM connector terminal A24 and body ground, while disconnecting the APP sensor 6P connector.

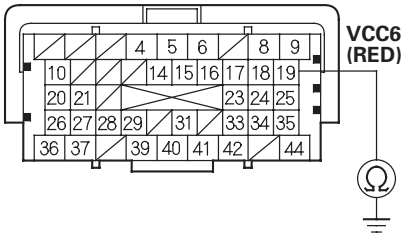
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A24) and the APP sensor. ■

NO—Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270). ■

87. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 88.

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

88. Continue to check for continuity between ECM/PCM connector terminal A19 and body ground, while disconnecting these parts, one at a time:

- A/C pressure sensor 3P connector
- FTP sensor 3P connector

Does continuity go away when one of the above connectors is disconnected?

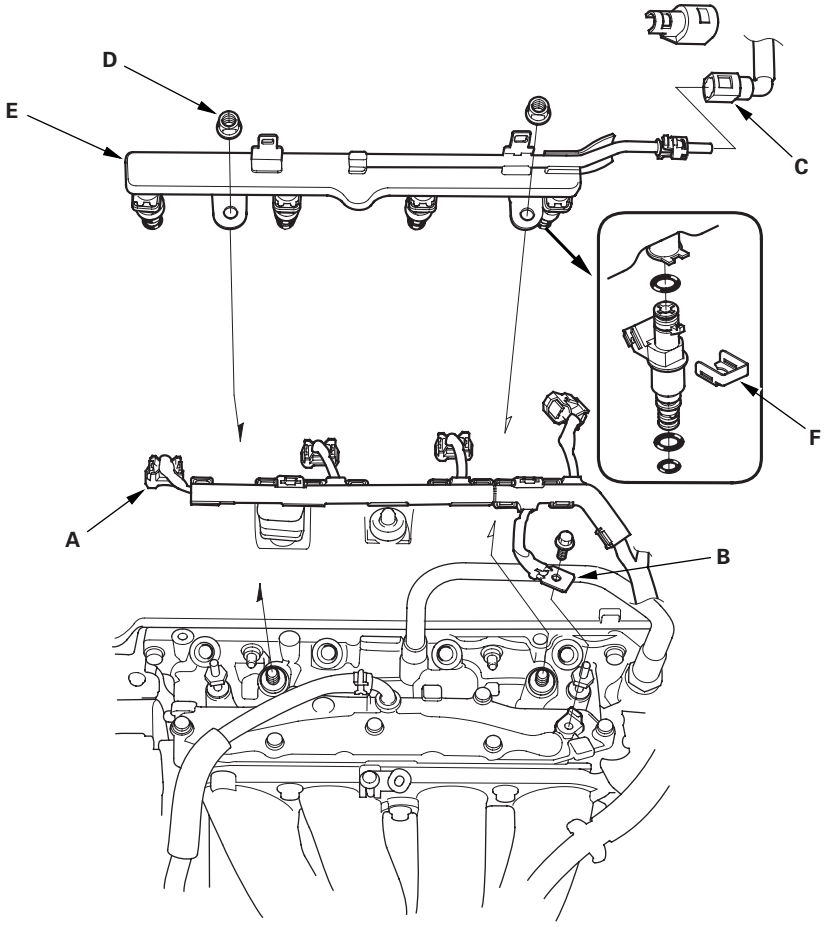
YES—Replace the part that caused an open when it was disconnected. ■

NO—Repair short in the wire between the ECM/PCM (A19) and the A/C pressure sensor or the FTP sensor. ■

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Injector Replacement

1. Relieve fuel pressure (see page 11-322).
2. Remove the engine cover.
3. Disconnect the injector connectors (A) from the injectors.



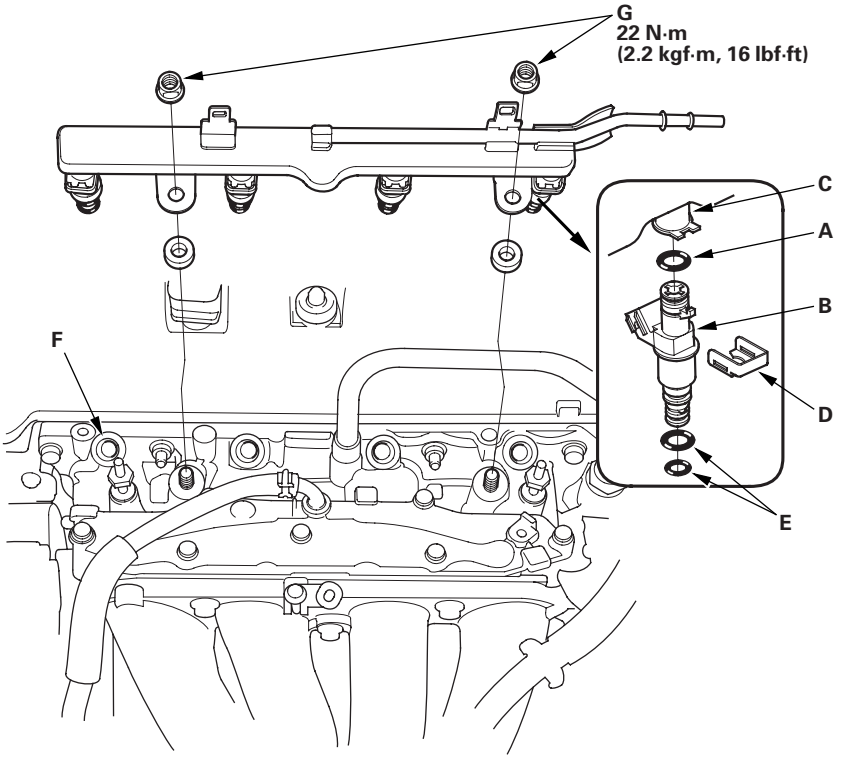
* : This illustration shows K20Z2 engine

4. Remove the ground cable bolt (G101) (B).
5. Disconnect the quick-connect fitting (C).
6. Remove the fuel rail mounting nuts (D) from the fuel rail (E).
7. Remove the fuel rail and the injectors from the injector base.
8. Remove the injector clips (F) from the injectors.
9. Remove the injectors from the fuel rail.

(cont'd)

Injector Replacement (cont'd)

10. Coat the new O-rings (A) with clean engine oil, and insert the injectors (B) into the fuel rail (C).



* : This illustration shows K20Z2 engine

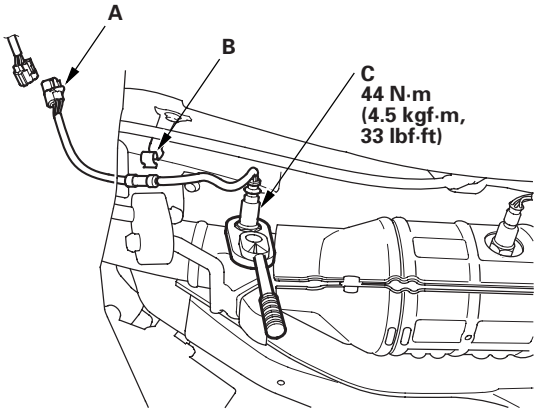
11. Install the injector clips (D).
12. Coat the injector O-rings (E) with clean engine oil.
13. Install the fuel rail and the injectors in the injector base (F).
14. Install the fuel rail mounting nuts (G).
15. Connect the connectors on the injectors, and reinstall the ground cable bolt (G101).
16. Connect the quick-connect fittings.
17. Turn the ignition switch to ON (II), but do not operate the starter. After the fuel pump runs for about 2 seconds, the fuel rail is pressurized. Repeat this two or three times, then check for fuel leakage.
18. Install the engine cover.

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A/F Sensor Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875 or SWR2, or equivalent, commercially available

1. Disconnect the A/F sensor 4P connector (A) and remove the clamp (B), then remove the A/F sensor (C).

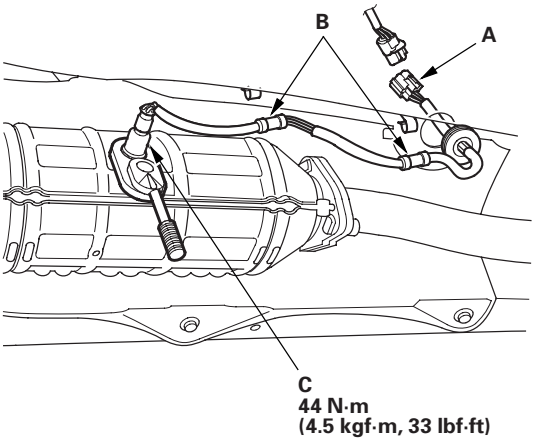


2. Install the parts in the reverse order of removal.

Secondary HO2S Replacement

Special Tools Required
O2 sensor wrench, Snap-on YA8875 or SWR2, or equivalent, commercially available

1. Disconnect the secondary HO2S 4P connector (A) and remove the clamps (B), then remove the secondary HO2S (C).

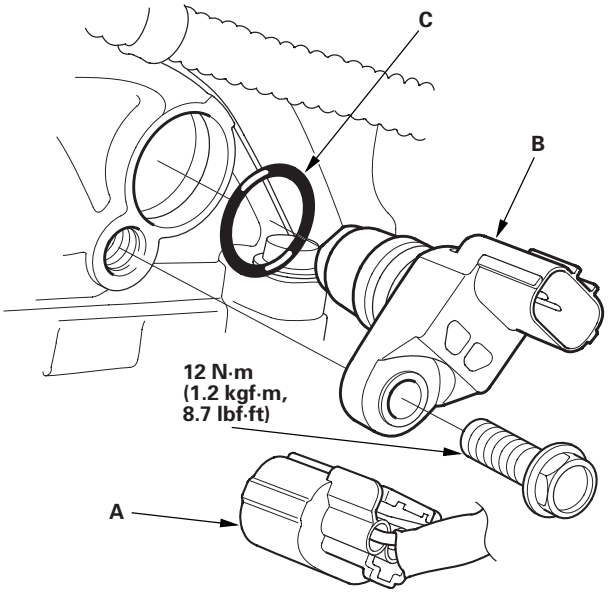


2. Install the parts in the reverse order of removal.

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CMP Sensor B Replacement

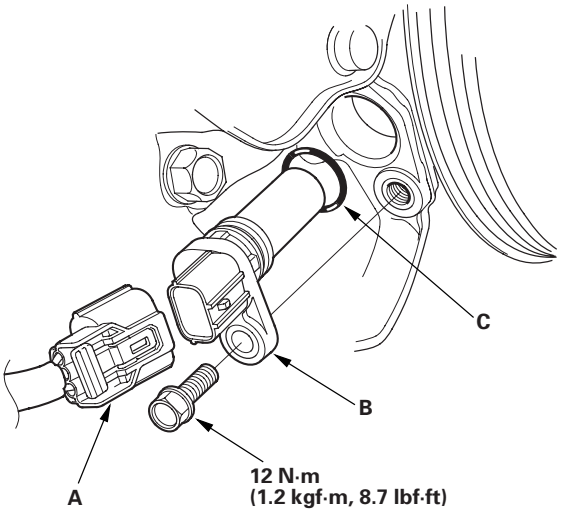
1. Remove the air cleaner (see page 11-345).
2. K20Z2 engine: Remove the EGR valve (see page 11-370).
3. Disconnect the CMP sensor B 3P connector (A).



4. Remove CMP sensor B.
5. Install the parts in the reverse order of removal with a new O-ring (C).

CKP Sensor Replacement

1. Disconnect the CKP sensor 3P connector (A).



2. Remove the CKP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).
4. Do the CKP pattern clear/CKP pattern learn procedure with the HDS (see page 11-4).

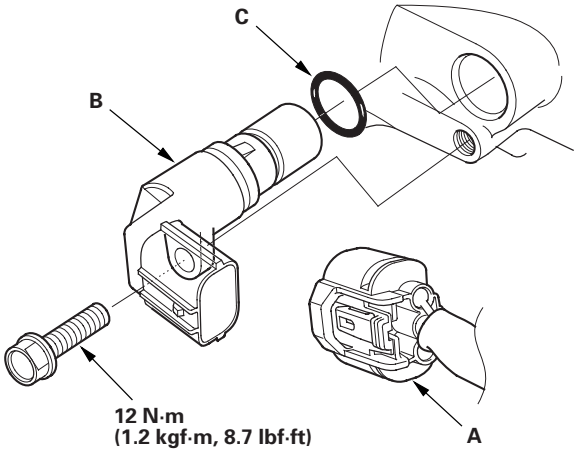
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Output Shaft (Countershaft) Speed Sensor Replacement

M/T model

NOTE: For A/T model (see page 14-227).

1. Disconnect the output shaft (countershaft) speed sensor 3P connector (A).

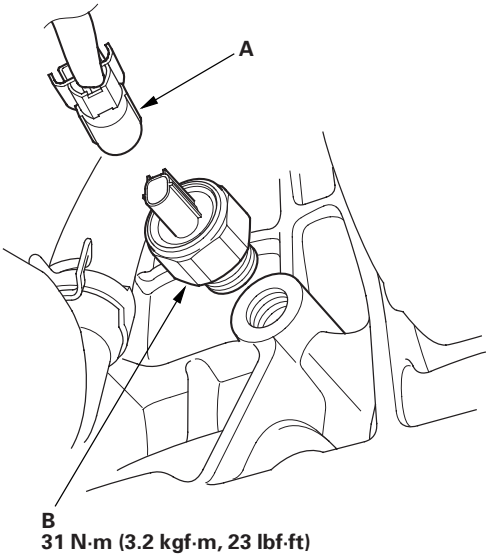


2. Remove the output shaft (countershaft) speed sensor (B).

3. Install the parts in the reverse order of removal with a new O-ring (C).

Knock Sensor Replacement

1. Disconnect the knock sensor 1P connector (A).



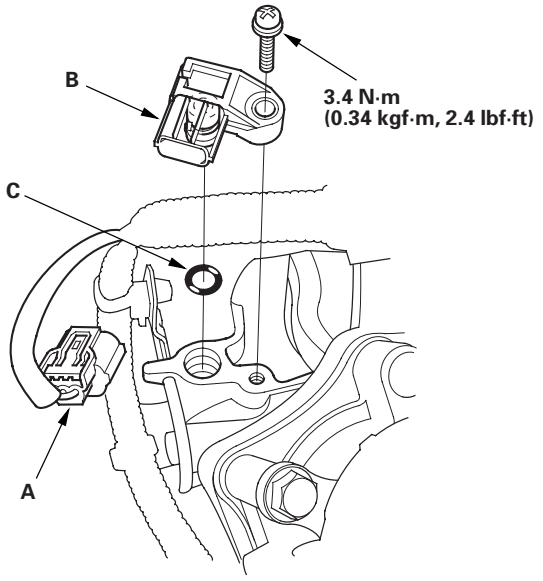
2. Remove the knock sensor (B).

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

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MAP Sensor Replacement

1. Disconnect the MAP sensor 3P connector (A).

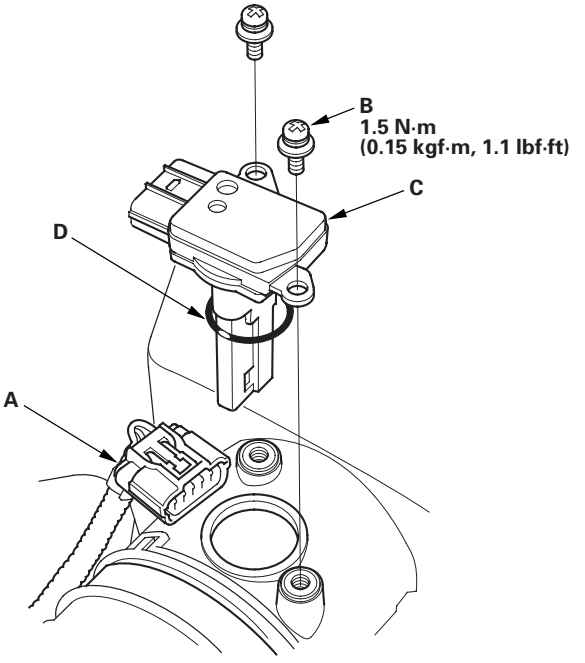


* : This illustration shows K20Z2 engine

2. Remove the MAP sensor (B).
3. Install the parts in the reverse order of removal with a new O-ring (C).

MAF Sensor/IAT Sensor Replacement

1. Disconnect the MAF sensor/IAT sensor 5P connector (A).

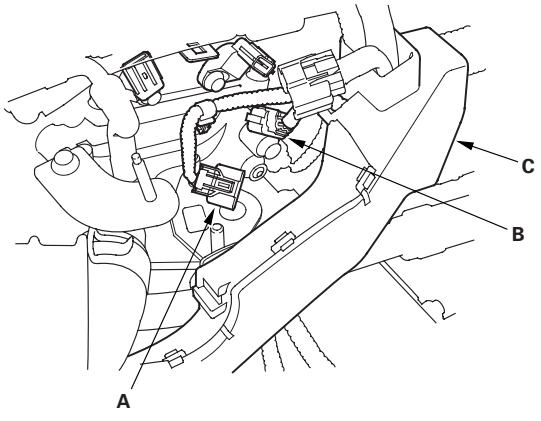


2. Remove the screws (B).
3. Remove the MAF sensor/IAT sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D).

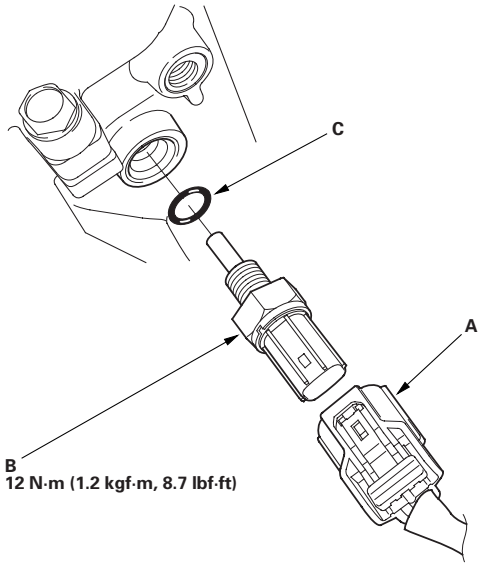
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ECT Sensor 1 Replacement

1. Drain the engine coolant (see page 10-8).
2. Remove the air cleaner (see page 11-345).
3. K20Z2 engine: Remove the EGR valve (see page 11-370).
4. Disconnect CMP sensor A 3P connector (A), and CMP sensor B 3P connector.



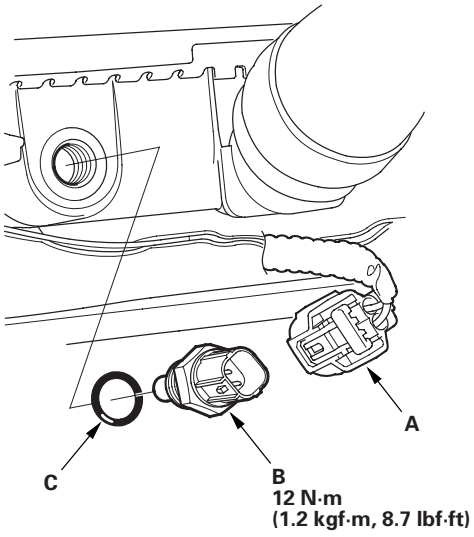
5. Remove the harness cover (C).
6. Disconnect the ECT sensor 1 2P connector (A).



7. Remove ECT sensor 1 (B).
8. Install the parts in the reverse order of removal with a new O-ring (C), then refill the radiator with engine coolant (see page 10-8).

ECT Sensor 2 Replacement

1. Drain the engine coolant (see page 10-8).
2. Remove the splash shield.
3. Disconnect the ECT sensor 2 2P connector (A), then remove ECT sensor 2 (B).

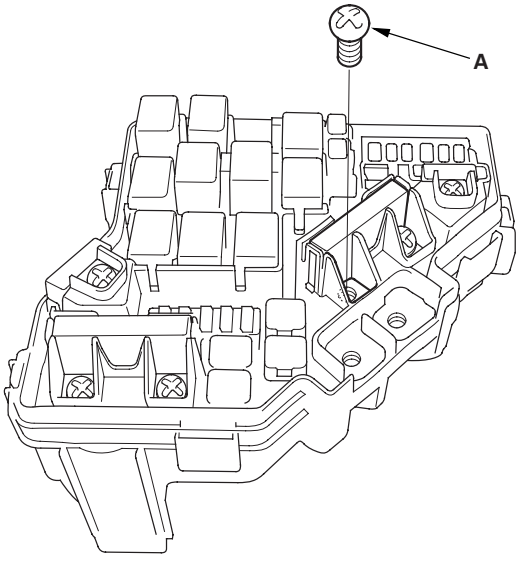


4. Install the parts in the reverse order of removal with a new O-ring (C).
5. Install the splash shield.
6. Refill the radiator with engine coolant (see page 10-8).

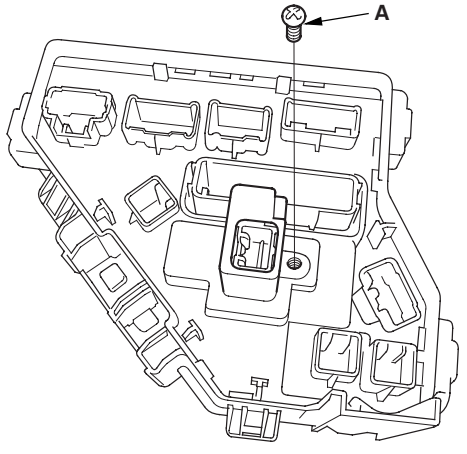
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ELD Replacement

1. Remove the ECM/PCM (see page 11-228).
2. Remove the under-hood fuse/relay box (see page 22-65).
3. Remove the screw (A).

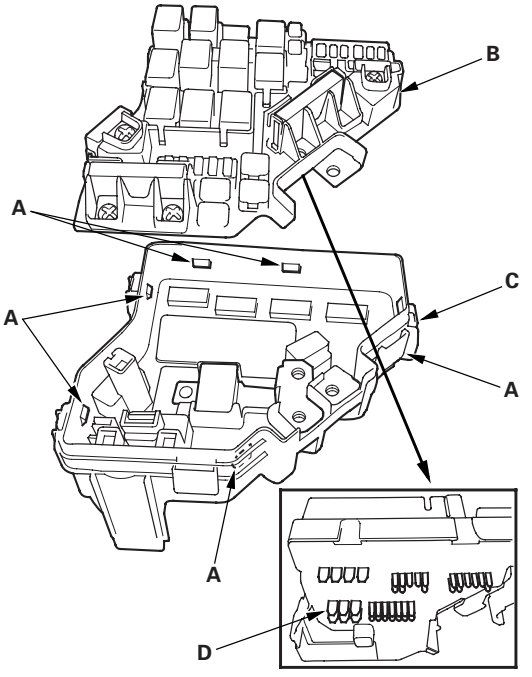


4. Turn the housing over, then remove the screw (A).

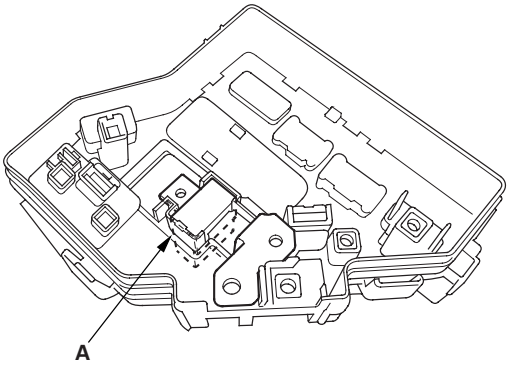


5. Turn the housing over again, using two flat-tip screwdrivers, release the tabs (A), and pry up the fuse/relay box base (B) from the fuse/relay box housing (C).

   NOTE: Make sure the terminals (D) are not bent or damaged.



6. Remove the ELD (A).



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

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ECM/PCM Update

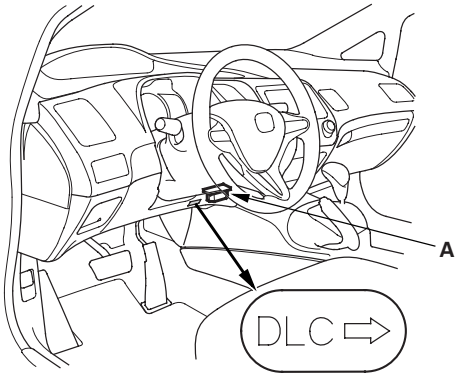
Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA 600 and iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

NOTE:
- Make sure the HDS/iN workstation has the latest HDS software version.
- Before you update the ECM/PCM, make sure the battery in the vehicle is fully charged, and connect a jumper battery (not a battery charger) to maintain system voltage.
- Never turn the ignition switch to LOCK (0) or ACC (I) during the update. If there is a problem with the update, leave the ignition switch to ON (II).
- To prevent ECM/PCM damage, do not operate anything electrical (headlights, audio system, brakes, A/C, power windows, moonroof (if equipped), door locks, etc.) during the update.
- To ensure the latest program is installed, do an ECM/PCM update whenever the ECM/PCM is substituted or replaced.
- You cannot update an ECM/PCM with a program it already has. It will only accept a new program.
- High temperature in the engine compartment might cause the ECM/PCM to become too hot to run the update. If the engine was 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) light came on or was flashing during the update, leave the ignition switch in ON (II) when you disconnect the HIM from the data link connector (DLC). This will prevent ECM/PCM damage.

1. Turn the ignition switch to 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 ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204). If you are returning from the DLC circuit troubleshooting, skip steps 4 to 5 and clean the throttle body after updating the ECM/PCM (see page 11-344).

4. Select the INSPECTION MENU with the HDS.

5. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the HDS screen prompts.

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

6. Exit the HDS diagnostic system, then select the update mode, and follow the screen prompts to update the ECM/PCM.

(cont'd)

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ECM/PCM Update (cont'd)

7. If the software in the ECM/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 ECM/PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system (A/T), make sure you update both.

   NOTE: If the ECM/PCM update system requires you to cool the ECM/PCM, follow the instructions on the screen. If you have a problem during the update (programming takes over 15 minutes, status bar goes over 100 %, D (A/T) or immobilizer indicator flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM/PCM:
   - Leave the ignition switch in ON (II).
   - 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 do the update again.

8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-344).

9. Do the ECM/PCM idle learn procedure (see page 11-310).

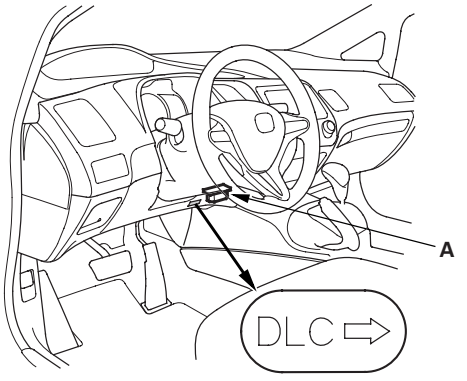
10. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

ECM/PCM Replacement

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA 600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

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 to ON (II).

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ECM/PCM Update (cont'd)

7. If the software in the ECM/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 ECM/PCM is not the latest, follow the instructions on the screen. If prompted to choose the PGM-FI system or the A/T system (A/T), make sure you update both.

   NOTE: If the ECM/PCM update system requires you to cool the ECM/PCM, follow the instructions on the screen. If you have a problem during the update (programming takes over 15 minutes, status bar goes over 100 %, D (A/T) or immobilizer indicator flashes, HDS tablet freezes, etc.), follow these steps to minimize the chance of damaging the ECM/PCM:
   - Leave the ignition switch in ON (II).
   - 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 do the update again.

8. If the TP POSITION CHECK failed in step 5, clean the throttle body (see page 11-344).

9. Do the ECM/PCM idle learn procedure (see page 11-310).

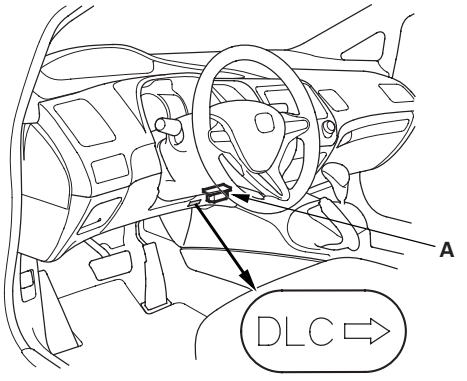
10. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

ECM/PCM Replacement

Special Tools Required
- Honda diagnostic system (HDS) tablet tester
- Honda interface module (HIM) and an iN workstation with the latest HDS software version
- HDS pocket tester
- GNA 600 and an iN workstation with the latest HDS software version

Any one of the above updating tools can be used.

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 to ON (II).

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3. Make sure the HDS communicates with the ECM/PCM and other vehicle systems. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204). If you are returning from DLC circuit troubleshooting, skip steps 4 through 9, 20 through 25, and 28 through 30, and do these procedures after replacing the ECM/PCM;

   - Replace the engine oil (see page 8-10) and the engine oil filter (see page 8-11).
   - Replace the ATF (A/T model) (see page 14-232).
   - Clean the throttle body (see page 11-344).

4. Select the PGM-FI system with the HDS.

5. Select the INSPECTION MENU with the HDS.

6. Select the ETCS TEST, then select the TP POSITION CHECK, and follow the screen prompts.

   NOTE: If the TP POSITION CHECK indicates FAILED, continue with this procedure.

7. Select the REPLACE ECM/PCM MENU, then select READ DATA, and follow the screen prompts.

   NOTE:
   - Doing this step copies (READS) the engine oil life data from the original ECM/PCM so you can later download (WRITES) it into the new ECM/PCM.
   - If READ DATA indicates FAILED, continue with this procedure.

8. A/T model: Select the A/T system with the HDS.

9. A/T model: Select the REPLACE TCM/PCM MENU, then select READ DATA and follow the screen prompts.

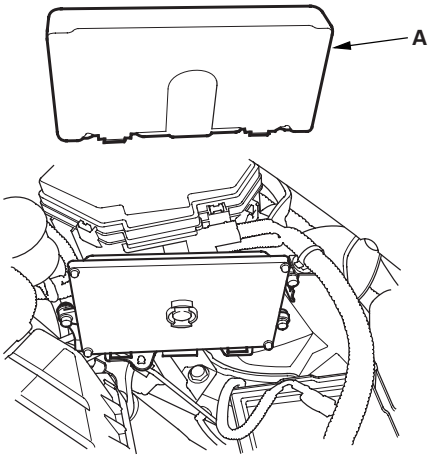
   NOTE:
   - Doing this step copies (READS) the ATF life data from the original PCM so you can later download (WRITES) it into the new PCM.
   - If READ DATA indicates FAILED, continue with this procedure.

10. Turn the ignition switch to LOCK (0).

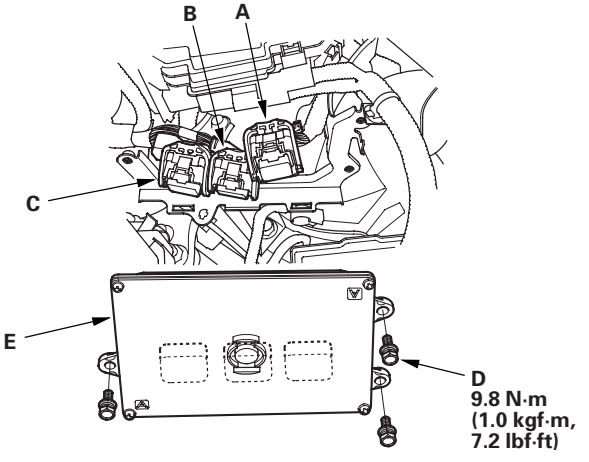
11. Jump the SCS line with the HDS.

12. Do the battery removal procedure (see page 22-69).

13. Remove the cover (A).



14. Remove the bolts (D), then remove the ECM/PCM (E).



15. Disconnect ECM/PCM connectors A, B, and C.

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

(cont'd)

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ECM/PCM Replacement (cont'd)

16. Install the parts in the reverse order of removal.
17. Do the battery installation procedure (see page 22-69).
18. Turn the ignition switch to ON (II).
19. Manually input the VIN to the ECM/PCM with the HDS.

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

20. If the READ DATA (engine oil life) failed in step 7, go to step 23 (A/T) or step 26 (M/T). Otherwise, go to step 21.
21. Select the PGM-FI system with the HDS.
22. Select the REPLACE ECM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

    NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

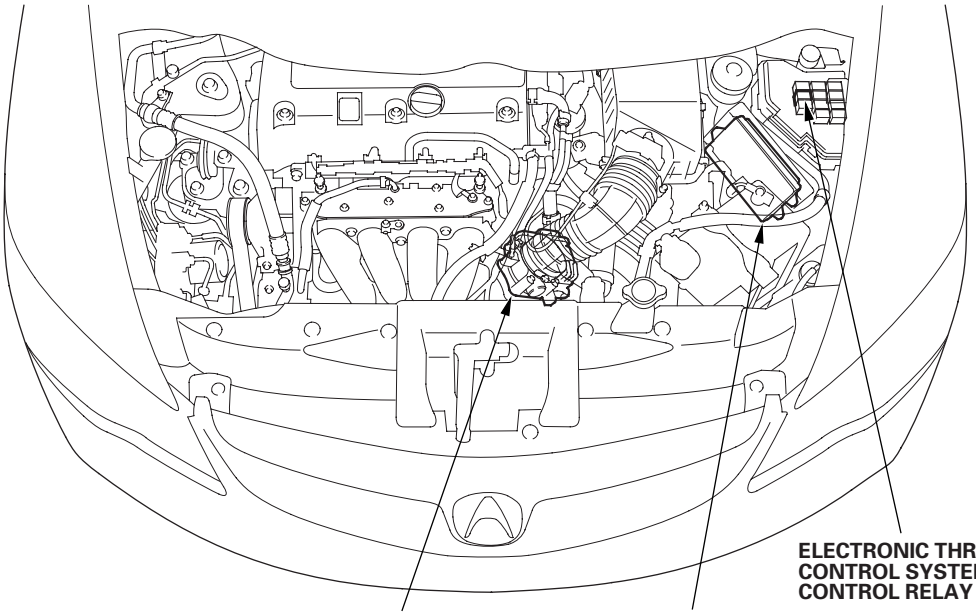
23. A/T model: If the READ DATA (ATF life) failed in step 9, go to step 26. Otherwise go to step 24.
24. A/T model: Select the A/T SYSTEM with the HDS.
25. A/T model: Select the REPLACE TCM/PCM MENU, then select WRITE DATA, and follow the screen prompts.

    NOTE: If the WRITE DATA indicates FAILED, continue with this procedure.

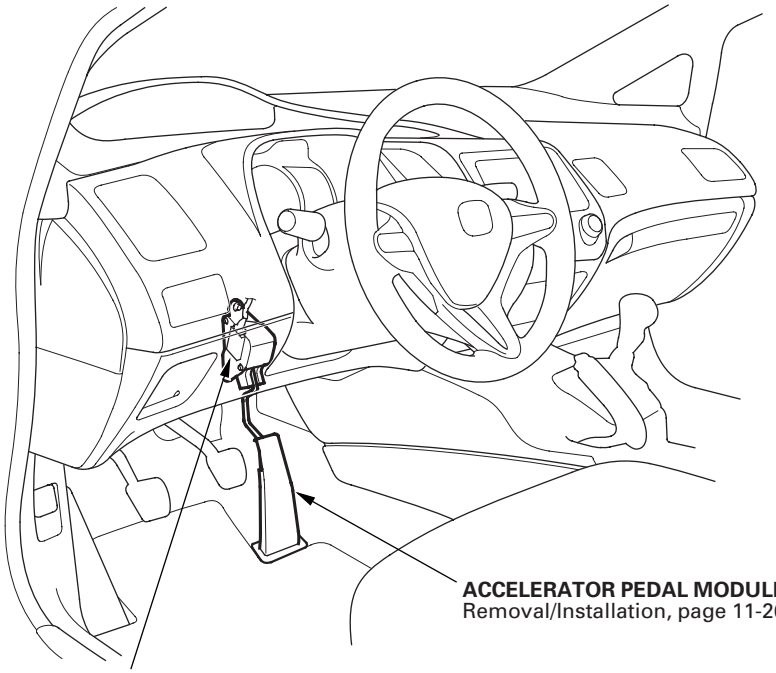
26. Select IMMOBI system with the HDS.
27. Enter the immobilizer code that you got from the iN or use the ECM/PCM replacement procedure in the HDS; it allows you to start the engine.
28. If the TP POSITION CHECK failed in step 7, clean the throttle body (see page 11-344), then go to step 29.
29. If the READ DATA failed in step 8 or the WRITE DATA failed in step 22, replace the engine oil (see page 8-10) and engine oil filter (see page 8-11), then go to step 30 (A/T) or step 31 (M/T).
30. If the READ DATA failed in step 10 or the WRITE DATA failed in step 27, replace the ATF (see page 14-232), then go to step 31.
31. Select PGM-FI system, and reset the ECM/PCM with the HDS.
32. Update the ECM/PCM if it does not have the latest software (see page 11-227).
33. Do the ECM/PCM idle learn procedure (see page 11-310).
34. Do the CKP pattern clear/CKP pattern learn procedure (see page 11-4).

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Component Location Index



* : This illustration shows K20Z2 engine



DTC Troubleshooting

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 to 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.

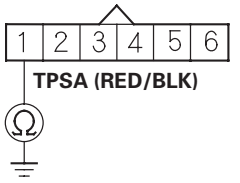
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   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 to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 1 and body ground.

   THROTTLE BODY 6P CONNECTOR



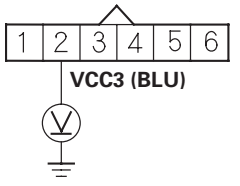
   Wire side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the throttle body and the ECM/PCM (C20), then go to step 18.

   NO—Go to step 23.
10. Measure the 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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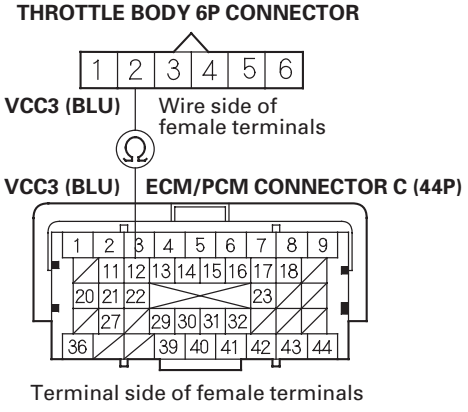
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Disconnect the throttle body 6P connector.

15. Check for continuity between ECM/PCM connector terminal C12 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 ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 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 to 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.

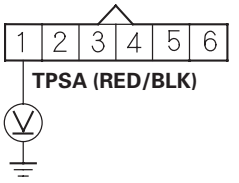
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   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 to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch to ON (II).
8. Measure the 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?

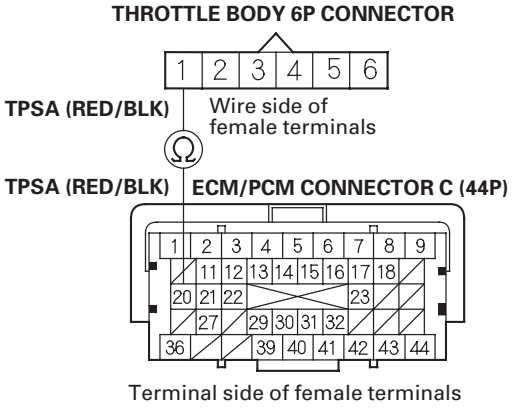
YES—Go to step 18.

NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

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12. Check for continuity between ECM/PCM connector terminal C20 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 ECM/PCM (C20), then go to step 20.

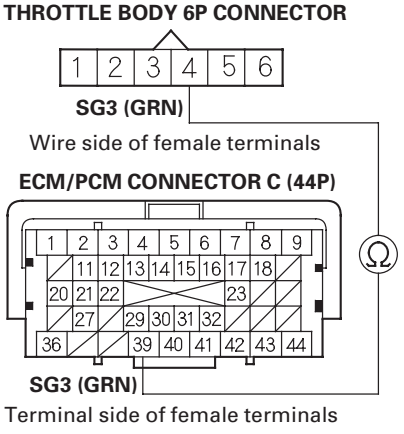
13. Turn the ignition switch to LOCK (0).

14. Disconnect the throttle body 6P connector.

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector C (44P).

17. Check for continuity between ECM/PCM connector terminal C39 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 ECM/PCM (C39), then go to step 20.

(cont'd)

DTC Troubleshooting (cont'd)

18. Turn the ignition switch to LOCK (0).
19. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).
22. Reset the ECM/PCM with the HDS.
23. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   Are DTC P0122 and P0222 indicated at the same time?

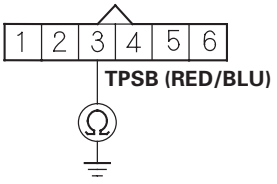
   YES—Go to step 10.

   NO—Go to step 5.

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5. Turn the ignition switch to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector C (44P).
9. Check for continuity between throttle body 6P connector terminal No. 3 and body ground.

THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

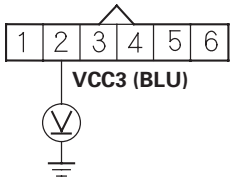
Is there continuity?

YES—Repair short in the wire between the throttle body and the ECM/PCM (C21), then go to step 18.

NO—Go to step 23.

10. Measure the 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.

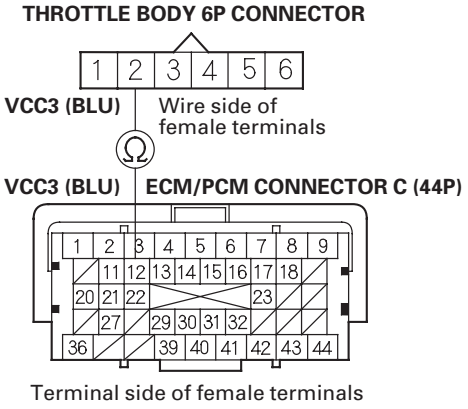
NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Jump the SCS line with the HDS.
13. Disconnect ECM/PCM connector C (44P).
14. Disconnect the throttle body 6P connector.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between ECM/PCM connector terminal C12 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 ECM/PCM (C12), then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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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 to 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.

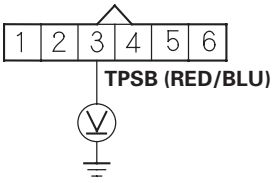
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
4. Check for Temporary DTCs or DTCs with the HDS.

   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 to LOCK (0).
6. Disconnect the throttle body 6P connector.
7. Turn the ignition switch to ON (II).
8. Measure the 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.

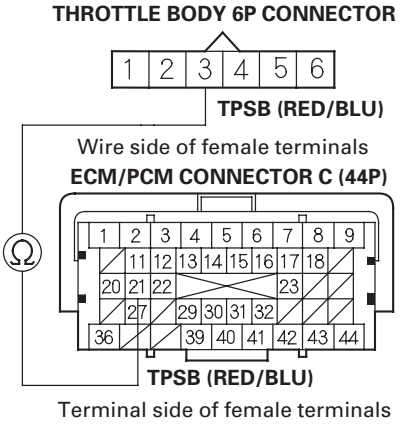
NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between ECM/PCM connector terminal C21 and throttle body 6P connector terminal No. 3.



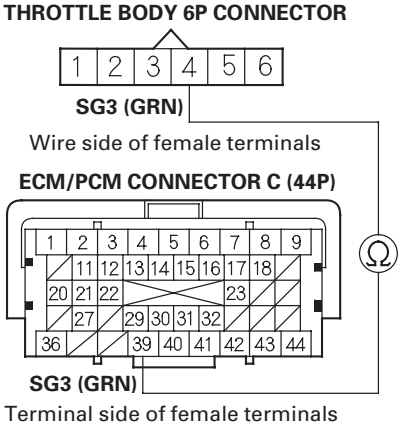
Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the throttle body and the ECM/PCM (C21), then go to step 20.

13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).

17. Check for continuity between ECM/PCM connector terminal C39 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 ECM/PCM (C39), then go to step 20.

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18. Turn the ignition switch to LOCK (0).

19. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

20. Reconnect all connectors.

21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

23. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to ON (II).

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

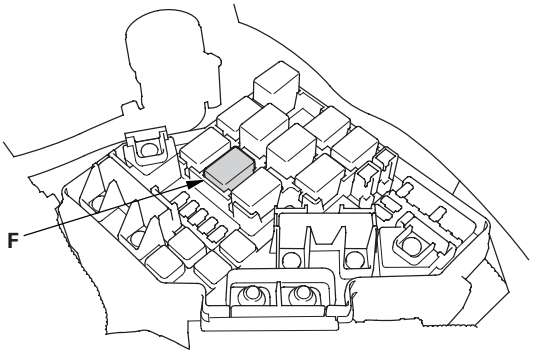
   Is the RELAY circuit OK?

   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. ■

   NO—Go to step 3.

3. Turn the ignition switch to LOCK (0).

4. Remove the ETCS control relay (F) from the under-hood fuse/relay box.



(cont'd)

DTC Troubleshooting (cont'd)

5. Test the ETCS control relay (see page 22-70).

   Is the ETCS control relay OK?

   YES—Go to step 6.

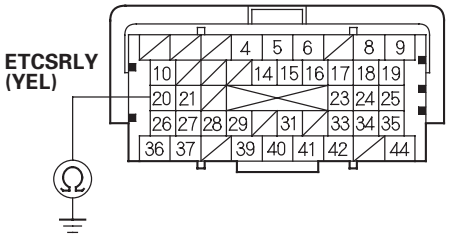
   NO—Replace the ETCS control relay, then go to step 13.

6. Jump the SCS line with the HDS.

7. Disconnect ECM/PCM connector A (44P).

8. Check for continuity between ECM/PCM connector terminal A20 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 13.

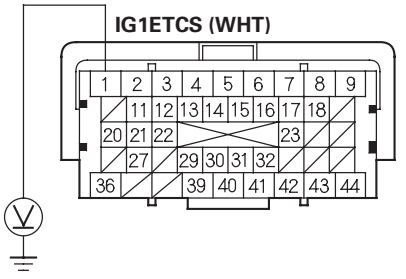
NO—Go to step 9.

9. Disconnect ECM/PCM connector C (44P).

10. Turn the ignition switch to ON (II).

11. Measure the voltage between ECM/PCM connector terminal C1 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Repair short to power in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 12.

NO—Go to step 18.

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12. Turn the ignition switch to LOCK (0).

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/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. Turn the ignition switch to LOCK (0).

19. Reconnect all connectors.

20. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P1658 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 ETCS control relay and the ECM/PCM. ■

4. Turn the ignition switch to LOCK (0).

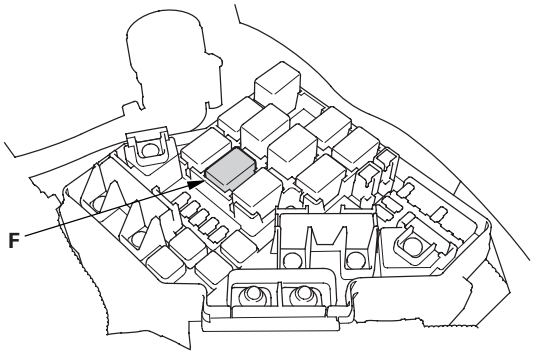
5. Check the No. 21 DBW (THROTTLE ACTUATOR CONTROL) (15 A) fuse in the under-hood fuse/relay box.

    Is the fuse OK?

    YES—Go to step 6.

    NO—Go to step 17.

6. Remove the ETCS control relay (F) from the under-hood fuse/relay box.



(cont'd)

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DTC Troubleshooting (cont'd)

7. Test the ETCS control relay (see page 22-70).

   Is the ETCS control relay OK?

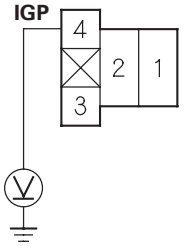
   YES—Go to step 8.

   NO—Replace the ETCS control relay, then go to step 23.

8. Turn the ignition switch to ON (II).

9. Measure the voltage between ETCS control relay 4P connector terminal No. 4 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

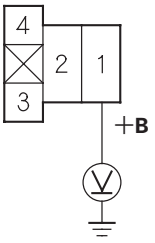
Is there battery voltage?

YES—Go to step 10.

NO—Replace the under-hood fuse/relay box (see page 22-65), then go to step 22.

10. Measure the voltage between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 11.

NO—Replace the under-hood fuse/relay box (see page 22-65), then go to step 22.

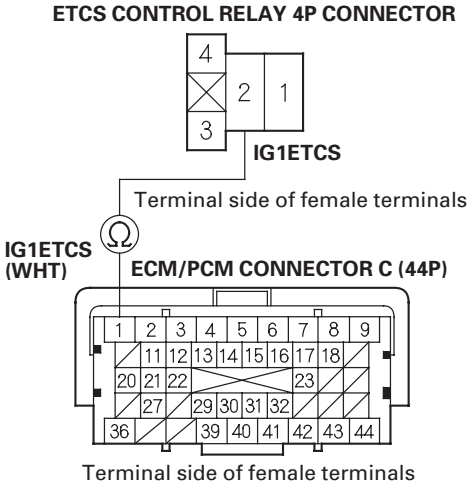
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

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14. Check for continuity between ETCS control relay 4P connector terminal No. 2 and ECM/PCM connector terminal C1.



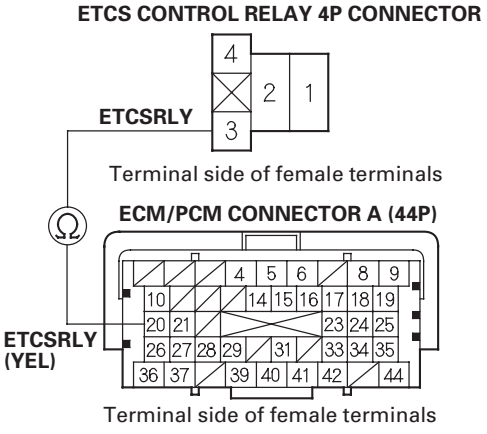
Is there continuity?

YES—Go to step 15.

NO—Repair open in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 23.

15. Disconnect ECM/PCM connector A (44P).

16. Check for continuity between ETCS control relay 4P connector terminal No. 3 and ECM/PCM connector terminal A20.



Is there continuity?

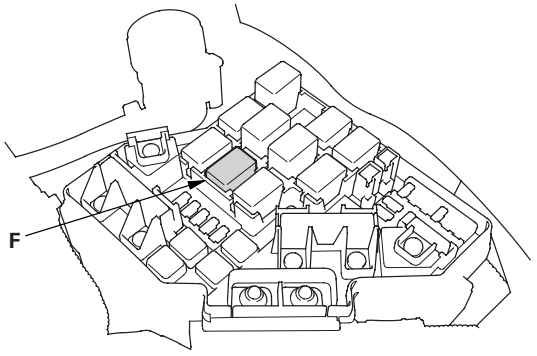
YES—Go to step 28.

NO—Repair open in the wire between the ECM/PCM (A20) and the ETCS control relay, then go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

17. Remove the ETCS control relay (F) from the under-hood fuse/relay box.

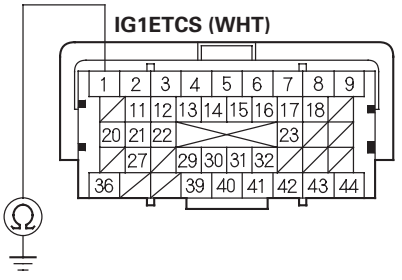


18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector C (44P).

20. Check for continuity between ECM/PCM connector terminal C1 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

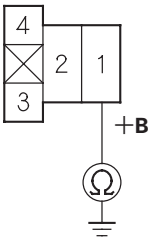
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C1) and the ETCS control relay, then go to step 23.

NO—Go to step 21.

21. Check for continuity between ETCS control relay 4P connector terminal No. 1 and body ground.

ETCS CONTROL RELAY 4P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Replace the under-hood fuse/relay box (see page 22-65), then go to step 23.

NO—Go to step 28.

22. Turn the ignition switch to LOCK (0).

23. Reconnect all connectors.

24. Turn the ignition switch to ON (II).

25. Reset the ECM/PCM with the HDS.

26. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC P1659 indicated?

YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/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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28. Reconnect all connectors.

29. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P1659 indicated?

    YES—Check for poor connections or loose terminals at the ETCS control relay and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Turn the ignition switch to LOCK (0), and wait 10 seconds.

5. Turn the ignition switch to 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 ECM/PCM. ■

7. Turn the ignition switch to LOCK (0).

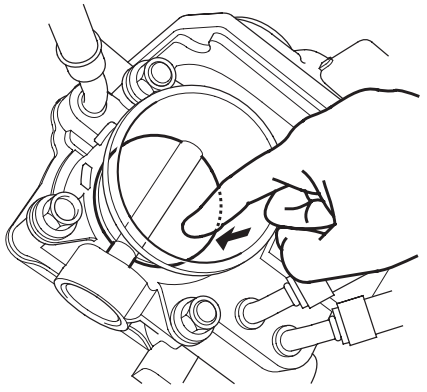
8. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

(cont'd)

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DTC Troubleshooting (cont'd)

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 11-344), 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; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

12. Turn the ignition switch to ON (II).

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-310).

15. Turn the ignition switch to LOCK (0), and wait 10 seconds.

16. Turn the ignition switch to 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 ECM/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 P1684: Throttle Valve Return Spring Performance Problem

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to 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 to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Turn the ignition switch to LOCK (0), and wait 10 seconds.

5. Turn the ignition switch to ON (II).

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

    Is DTC P1684 indicated?

    YES—Go to step 7.

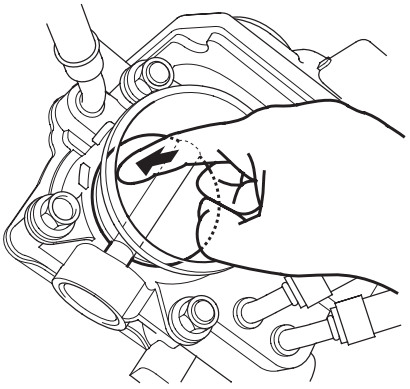
    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■

7. Turn the ignition switch to LOCK (0).

8. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

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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 11-344), 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; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

12. Turn the ignition switch to ON (II).

13. Reset the ECM/PCM with the HDS.

14. Do the ECM/PCM idle learn procedure (see page 11-310).

15. Turn the ignition switch to LOCK (0), and wait 10 seconds.

16. Turn the ignition switch to 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 ECM/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 P2101: ETCS Malfunction

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to 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 to 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

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 ECM/PCM, then clean the throttle body (see page 11-344). ■

(cont'd)

DTC Troubleshooting (cont'd)

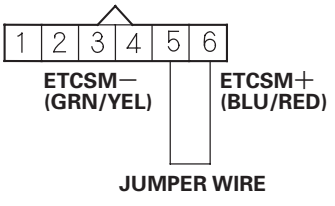
7. Turn the ignition switch to LOCK (0).
8. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
9. Turn the ignition switch to ON (II).
10. Clear the DTC with the HDS.
11. Do the ETCS TEST in the INSPECTION MENU with the HDS.
12. Visually check the throttle valve operation.

    Does the throttle valve operate smoothly?

    YES—Clean the throttle body (see page 11-344), then go to step 22 and recheck. If DTC P2101 is indicated, go to step 19.

    NO—Go to step 13.
13. Turn the ignition switch to LOCK (0).
14. Disconnect the throttle body 6P connector.
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector C (44P).
17. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

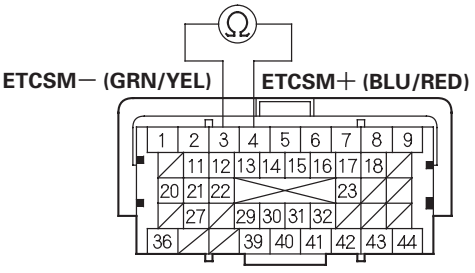
THROTTLE BODY 6P CONNECTOR



Wire side of female terminals

18. Check for continuity between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (44P)



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 ECM/PCM (C3, C4), then go to step 21.

19. Turn the ignition switch to LOCK (0).
20. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
21. Reconnect all connectors.
22. Turn the ignition switch to ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    • ENGINE SPEED
    • VSS
    • APP SENSOR

26. 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 ECM/PCM, then clean the throttle body (see page 11-344), 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. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    • ENGINE SPEED
    • VSS
    • APP SENSOR

30. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P2118: Throttle Actuator Current Range/ Performance Problem

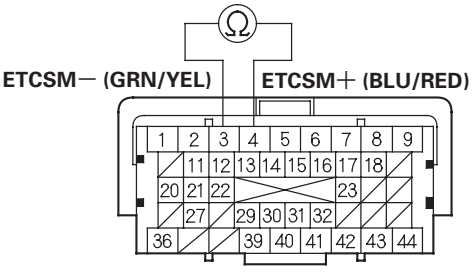
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Jump the SCS line with the HDS.

2. Disconnect ECM/PCM connector C (44P).

3. Measure the resistance between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there about 1.0 Ω or less?

YES—Go to step 4.

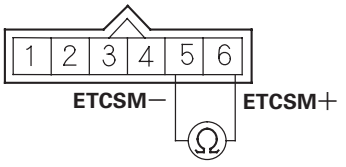
NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

4. Disconnect the throttle body 6P connector.
5. At the throttle body side, measure the 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 ECM/PCM C3 (ETCSM− line) and C4 (ETCSM+ line), then go to step 7.

6. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
7. Reconnect all connectors.
8. Turn the ignition switch to ON (II).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Turn the ignition switch to LOCK (0).
12. Turn the ignition switch to 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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
17. Turn the ignition switch to LOCK (0).
18. Turn the ignition switch to ON (II).
19. Slowly press the accelerator pedal to the floor.
20. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 17. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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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).

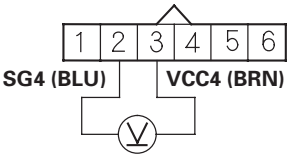
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   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 the APP sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

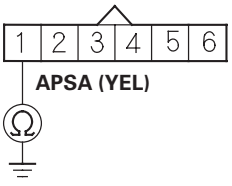
Is there about 5 V?

YES—Go to step 7.

NO—Go to step 17.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 1 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

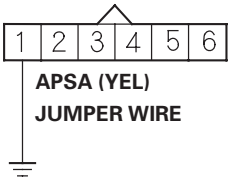
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A17) and the APP sensor, 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



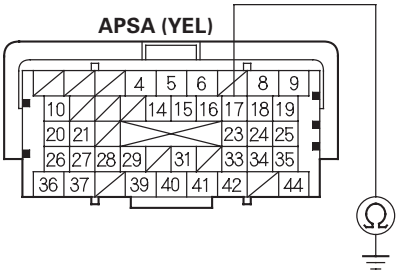
Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

12. Check for continuity between ECM/PCM connector terminal A17 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

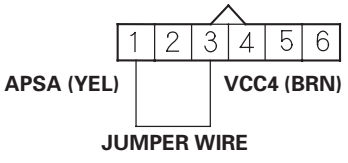
YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (A17) and the APP sensor, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).

14. Connect APP sensor 6P connector terminals No. 1 and No. 3 with a jumper wire.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

15. Turn the ignition switch to 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.

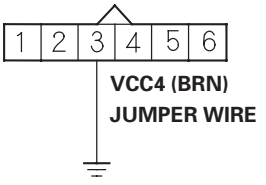
17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector A (44P).

20. Connect APP sensor 6P connector terminal No. 3 to body ground with a jumper wire.

APP SENSOR 6P CONNECTOR

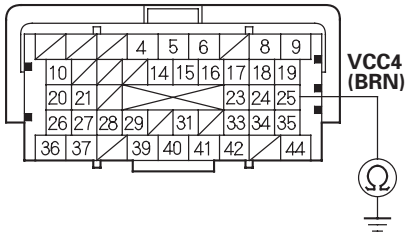


Wire side of female terminals

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21. Check for continuity between ECM/PCM connector terminal A25 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the ECM/PCM (A25) and the APP sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).

23. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

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

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/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 to LOCK (0).

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

Is DTC P2122 indicated?

YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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).

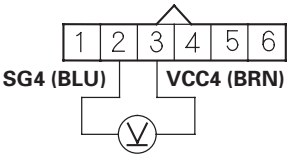
1. Turn the ignition switch to ON (II).
2. Check APP SENSOR A in the DATA LIST with the HDS.

   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 the APP sensor and the ECM/PCM. ■
3. Turn the ignition switch to LOCK (0).
4. Disconnect the APP sensor 6P connector.
5. Turn the ignition switch to ON (II).
6. Measure the voltage between APP sensor 6P connector terminals No. 2 and No. 3.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

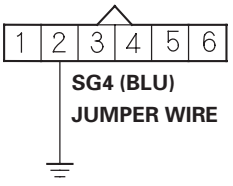
Is there about 5 V?

YES—Go to step 12.

NO—Go to step 7.

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 2 to body ground with a jumper wire.

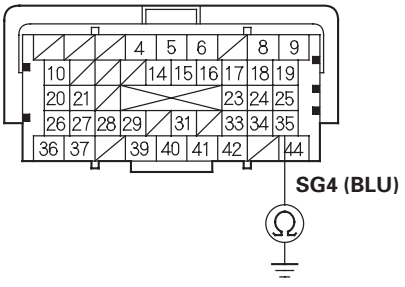
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A35 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A35) and the APP sensor, then go to step 14.

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12. Turn the ignition switch to LOCK (0).

13. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P2123 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 the APP sensor and the ECM/PCM. ■

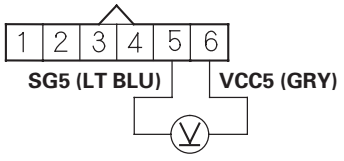
3. Turn the ignition switch to LOCK (0).

4. Disconnect the APP sensor 6P connector.

5. Turn the ignition switch to ON (II).

6. Measure the 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.

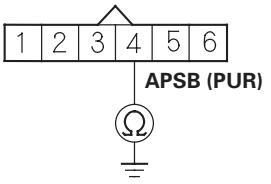
(cont'd)

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DTC Troubleshooting (cont'd)

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Check for continuity between APP sensor 6P connector terminal No. 4 and body ground.

APP SENSOR 6P CONNECTOR



Wire side of female terminals

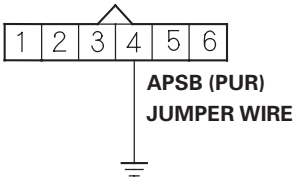
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A18) and the APP sensor, 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.

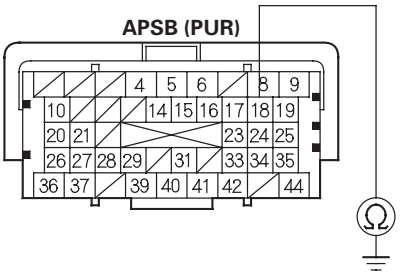
APP SENSOR 6P CONNECTOR



Wire side of female terminals

12. Check for continuity between ECM/PCM connector terminal A18 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

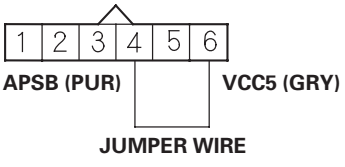
Is there continuity?

YES—Go to step 13.

NO—Repair open in the wire between the ECM/PCM (A18) and the APP sensor, then go to step 24.

13. Reconnect ECM/PCM connector A (44P).
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

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15. Turn the ignition switch to 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.

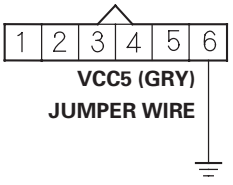
17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect ECM/PCM connector A (44P).

20. Connect APP sensor 6P connector terminal No. 6 to body ground with a jumper wire.

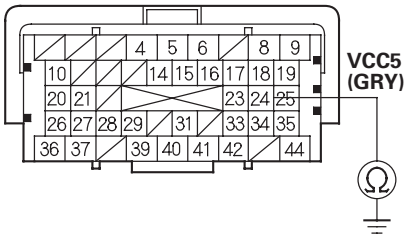
APP SENSOR 6P CONNECTOR



Wire side of female terminals

21. Check for continuity between ECM/PCM connector terminal A24 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the ECM/PCM (A24) and the APP sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).

23. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P2127 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/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)

29. Turn the ignition switch to LOCK (0).

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P2127 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 at the APP sensor and the ECM/PCM. ■

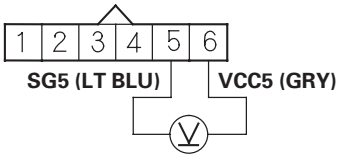
3. Turn the ignition switch to LOCK (0).

4. Disconnect the APP sensor 6P connector.

5. Turn the ignition switch to ON (II).

6. Measure the 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?

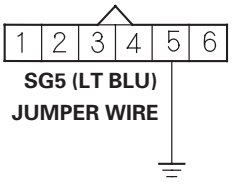
YES—Go to step 12.

NO—Go to step 7.

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7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector A (44P).
10. Connect APP sensor 6P connector terminal No. 5 to body ground with a jumper wire.

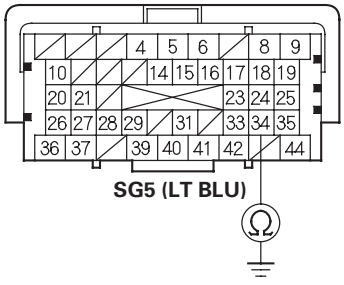
APP SENSOR 6P CONNECTOR



Wire side of female terminals

11. Check for continuity between ECM/PCM connector terminal A34 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (A34) and the APP sensor, then go to step 14.

12. Turn the ignition switch to LOCK (0).
13. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).
14. Reconnect all connectors.
15. Turn the ignition switch to ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-310).
18. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
21. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P2128 indicated?

    YES—Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 P2135: TP Sensor A/B Incorrect Voltage Correlation

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to 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 to 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.

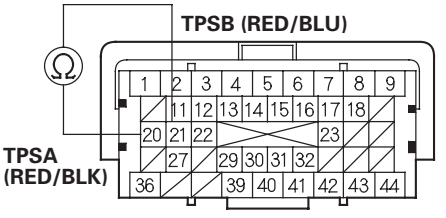
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the throttle body and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
7. Turn the ignition switch to ON (II).
8. Visually check the throttle valve operation while you clear the DTC with the HDS.

   Does the valve temporarily move to its fully closed position?

   YES—Go to step 15.

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).
12. Check for continuity between ECM/PCM connector terminals C20 and C21.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 13.

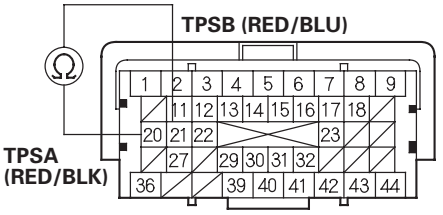
NO—Go to step 22.

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13. Disconnect the throttle body 6P connector.

14. Check for continuity between ECM/PCM connector terminals C20 and C21.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between ECM/PCM connector terminals C20 (TPSA line) and C21 (TPSB line), then go to step 17.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).

16. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

17. Reconnect all connectors.

18. Turn the ignition switch to ON (II).

19. Reset the ECM/PCM with the HDS.

20. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 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 to 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.

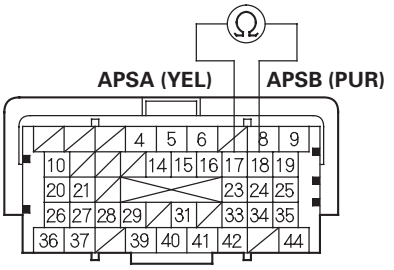
   NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the APP sensor and the ECM/PCM. ■
5. Check APP SENSOR A and APP SENSOR B in the DATA LIST with the HDS.

   Are they the same voltage?

   YES—Go to step 6.

   NO—Go to step 12.
6. Turn the ignition switch to LOCK (0).
7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector A (44P).
9. Check for continuity between ECM/PCM connector terminals A17 and A18.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

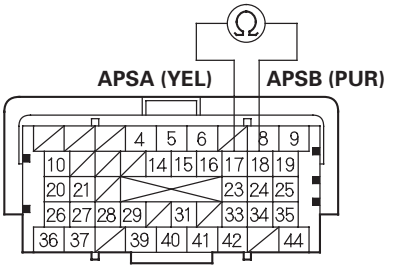
Is there continuity?

YES—Go to step 10.

NO—Go to step 22.

10. Disconnect the APP sensor 6P connector.
11. Check for continuity between ECM/PCM connector terminals A17 and A18.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wires between the ECM/PCM A17 (APSA line) and A18 (APSB line), then go to step 14.

NO—Go to step 13.

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12. Turn the ignition switch to LOCK (0).

13. Replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

14. Reconnect all connectors.

15. Turn the ignition switch to ON (II).

16. Reset the ECM/PCM with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

18. Turn the ignition switch to LOCK (0).

19. Turn the ignition switch to ON (II).

20. Press the accelerator pedal to the floor.

21. 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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

24. Turn the ignition switch to LOCK (0).

25. Turn the ignition switch to ON (II).

26. Press the accelerator pedal to the floor.

27. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 23. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 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 to 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 to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Turn the ignition switch to 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 ECM/PCM, then clean the throttle body (see page 11-344). ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
8. Turn the ignition switch to 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.

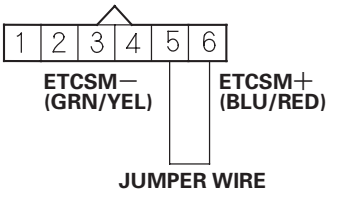
    NO—Go to step 12.
11. Check for sludge or carbon on the throttle valve.

    Is there sludge or carbon on the throttle valve?

    YES—Clean the throttle body (see page 11-344), then go to step 21 and recheck.

    NO—Go to step 18.
12. Turn the ignition switch to LOCK (0).
13. Disconnect the throttle body 6P connector.
14. Jump the SCS line with the HDS.
15. Disconnect ECM/PCM connector C (44P).
16. Connect throttle body 6P connector terminals No. 5 and No. 6 with a jumper wire.

THROTTLE BODY 6P CONNECTOR

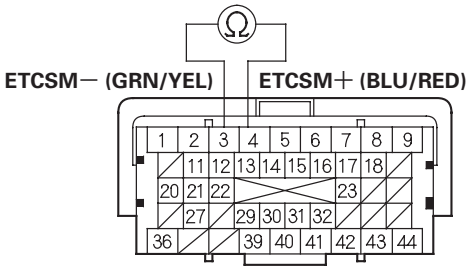


Wire side of female terminals

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17. Check for continuity between ECM/PCM connector terminals C3 and C4.

ECM/PCM CONNECTOR C (44P)



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 ECM/PCM (C3, C4), then go to step 20.

18. Turn the ignition switch to LOCK (0).

19. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

20. Reconnect all connectors.

21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Turn the ignition switch to LOCK (0).

25. Turn the ignition switch to 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 ECM/PCM, then clean the throttle body (see page 11-344), 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. ■

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Turn the ignition switch to LOCK (0).

30. Turn the ignition switch to ON (II), and wait 10 seconds.

31. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

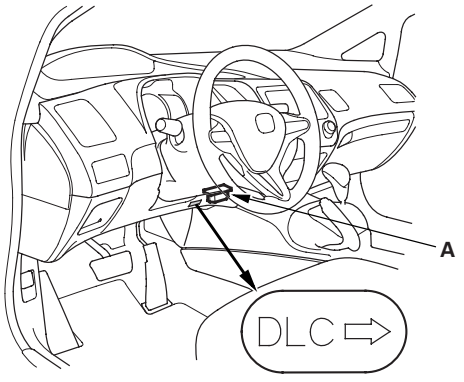
NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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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 procedure.
- 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; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270).

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 to ON (II).

3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

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 ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see page 11-7), then go to step 5.

5. With the accelerator pedal not pressed, then check the APP SENSOR in the DATA LIST with the HDS.

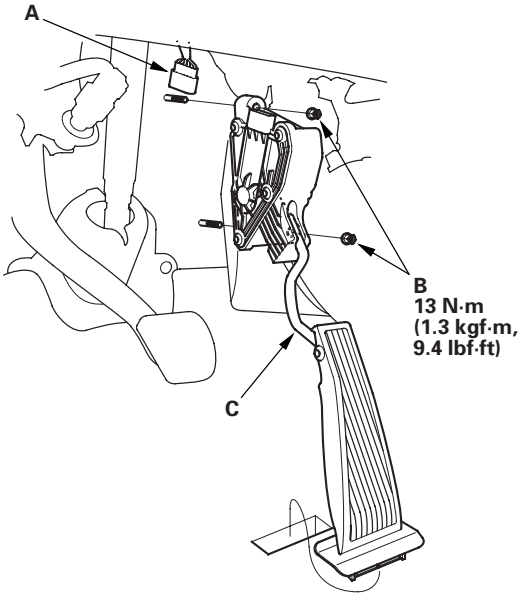
   - If it is 0 %, the APP sensor is OK.
   - If it is not 0 %, replace the accelerator pedal module; K20Z2 engine (see page 11-269), K20Z3 engine (see page 11-270), then go to step 1.

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Accelerator Pedal Module Removal/Installation

K20Z2 engine ('06-08 models)

1. Disconnect the APP sensor 6P connector (A), then remove the nuts (B).



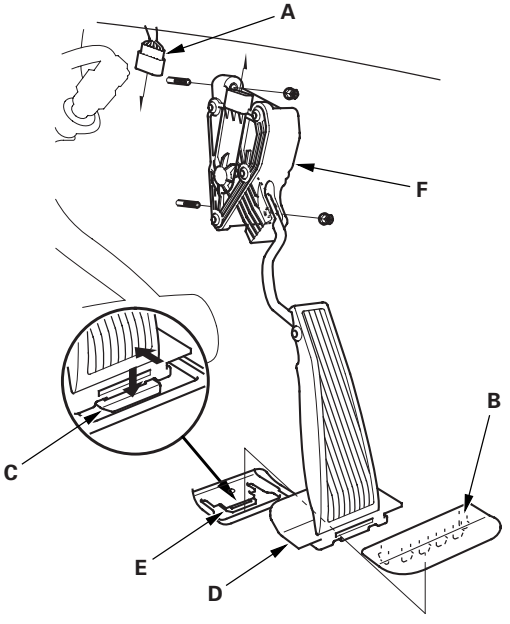
2. Remove the accelerator pedal module (C).

   NOTE: APP sensor is not available separately. Do not disassemble the accelerator pedal module.

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

K20Z2 engine ('09 model)

1. Disconnect the APP sensor connector (A).



2. Remove the clip (B).

   NOTE: Do not reuse the clip once it is removed.

3. Push the tab (C), and remove the accelerator pedal pad (D) from the pedal stop (E).

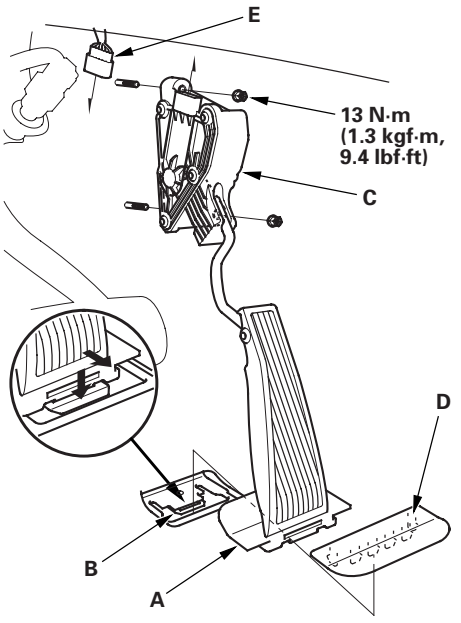
4. Remove the accelerator pedal module (F).

   NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

(cont'd)

Accelerator Pedal Module Removal/Installation (cont'd)

5. Set the accelerator pedal pad (A) to the pedal stop (B).

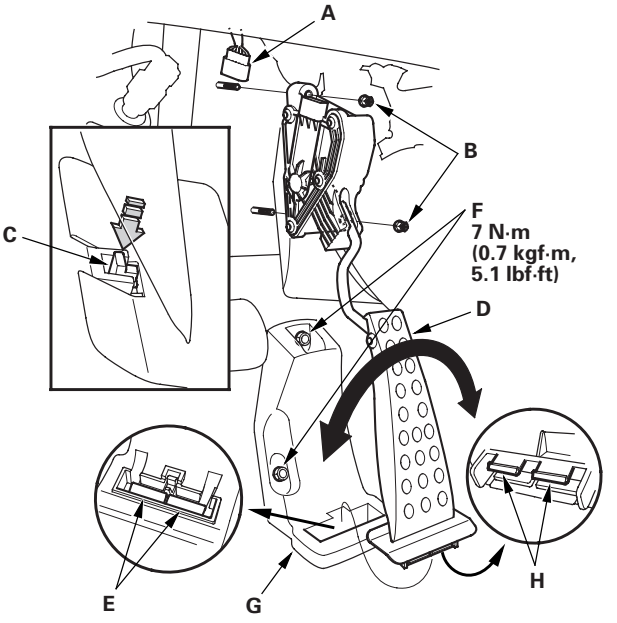


6. Install the accelerator pedal module (C) with a new clip (D).

7. Reconnect the APP sensor connector (E).

K20Z3 engine ('06-08 models)

1. Disconnect the APP sensor 6P connector (A), then remove the nuts (B).



2. Push the tab (C).

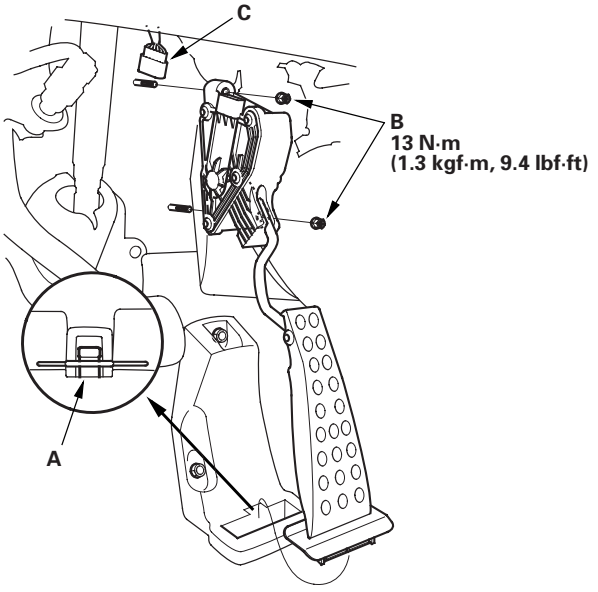
3. Pry the accelerator pedal module to right and left, and remove the accelerator pedal module (D).

NOTE:
- The APP sensor is not available separately. Do not disassemble the accelerator pedal module.
- If the tab or tab receivers (E) are damaged, pull back the carpet, remove the nuts (F), and replace the pedal stop (G).
- If the tabs (H) of the accelerator pedal module are damaged, replace the accelerator pedal module.

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4. Install the accelerator pedal module.

   NOTE: Make sure the tab (A) is secure.

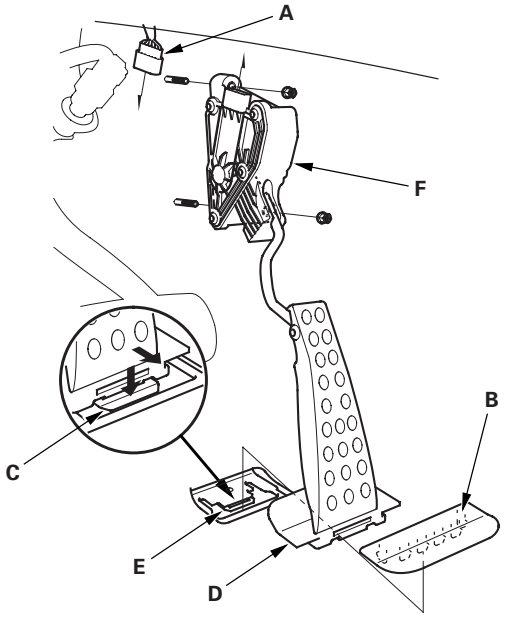


5. Install the nuts (B), then connect the APP sensor 6P connector (C).

   NOTE: Make sure that the accelerator pedal module is secure.

K20Z3 engine ('09 model)

1. Disconnect the APP sensor connector (A).



2. Remove the clip (B).

   NOTE: Do not reuse the clip once it is removed.

3. Push the tab (C), and remove the accelerator pedal pad (D) from the pedal stop (E).

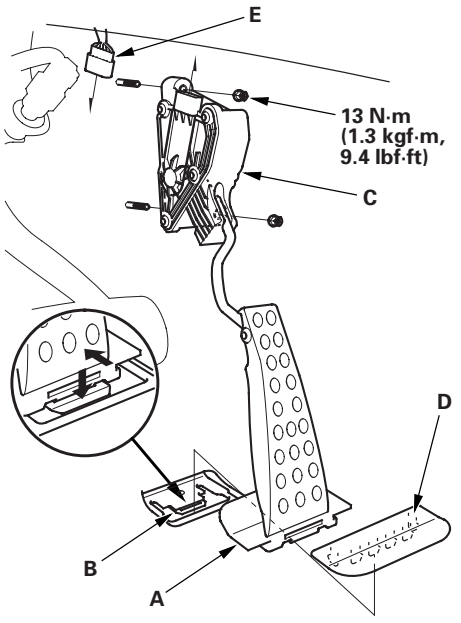
4. Remove the accelerator pedal module (F).

   NOTE: The APP sensor is not available separately. Do not disassemble the accelerator pedal module.

(cont'd)

Accelerator Pedal Module Removal/Installation (cont'd)

5. Set the accelerator pedal pad (A) to the pedal stop (B).

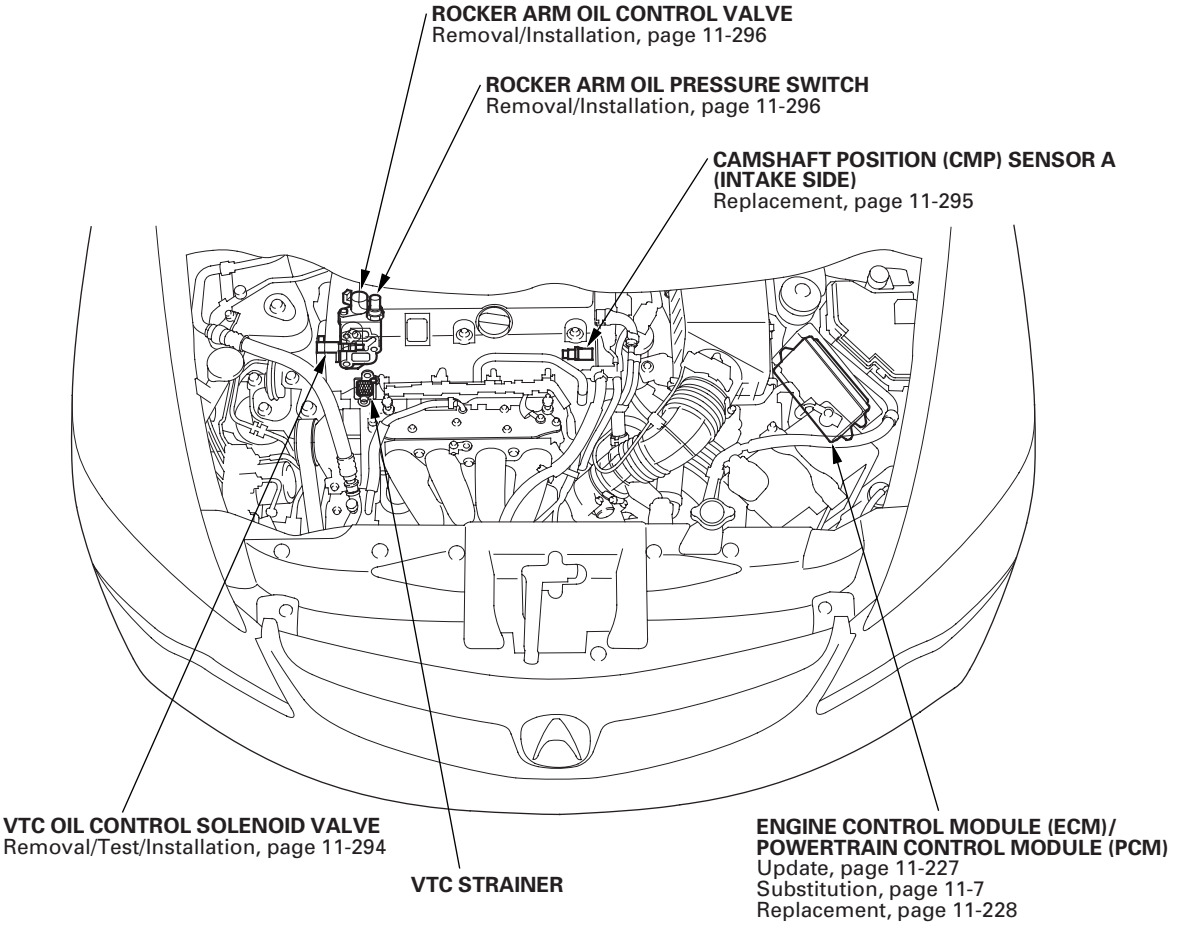


6. Install the accelerator pedal module (C) with a new clip (D).

7. Reconnect the APP sensor connector (E).

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Component Location Index



* : This illustration shows K20Z2 engine

DTC Troubleshooting

DTC P0010: VTC Oil Control Solenoid Valve Malfunction

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

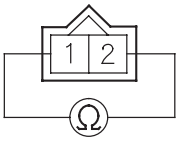
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Do the VTC TEST in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0010 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 VTC oil control solenoid valve and the ECM/PCM. ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the VTC oil control solenoid valve 2P connector.
8. At the solenoid valve side, measure the resistance between VTC oil control solenoid valve 2P connector terminals No. 1 and No. 2.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

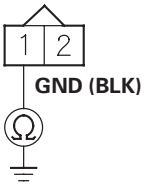
Is there 6.75—8.25 Ω at room temperature?

YES—Go to step 9.

NO—Go to step 14.

9. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 1 and body ground.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 10.

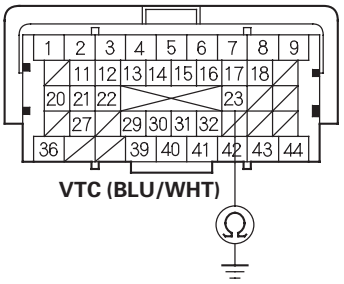
NO—Repair open in the wire between the VTC oil control solenoid valve and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 15.

10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector C (44P).

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12. Check for continuity between ECM/PCM connector terminal C23 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

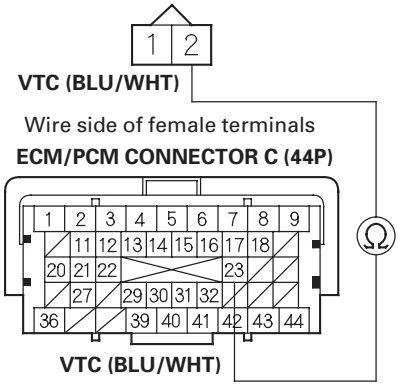
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (C23) and the VTC oil control solenoid valve, then go to step 15.

NO—Go to step 13.

13. Check for continuity between VTC oil control solenoid valve 2P connector terminal No. 2 and ECM/PCM connector terminal C23.

VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the ECM/PCM (C23) and the VTC oil control solenoid valve, then go to step 15.

14. Replace the VTC oil control solenoid valve (see page 11-294).

15. Reconnect all connectors.

16. Turn the ignition switch to ON (II).

17. Reset the ECM/PCM with the HDS.

18. Do the ECM/PCM idle learn procedure (see page 11-310).

19. Do the VTC TEST in the INSPECTION MENU with the HDS.

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

Is DTC P0010 indicated?

YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

NO—Go to step 21.

21. Monitor the OBD STATUS for DTC P0010 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 20, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

(cont'd)

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DTC Troubleshooting (cont'd)

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

24. Do the VTC TEST in the INSPECTION MENU with the HDS.

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

    Is DTC P0010 indicated?

    YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P0010 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 VTC oil control solenoid valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 24.

DTC P0011: VTC 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 to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine.

4. Watch the low oil pressure indicator with the engine running.

   Is the low oil pressure indicator on?

   YES—Check the engine oil level. If the oil level is OK, check the oil pressure (see page 8-10), then go to step 15.

   NO—Go to step 5.

5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 6.

   NO—Go to step 9.

6. Test-drive at a steady speed between 40—120 km/h (25—75 mph) for 10 minutes.

7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 8.

   NO—Go to step 6 and recheck.

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8. Monitor the OBD STATUS for DTC P0011 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

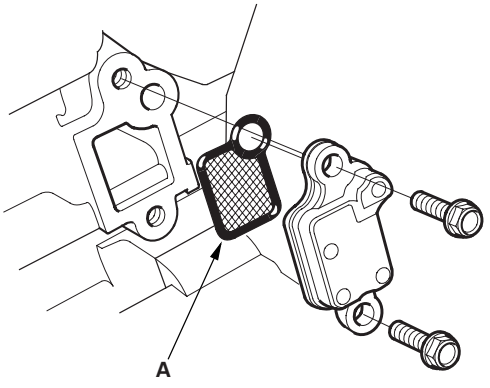
   YES—Go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.

9. Turn the ignition switch to LOCK (0).

10. Remove the auto-tensioner (see page 4-32).

11. Remove the VTC strainer (A), and check it for clogging.



   Is the strainer OK?

   YES—Go to step 12.

   NO—Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 14.

12. Test the VTC oil control solenoid valve (see page 11-294).

   Is the VTC oil control solenoid valve OK?

   YES—Go to step 13.

   NO—Replace the VTC oil control solenoid valve (see page 11-294), then go to step 14.

13. Inspect the VTC actuator (see page 6-11).

   Is the VTC actuator OK?

   YES—Go to step 14.

   NO—Replace the VTC actuator (see page 6-42), then go to step 14.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Clear the CKP pattern with the HDS.

17. Do the ECM/PCM idle learn procedure (see page 11-310).

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

19. Do the VTC TEST in the INSPECTION MENU with the HDS.

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

   Is DTC P0011 indicated?

   YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

   NO—Go to step 21.

(cont'd)

DTC Troubleshooting (cont'd)

21. Monitor the OBD STATUS for DTC P0011 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 20, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19 and recheck.

DTC P0340: CMP Sensor A 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).

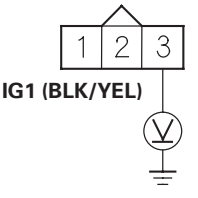
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine.
4. Check for Temporary DTCs or DTCs with the HDS.

   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 CMP sensor A and the ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect CMP sensor A 3P connector.
7. Turn the ignition switch to ON (II).
8. Measure the voltage between CMP sensor A 3P connector terminal No. 3 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

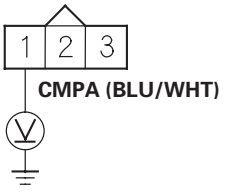
YES—Go to step 9.

NO—Repair open in the wire between CMP sensor A and the No. 3 ALTERNATOR (10 A) fuse then go to step 18.

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9. Measure the voltage between CMP sensor A 3P connector terminal No. 1 and body ground.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

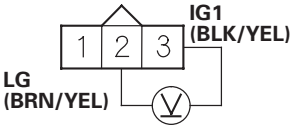
Is there about 5 V?

YES—Go to step 10.

NO—Go to step 11.

10. Measure the voltage between CMP sensor A 3P connector terminals No. 2 and No. 3.

CMP SENSOR A 3P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 16.

NO—Repair open in the wire between CMP sensor A and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 18.

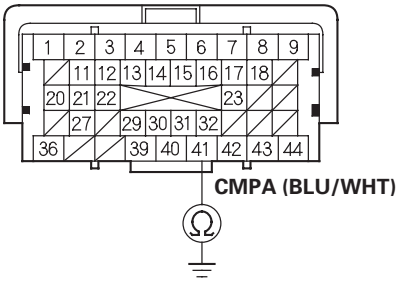
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between ECM/PCM connector terminal C41 and body ground.

ECM/PCM CONNECTOR C (44P)



Terminal side of female terminals

Is there continuity?

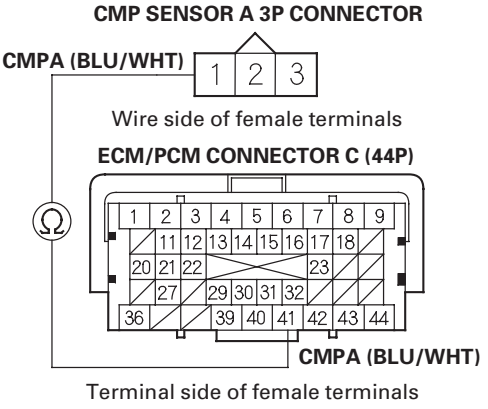
YES—Repair short in the wire between the ECM/PCM (C41) and CMP sensor A, then go to step 18.

NO—Go to step 15.

(cont'd)

DTC Troubleshooting (cont'd)

15. Check for continuity between CMP sensor A 3P connector terminal No. 1 and ECM/PCM connector terminal C41.



Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the ECM/PCM (C41) and CMP sensor A, then go to step 18.

16. Turn the ignition switch to LOCK (0).

17. Replace CMP sensor A (see page 11-295).

18. Reconnect all connectors.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor A and the ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P0340 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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DTC P0341: CMP Sensor A and CKP Sensor Incorrect Phase 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 to ON (II).
2. Clear the DTC with the HDS.
3. Test-drive at a steady speed between 30—60 km/h (19—38 mph) for 10 minutes.
4. Check for Temporary DTCs or DTCs with the HDS.

   Is DTC P0341 indicated?

   YES—Go to step 9.

   NO—Go to step 5.
5. Do the VTC TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Go to step 6.

   NO—Go to step 9.
6. Test-drive at a steady speed between 30—60 km/h (19—38 mph) for 10 minutes.
7. Check the VTC STATUS in the DATA LIST with the HDS.

   Does it indicate ON?

   YES—Go to step 8.

   NO—Go to step 6 and recheck.
8. Monitor the OBD STATUS for DTC P0341 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 9.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.
9. Turn the ignition switch to LOCK (0).
10. Test the VTC oil control solenoid valve (see page 11-294).

    Is the VTC oil control solenoid valve OK?

    YES—Go to step 11.

    NO—Replace the VTC oil control solenoid valve (see page 11-294), then go to step 14.
11. Check the camshaft timing (see page 6-21).

    Is the camshaft timing OK?

    YES—Go to step 12.

    NO—Reset the camshaft timing (see page 6-21), then go to step 14.
12. Check for damage or stretch at the cam chain (see page 6-32).

    Is the cam chain damaged or stretched?

    YES—Replace the cam chain (see page 6-18), then go to step 14.

    NO—Go to step 13.
13. Inspect the VTC actuator (see page 6-11).

    Is the actuator OK?

    YES—Go to step 14.

    NO—Replace the VTC actuator (see page 6-42), then go to step 14.

(cont'd)

DTC Troubleshooting (cont'd)

14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Clear the CKP pattern with the HDS.
17. Do the ECM/PCM idle learn procedure (see page 11-310).
18. Do the CKP pattern learn procedure (see page 11-4).
19. Test-drive at a steady speed between 30—60 km/h (19—38 mph) for 10 minutes.
20. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0341 indicated?

    YES—Check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1.

    NO—Go to step 21.
21. Monitor the OBD STATUS for DTC P0341 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 20, go to the indicated DTC's troubleshooting. ■

    NO—If the screen indicates FAILED, check for poor connections or loose terminals at the VTC oil control solenoid valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 19.

DTC P0344: CMP Sensor A 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 10 seconds.
4. Check the CMP A NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Go to step 5.
5. Test-drive the vehicle for several minutes in the range of these recorded freeze data parameters:

    • ENGINE SPEED
    • VSS
6. Check the CMP A NOISE in the DATA LIST with the HDS.

    Are 0 counts indicated?

    YES—Go to step 7.

    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at CMP sensor A and the ECM/PCM. ■
7. Check for poor connections or loose terminals at these locations:

    • CMP sensor A
    • ECM/PCM
    • Engine ground
    • Body ground

    Are the connections and the terminals OK?

    YES—Go to step 8.

    NO—Repair the connectors or the terminals, then go to step 11.

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8. Check for damage on the CMP sensor A pulser plate (see page 6-41).

   Is the pulser plate damaged?

   YES—Replace the CMP sensor A pulser plate (see page 6-41), then go to step 11.

   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Replace CMP sensor A (see page 11-295).

11. Turn the ignition switch to ON (II).

12. Reset the ECM/PCM with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-310).

14. Start the engine, and let it idle for 10 seconds.

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

    Is DTC P0344 indicated?

    YES—Check for poor connections or loose terminals at CMP sensor A and the ECM/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 P1009: VTC Advance 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 P0341 is stored at the same time as DTC P1009, troubleshoot DTC P1009 first, then recheck for DTC P0341.

1. Turn the ignition switch to 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 P1009 indicated?

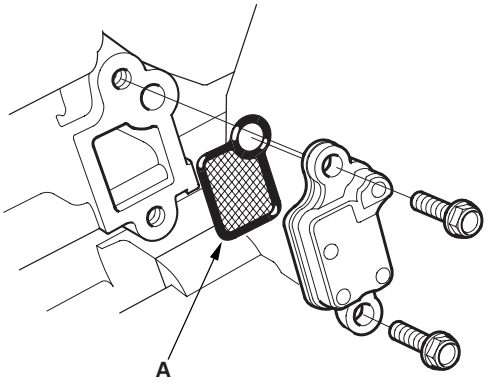
   YES—Go to step 5.

   NO—Intermittent failure, the system is OK at this time. ■

5. Turn the ignition switch to LOCK (0).

6. Remove the cam chain auto-tensioner (see page 6-29).

7. Remove the VTC strainer (A), and check it for clogging.



   Is the strainer OK?

   YES—Go to step 8.

   NO—Clean the VTC strainer, replace the engine oil filter and the engine oil, then go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

8. Test the VTC oil control solenoid valve (see page 11-294).

   Is the valve OK?

   YES—Go to step 9.

   NO—Replace the VTC oil control solenoid valve (see page 11-294), then go to step 10.

9. Inspect the VTC actuator (see page 6-11).

   Is the actuator OK?

   YES—Check the VTC system oil passages, then go to step 10.

   NO—Replace the VTC actuator (see page 6-42), then go to step 10.

10. Turn the ignition switch to ON (II).

11. Reset the ECM/PCM with the HDS.

12. Clear the CKP pattern with the HDS.

13. Do the ECM/PCM idle learn procedure (see page 11-310).

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

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

    Is DTC P1009 indicated?

    YES—Check the oil passages at the VTC system, 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 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 21.

2. Turn the ignition switch to 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 ECM/PCM. ■

   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the rocker arm oil pressure switch 2P connector.

7. Turn the ignition switch to ON (II).

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8. Check the VTEC PRES SW in the DATA LIST with the HDS.

   Is SWITCH ON indicated?

   YES—Go to step 16.

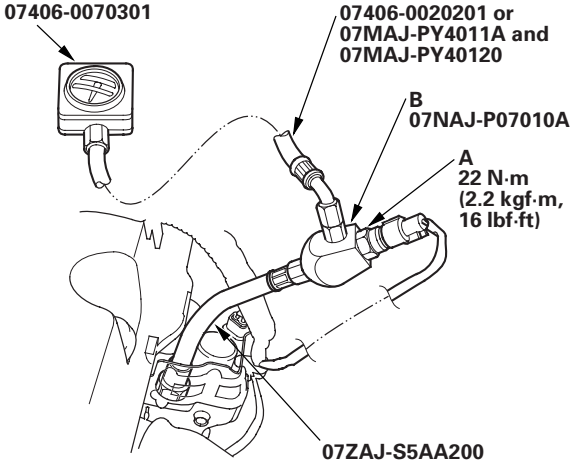
   NO—Go to step 9.

9. Turn the ignition switch to LOCK (0).

10. Remove the cowl cover and the under cowl panel (see page 20-163).

11. Remove the rocker arm oil pressure switch (A), and attach the special tools as shown, then attach the rocker arm oil pressure switch to the oil pressure gauge attachment (B).

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



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

13. Start the engine.

14. Do the VTEC TEST in the INSPECTION MENU with the HDS.

15. 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 11-296), then go to step 20.

    NO—Inspect the following items. If they are OK, replace the rocker arm oil control valve (see page 11-296), then go to step 19.

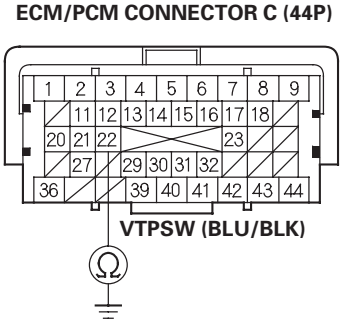
    - VTEC systems oil line
    - Operation of the rocker arm (see page 6-8).

16. Turn the ignition switch to LOCK (0).

17. Jump the SCS line with the HDS.

18. Disconnect ECM/PCM connector C (44P).

19. Check for continuity between ECM/PCM connector terminal C22 and body ground.



Terminal side of female terminals

   Is there continuity?

   YES—Repair short in the wire between the ECM/PCM (C22) and the rocker arm oil pressure switch, then go to step 20.

   NO—Go to step 27.

20. Reconnect all connectors.

21. Turn the ignition switch to ON (II).

22. Reset the ECM/PCM with the HDS.

(cont'd)

DTC Troubleshooting (cont'd)

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Do the VTEC TEST in the INSPECTION MENU with the HDS.

25. 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, the rocker arm oil control valve, and the ECM/PCM, then go step 1.

    NO—Go to step 26.

26. 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 25, 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, the rocker arm oil control valve, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 24 and recheck.

27. Reconnect all connectors.

28. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

29. Do the VTEC TEST in the INSPECTION MENU with the HDS.

30. 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, the rocker arm oil control solenoid, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P2646 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 rocker arm oil pressure switch, the rocker arm oil control solenoid, and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 29. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 29 and recheck.

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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 17.

2. Turn the ignition switch to 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 ECM/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 above?

   YES—Go to step 6.

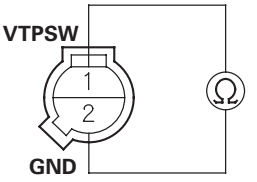
   NO—Check for poor connections or loose terminals at the rocker arm oil pressure switch. If it is OK, replace the rocker arm oil control valve (see page 11-296), then, go to step 15.

6. Turn the ignition switch to LOCK (0).

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?

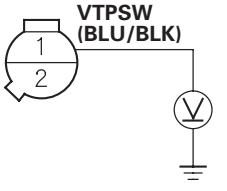
YES—Go to step 9.

NO—Replace the rocker arm oil pressure switch (see page 11-296), then go to step 16.

9. Turn the ignition switch to ON (II).

10. Measure the 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; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 15.

NO—Go to step 11.

(cont'd)

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DTC Troubleshooting (cont'd)

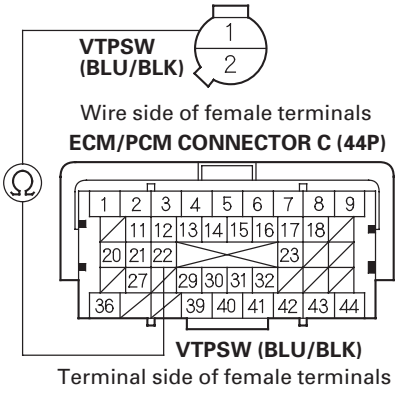
11. Turn the ignition switch to LOCK (0).

12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector C (44P).

14. Check for continuity between rocker arm oil pressure switch 2P connector terminal No. 1 and ECM/PCM connector terminal C22.

ROCKER ARM OIL PRESSURE SWITCH 2P CONNECTOR



Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the ECM/PCM (C22) and the rocker arm oil pressure switch, then go to step 16.

15. Turn the ignition switch to LOCK (0).

16. Reconnect all connectors.

17. Turn the ignition switch to ON (II).

18. Reset the ECM/PCM with the HDS.

19. Do the ECM/PCM idle learn procedure (see page 11-310).

20. 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, the rocker arm oil control solenoid, and the ECM/PCM, then go to step 1.

NO—Go to step 21.

21. 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 20, 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, the rocker arm oil control solenoid, and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

22. Reconnect all connectors.

23. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

24. Start the engine, and let it idle.

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25. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 26.

26. Monitor the OBD STATUS for DTC P2647 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 rocker arm oil pressure switch and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 24. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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 to 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 ECM/PCM. ■

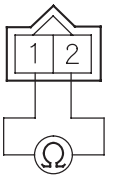
    NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Disconnect the rocker arm oil control solenoid 2P connector.

6. At the solenoid side, measure the resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of male terminals

Is there 14—30 Ω at room temperature?

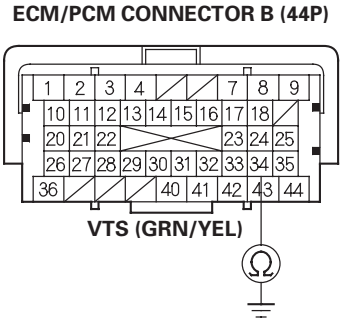
YES—Go to step 7.

NO—Go to step 10.

(cont'd)

DTC Troubleshooting (cont'd)

7. Jump the SCS line with the HDS.
8. Disconnect ECM/PCM connector B (44P).
9. Check for continuity between ECM/PCM connector terminal B34 and body ground.



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B34) and the rocker arm oil control solenoid, then go to step 11.

NO—Go to step 18.

10. Replace the rocker arm oil control valve (see page 11-296).
11. Reconnect all connectors.
12. Turn the ignition switch to ON (II).
13. Reset the ECM/PCM with the HDS.
14. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/PCM, then go to step 1.

    NO—Go to step 17.

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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 15.

18. Reconnect all connectors.
19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 22.

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22. Monitor the OBD STATUS for DTC P2648 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 20.

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).

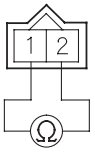
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs with the HDS.

   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 ECM/PCM. ■
5. Turn the ignition switch to LOCK (0).
6. Disconnect the rocker arm oil control solenoid 2P connector.
7. At the solenoid side, measure the resistance between rocker arm oil control solenoid 2P connector terminals No. 1 and No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of male terminals

Is there 14—30 Ω at room temperature?

YES—Go to step 8.

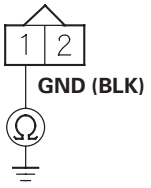
NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

8. Check for continuity between rocker arm oil control solenoid 2P connector terminal No. 1 and body ground.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 9.

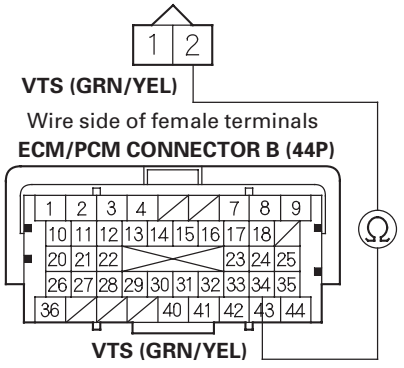
NO—Repair open in the wire between the rocker arm oil control solenoid and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 13.

9. Jump the SCS line with the HDS.

10. Disconnect ECM/PCM connector B (44P).

11. Check for continuity between ECM/PCM connector terminal B34 and rocker arm oil control solenoid 2P connector terminal No. 2.

ROCKER ARM OIL CONTROL SOLENOID 2P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 19.

NO—Repair open in the wire between the ECM/PCM (B34) and the rocker arm oil control solenoid, then go to step 13.

12. Replace the rocker arm oil control valve (see page 11-296).

13. Reconnect all connectors.

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/PCM, then go to step 1.

NO—Go to step 18.

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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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

21. Start the engine, and let it idle.

22. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 21. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P2649 in the DTCs MENU with the HDS.

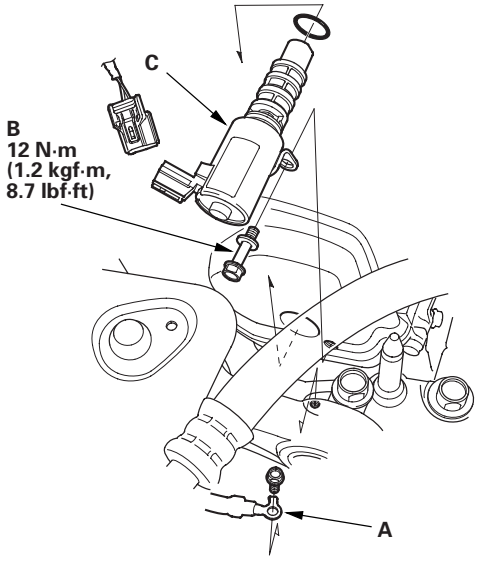
    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 22, 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 21. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

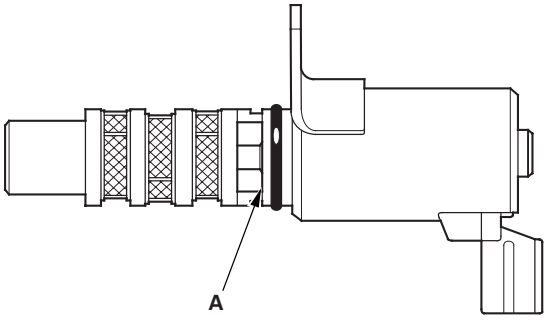
VTC Oil Control Solenoid Valve Removal/Test/Installation

1. Disconnect the VTC oil control solenoid valve 2P connector.
2. Remove the ground wire (A).



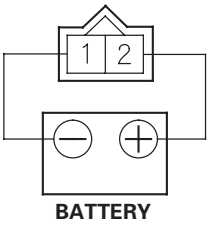
3. Remove the bolt (B) and the VTC oil control solenoid valve (C).
4. Check the VTC oil control solenoid valve strainer for clogging. If the strainer is clogged, replace the VTC oil control solenoid valve.
5. Note the amount of valve opening by observing the position of the piston shoulder (A) through the valve retard drain port. If you see the shoulder of the piston, the valve is open and must be replaced.

Closed



6. Connect the battery positive terminal to VTC oil control solenoid valve 2P connector terminal No. 2.

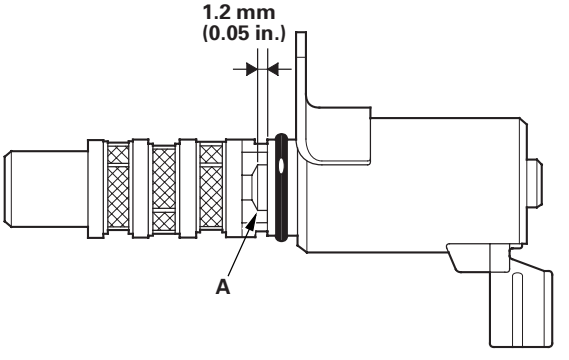
VTC OIL CONTROL SOLENOID VALVE 2P CONNECTOR



Terminal side of male terminals

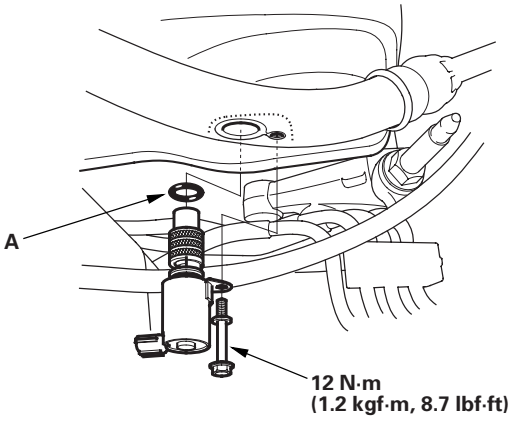
7. Connect the battery negative terminal to VTC oil control solenoid valve 2P connector terminal No. 1. Appearance of inner valve (A) in the port should be at least 1.2 mm (0.05 in.). If the inner valve does not open, replace it; then go to step 8.

Open



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8. Remove the VTC valve O-ring (A).



9. Coat a new O-ring with new engine oil, then install it on the valve.

10. Clean and dry the mating surface of the valve.

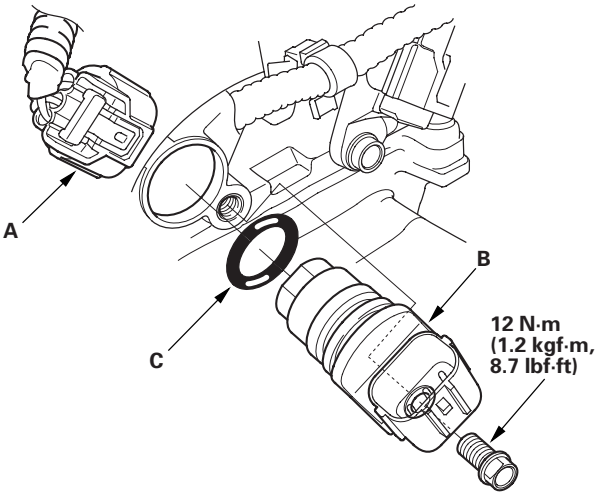
11. Install the valve.

    NOTE: Do not install the valve while wearing cloth fibrous gloves. Be careful not to contaminate the cylinder head opening.

CMP Sensor A Replacement

1. Remove the air cleaner (see page 11-345).

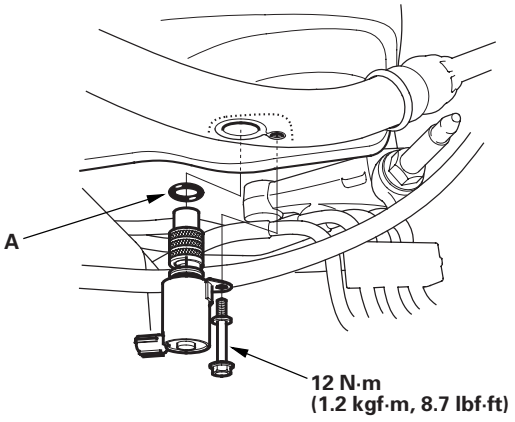
2. Disconnect CMP sensor A 3P connector (A).



3. Remove CMP sensor A (B) from the intake camshaft side of the cylinder head.

4. Install the parts in the reverse order of removal with a new O-ring (C).

8. Remove the VTC valve O-ring (A).



9. Coat a new O-ring with new engine oil, then install it on the valve.

10. Clean and dry the mating surface of the valve.

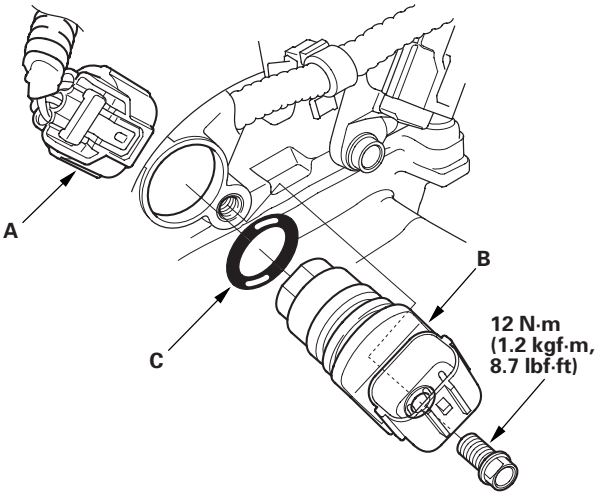
11. Install the valve.

    NOTE: Do not install the valve while wearing cloth fibrous gloves. Be careful not to contaminate the cylinder head opening.

CMP Sensor A Replacement

1. Remove the air cleaner (see page 11-345).

2. Disconnect CMP sensor A 3P connector (A).

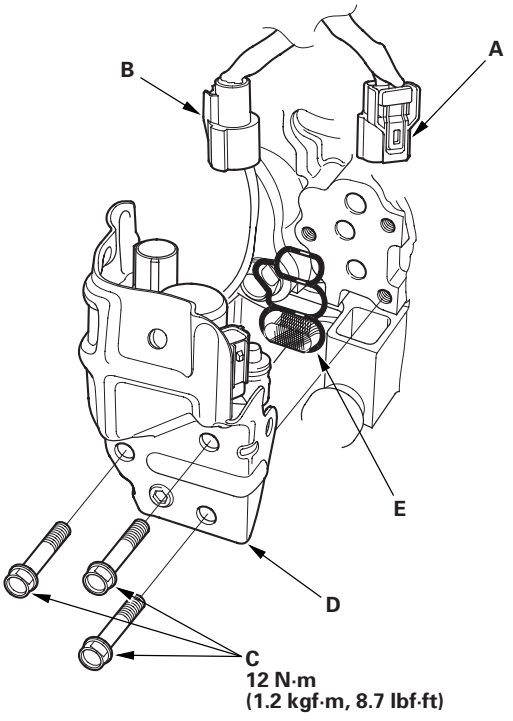


3. Remove CMP sensor A (B) from the intake camshaft side of the cylinder head.

4. Install the parts in the reverse order of removal with a new O-ring (C).

Rocker Arm Oil Control Valve Removal/Installation

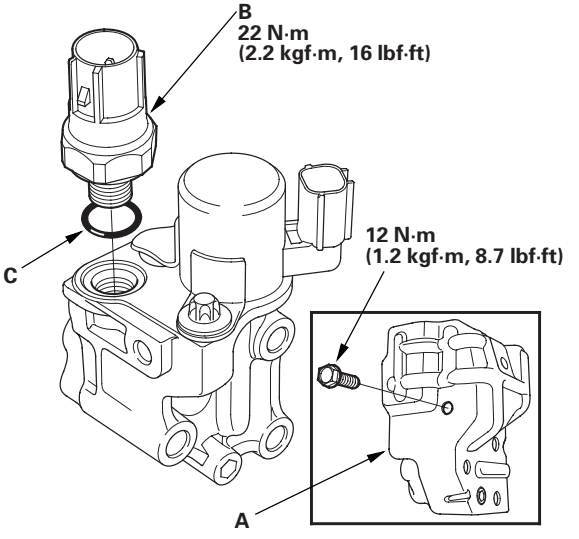
1. Remove the cowl cover and the under-cowl panel (see page 20-163).
2. Disconnect the rocker arm oil control valve 2P connector (A) and the rocker arm oil pressure switch 2P connector (B).



3. Remove the bolts (C).
4. Remove the rocker arm oil control valve (D).
5. Install the parts in the reverse order of removal with a new solenoid valve filter (E).

Rocker Arm Oil Pressure Switch Removal/Installation

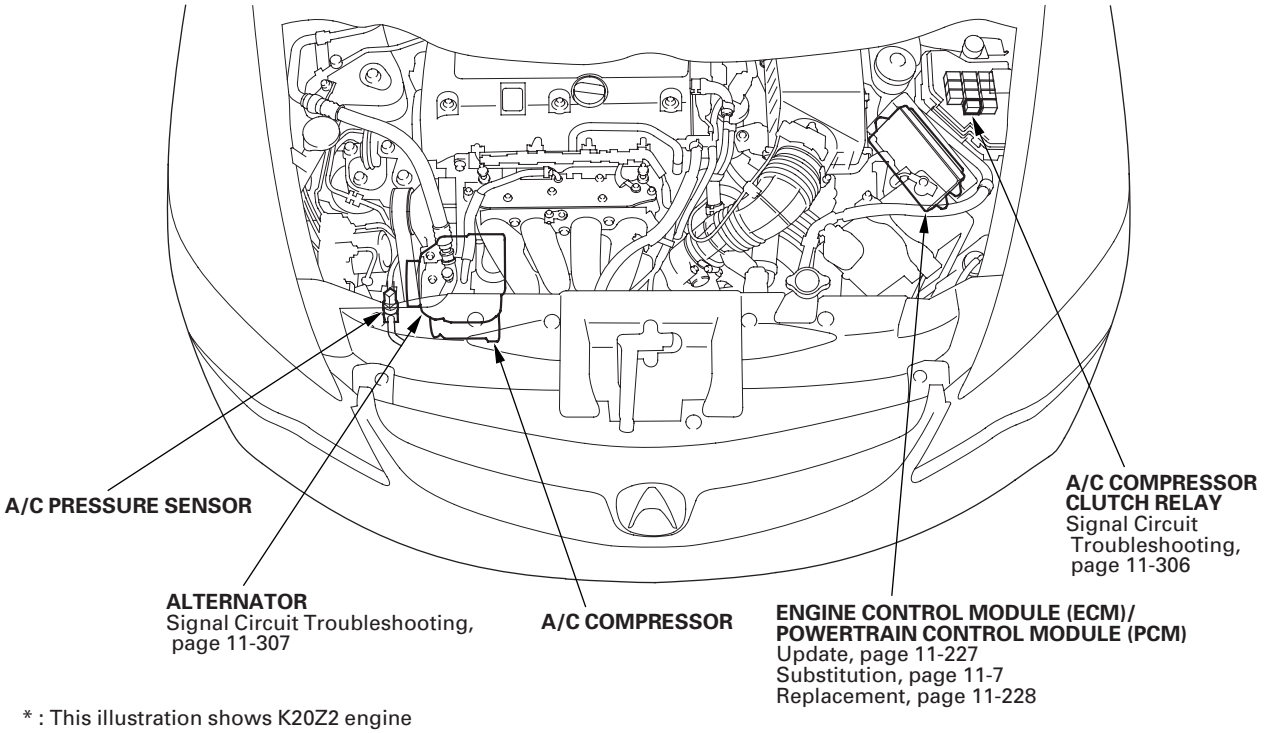
1. Remove the rocker arm oil control valve (see page 11-296).
2. Remove the cover (A).



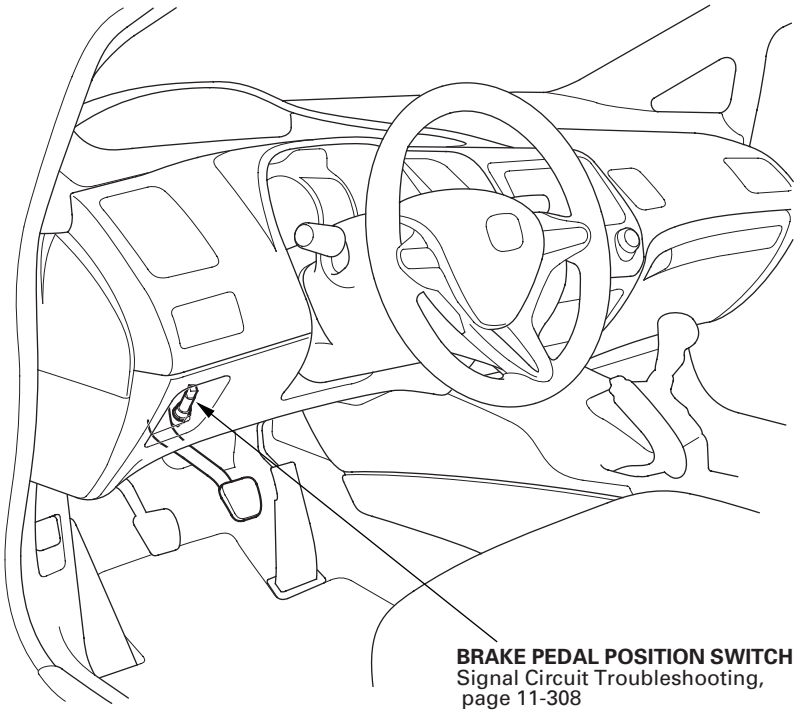
3. Remove the rocker arm oil pressure switch (B).
4. Install the parts in the reverse order of removal with a new O-ring (C).

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Component Location Index



* : This illustration shows K20Z2 engine



DTC Troubleshooting

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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
4. Check under these DATA LIST conditions with the HDS:

   - ECT SENSOR 1 above 70 ℃ (156 ℉)
   - IAT SENSOR above 0 ℃ (32 ℉)
   - VSS is 0 km/h (0 mph)
   - ST FUEL TRIM between 0.69—1.47
   - FSS is CLOSED

5. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 6.

   NO—If the screen indicates PASSED, go to step 15. If the screen indicates EXECUTING, keep idling 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; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
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 11-344). Also check for damage to the air cleaner element (see page 11-346), then go to step 9. If there is damage in the throttle bore, go to step 8.

   NO—Check the A/C system or the charging system, then go to step 9.

8. Replace the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
9. Reset the ECM/PCM with the HDS.
10. Do the ECM/PCM idle learn procedure (see page 11-310).
11. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
12. Check under these DATA LIST conditions with the HDS:

    - ECT SENSOR 1 above 70 ℃ (156 ℉)
    - IAT SENSOR above 0 ℃ (32 ℉)
    - VSS is 0 km/h (0 mph)
    - ST FUEL TRIM between 0.69—1.47
    - FSS is CLOSED

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

    Is DTC P0506 indicated?

    YES—Go to step 19.

    NO—Go to step 14.

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14. Monitor the OBD STATUS for DTC P0506 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, go to step 19. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 11.

15. Remove the intake air duct from the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).

16. Check for dirt, carbon, or damage in the throttle bore.

    Is there dirt, carbon, or damage in the throttle bore?

    YES—If there is dirt or carbon, clean the throttle body (see page 11-344). Also check for damage to the air cleaner element (see page 11-346), then go to step 9. If there is damage in the throttle bore, go to step 8.

    NO—Go to step 17.

17. Recheck with different load conditions (turn on the headlights, blower motor, rear window defogger and/or A/C, change the gear position, etc.).

18. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—Intermittent failure, the system is OK at this time. ■

    NO—If the screen indicates FAILED, check the A/C system and/or the charging system, then go to step 1 and recheck. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 17.

19. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

20. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

21. Check under these DATA LIST conditions with the HDS:

    - ECT SENSOR 1 above 70 °C (156 °F)
    - IAT SENSOR above 0 °C (32 °F)
    - VSS is 0 km/h (0 mph)
    - ST FUEL TRIM between 0.69—1.47
    - FSS is CLOSED

22. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 23.

23. Monitor the OBD STATUS for DTC P0506 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 22, 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 20. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 20.

DTC Troubleshooting (cont'd)

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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for at least 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, keep idling 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
   - Brake booster

   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 to ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see page 11-310).
9. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle for at least 20 seconds.
10. Check for Temporary DTCs or DTCs with the HDS.

    Is DTC P0507 indicated?

    YES—Go to step 12.

    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—Troubleshooting is complete. 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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, recheck with different load conditions (turn on the headlights, blower motor, or A/C; change the gear position, etc.), then go to step 9.

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12. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

14. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 13. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 15.

15. Monitor the OBD STATUS for DTC P0507 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 throttle body and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 13. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13.

DTC P0532: A/C Pressure 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. Start the engine, and let it idle.

2. Turn the blower switch on.

3. Turn the A/C switch on.

4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 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 A/C pressure sensor and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the A/C pressure sensor 3P connector.

7. Turn the ignition switch to ON (II).

8. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 0.3 V or less?

   YES—Go to step 10.

   NO—Go to step 9.

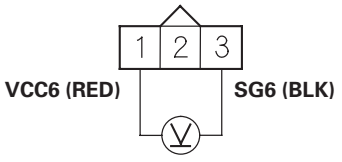
(cont'd)

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DTC Troubleshooting (cont'd)

9. Measure the voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

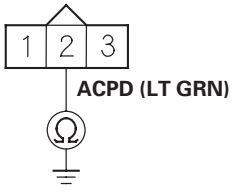
Is there about 5 V?

YES—Go to step 18.

NO—Go to step 14.

10. Turn the ignition switch to LOCK (0).
11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector A (44P).
13. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and body ground.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

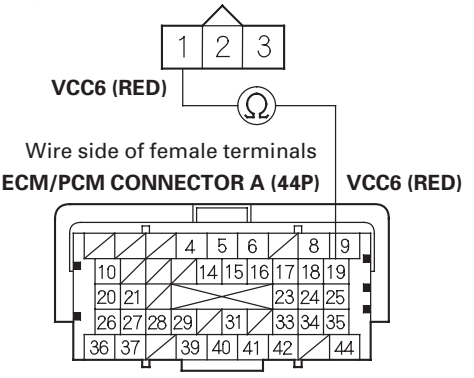
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (A16) and the A/C pressure sensor, then go to step 20.

NO—Go to step 28.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 1 and ECM/PCM connector terminal A19.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

Terminal side of female terminals

Is there continuity?

YES—Go to step 28.

NO—Repair open in the wire between the ECM/PCM (A19) and the A/C pressure sensor, then go to step 20.

18. Turn the ignition switch to LOCK (0).
19. Replace the A/C pressure sensor (see page 21-8).
20. Reconnect all connectors.
21. Turn the ignition switch to ON (II).

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22. Reset the ECM/PCM with the HDS.

23. Do the ECM/PCM idle learn procedure (see page 11-310).

24. Start the engine, and let it idle.

25. Turn the blower switch on.

26. Turn the A/C switch on.

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

    Is DTC P0532 indicated?

    YES—Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/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. ■

28. Reconnect all connectors.

29. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

30. Start the engine, and let it idle.

31. Turn the blower switch on.

32. Turn the A/C switch on.

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

    Is DTC P0532 indicated?

    YES—Check for poor connections or loose terminals at A/C pressure sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 30. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

DTC P0533: A/C Pressure 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. Start the engine, and let it idle.

2. Turn the blower switch on.

3. Turn the A/C switch on.

4. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

    Is there about 4.75 V or more?

    YES—Go to step 5.

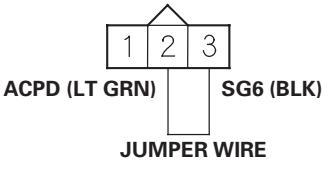
    NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. ■

5. Turn the ignition switch to LOCK (0).

6. Disconnect the A/C pressure sensor 3P connector.

7. Connect A/C pressure sensor 3P connector terminals No. 2 and No. 3 with a jumper wire.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

(cont'd)

DTC Troubleshooting (cont'd)

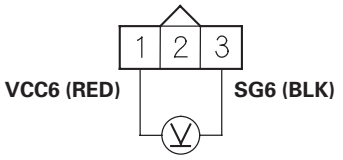
8. Turn the ignition switch to ON (II).
9. Check the A/C PRESSURE SENSOR in the DATA LIST with the HDS.

   Is there about 4.75 V or more?

   YES—Go to step 10.

   NO—Go to step 22.
10. Turn the ignition switch to LOCK (0).
11. Remove the jumper wire from the A/C pressure sensor 3P connector.
12. Turn the ignition switch to ON (II).
13. Measure the voltage between A/C pressure sensor 3P connector terminals No. 1 and No. 3.

A/C PRESSURE SENSOR 3P CONNECTOR



Wire side of female terminals

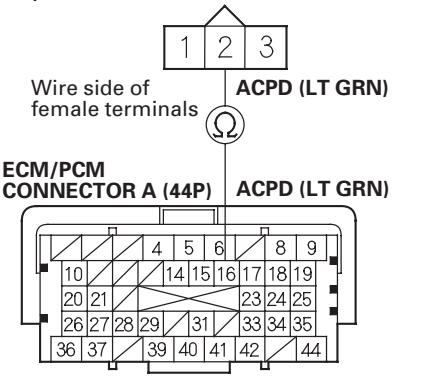
Is there about 5 V?

YES—Go to step 14.

NO—Go to step 18.

14. Turn the ignition switch to LOCK (0).
15. Jump the SCS line with the HDS.
16. Disconnect ECM/PCM connector A (44P).
17. Check for continuity between A/C pressure sensor 3P connector terminal No. 2 and ECM/PCM connector terminal A16.

A/C PRESSURE SENSOR 3P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM (A16) and the A/C pressure sensor, then go to step 24.

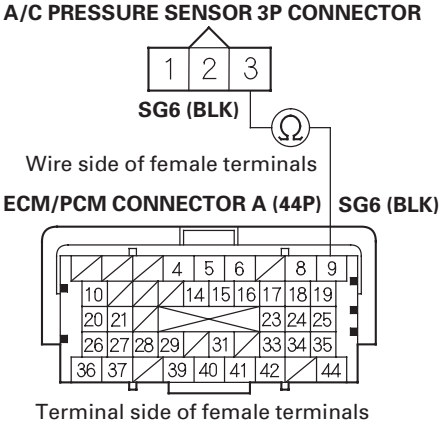
DYNOMITE -2009-

18. Turn the ignition switch to LOCK (0).

19. Jump the SCS line with the HDS.

20. Disconnect ECM/PCM connector A (44P).

21. Check for continuity between A/C pressure sensor 3P connector terminal No. 3 and ECM/PCM connector terminal A9.



Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM (A9) and the A/C pressure sensor, then go to step 24.

22. Turn the ignition switch to LOCK (0).

23. Replace the A/C pressure sensor (see page 21-8).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

28. Start the engine, and let it idle.

29. Turn the blower switch on.

30. Turn the A/C switch on.

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

    Is DTC P0533 indicated?

    YES—Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/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. ■

32. Reconnect all connectors.

33. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

34. Start the engine, and let it idle.

35. Turn the blower switch on.

36. Turn the A/C switch on.

(cont'd)

DTC Troubleshooting (cont'd)

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

    Is DTC P0533 indicated?

    YES—Check for poor connections or loose terminals at the A/C pressure sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

A/C Signal Circuit Troubleshooting

1. Start the engine, and let it idle.
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 system test (see page 21-99). ■
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 to LOCK (0).
7. Turn the ignition switch to 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?

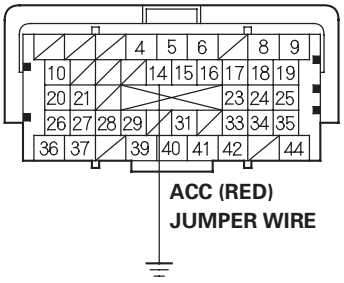
   YES—Do the A/C system test (see page 21-99). ■

   NO—Go to step 9.
9. Turn the ignition switch to LOCK (0).
10. Jump the SCS line with the HDS.
11. Disconnect ECM/PCM connector A (44P).
12. Turn the ignition switch to ON (II).

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13. Momentarily connect ECM/PCM connector terminal A14 to body ground with a jumper wire several times.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the ECM/PCM. If the connections and the terminals are OK, check the A/C compressor clutch relay (see page 22-70), repair open in the wires between the ECM/PCM (A14), the A/C compressor clutch relay, and other A/C systems parts. ■

Alternator FR Signal Circuit Troubleshooting

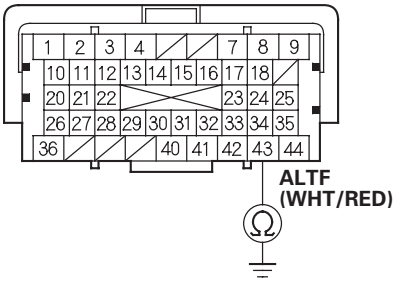
1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

   Does the percentage vary?

   YES—The alternator signal circuit is OK. ■

   NO—Go to step 4.
4. Turn the headlight switch and ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (44P).
8. Check for continuity between body ground and ECM/PCM connector terminal B43.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

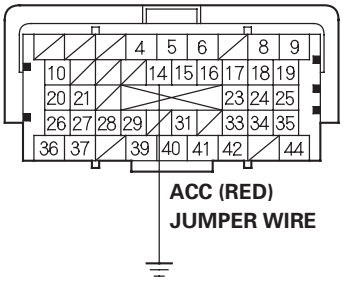
YES—Repair short in the wire between the ECM/PCM (B43) and the alternator. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

DYNOMITE -2009-

13. Momentarily connect ECM/PCM connector terminal A14 to body ground with a jumper wire several times.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there a clicking noise from the A/C compressor clutch?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Check for poor connections or loose terminals at the A/C clutch relay and the ECM/PCM. If the connections and the terminals are OK, check the A/C compressor clutch relay (see page 22-70), repair open in the wires between the ECM/PCM (A14), the A/C compressor clutch relay, and other A/C systems parts. ■

Alternator FR Signal Circuit Troubleshooting

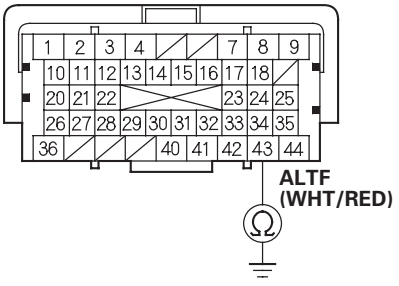
1. Start the engine, and let it idle.
2. Monitor the ALTERNATOR in the DATA LIST with the HDS.
3. Check if the indicated percentage varies when the headlight switch is turned on.

   Does the percentage vary?

   YES—The alternator signal circuit is OK. ■

   NO—Go to step 4.
4. Turn the headlight switch and ignition switch to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the alternator 4P connector.
7. Disconnect ECM/PCM connector B (44P).
8. Check for continuity between body ground and ECM/PCM connector terminal B43.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B43) and the alternator. ■

NO—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

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Brake Pedal Position Switch Signal Circuit Troubleshooting

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

   Does it indicate OFF?

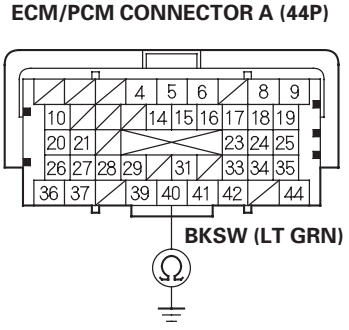
   YES—Go to step 3.

   NO—Inspect the brake pedal position switch (see page 19-6). ■
3. Press the brake pedal while checking 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 to LOCK (0).
5. Jump the SCS line with the HDS.
6. Disconnect the brake pedal position switch 4P connector.
7. Disconnect ECM/PCM connector A (44P).
8. Check for continuity between ECM/PCM connector terminal A40 and body ground.



Terminal side of female terminals

Is there continuity?

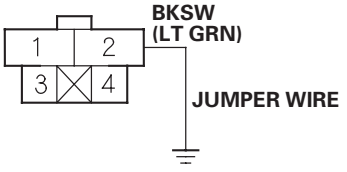
YES—Repair short in the wire between the ECM/PCM (A40) and the No. 12 HORN/STOP (15 A) fuse. Also, replace the No. 12 HORN/STOP (15 A) fuse. ■

NO—Go to step 9.

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9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

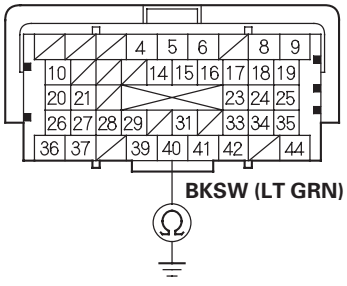
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A40 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 12 HORN/STOP (15 A) fuse. Also, inspect the brake pedal position switch (see page 19-6). ■

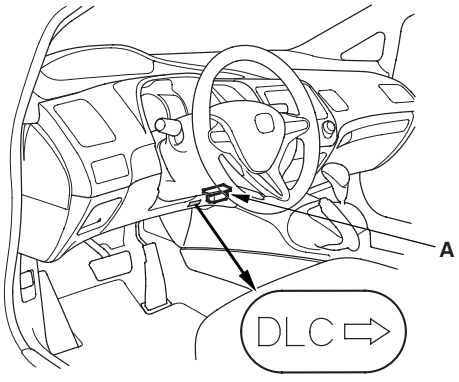
NO—Repair open in the wire between the ECM/PCM (A40) and the brake pedal position switch. ■

Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system
- Apply the parking brake, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector (see step 5 on page 11-409).

2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.



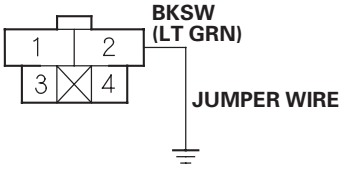
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

(cont'd)

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9. Connect brake pedal position switch 4P connector terminal No. 2 to body ground with a jumper wire.

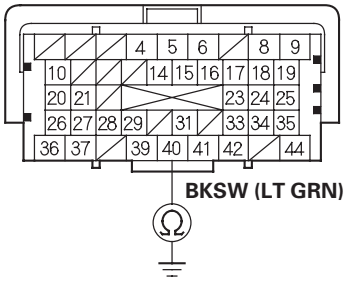
BRAKE PEDAL POSITION SWITCH 4P CONNECTOR



Wire side of female terminals

10. Check for continuity between ECM/PCM connector terminal A40 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Repair open in the wire between the brake pedal position switch and the No. 12 HORN/STOP (15 A) fuse. Also, inspect the brake pedal position switch (see page 19-6). ■

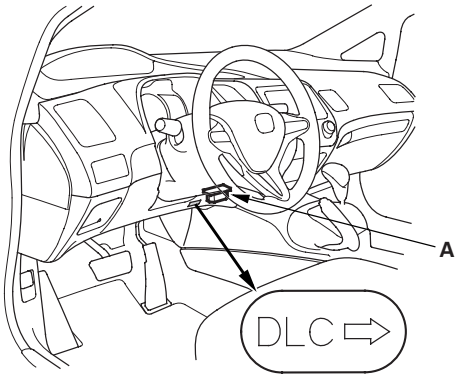
NO—Repair open in the wire between the ECM/PCM (A40) and the brake pedal position switch. ■

Idle Speed Inspection

NOTE:
- Before checking the idle speed, check these items:
  - The malfunction indicator lamp (MIL) has not been reported on, and there are no DTCs.
  - Ignition timing
  - Spark plugs
  - Air cleaner
  - PCV system
- Apply the parking brake, and make sure the headlights are off.

1. Disconnect the evaporative emission (EVAP) canister purge valve connector (see step 5 on page 11-409).

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 ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).

(cont'd)

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Idle Speed Inspection (cont'd)

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be:
   K20Z2 engine:

M/T	**700±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

6. 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:
   K20Z2 engine:

M/T	**780±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

   NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see page 11-310). If the idle speed is still not within specification, go to the symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.

ECM/PCM Idle Learn Procedure

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace the ECM/PCM.
- Reset the ECM/PCM.
- Update the ECM/PCM.
- Replace or clean the throttle body.
- Disassemble the engine or the transmission.

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 ECM/PCM with the HDS.

3. Turn the ignition switch to ON (II), and wait 2 seconds.

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 90 ℃ (194 ℉).

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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Idle Speed Inspection (cont'd)

4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

5. Check the idle speed without load conditions: headlights, blower fan, radiator fan, and air conditioner off.

   Idle speed should be:
   K20Z2 engine:

M/T	**700±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

6. 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:
   K20Z2 engine:

M/T	**780±50 rpm**
A/T	**800±50 rpm (in P or N)**

   K20Z3 engine:

M/T	**750±50 rpm**

   NOTE: If the idle speed is not within specification, do the ECM/PCM idle learn procedure (see page 11-310). If the idle speed is still not within specification, go to the symptom troubleshooting.

7. Reconnect the EVAP canister purge valve connector.

ECM/PCM Idle Learn Procedure

The idle learn procedure must be done so the ECM/PCM can learn the engine idle characteristics.

Do the idle learn procedure whenever you do any of these actions:

- Replace the ECM/PCM.
- Reset the ECM/PCM.
- Update the ECM/PCM.
- Replace or clean the throttle body.
- Disassemble the engine or the transmission.

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 ECM/PCM with the HDS.

3. Turn the ignition switch to ON (II), and wait 2 seconds.

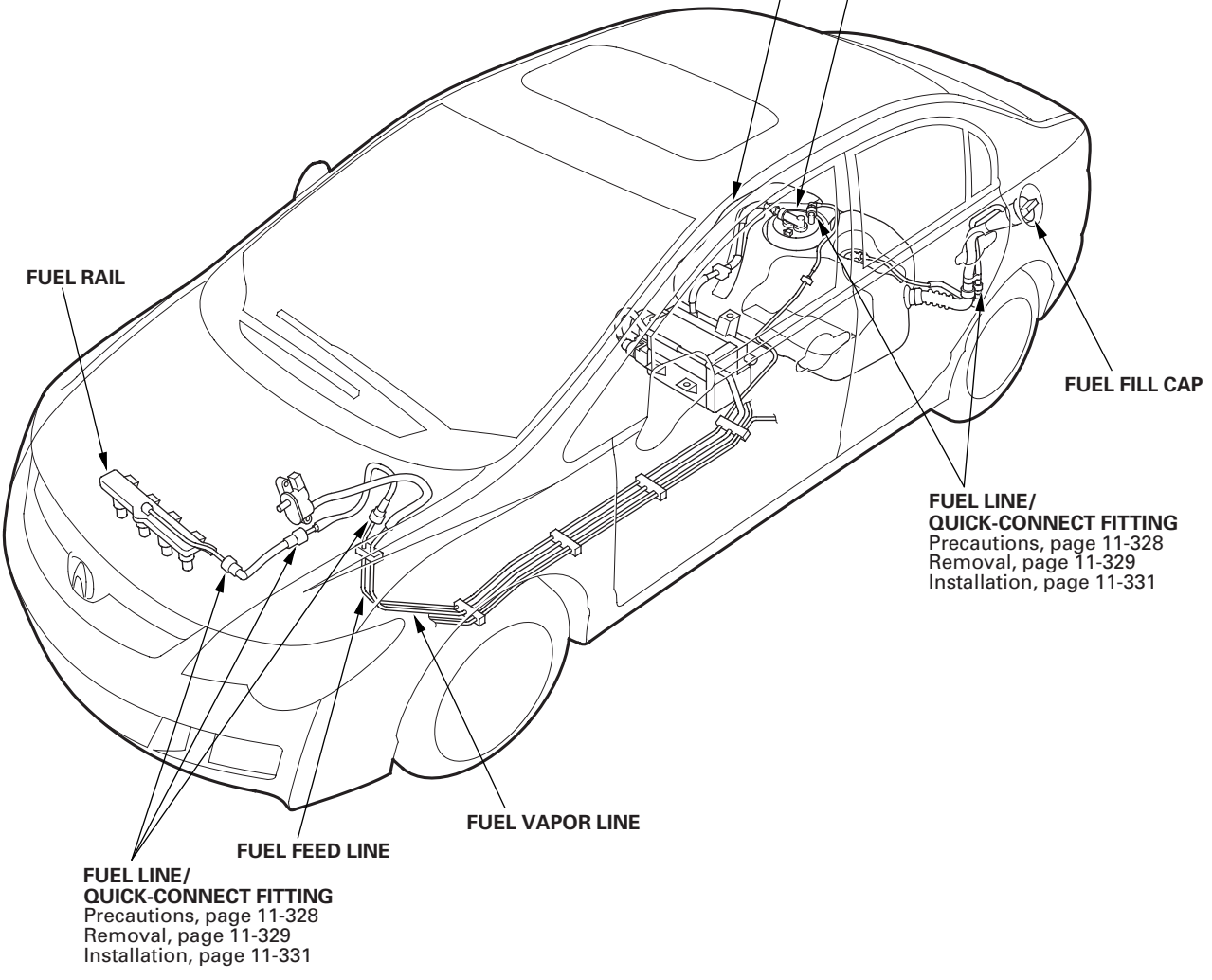
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, or until the engine coolant temperature reaches 90 ℃ (194 ℉).

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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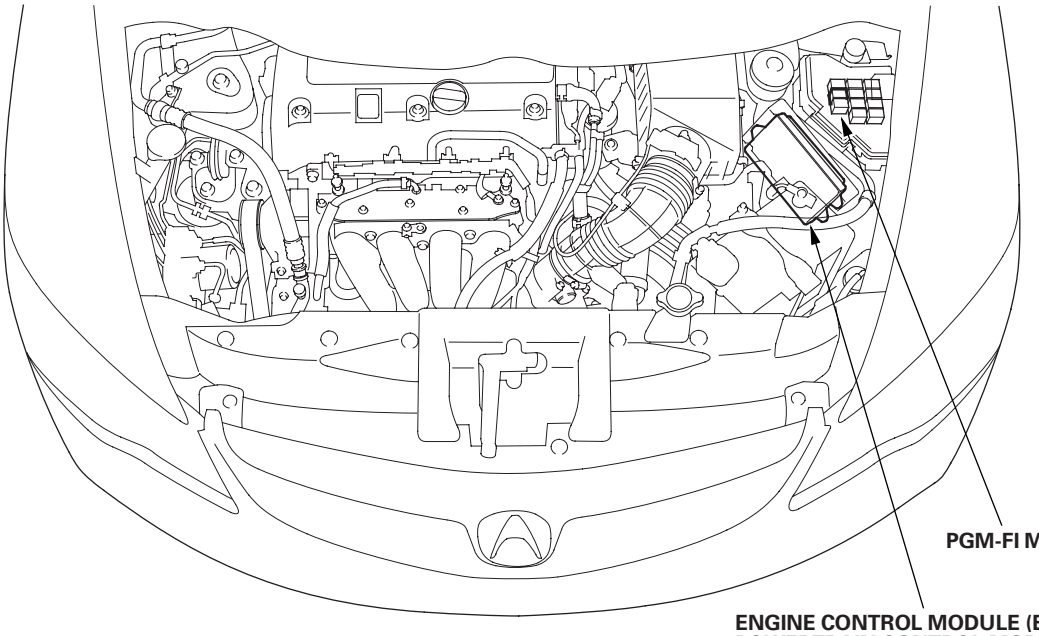
Component Location Index

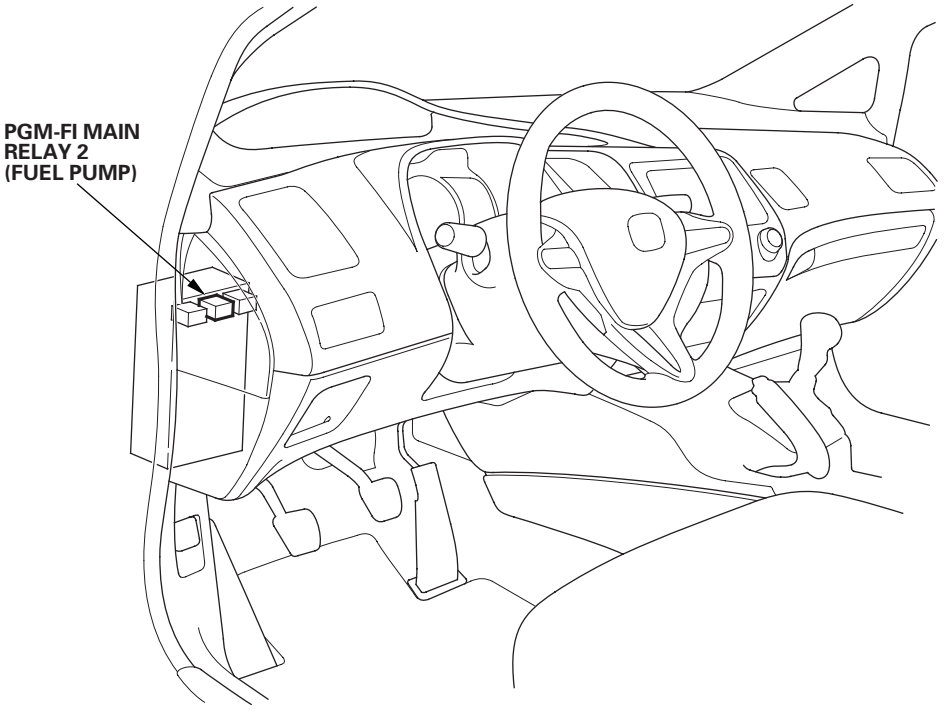


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Component Location Index (cont'd)





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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 260 km (162 miles) of driving without refueling to complete this diagnosis, DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-340).

   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 (tach). ■

   NO—Replace the fuel gauge sending unit (see page 11-338), then go to step 2.

2. Turn the ignition switch to ON (II).
3. Reset the ECM/PCM with the HDS.
4. Do the ECM/PCM idle learn procedure (see page 11-310).
5. Check for Temporary DTCs or DTCs with the HDS.

   Are any Temporary DTCs or DTCs indicated?

   YES—Go to the indicated DTC's troubleshooting.

   NO—Troubleshooting is complete. ■

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 to 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 (tach) and the fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0).
5. Remove the rear seat cushion (see page 20-131).
6. Remove the rear floor upper cross-member and the access panel from the floor (see page 11-334).
7. Disconnect the fuel tank unit 4P connector.
8. Turn the ignition switch to 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 11-338), then go to step 22.

    NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Remove the gauge control module (tach) (see page 22-277).
13. Disconnect the gauge control module (tach) 36P connector.

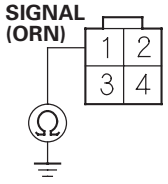
(cont'd)

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DTC Troubleshooting (cont'd)

14. Check for continuity between fuel tank unit 4P connector terminal No. 1 and body ground.

FUEL TANK UNIT 4P CONNECTOR



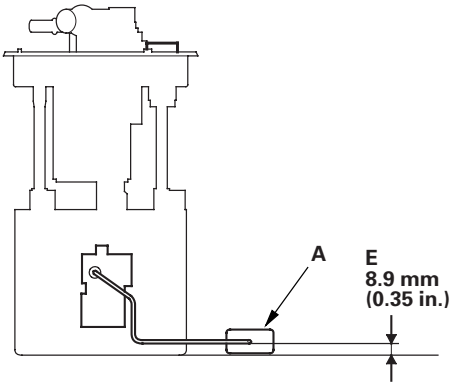
Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 23.

NO—Go to step 15.

15. Reconnect the gauge control module (tach) 36P connector.
16. Remove the fuel tank unit (see page 11-334).
17. Connect the fuel tank unit 4P connector.
18. Turn the ignition switch to ON (II).
19. Clear the DTC with the HDS.
20. Set the float (A) to the E position.



21. Check the fuel gauge.

Does the gauge move to the empty position?

YES—Go to step 29.

NO—Replace the gauge control module (tach) (see page 22-277), then go to step 22.

22. Turn the ignition switch to LOCK (0).
23. Reconnect all connectors.
24. Install the parts in the reverse order of removal.
25. Turn the ignition switch to ON (II).
26. Reset the ECM/PCM with the HDS.
27. Do the ECM/PCM idle learn procedure (see page 11-310).
28. Check for Temporary DTCs or DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, 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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29. Reconnect all connectors.

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

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P0462 indicated?

    YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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 to 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 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 (tach) and the fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0).

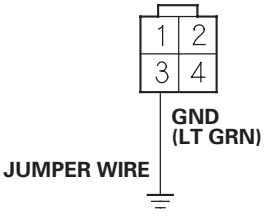
5. Remove the rear seat cushion (see page 20-131).

6. Remove the rear floor upper cross-member and the access panel from the floor (see page 11-334).

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

(cont'd)

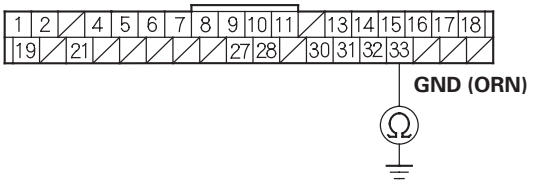
DTC Troubleshooting (cont'd)

9. Remove the gauge control module (tach) (see page 22-277).

10. Disconnect the gauge control module (tach) 36P connector.

11. Check for continuity between gauge control module (tach) 36P connector terminal No. 33 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

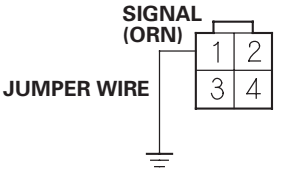
Is there continuity?

YES—Go to step 12.

NO—Repair open in the wire between the gauge control module (tach) (GND line) and the fuel gauge sending unit, then go to step 24.

12. Connect fuel tank unit 4P connector terminal No. 1 to body ground with a jumper wire.

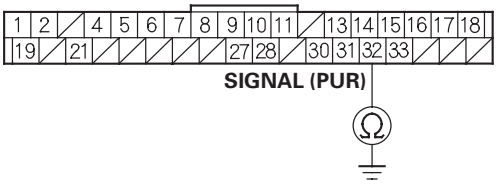
FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

13. Check for continuity between gauge control module (tach) 36P connector terminal No. 32 and body ground.

GAUGE CONTROL MODULE (TACH) 36P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the gauge control module (tach) (signal line) and the fuel gauge sending unit, then go to step 24.

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14. Remove the jumper wire from the fuel tank unit 4P connector.

15. Remove the fuel tank unit (see page 11-334).

16. Test the fuel gauge sending unit (see page 11-340).

    Is the fuel gauge sending unit OK?

    YES—Go to step 17.

    NO—Replace the fuel gauge sending unit (see page 11-338), then go to step 23.

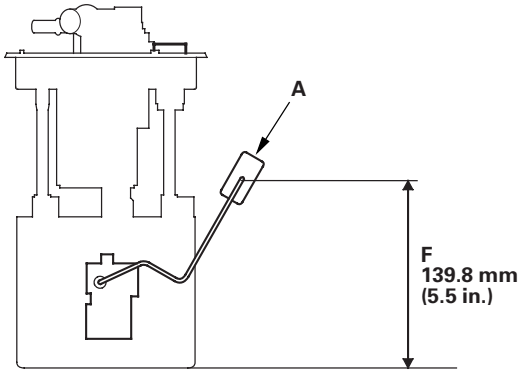
17. Connect the fuel tank unit 4P connector.

18. Reconnect the gauge control module (tach) 36P connector.

19. Turn the ignition switch to 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 (tach) (see page 22-277), then go to step 23.

23. Turn the ignition switch to LOCK (0).

24. Reconnect all connectors.

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

26. Turn the ignition switch to ON (II).

27. Reset the ECM/PCM with the HDS.

28. Do the ECM/PCM idle learn procedure (see page 11-310).

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

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit, 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. Reconnect all connectors.

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

32. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

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

    Is DTC P0463 indicated?

    YES—Check for poor connections or loose terminals at the gauge control module (tach) and the fuel gauge sending unit. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

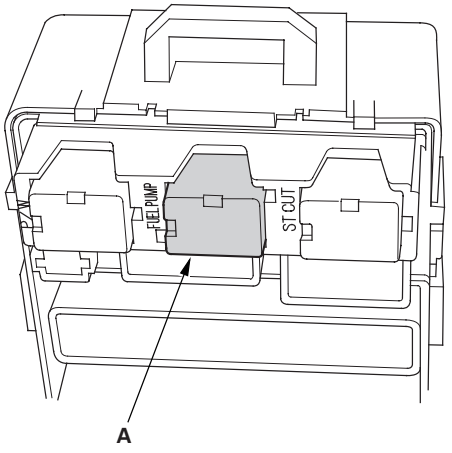
    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC's troubleshooting. ■

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Fuel Pump Circuit Troubleshooting

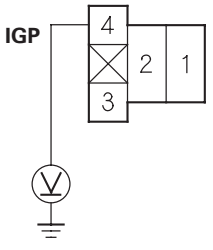
If you suspect a problem with the fuel pump, check that the fuel pump actually runs; when it is on, you will hear some noise if you listen to the fuel fill port with the fuel fill cap removed. The fuel pump should run for 2 seconds when the ignition switch is first turned on. If the fuel pump does not make noise, check as follows:

1. Turn the ignition switch to LOCK (0).
2. Remove the under-dash fuse/relay box (see page 22-66), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



3. Reinstall the under-dash fuse/relay box.
4. Turn the ignition switch to ON (II).
5. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

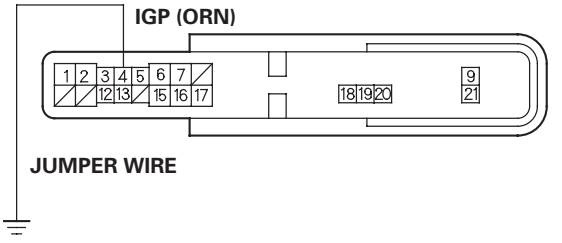
Is there battery voltage?

YES—Go to step 12.

NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).
7. Disconnect the under-hood fuse/relay box connector E (10P).
8. Disconnect the C101 connector at left side of engine compartment (see page 22-16).
9. Disconnect under-dash fuse/relay box connector G (21P).
10. Connect under-dash fuse/relay box connector G (21P) terminal No. 4 to body ground with a jumper wire.

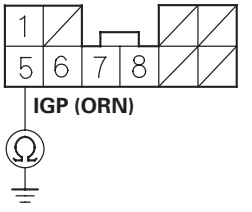
UNDER-DASH FUSE/RELAY BOX CONNECTOR G (21P)



Wire side of female terminals

11. Check for continuity between under-hood fuse/relay box connector E (10P) terminal No. 5 and body ground.

UNDER-HOOD FUSE/RELAY BOX CONNECTOR E (10P)



Wire side of female terminals

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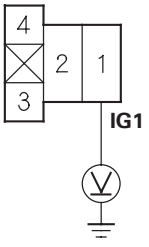
Is there continuity?

YES—
- Replace PGM-FI main relay 1. ■
- If needed, replace the under-hood fuse/relay box (see page 22-65). ■

NO—Repair open in the wire between the under-hood fuse/relay box and the under-dash fuse/relay box. ■

12. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 1 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

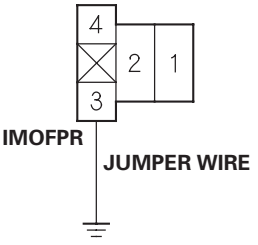
YES—Go to step 13.

NO—
- Check the No. 2 FUEL PUMP (15 A) fuse in the under-dash fuse/relay box. ■
- If needed, replace the under-dash fuse/relay box (see page 22-66). ■

13. Turn the ignition switch to LOCK (0).

14. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 to body ground with a jumper wire.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



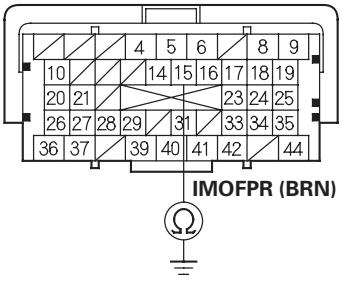
Terminal side of female terminals

15. Jump the SCS line with the HDS.

16. Disconnect ECM/PCM connector A (44P).

17. Check for continuity between body ground and ECM/PCM connector terminal A15.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the ECM/PCM (A15). ■

18. Remove the under-dash fuse/relay box (see page 22-66), then reinstall PGM-FI main relay 2 (FUEL PUMP).

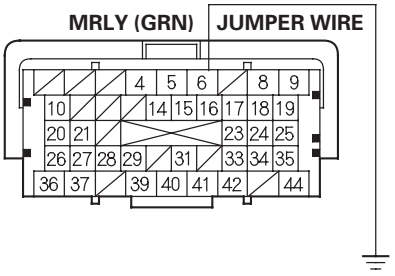
19. Reinstall the under-dash fuse/relay box (see page 22-66).

(cont'd)

Fuel Pump Circuit Troubleshooting (cont'd)

20. Connect ECM/PCM connector terminal A6 to body ground with a jumper wire.

ECM/PCM CONNECTOR A (44P)

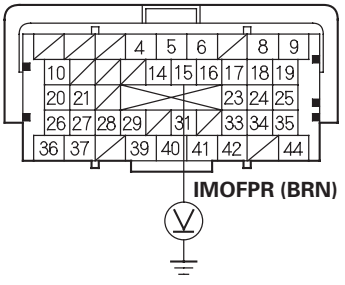


Terminal side of female terminals

21. Turn the ignition switch to ON (II).

22. Measure the voltage between ECM/PCM connector terminal A15 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there battery voltage?

YES—Go to step 23.

NO—Replace PGM-FI main relay 2 (FUEL PUMP). ■

23. Turn the ignition switch to LOCK (0).

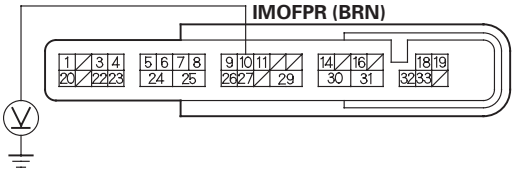
24. Reconnect ECM/PCM connector A (44P).

25. Open the SCS line with the HDS.

26. Turn the ignition switch to LOCK (0).

27. Turn the ignition switch to ON (II), and measure the voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground within 2 seconds.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

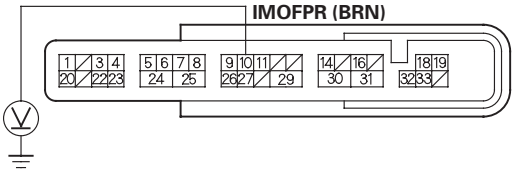
Is there battery voltage?

YES—Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7), then recheck. If the symptom/indication goes away with a known-good ECM/PCM, replace the original ECM/PCM (see page 11-228). ■

NO—Go to step 28.

28. Turn the ignition switch to ON (II), and measure the voltage between under-dash fuse/relay box connector F (34P) terminal No. 10 and body ground after 2 seconds.

UNDER-DASH FUSE/RELAY BOX CONNECTOR F (34P)



Wire side of female terminals

Is there battery voltage?

YES—Go to step 29.

NO—If needed replace the under-dash fuse/relay box (see page 22-66), then go to step 29.

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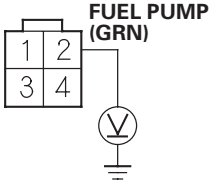
29. Turn the ignition switch to LOCK (0).

30. Remove the rear seat cushion (see page 20-131).

31. Remove the rear floor upper cross-member, then remove the access panel from the floor (see page 11-334).

32. Turn the ignition switch to ON (II), and measure the 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—Go to step 37.

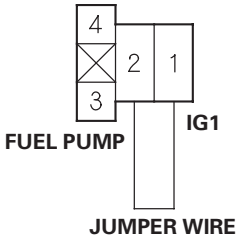
NO—Go to step 33.

33. Turn the ignition switch to LOCK (0).

34. Remove PGM-FI main relay 2 (FUEL PUMP).

35. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminals No. 1 and No. 2 with a jumper wire.

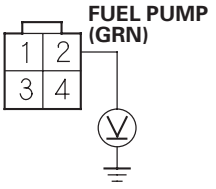
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

36. Turn the ignition switch to ON (II), and measure the voltage between fuel tank unit 4P connector terminal No. 2 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there battery voltage?

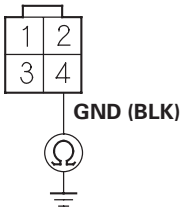
YES—Replace PGM-FI main relay 2 (FUEL PUMP). ■

NO—Repair open in the wire between PGM-FI main relay 2 (FUEL PUMP) and the fuel tank unit 4P connector. ■

37. Turn the ignition switch to LOCK (0).

38. Check for continuity between fuel tank unit 4P connector terminal No. 4 and body ground.

FUEL TANK UNIT 4P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Replace the fuel pump (see page 11-338). ■

NO—Repair open in the wire between the fuel tank unit 4P connector and G601 (see page 22-34). ■

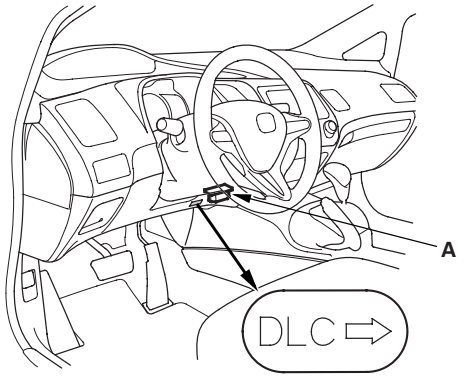
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Fuel Pressure Relieving

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.

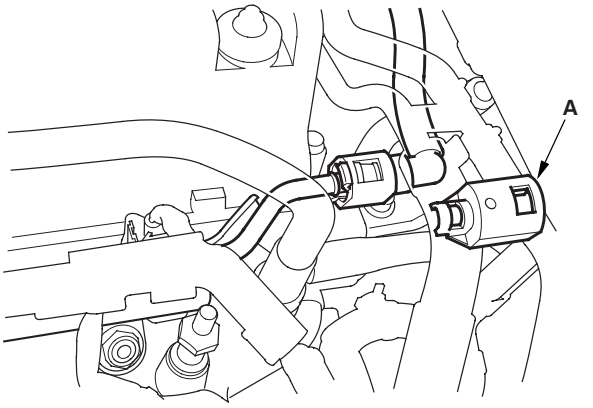
With the HDS

1. Turn the ignition switch to LOCK (0).
2. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

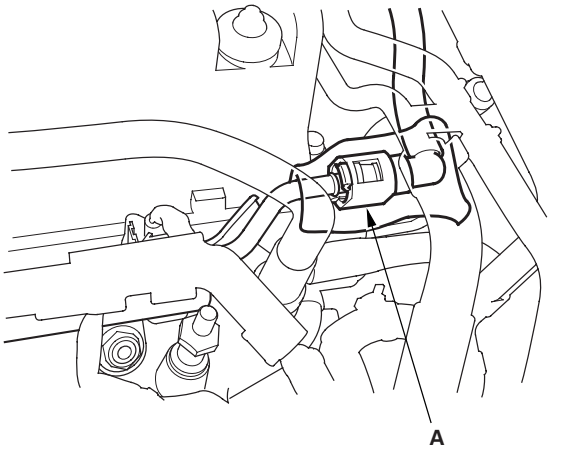


3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
5. Turn the ignition switch to LOCK (0).
6. Remove the fuel fill cap to relieve the pressure in the fuel tank.
7. Turn the ignition switch to ON (II).
8. From the INSPECTION MENU of the HDS, select Fuel Pump OFF, then start the engine, and let it idle until it stalls.

   NOTE:
   - Do not allow the engine to idle above 1,000 rpm or the ECM/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).
9. Turn the ignition switch to LOCK (0).
10. Do the battery terminal disconnection procedure (see page 22-68).
11. Remove the quick-connect fitting cover (A).



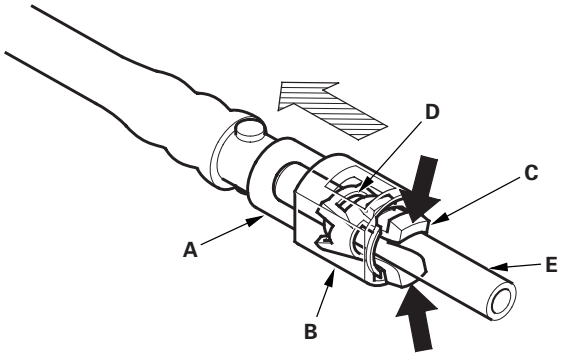
12. Check the fuel quick-connect fitting for dirt, and clean it if needed.
13. Place a rag or shop towel over the quick-connect fitting (A).



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14. 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.

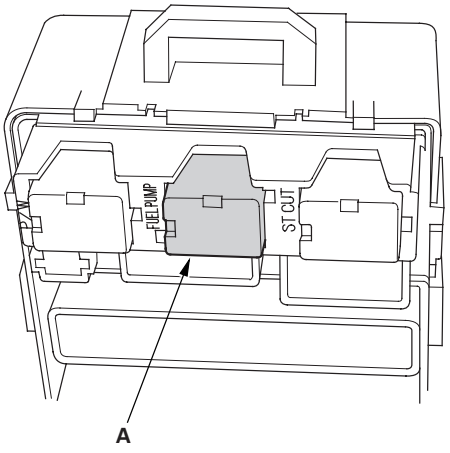


15. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 4 on page 11-330).

16. Do the battery terminal reconnection procedure (see page 22-68).

Without the HDS

1. Remove the under-dash fuse/relay box (see page 22-66), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the under-dash fuse/relay box.



2. Reinstall the under-dash fuse/relay box.

3. Start the engine, and let it idle until it stalls.

    NOTE: If any DTCs are stored, clear and ignore them.

4. Turn the ignition switch to LOCK (0).

5. Remove the fuel fill cap.

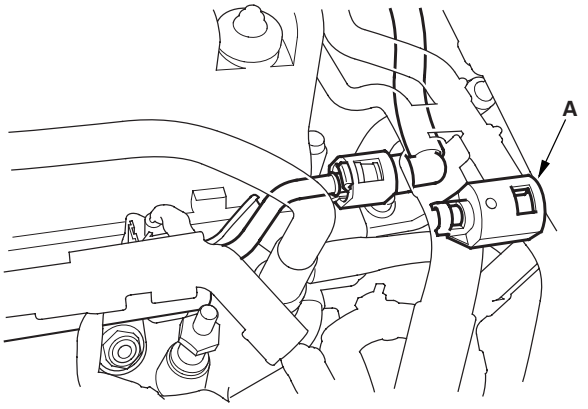
6. Do the battery terminal disconnection procedure (see page 22-68).

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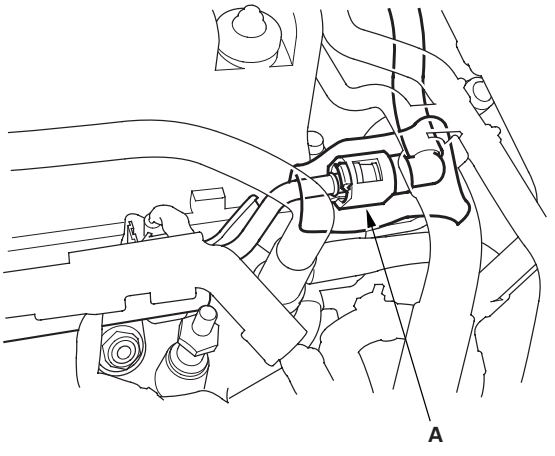
Fuel Pressure Relieving (cont'd)

7. Remove the quick-connect fitting cover (A).



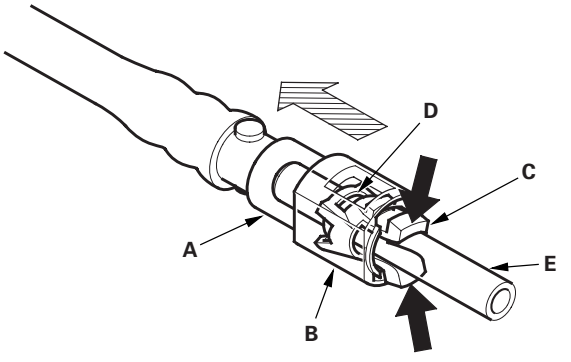
8. Check the fuel quick-connect fitting for dirt, and clean it if needed.

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 11-330).

12. Do the battery terminal reconnection procedure (see page 22-68).

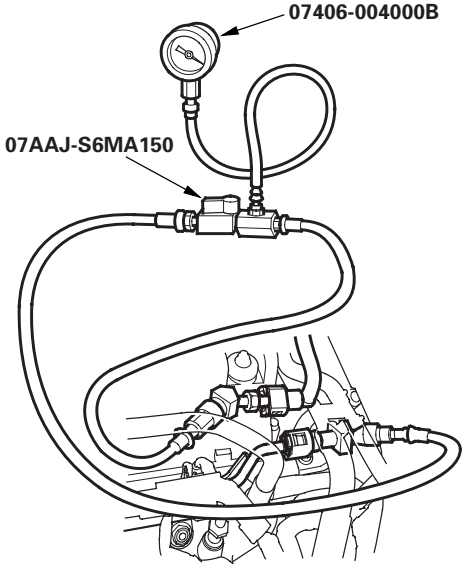
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Fuel Pressure Test

Special Tools Required
- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-322).

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, do the fuel pump circuit troubleshooting (see page 11-318).

5. Read the fuel pressure gauge. The pressure should be 330—380 kPa (3.4—3.9 kgf/cm^2, 48—55 psi).

   - If the pressure is OK, the test is complete.
   - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-337) and the fuel filter (see page 11-337), then recheck the fuel pressure.

Fuel Tank Draining

1. Remove the fuel tank unit (see page 11-334).

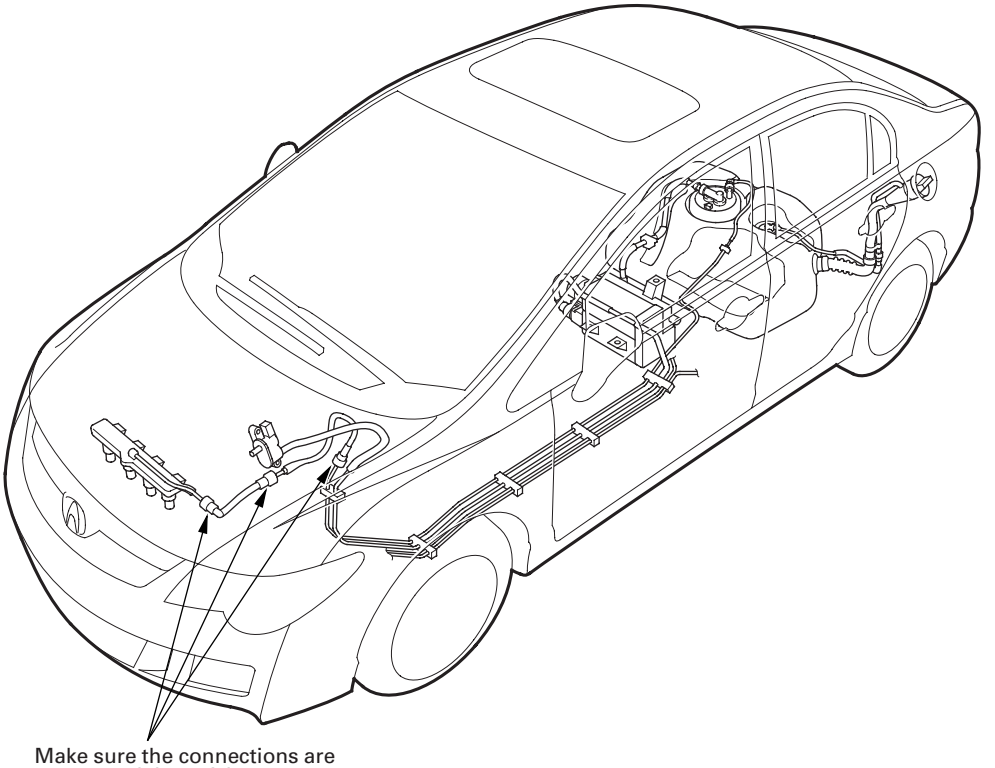
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank.

3. Reinstall the fuel tank unit (see page 11-335).

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Fuel Line Inspection

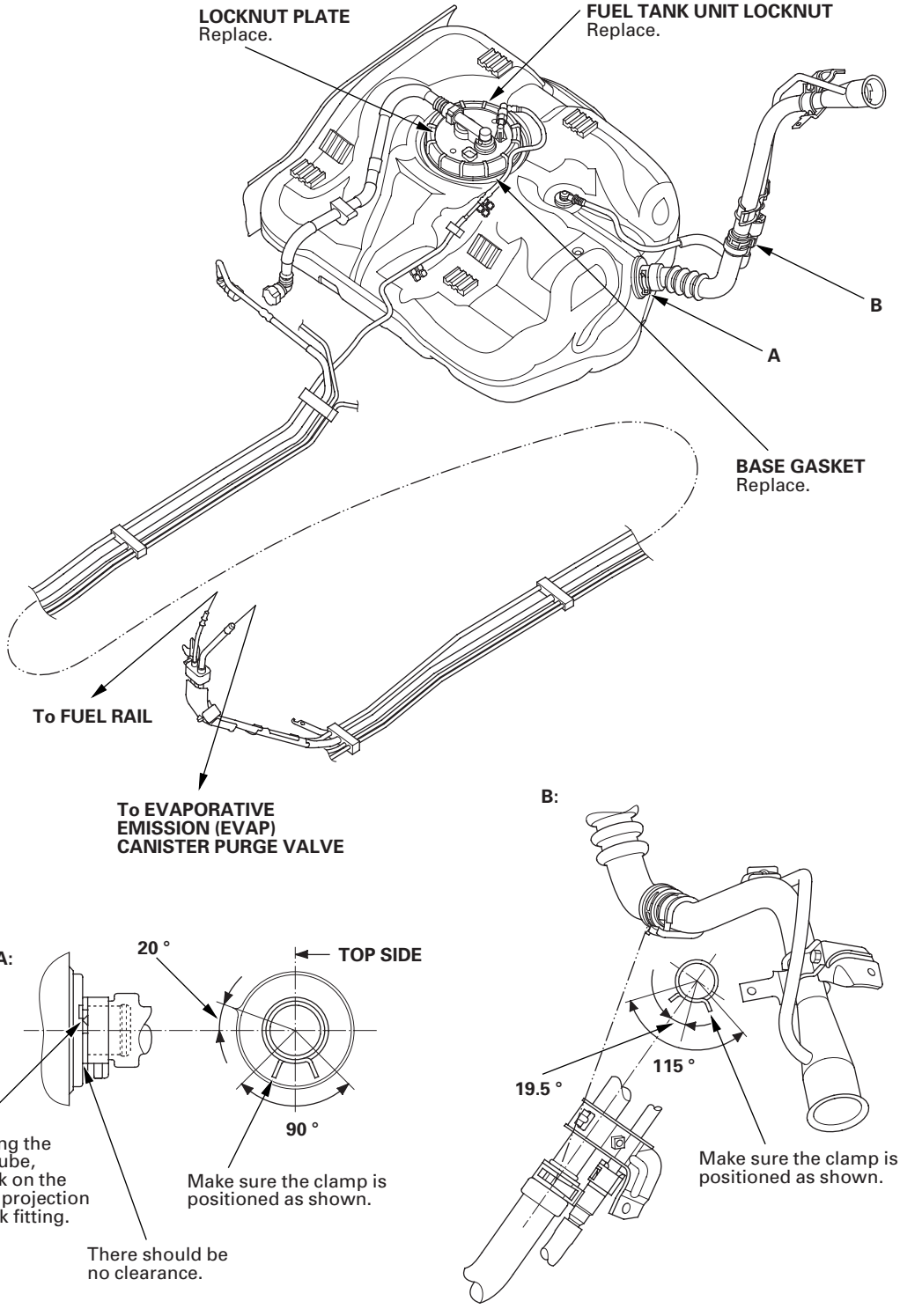
Check the fuel system lines and hoses for damage, leaks, and deterioration. Replace any damaged parts.



Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.

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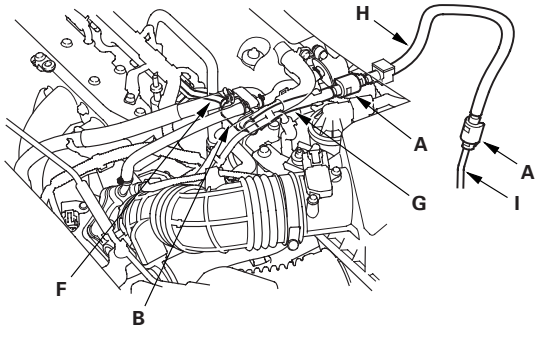
Check all clamps, and make sure they are properly positioned.



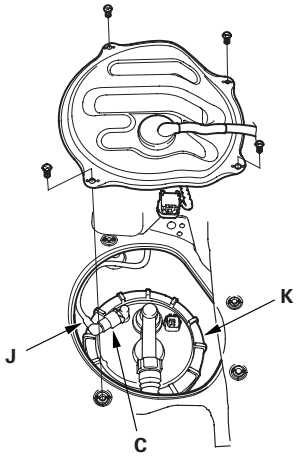
Fuel Line/Quick-Connect Fitting Precautions

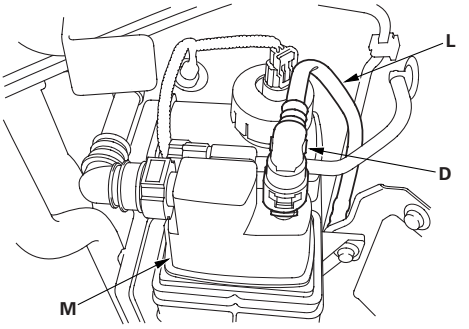
The fuel line/quick-connect fittings (A), (B), (C), (D), and (E) connect the fuel rail (F) to fuel feed hose A (G), fuel feed hose A to fuel feed hose B (H), fuel feed hose B to the fuel line (I), the fuel line (J) to the fuel tank unit (K), the fuel vapor line (L) to the EVAP canister (M) and the fuel tank vapor recirculation tube (N) to the fuel fill pipe (O). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, you need to disconnect or connect the quick-connect fittings.
Pay attention to the following:

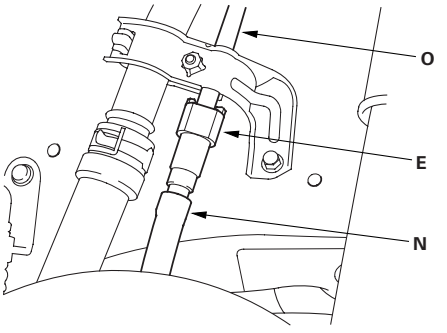
- The fuel feed hoses, the fuel line, and the quick-connect fittings are not heat-resistant; be careful not to damage them during welding or other heat-generating procedures.
- The fuel feed hoses, the fuel line, and the quick-connect fittings are not acid-proof; do not touch them with a shop towel that was used for wiping battery electrolyte. Replace them if they come in contact with electrolyte or something similar.
- When connecting or disconnecting the fuel feed hoses, the fuel line, and the quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.



* : This illustration shows K20Z2 engine.







A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge line.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- it has been removed from the line.
- it is damaged.

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Green	6.3 mm (0.2 in.)
B	Tokai	Blue green	8 mm (0.3 in.)
C	Sanoh	White	9.5 mm (0.4 in.)
D	Sanoh	White	12 mm (0.5 in.)
E	Tokai	Natural	12 mm (0.5 in.)

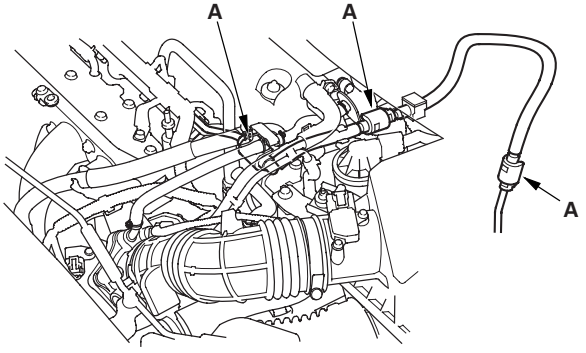
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Fuel Line/Quick-Connect Fitting Removal

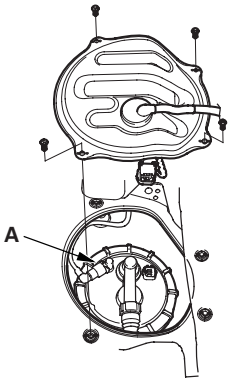
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-328).

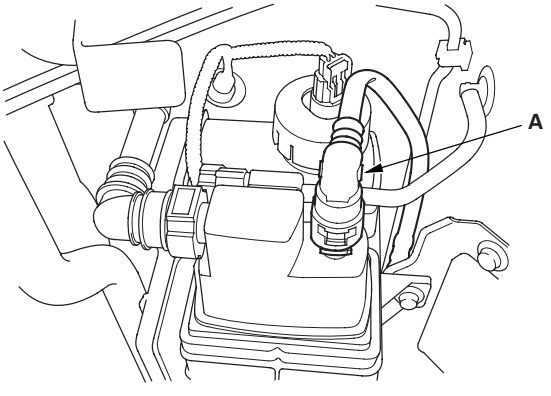
1. Relieve the fuel pressure (see page 11-322).

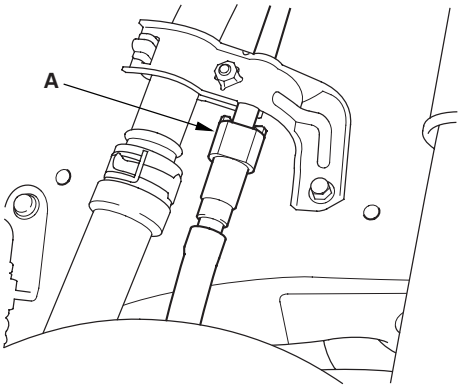
2. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.



* : This illustration shows K20Z2 engine.

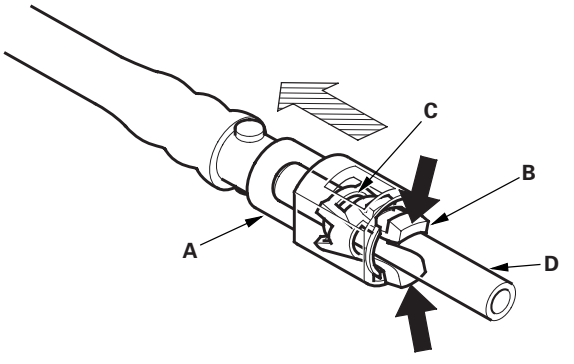






3. Place a rag or shop towel over the quick-connect fitting. Hold the connector (A) with one hand, and squeeze the retainer tabs (B) with the other hand to release them from the locking tabs (C). Pull the connector off.

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.

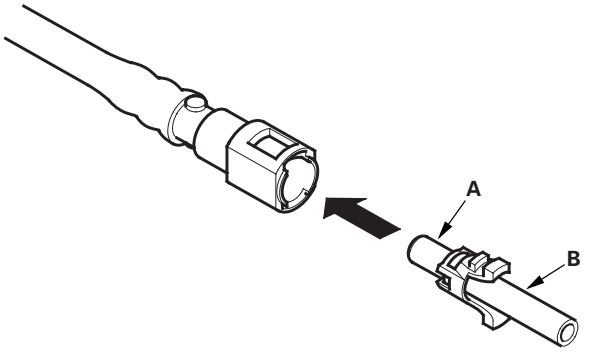


(cont'd)

Fuel Line/Quick-Connect Fitting Removal (cont'd)

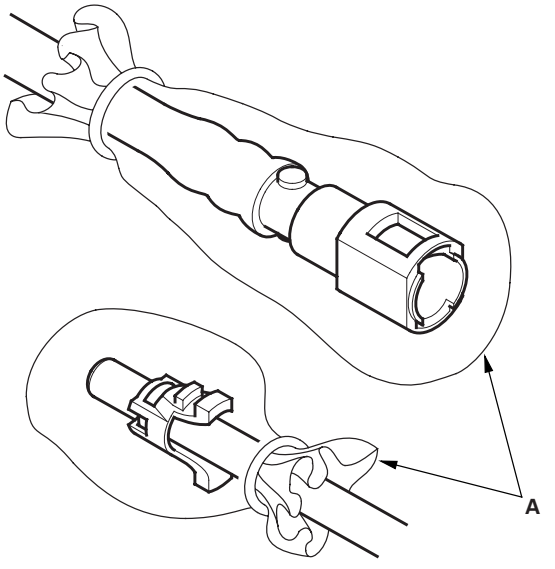
4. Check the contact area (A) of the line (B) for dirt or damage.

   - If it is dirty, clean it, then dry it with the compressed air.
   - If it is rusty or damaged, replace the 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.
   - replacing the fuel tank.
   - replacing the fuel fill pipe.
   - it has been removed from the line.
   - it is damaged.

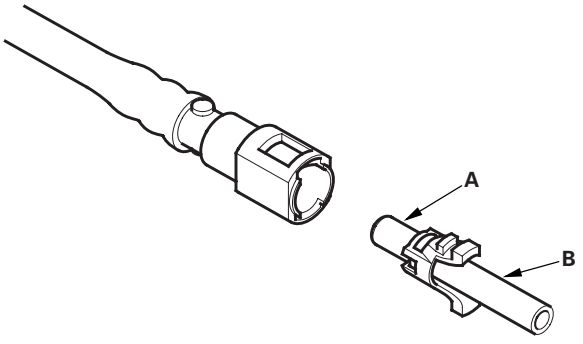


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Fuel Line/Quick-Connect Fitting Installation

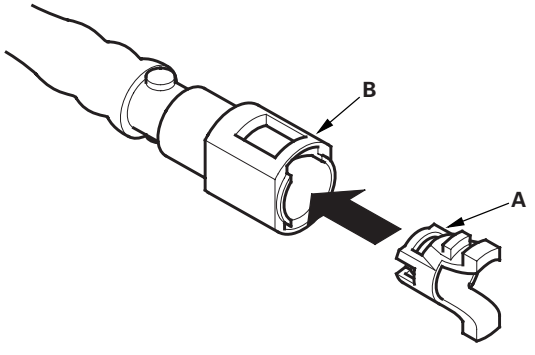
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-328).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

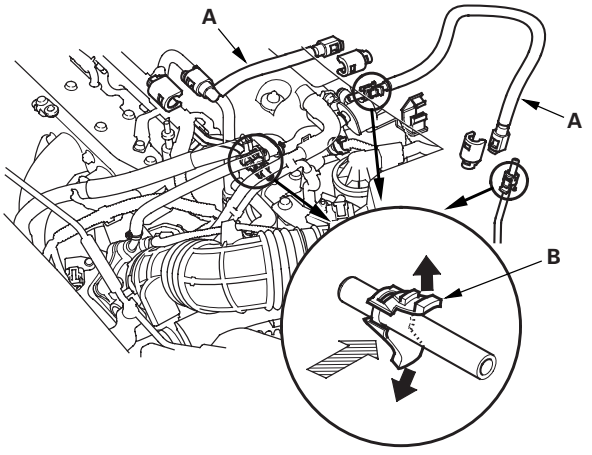


2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

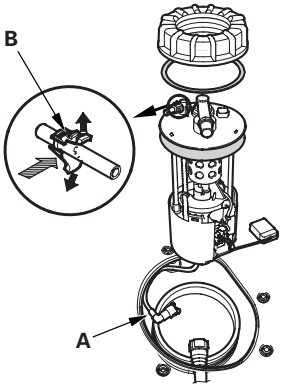
- replacing the fuel rail.
- replacing the fuel feed line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP purge pipe.
- replacing the EVAP canister.
- replacing the fuel tank.
- replacing the fuel fill pipe.
- removing the retainer from the line.
- Use the same manufacturer's retainer and the same size when replacing the retainer (see page 11-328).

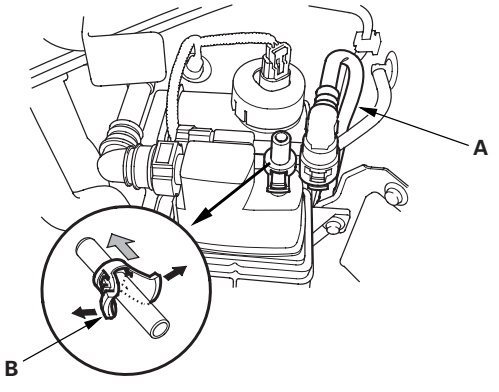


3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer (B) from the mating line.



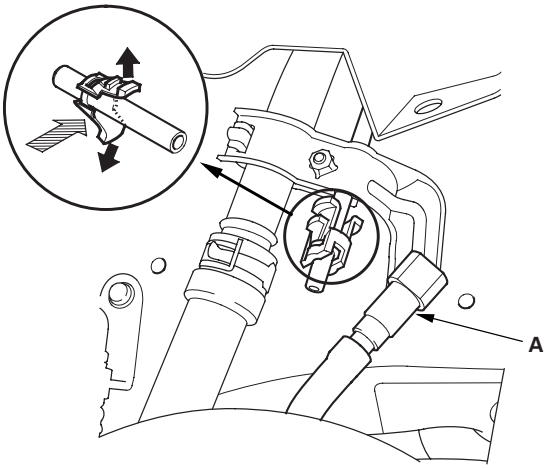
* : This illustration shows K20Z2 engine.





(cont'd)

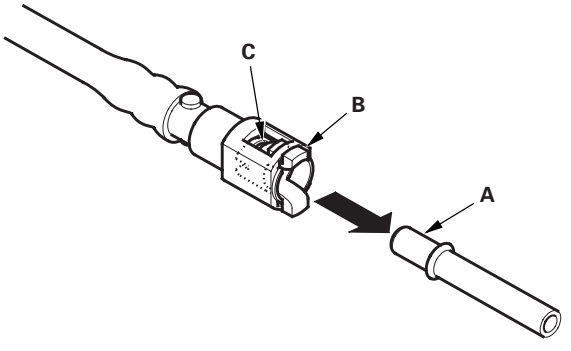
Fuel Line/Quick-Connect Fitting Installation (cont'd)



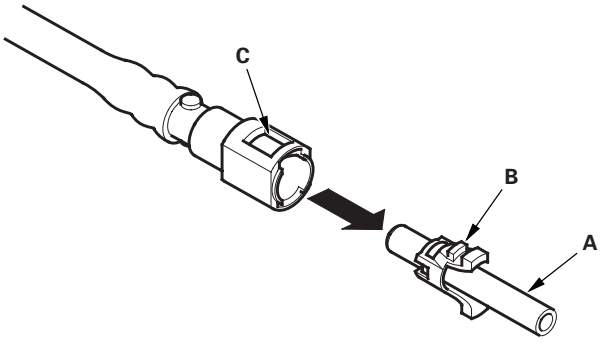
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

   NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

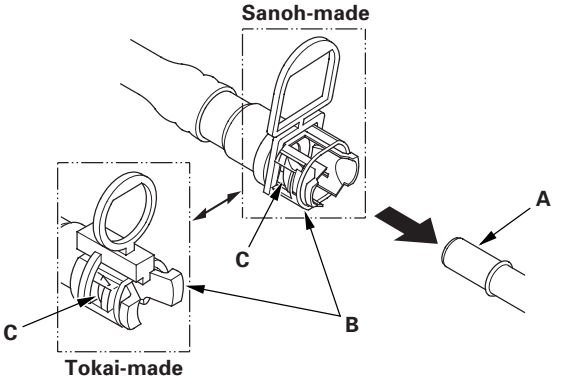
Connection with new retainer



Reconnection to existing retainer



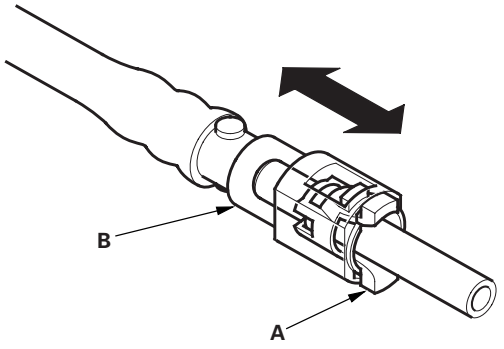
Connection to new fuel line



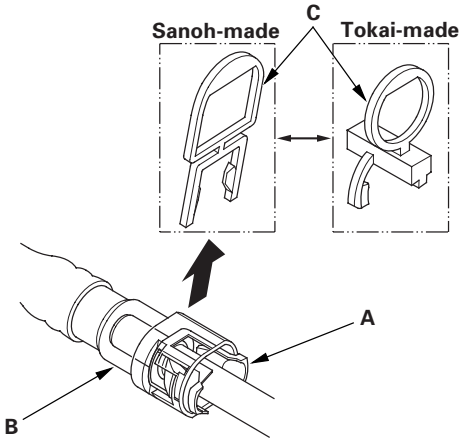
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5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure 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.



Connection to new fuel line



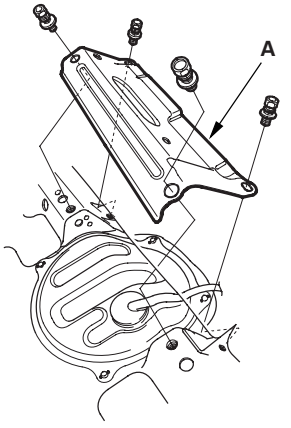
6. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.

Fuel Tank Unit Removal and Installation

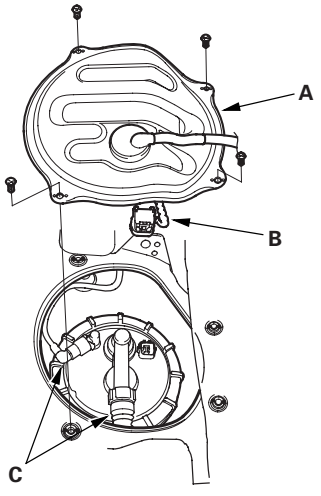
Special Tools Required
Fuel pump module locknut wrench 07AAA-SNAA100

Removal

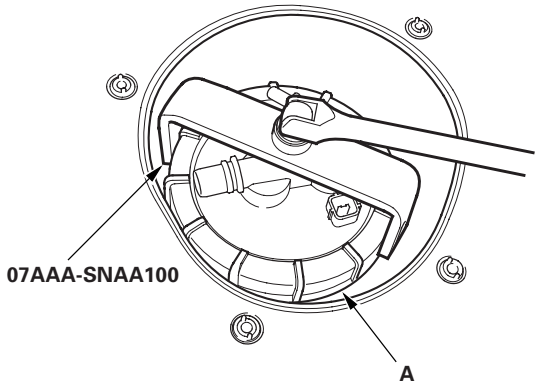
1. Relieve the fuel pressure (see page 11-322).
2. Remove the rear seat cushion (see page 20-131).
3. Remove the rear floor upper cross-member (A).



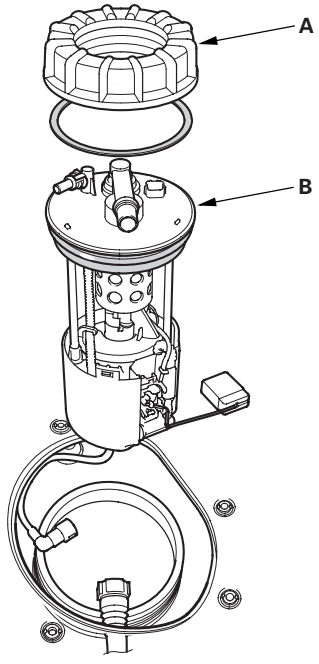
4. Remove the access panel (A) from the floor.



5. Disconnect the fuel tank unit 4P connector (B).
6. Disconnect the quick-connect fittings (C) from the fuel tank unit.
7. Using the special tool, loosen the locknut (A).



8. Remove the locknut (A) and the fuel tank unit (B).

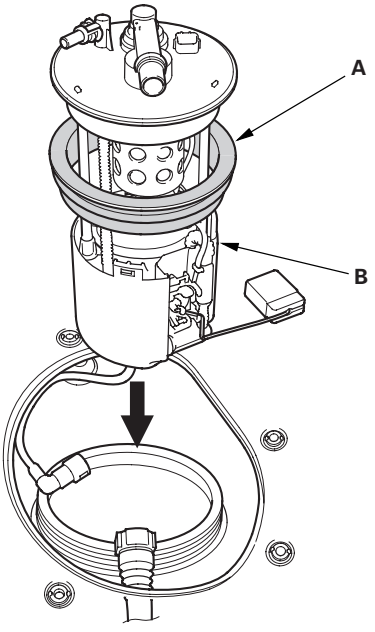


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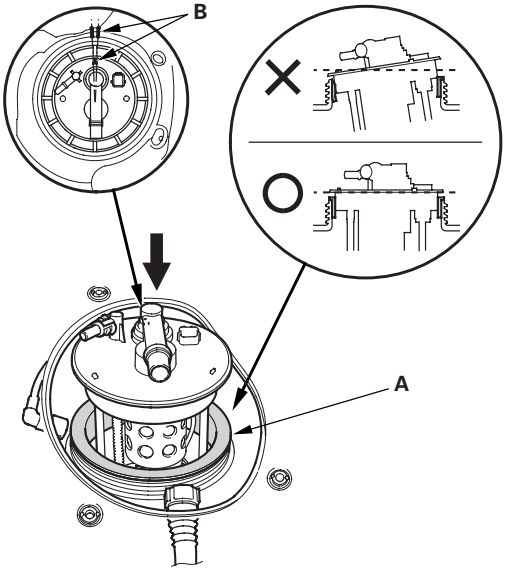
Installation

1. Temporarily attach a new base gasket (A) to the fuel tank unit (B), then insert the fuel tank unit partially into the fuel tank.

   NOTE:
   - Be careful not to damage the new base gasket.
   - Be careful not to bend the fuel gauge sending unit.
   - Do not coat the base gasket with oil.



2. Transfer the base gasket (A) from the fuel tank unit to the fuel tank.



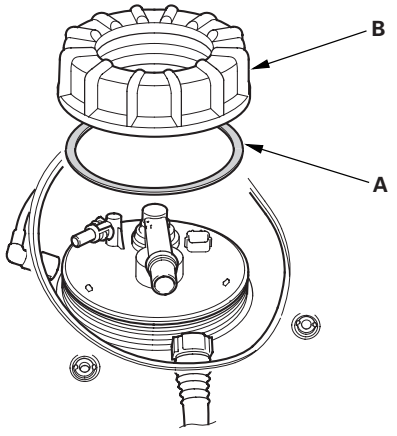
3. Align the marks (B) on the fuel tank and the fuel tank unit, then insert the fuel tank unit into the fuel tank until it sits on the base gasket.

   NOTE: To prevent a fuel leak, check the base gasket, visually or by hand, to make sure it is not pinched.

(cont'd)

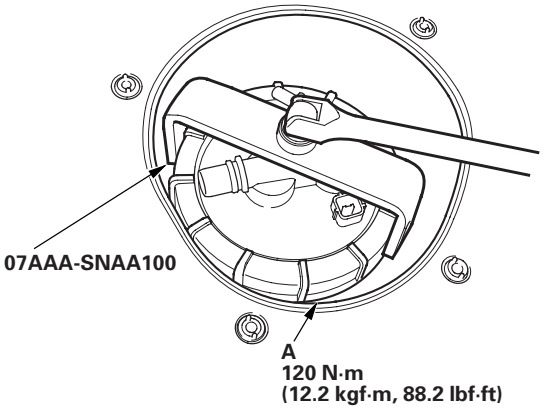
Fuel Tank Unit Removal and Installation (cont'd)

4. Install a locknut plate (A) and a new locknut (B).



5. Using the special tool, tighten the new locknut (A) to the specified torque.

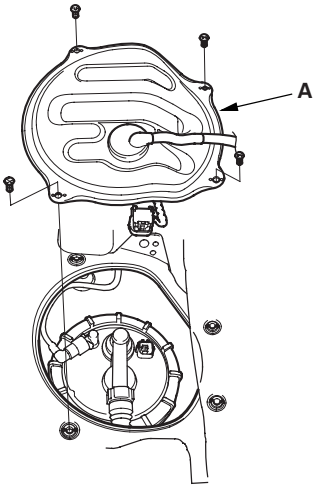
   NOTE:
   - After tightening, make sure the marks are still aligned.
   - After installation, check the base gasket, visually or by hand, to make sure it is not pinched.



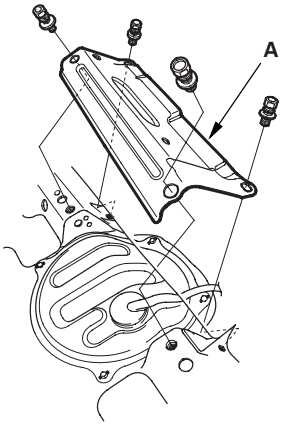
6. Connect the fuel tank unit 4P connector, then connect the quick-connect fitting.

7. Reconnect the negative cable to the battery, and turn the ignition switch to ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure will rise. Repeat this two or three times, then check that there is no leakage in the fuel supply system.

8. Install the access panel (A) to the floor.



9. Install the rear floor upper cross-member (A).



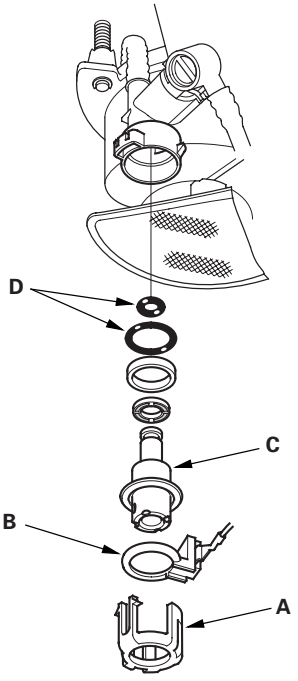
10. Install the rear seat cushion (see page 20-131).

11. Install the fuel fill cap.

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Fuel Pressure Regulator Replacement

1. Remove the fuel tank unit (see page 11-334).
2. Remove the bracket (A).



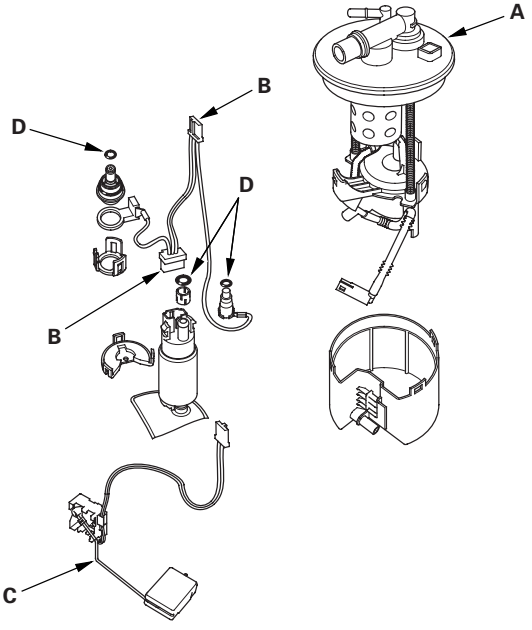
3. Remove the ground ring (B).
4. Remove the fuel pressure regulator (C).
5. Install the parts in the reverse order of removal with new O-rings (D) and a new bracket (A). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-335).

   NOTE: Coat the O-rings with clean engine oil; do not use any other oil.
   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 11-325), after making sure that the fuel pump and the fuel pressure regulator are OK.

1. Remove the fuel tank unit (see page 11-334).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:

   - When connecting the wire harness, make sure the connection is secure and the connectors (B) are firmly locked into place.
   - When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

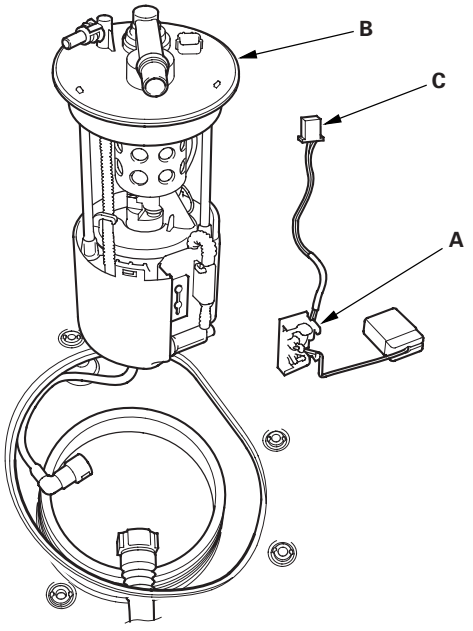
4. Install the parts in the reverse order of removal with new O-rings (D). When installing the fuel tank unit, align the marks on the unit and the fuel tank (see page 11-335).

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Fuel Pump/Fuel Gauge Sending Unit Replacement

1. Remove the fuel tank unit (see page 11-334).

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 unit:

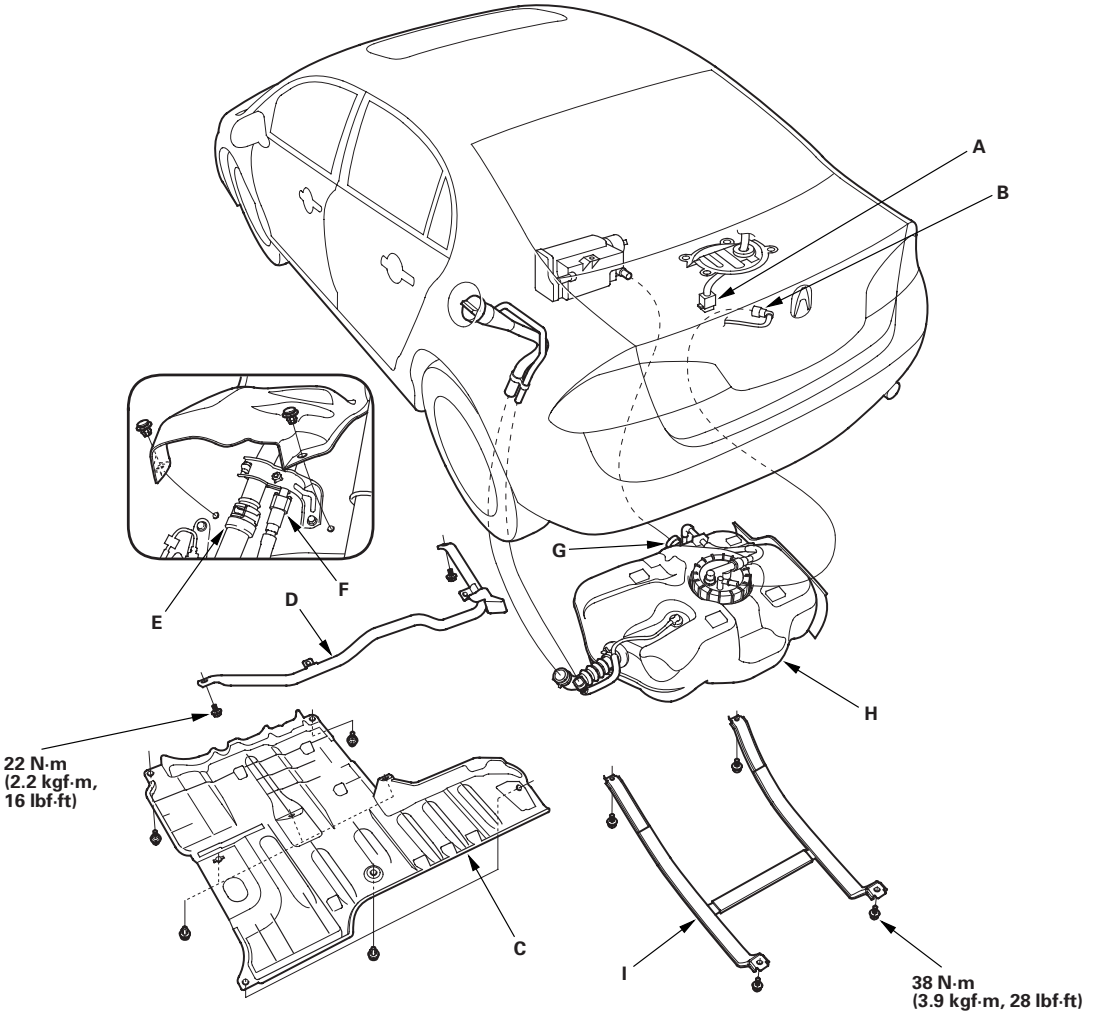
   - When connecting the wire harness, make sure the connection is secure and the connector (C) is firmly locked into place.
   - When installing the fuel gauge sending unit, be careful not to bend or twist it excessively.

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 11-335).

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Fuel Tank Replacement

1. Drain the fuel tank (see page 11-325), then disconnect fuel tank unit 4P connector (A) and the quick-connect fittings (B).



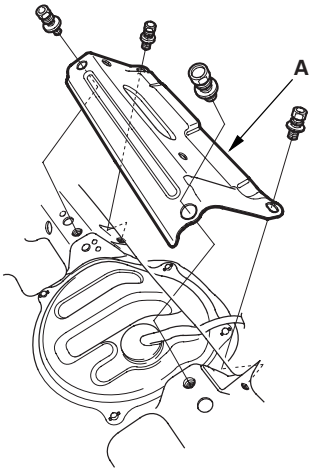
2. Raise the vehicle on a lift.
3. Remove the cover (C), and the EVAP canister guard pipe (D).
4. Disconnect the fuel fill tube (E). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
5. Disconnect the quick-connect fitting (F) and the fuel tank vapor recirculation tube (G).
6. Place a jack or other support under the fuel tank (H).
7. Remove the strap bolts and the strap (I).
8. Remove the fuel tank.
9. Install the parts in the reverse order of removal.

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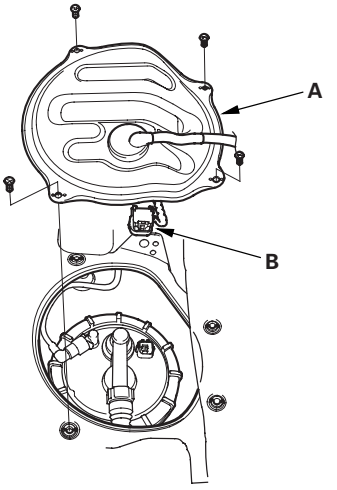
Fuel Gauge Sending Unit Test

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-244).

1. Check the No. 10 METER (7.5 A) fuse in the under-dash fuse/relay box before testing.
2. Check for body electrical system DTCs.
   - If no DTCs are found, go to step 3.
   - If DTC B1175 or B1176 is indicated, go to the indicated DTC's troubleshooting.
3. Turn the ignition switch to LOCK (0).
4. Remove the rear seat cushion (see page 20-131).
5. Remove the rear floor upper cross-member (A).

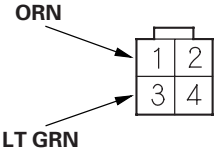


6. Remove the access panel (A) from the floor.



7. Disconnect the fuel tank unit 4P connector (B).
8. Measure the 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 9.
   - If the voltage is not as specified, check for:
     – a short in the ORN wire to ground.
     – an open in the ORN or LT GRN wire.

FUEL TANK UNIT 4P CONNECTOR



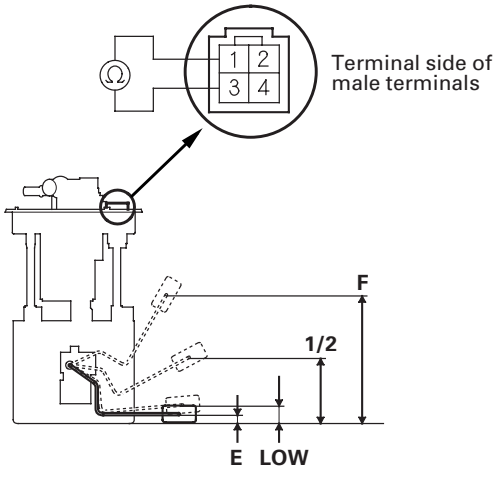
Wire side of female terminals

9. Turn the ignition switch to LOCK (0).
10. Remove the fuel tank unit from the fuel tank (see page 11-334).

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11. Measure the 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 11-338).

Float Position	F 139.8 mm (5.5 in.)	1/2 72.1 mm (2.8 in.)	LOW 19.5 mm (0.77 in.)	E 8.9 mm (0.35 in.)
Resistance (Ω)	19 to 21	205.8 to 215.8	537.5 to 707	772 to 788



12. Reconnect the fuel tank unit 4P connector.

13. Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.

14. Turn the ignition switch to ON (II).

15. 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 turned to ACC or to LOCK (0), regardless of the fuel level.
    - Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

Low Fuel Indicator Test

1. Do the gauge self-diagnostic function (see page 22-241).

    - If the low fuel indicator flashes, go to step 2.
    - If the low fuel indicator does not flash, replace the gauge control module (tach) (see page 22-277).

2. Check for body electrical system DTCs.

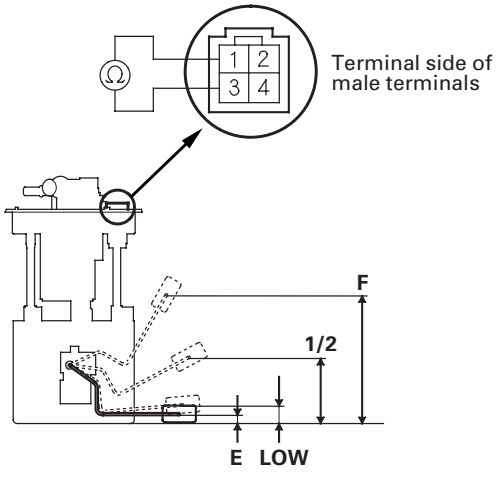
    - If any DTCs are indicated, do the indicated DTC's troubleshooting.
    - If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-340).

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11. Measure the 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 11-338).

Float Position	F 139.8 mm (5.5 in.)	1/2 72.1 mm (2.8 in.)	LOW 19.5 mm (0.77 in.)	E 8.9 mm (0.35 in.)
Resistance (Ω)	19 to 21	205.8 to 215.8	537.5 to 707	772 to 788



12. Reconnect the fuel tank unit 4P connector.

13. Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds, then reinstall it.

14. Turn the ignition switch to ON (II).

15. 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 turned to ACC or to LOCK (0), regardless of the fuel level.
    - Remove the No. 23 BACK UP (10 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.

Low Fuel Indicator Test

1. Do the gauge self-diagnostic function (see page 22-241).

    - If the low fuel indicator flashes, go to step 2.
    - If the low fuel indicator does not flash, replace the gauge control module (tach) (see page 22-277).

2. Check for body electrical system DTCs.

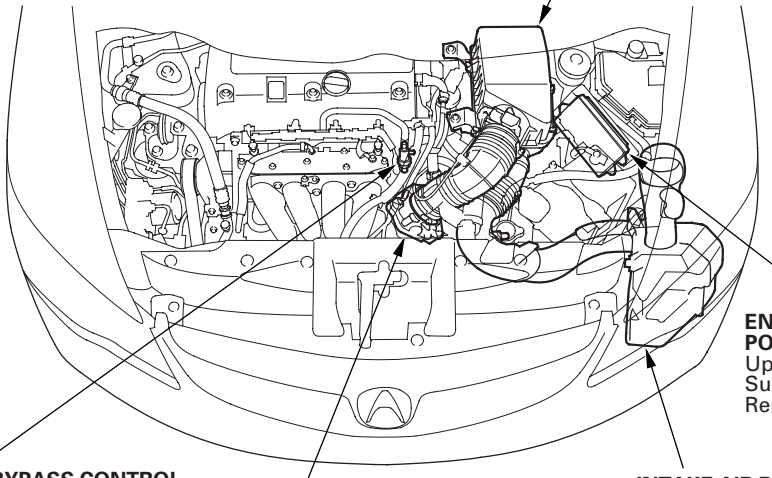
    - If any DTCs are indicated, do the indicated DTC's troubleshooting.
    - If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-340).

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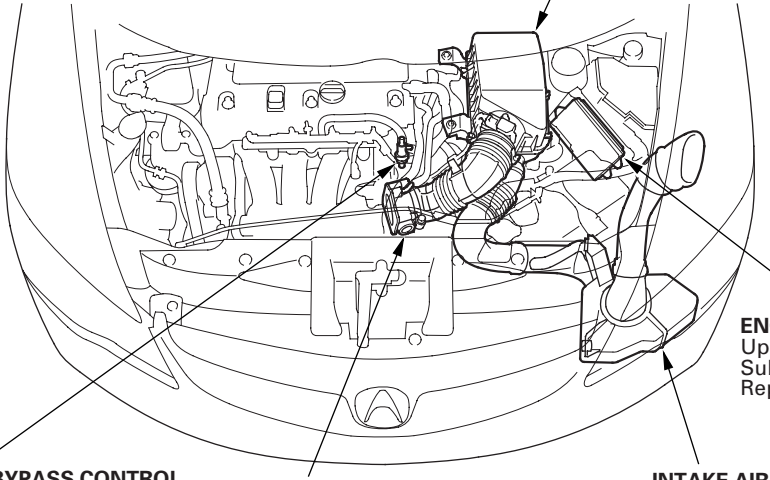
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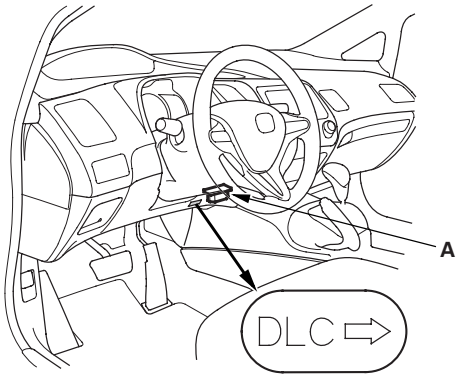
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Throttle Body Test

Carbon Accumulation Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble code (DTCs).

1. Connect the HDS to the data link connector (DLC) (A) located under the driver's side of the dashboard.

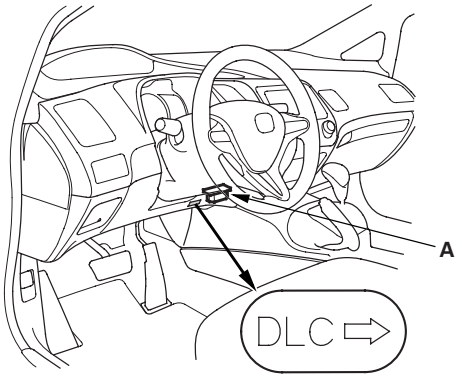


2. Turn the ignition switch to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
4. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.
5. Check the REL TP SENSOR in the DATA LIST with the HDS. The reading should be below 2.46 deg. If it is not, clean the throttle body (see page 11-344).

Throttle Position Learning Check

NOTE: If the malfunction indicator lamp (MIL) has been reported on, check for diagnostic trouble code (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 to ON (II).
3. Make sure the HDS communicates with the ECM/PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-204).
4. Select the INSPECTION MENU with the HDS.
5. Do the TP POSITION CHECK in the ETCS TEST. If needed, clean the throttle body (see page 11-344).

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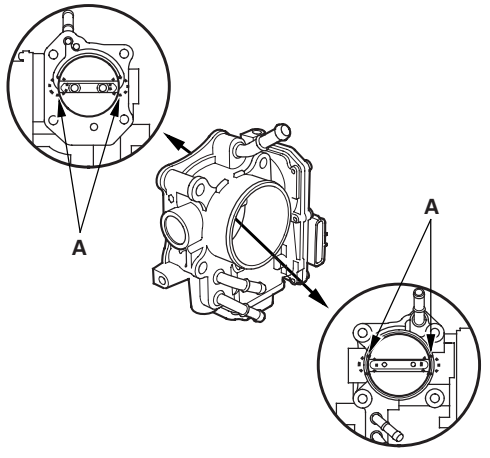
Throttle Body Cleaning

⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to 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 element is damaged, replace it (see page 11-346).
2. Remove the throttle body; K20Z2 engine (see page 11-348), K20Z3 engine (see page 11-349).
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 Honda genuine throttle plate and induction cleaner.



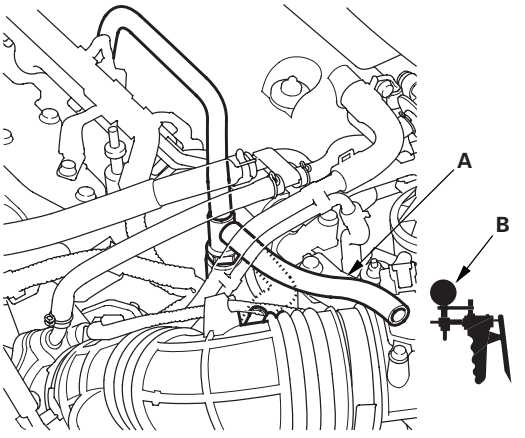
4. Install the throttle body (see page 11-348).
5. Reset the ECM/PCM with the HDS (see page 11-4).
6. Turn the ignition switch to ON (II), and wait 2 seconds.
7. Do the ECM/PCM idle learn procedure (see page 11-310).

Intake Air Bypass Control Thermal Valve Test

Special Tools Required
Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

1. Start the engine, then let it idle.

   NOTE: The engine coolant temperature must be below 65 ℃ (149 ℉).
2. Remove the engine cover (see step 1 on page 9-3).
3. Remove the vacuum hose (A) from the intake air duct, and connect a vacuum pump/gauge (B) to the hose.



* : This illustration shows K20Z2 engine.

4. Raise and lower the engine speed, and make sure the vacuum gauge reading changes as the engine speed changes.

   If the vacuum reading does not change, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see page 11-351).
5. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

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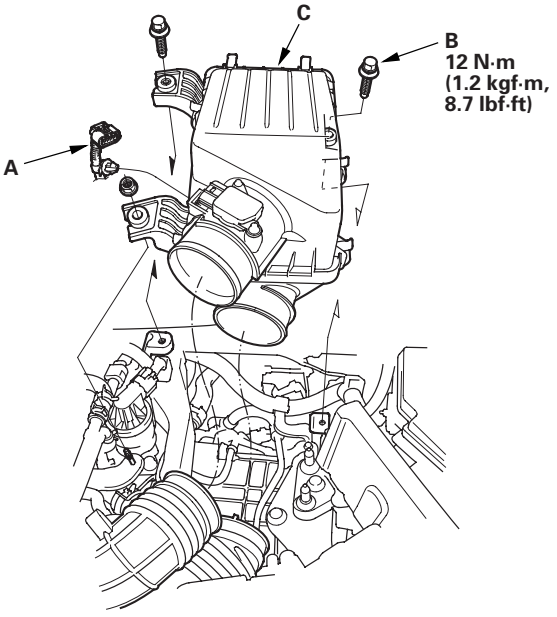
6. Raise and lower the engine speed, and make sure the vacuum gauge reading does not change as the rpm changes.

   If the vacuum reading changes, check for these problems:

   - Misrouted, leaking, broken, or clogged intake air bypass control system vacuum lines.
   - A cracked or damaged intake air bypass control thermal valve. Replace the valve if needed (see page 11-351).

Air Cleaner Removal/Installation

1. Disconnect the MAF sensor/IAT sensor 5P connector (A).



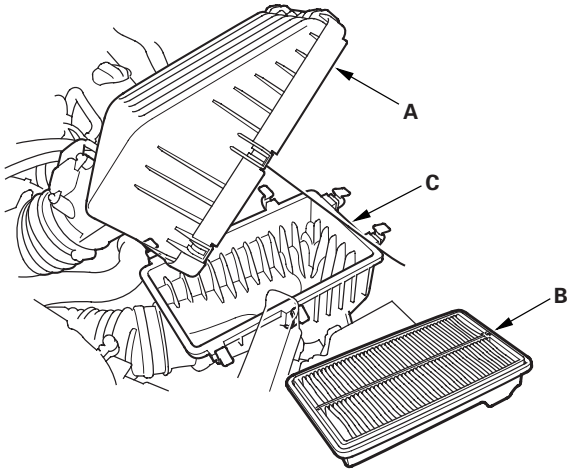
* : This illustration shows K20Z2 engine.

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 it is damaged or clogged, replace it.

   NOTE: Do not use compressed air to clean the air cleaner element.

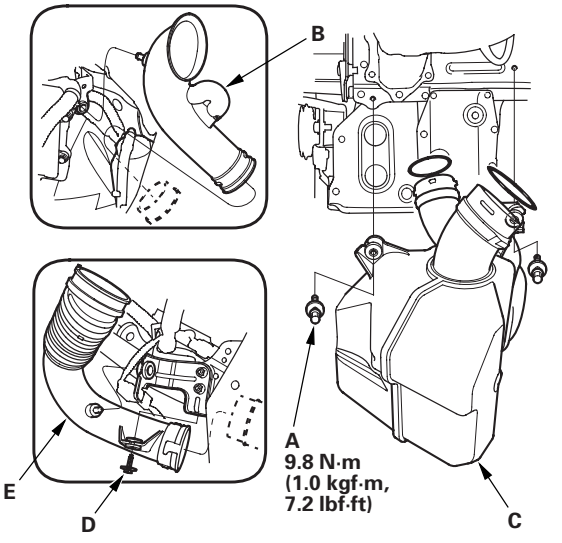
4. Clean and remove any debris from inside the air cleaner housing.
5. Install the parts in the reverse order of removal.

   - If you did not replace the air cleaner element, this procedure is complete.
   - If the maintenance minder required air cleaner element replacement, reset the maintenance minder (see page 3-7).
   - If you replaced the air cleaner element, reset the ECM/PCM (see page 11-4), and do the ECM/PCM idle learn procedure (see page 11-310).

Intake Air Resonator Removal/ Installation

K20Z2 engine

1. Remove the front bumper (see page 20-146).
2. Remove the bolts (A), and pipe (B).

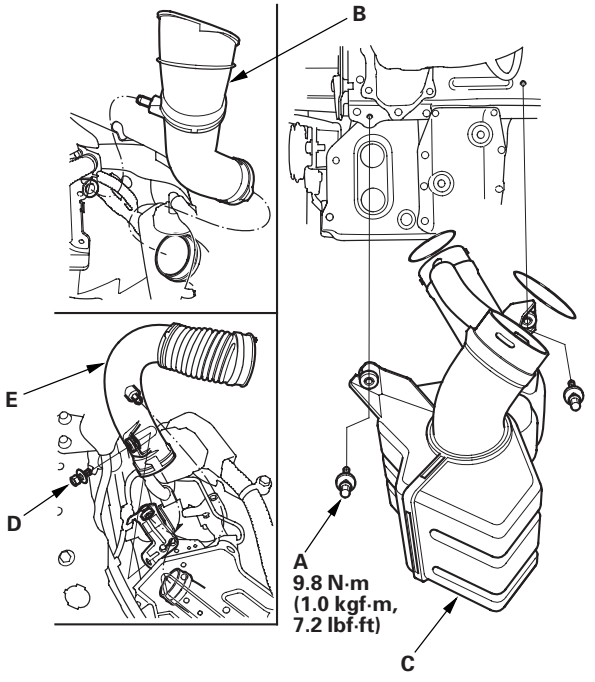


3. Remove the intake air resonator (C).
4. Do the battery removal procedure (see page 22-69).
5. Remove the bolt (D), and duct (E).
6. Install the parts in the reverse order of removal.
7. Do the battery installation procedure (see page 22-69).

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K20Z3 engine

1. Remove the front bumper (see page 20-146).
2. Remove the bolts (A), and pipe (B).



3. Remove the intake air resonator (C).
4. Do the battery removal procedure (see page 22-69).
5. Remove the bolt (D), and duct (E).
6. Install the parts in the reverse order of removal.
7. Do the battery installation procedure (see page 22-69).

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Throttle Body Removal/Installation

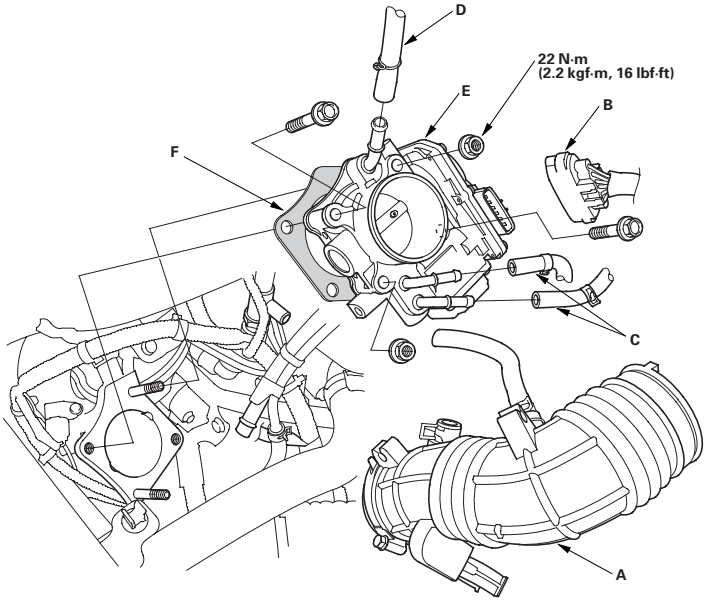
⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

K20Z2 engine

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 4.

1. Connect the HDS to the DLC while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch to LOCK (0).
5. Remove the intake air duct (A).



6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug them.
8. Disconnect the vacuum hose (D).
9. Remove the throttle body (E).
10. Install the parts in the reverse order of removal with a new gasket (F), then do these:
    - Refill the radiator with engine coolant (see page 10-8).
    - Do the ECM/PCM idle learn procedure (see page 11-310).

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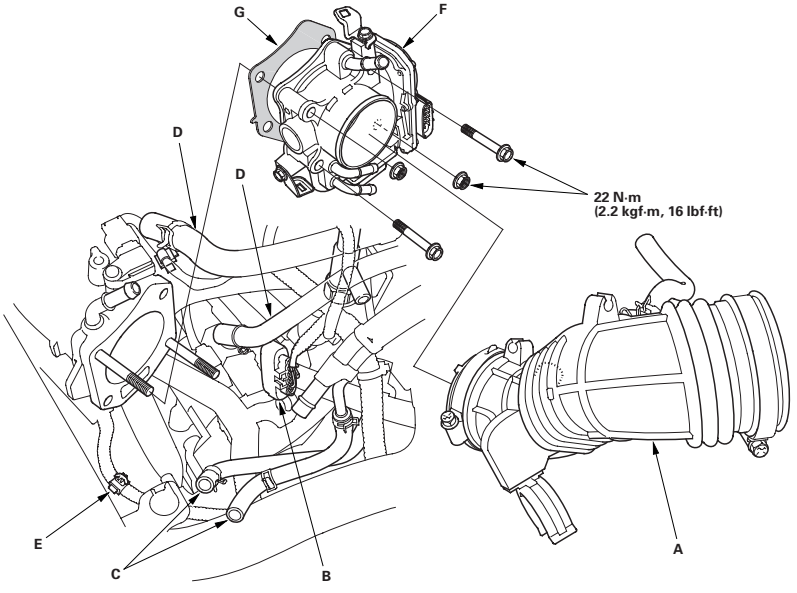
⚠CAUTION

Do not insert your fingers into the installed throttle body when you turn the ignition switch to ON (II) or while the ignition switch is ON (II). If you do, there will be serious injury to your fingers if the throttle valve is activated.

K20Z3 engine

NOTE: If you are replacing or cleaning the throttle body, start at step 1. If you are removing the throttle body, start at step 4.

1. Connect the HDS to the DLC while the engine is stopped.
2. Select the INSPECTION MENU with the HDS.
3. Do the TP POSITION CHECK in the ETCS TEST.
4. Turn the ignition switch to LOCK (0).
5. Remove the intake air duct (A).

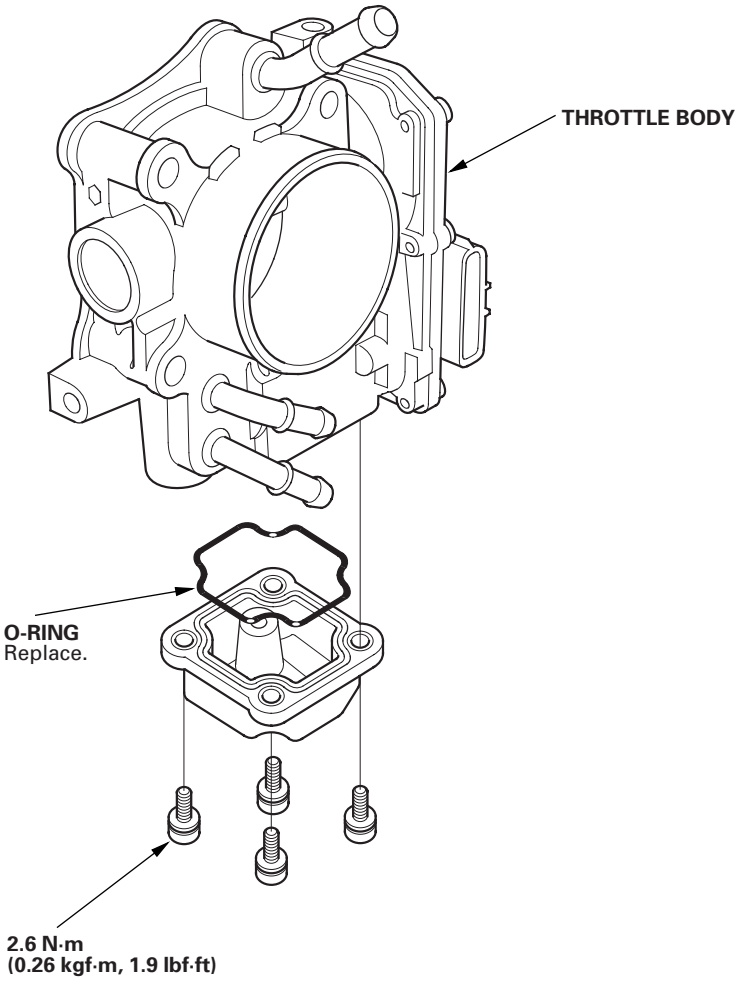


6. Disconnect the throttle body connector (B).
7. Disconnect the water bypass hoses (C), and plug them.
8. Disconnect the vacuum hoses (D) and the clamp (E).
9. Remove the throttle body (F).
10. Install the parts in the reverse order of removal with a new gasket (G), then do these:

    • Refill the radiator with engine coolant (see page 10-8).
    • Do the ECM idle learn procedure (see page 11-310).

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Throttle Body Disassembly/Reassembly



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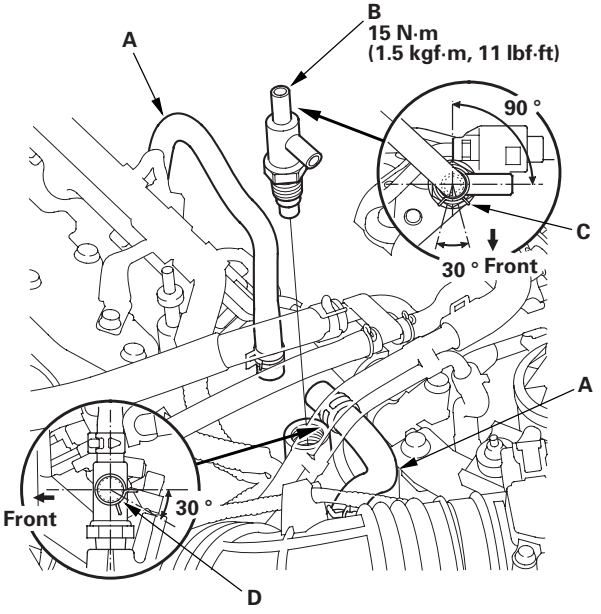
Intake Air Bypass Control Thermal Valve Replacement

1. Remove the engine cover (see step 1 on page 9-3).

2. Remove the intake air duct.

   - K20Z2 engine (see page 11-348)
   - K20Z3 engine (see page 11-349)

3. Disconnect the hoses (A).



* : This illustration shows K20Z2 engine.

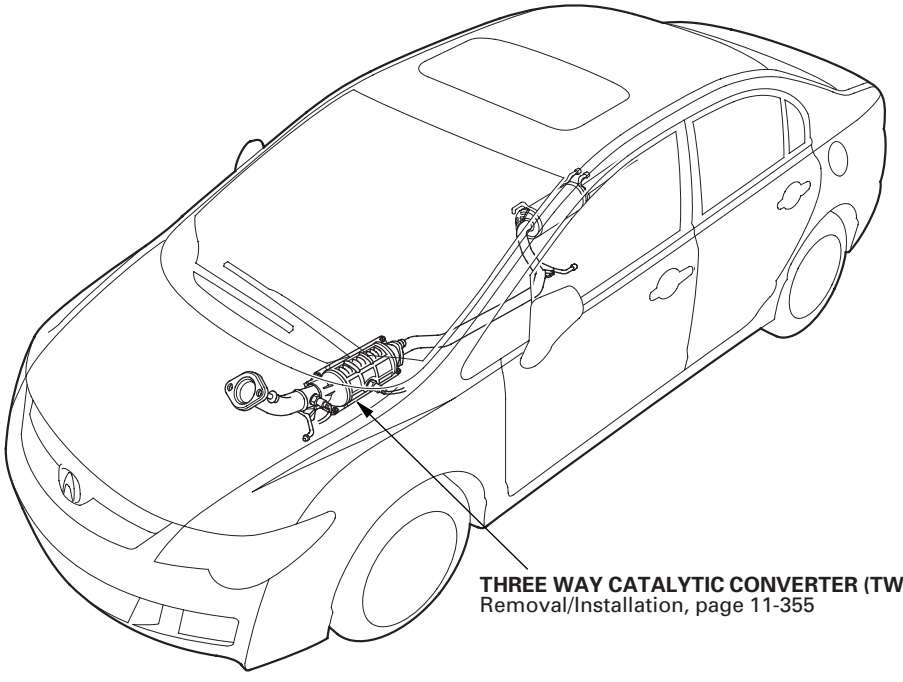
4. Remove the intake air bypass control thermal valve (B).

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

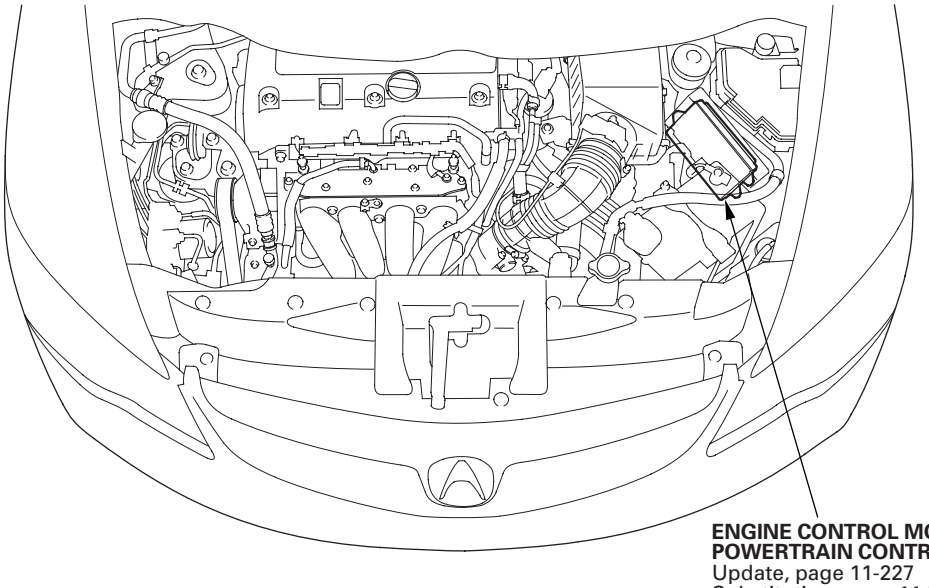
   NOTE:
   - Position the valve angle as shown.
   - Make sure the center of clamp (C) and the lever end of clamp (D) are the position within the range shown.

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DTC P0420: Catalyst System Efficiency Below Threshold

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, troubleshoot them first, then recheck for DTC P0420.
  P0137, P0138: Secondary HO2S (Sensor 2)
  P0141: Secondary HO2S (Sensor 2) heater
- Poor quality fuel may cause this DTC.

1. Turn the ignition switch to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

4. Test-drive under these conditions:

   - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
   - A/T in D, M/T in 5th
   - Vehicle speed between 72—120 km/h (45—75 mph) for 5 minutes or more with cruise control set
   - K20Z2 engine: Maintain the vehicle speed at 88 km/h (55 mph) for 5 minutes or more with cruise control set
   - K20Z3 engine: Maintain the vehicle speed at 88 km/h (55 mph) for 30 seconds or more

5. Monitor the OBD STATUS for DTC P0420 in the DTCs MENU with the HDS.

   Does the screen indicate EXECUTING?

   YES—Go to step 6.

   NO—If the screen indicates OUT OF CONDITION, go to step 4 and recheck. If the screen indicates PASSED, intermittent failure, the system is OK at this time. If the screen indicates FAILED, go to step 8.

6. Continue test driving until a result comes on.

7. Monitor the OBD STATUS for DTC P0420 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 to LOCK (0).

9. Replace the TWC (see page 11-355).

10. Turn the ignition switch to ON (II).

11. Reset the ECM/PCM with the HDS.

12. Do the ECM/PCM idle learn procedure (see page 11-310).

13. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

14. Test-drive for about 10 minutes, varying the vehicle speed.

15. Check the CATA MONITOR CONDITION 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 70 ℃ (158 ℉)
    - A/T in D, M/T in 5th
    - K20Z2 engine: Vehicle speed at 88 km/h (55mph) for 5 minutes or more with cruise control set
    - K20Z3 engine: Vehicle speed at 88 km/h (55mph) for 30 seconds or more

(cont'd)

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DTC Troubleshooting (cont'd)

17. Monitor the OBD STATUS for DTC P0420 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 indicated?

    YES—Check the fuel quality, then go to step 1.

    NO—Go to step 20.

20. Monitor the OBD STATUS for DTC P0420 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 ECM/PCM. If the screen indicates EXECUTING, keep driving until a result comes on. If the screen indicates OUT OF CONDITION, go to step 13.

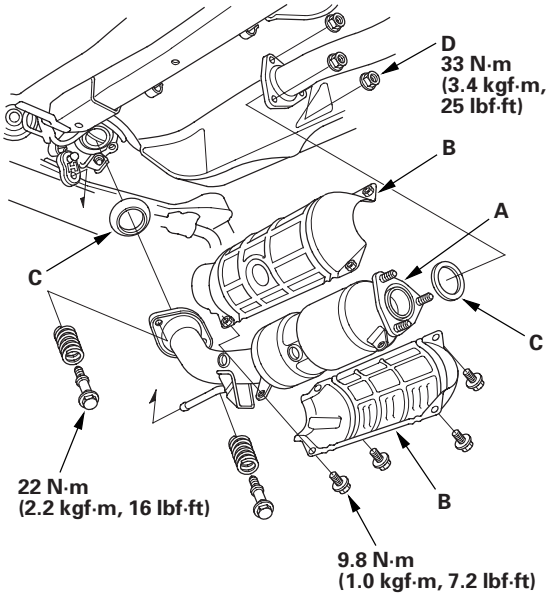
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Catalytic Converter Removal/Installation

1. Remove the A/F sensor (Sensor 1) (see page 11-221).

2. Remove the secondary HO2S (Sensor 2) (see page 11-221).

3. Remove the catalytic converter (A).

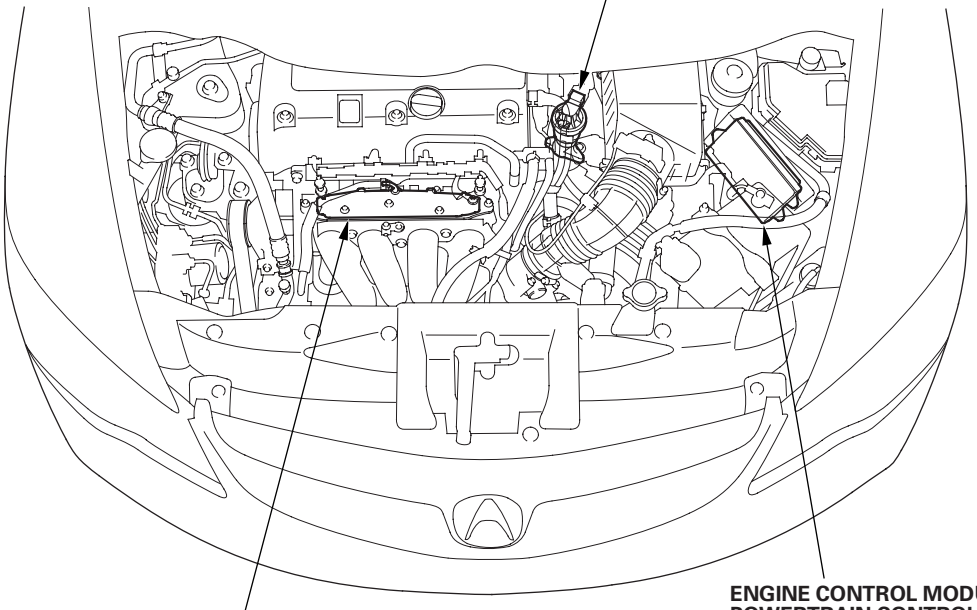


4. Remove the converter cover (B).

5. Install the parts in the reverse order of removal with new gaskets (C) and new self-locking nuts (D).

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Component Location Index



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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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in 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 70 ℃ (158 ℉)
   - A/T in D, M/T in 4th
   - Drive at a steady speed between 88—120 km/h (55—75 mph) for at least 10 seconds
   - 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 EGR plate (see page 9-2), and clean the intake manifold port 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. Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. 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 to LOCK (0).
8. Replace the EGR valve (see page 11-370).
9. Turn the ignition switch to ON (II).
10. Reset the ECM/PCM with the HDS.
11. Do the ECM/PCM idle learn procedure (see page 11-310).
12. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for at least 10 seconds
    - 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 ECM/PCM. If the connections are OK, 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 ECM/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.

(cont'd)

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DTC Troubleshooting (cont'd)

15. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

16. Test-drive under these conditions:

    - Engine coolant temperature (ECT SENSOR 1) above 70 ℃ (158 ℉)
    - A/T in D, M/T in 4th
    - Drive at a steady speed between 88—120 km/h (55—75 mph) for at least 10 seconds
    - During the drive, decelerate (with the throttle fully closed) for 5 seconds

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

    Is DTCs P0401 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/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 ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 16. If the ECM/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 16.

DTC P0404: EGR Valve 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 to ON (II).

2. Clear the DTC with the HDS.

3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in 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. ■

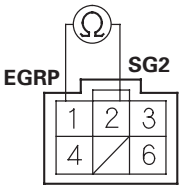
   NO—Go to step 5.

5. Turn the ignition switch to LOCK (0).

6. Disconnect the EGR valve 6P connector.

7. At the EGR valve side, measure the 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?

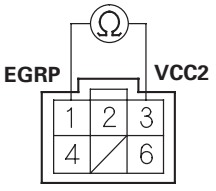
YES—Go to step 25.

NO—Go to step 8.

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8. At the EGR valve side, measure the resistance between EGR valve 6P connector terminals No. 1 and No. 3.

EGR VALVE 6P CONNECTOR



Terminal side of male terminals

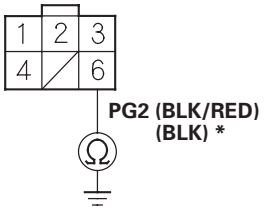
Is there 100 kΩ or more?

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

***: '07-09 models**

Is there continuity?

YES—Go to step 10.

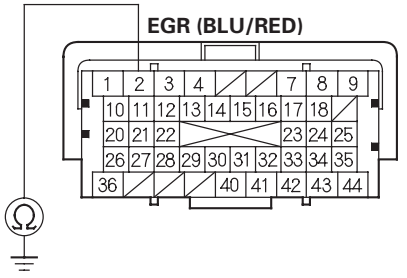
NO—Repair open in the wire between the EGR valve and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 26.

10. Jump the SCS line with the HDS.

11. Disconnect ECM/PCM connector B (44P).

12. Check for continuity between ECM/PCM connector terminal B2 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

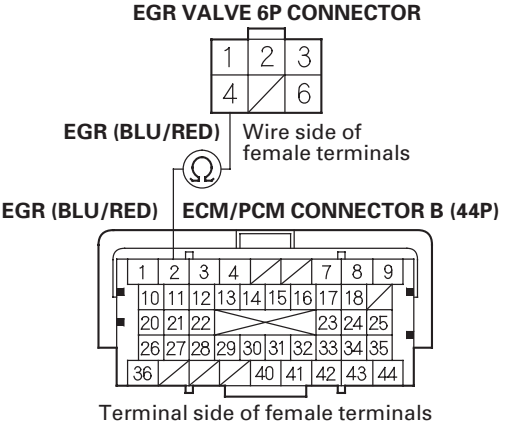
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 26.

NO—Go to step 13.

13. Check for continuity between ECM/PCM connector terminal B2 and EGR valve 6P connector terminal No. 4.

EGR VALVE 6P CONNECTOR



Terminal side of female terminals

Is there continuity?

YES—Go to step 14.

NO—Repair open in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 26.

(cont'd)

DTC Troubleshooting (cont'd)

14. Remove the EGR valve (see page 11-370).

15. Remove the EGR plate (see page 9-2), and clean the intake manifold EGR port with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.

16. Install the EGR valve (see page 11-370).

17. Reconnect the EGR valve 6P connector.

18. Reconnect ECM/PCM connector B (44P).

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in 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 to LOCK (0).

25. Replace the EGR valve (see page 11-370).

26. Reconnect all connectors.

27. Turn the ignition switch to ON (II).

28. Reset the ECM/PCM with the HDS.

29. Do the ECM/PCM idle learn procedure (see page 11-310).

30. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in neutral) until the radiator fan comes on, then let it idle.

31. Do the EGR TEST in the INSPECTION MENU with the HDS.

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 ECM/PCM, then go to step 1. If the connections and terminals are OK, 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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 30.

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34. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

35. Start the engine. Hold the engine speed at 3000 rpm without load (A/T in P or N, M/T in 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 DTCs P0404 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 35. If the ECM/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 ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 35. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 35.

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 to ON (II).

2. Check 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 ECM/PCM. ■

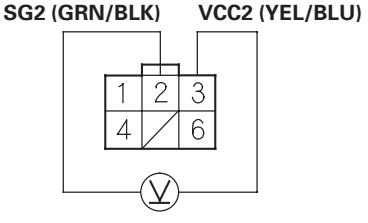
3. Turn the ignition switch to LOCK (0).

4. Disconnect EGR valve 6P connector.

5. Turn the ignition switch to ON (II).

6. Measure the 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?

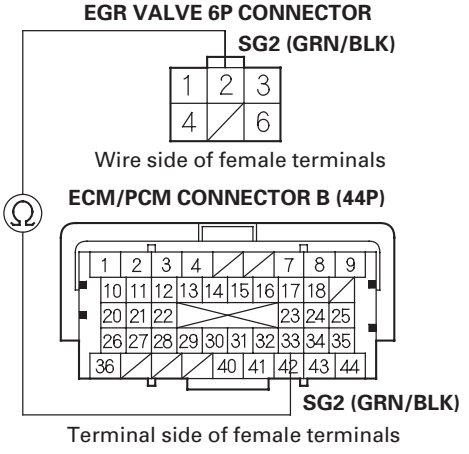
YES—Go to step 11.

NO—Go to step 7.

(cont'd)

DTC Troubleshooting (cont'd)

7. Turn the ignition switch to LOCK (0).
8. Jump the SCS line with the HDS.
9. Disconnect ECM/PCM connector B (44P).
10. Check for continuity between EGR valve 6P connector terminal No. 2 and ECM/PCM connector terminal B33.



Is there continuity?

YES—Go to step 18.

NO—Repair open in the wire between the ECM/PCM (B33) and the EGR valve, then go to step 13.

11. Turn the ignition switch to LOCK (0).
12. Replace the EGR valve (see page 11-370).
13. Reconnect all connectors.
14. Turn the ignition switch to ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then recheck. If the ECM/PCM was substituted, go to step 1.

    NO—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in 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 ECM/PCM. ■

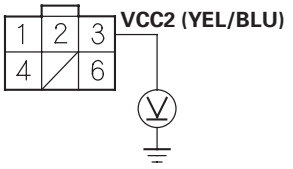
   NO—Go to step 5.
5. Turn the ignition switch to LOCK (0).
6. Turn the ignition switch to ON (II).
7. Check the EGR VLS in the DATA LIST with the HDS.

   Is about 0 V indicated?

   YES—Go to step 8.

   NO—Go to step 21.
8. Turn the ignition switch to LOCK (0).
9. Disconnect the EGR valve 6P connector.
10. Turn the ignition switch to ON (II).
11. Measure the voltage between EGR valve 6P connector terminal No. 3 and body ground.

EGR VALVE 6P CONNECTOR



Wire side of female terminals

Is there about 5 V?

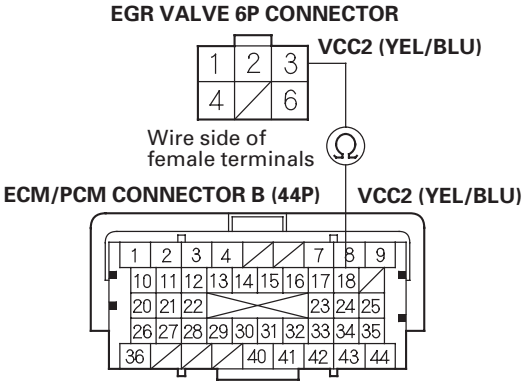
YES—Go to step 16.

NO—Go to step 12.

(cont'd)

DTC Troubleshooting (cont'd)

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect ECM/PCM connector B (44P).
15. Check for continuity between ECM/PCM connector terminal B18 and EGR valve 6P connector terminal No. 3.



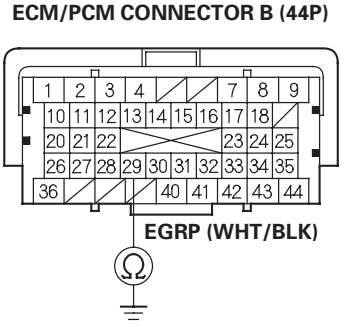
Terminal side of female terminals

Is there continuity?

YES—Go to step 52.

NO—Repair open in the wire between the EGR valve and the ECM/PCM (B18), then go to step 44.

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector B (44P).
19. Check for continuity between ECM/PCM connector terminal B29 and body ground.



Terminal side of female terminals

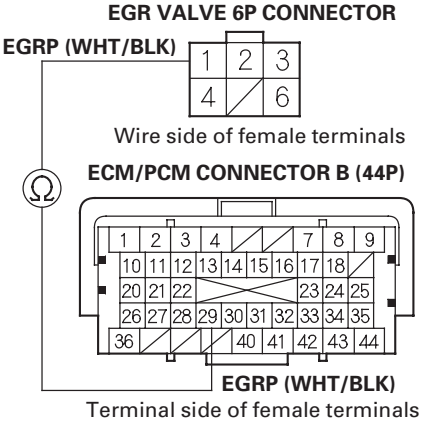
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B29) and the EGR valve, then go to step 44.

NO—Go to step 20.

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20. Check for continuity between ECM/PCM connector terminal B29 and EGR valve 6P connector terminal No. 1.



Is there continuity?

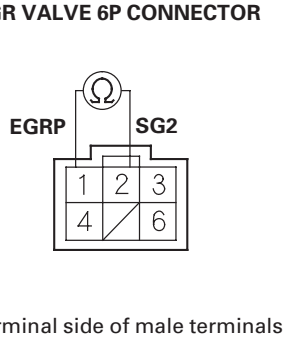
YES—Go to step 21.

NO—Repair open in the wire between the ECM/PCM (B29) and the EGR valve, then go to step 44.

21. Turn the ignition switch to LOCK (0).

22. If not already done, disconnect the EGR valve 6P connector.

23. At the EGR valve side, measure the resistance between EGR valve 6P connector terminals No. 1 and No. 2.



Is there 100 kΩ or more?

YES—Go to step 43.

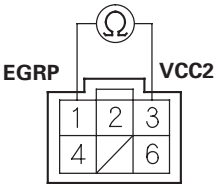
NO—Go to step 24.

(cont'd)

DTC Troubleshooting (cont'd)

24. At the EGR valve side, measure the 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.

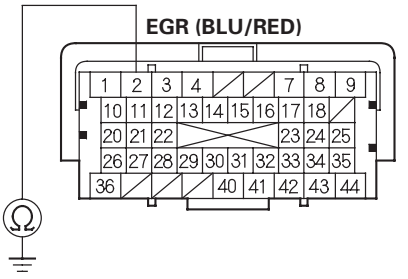
NO—Go to step 25.

25. If not already done, jump the SCS line with the HDS.

26. If not already done, disconnect ECM/PCM connector B (44P).

27. Check for continuity between ECM/PCM connector terminal B2 and body ground.

ECM/PCM CONNECTOR B (44P)



Terminal side of female terminals

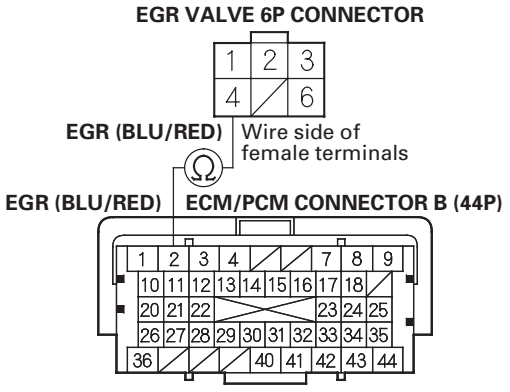
Is there continuity?

YES—Repair short in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 44.

NO—Go to step 28.

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28. Check for continuity between ECM/PCM connector terminal B2 and EGR valve 6P connector terminal No. 4.



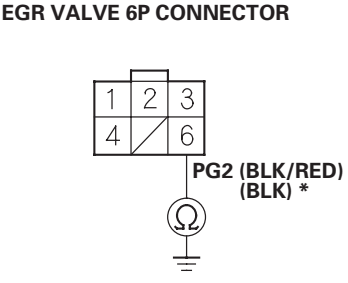
Terminal side of female terminals

Is there continuity?

YES—Go to step 29.

NO—Repair open in the wire between the ECM/PCM (B2) and the EGR valve, then go to step 44.

29. Check for continuity between EGR valve 6P connector terminal No. 6 and body ground.



Wire side of female terminals

***: '07-09 models**

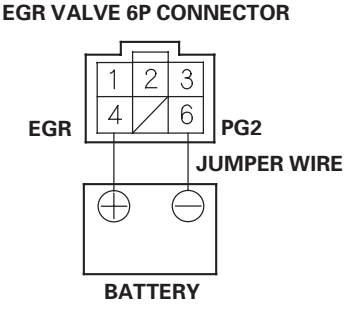
Is there continuity?

YES—Go to step 30.

NO—Repair open in the wire between the EGR valve and G101; A/T model (see page 22-16), M/T model (see page 22-18), then go to step 44.

30. Reconnect ECM/PCM connector B (44P).

31. Connect the battery positive terminal to EGR valve 6P connector terminal No. 4 with a jumper wire.



Terminal side of male terminals

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.

(cont'd)

DTC Troubleshooting (cont'd)

33. Turn the ignition switch to LOCK (0).
34. Remove the EGR valve (see page 11-370).
35. Remove the EGR plate (see page 9-2), and clean the intake manifold EGR port with throttle plate and induction cleaner. Also, clean the passage inside the EGR valve with throttle plate and induction cleaner.
36. Install the EGR valve (see page 11-370).
37. Reconnect all connectors.
38. Turn the ignition switch to ON (II).
39. Reset the ECM/PCM with the HDS.
40. Do the ECM/PCM idle learn procedure (see page 11-310).
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 to LOCK (0).
43. Replace the EGR valve (see page 11-370).
44. Reconnect all connectors.
45. Turn the ignition switch to ON (II).
46. Reset the ECM/PCM with the HDS.
47. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 47.

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51. Turn the ignition switch to LOCK (0).

52. Reconnect all connectors.

53. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

54. Do the EGR TEST in the INSPECTION MENU with the HDS.

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

    Is DTCs P2413 indicated?

    YES—Check for poor connections or loose terminals at the EGR valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 54. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 56.

56. Monitor the OBD STATUS for DTC P2413 in the DTCs MENU with the HDS.

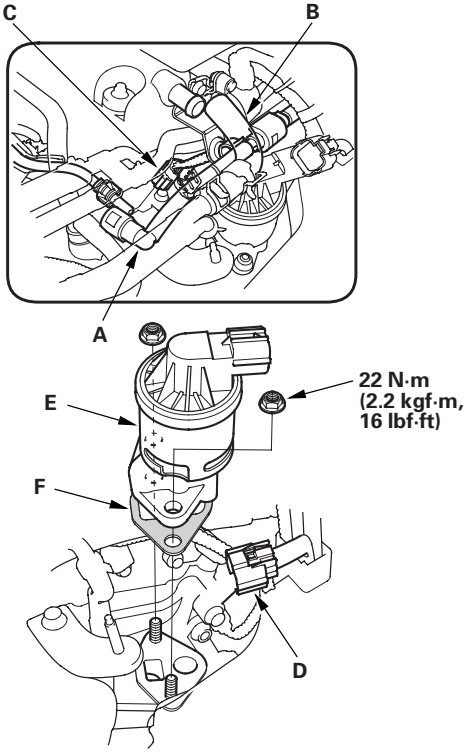
    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 54. If the ECM/PCM was substituted, go to step 1. If the screen indicates EXECUTING, keep idling until a result comes on. If the screen indicates OUT OF CONDITION, go to step 54.

EGR Valve Replacement

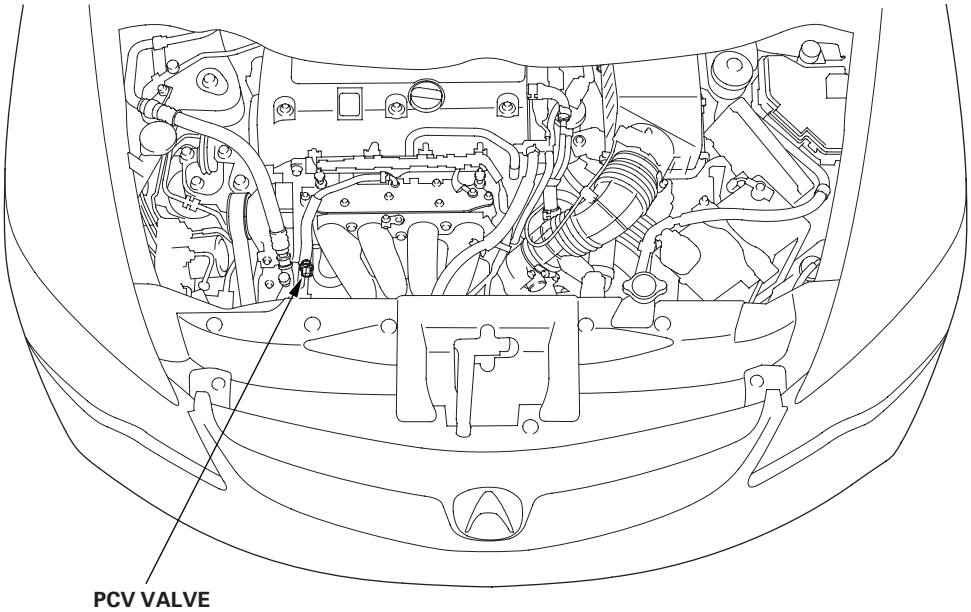
1. Remove the air cleaner (see page 11-345).
2. Relieve the fuel pressure (see page 11-322).
3. Remove the fuel line (A). Disconnect the hose (B).



4. Disconnect CMP sensor A connector (C).
5. Remove the EGR valve 6P connector (D).
6. Remove the EGR valve (E).
7. Install the parts in the reverse order of removal with a new gasket (F).

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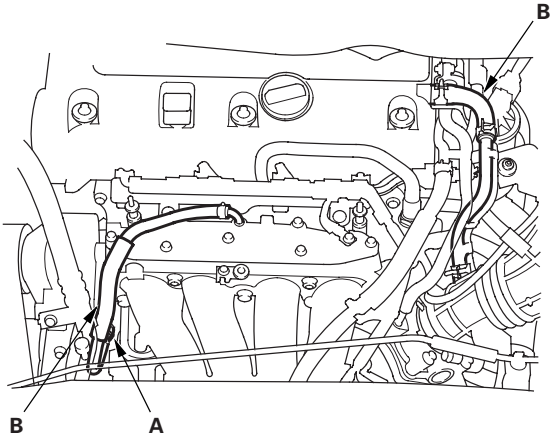
PCV VALVE
Inspection (K20Z2 engine), page 11-372
Inspection (K20Z3 engine), page 11-372
Replacement, page 11-373

* : This illustration shows K20Z2 engine.

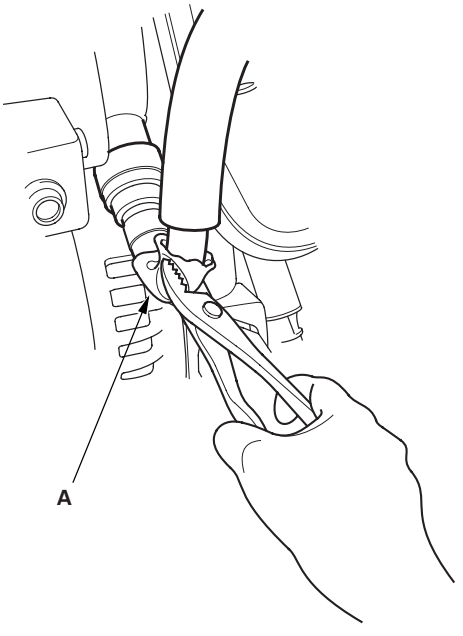
PCV Valve Inspection

K20Z2 engine

1. Check the PCV valve (A), the hoses (B), and the connections for leaks or restrictions.

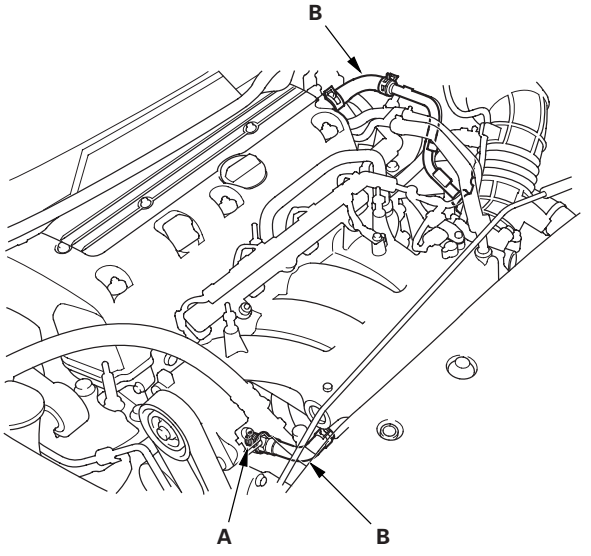


2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve then recheck.

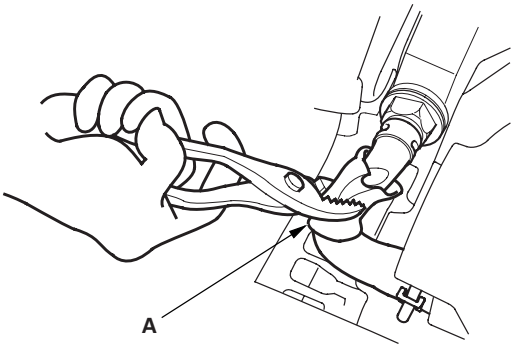


K20Z3 engine

1. Check the PCV valve (A), hoses (B), and connections for leaks or restrictions.



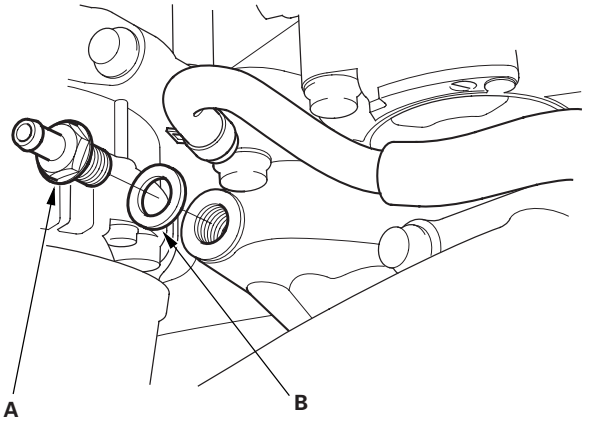
2. At idle, make sure there is a clicking sound from the PCV valve when the hose between the PCV valve and intake manifold is lightly pinched (A) with your fingers or pliers.
   If there is no clicking sound, check the PCV valve washer for cracks or damage. If the washer is OK, replace the PCV valve and recheck.



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PCV Valve Replacement

1. Disconnect the PCV hose.
2. Remove the PCV valve (A).

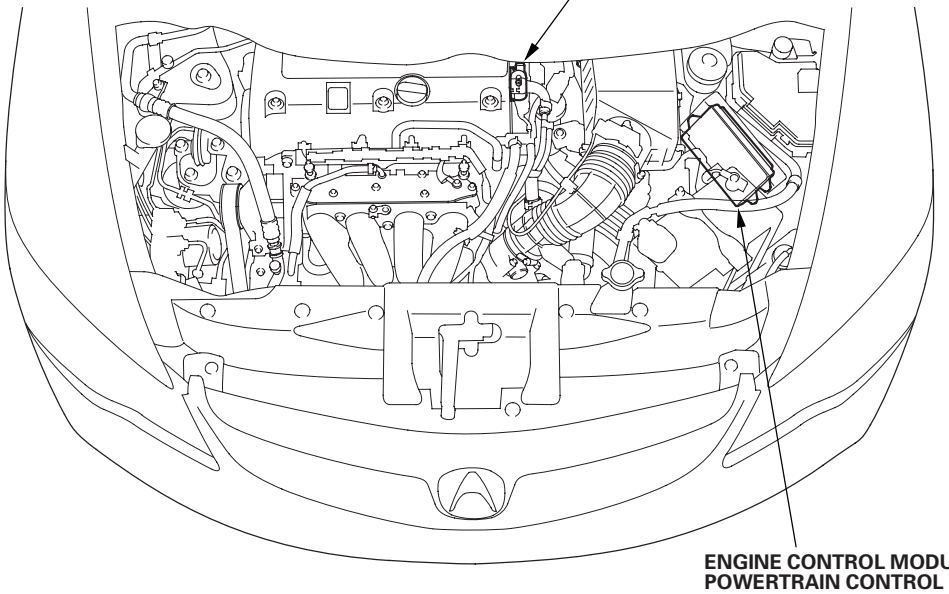


A
44 N·m
(4.5 kgf·m, 33 lbf·ft)

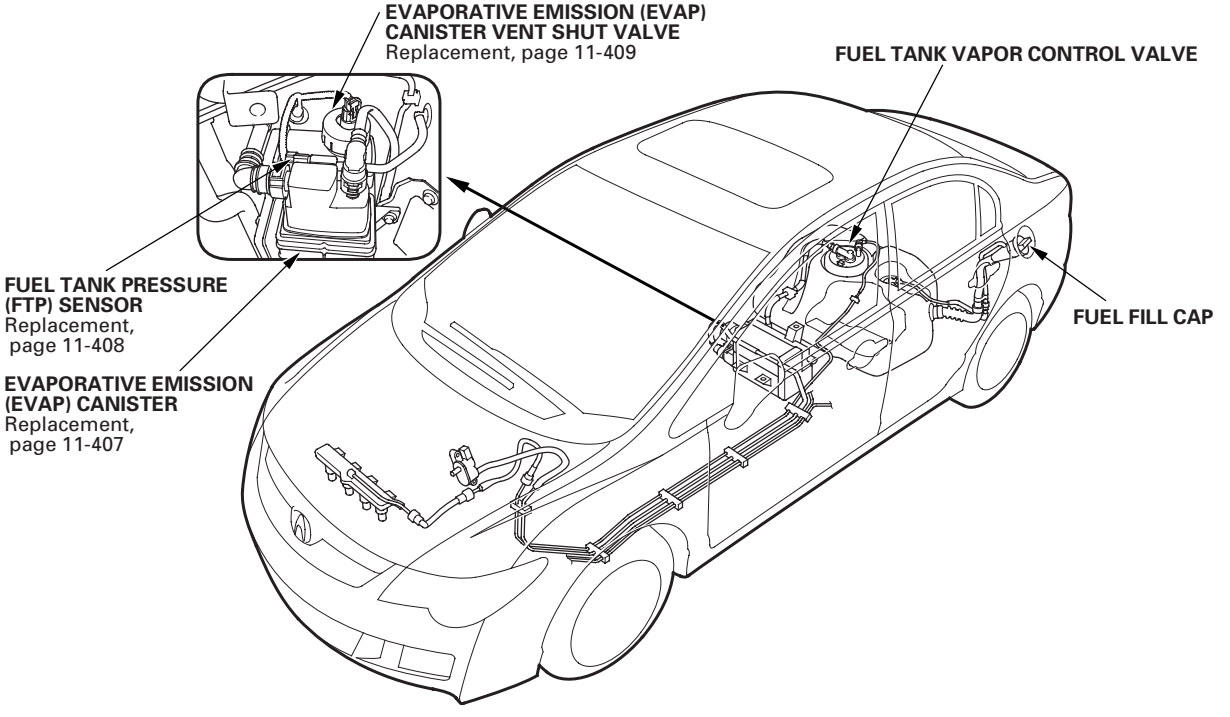
3. Install the parts in the reverse order of removal with a new washer (B).

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* : This illustration shows K20Z2 engine.



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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

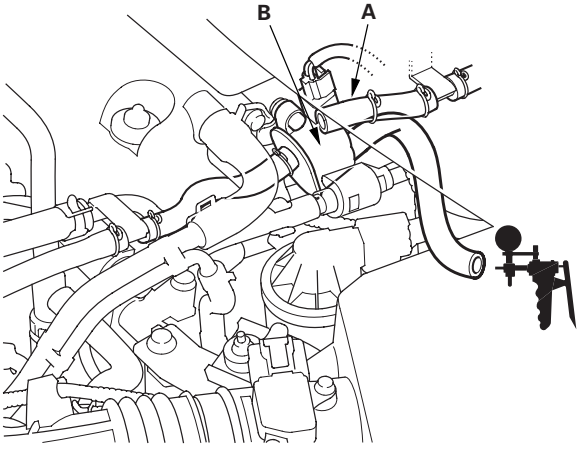
NOTE: Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (A/T in P or N, M/T in 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 ECM/PCM. ■
5. Turn the ignition switch to LOCK (0), and allow the engine to cool below 60 ℃ (140 ℉).
6. Disconnect the vacuum hose (A) from the purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



* : This illustration shows K20Z2 engine.

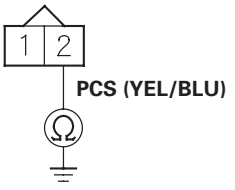
7. Start the engine, and let it idle.

   Is there vacuum?

   YES—Go to step 8.

   NO—Go to step 14.
8. Turn the ignition switch to LOCK (0).
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.

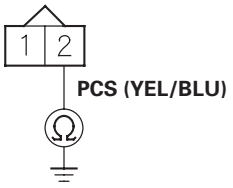
NO—Go to step 23.

(cont'd)

DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector B (44P).
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

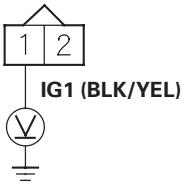
Is there continuity?

YES—Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

NO—Go to step 30.

14. Turn the ignition switch to LOCK (0).
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch to ON (II).
17. Measure the 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?

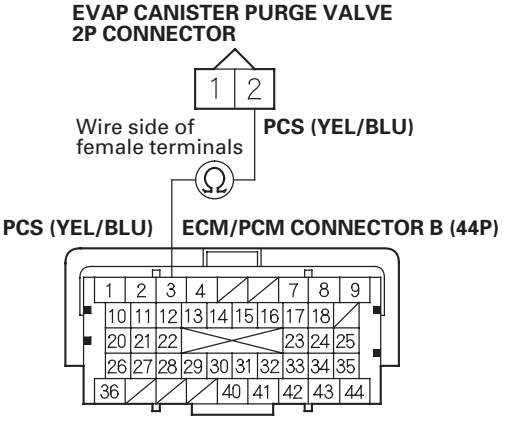
YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 3 ALTERNATOR (10 A) fuse in the under-dash fuse/relay box, then go to step 24.

18. Turn the ignition switch to LOCK (0).
19. Jump the SCS line with the HDS.
20. Disconnect ECM/PCM connector B (44P).

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21. Check for continuity between ECM/PCM connector terminal B3 and EVAP canister purge valve 2P connector terminal No. 2.



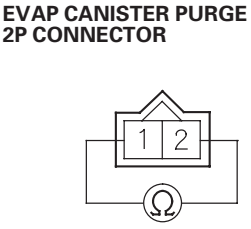
Terminal side of female terminals

Is there continuity?

YES—Go to step 22.

NO—Repair open in the wire between the EVAP canister purge valve and the ECM/PCM (B3), then go to step 24.

22. At the valve side, measure the resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.



Terminal side of male terminals

Is there about 25 Ω at room temperature?

YES—Go to step 30.

NO—Go to step 23.

23. Replace the EVAP canister purge valve (see page 11-409).

24. Reconnect all connectors.

25. Turn the ignition switch to ON (II).

26. Reset the ECM/PCM with the HDS.

27. Do the ECM/PCM idle learn procedure (see page 11-310).

(cont'd)

DTC Troubleshooting (cont'd)

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 ECM/PCM, then go to step 1.

    NO—Go to step 29.

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 ECM/PCM, then go to step 1. If the screen indicates EXECUTING or OUT OF CONDITION, keep idling until a result comes on.

30. Reconnect all connectors.

31. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

32. Start the engine, and let it idle.

33. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 34.

34. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 EVAP canister purge valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 32. If the ECM/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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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 to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle for 1 minute.
4. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES—Go to step 5.

   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
5. Turn the ignition switch to LOCK (0).
6. Replace the FTP sensor (see page 11-408).
7. Turn the ignition switch to ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see page 11-310).
10. Start the engine, then let it idle for 1 minute.
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 ECM/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 ECM/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 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 to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about −7.3 kPa (−55 mmHg, −2.16 in.Hg), 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, and let it idle.
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.

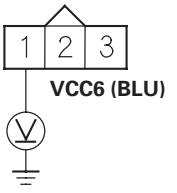
   NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
10. Turn the ignition switch to LOCK (0).
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch to ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about −7.3 kPa (−55 mmHg, −2.16 in.Hg), or 0.3 V or less indicated?

    YES—Go to step 14.

    NO—Go to step 24.
14. Measure the 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?

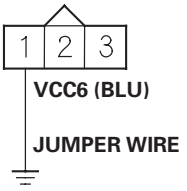
YES—Go to step 20.

NO—Go to step 15.

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15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector A (44P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

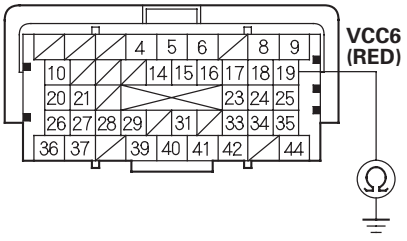
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between ECM/PCM connector terminal A19 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

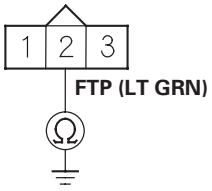
Is there continuity?

YES—Go to step 32.

NO—Repair open in the wire between the ECM/PCM (A19) and the FTP sensor, then go to step 26.

20. Turn the ignition switch to LOCK (0).
21. Jump the SCS line with the HDS.
22. Disconnect ECM/PCM connector A (44P).
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 ECM/PCM (A26) and the FTP sensor, then go to step 26.

NO—Go to step 32.

(cont'd)

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DTC Troubleshooting (cont'd)

24. Turn the ignition switch to LOCK (0).
25. Replace the FTP sensor (see page 11-408).
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see page 11-310).
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 ECM/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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).
34. Start the engine, and let it idle.
35. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 36.

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). If any other Temporary DTCs or DTCs were indicated in step 35, 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 34. If the ECM/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 to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
4. Remove the fuel fill cap.
5. Turn the ignition switch to ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (55 mmHg, 2.16 in.Hg), or 4.7 V or more indicated?

   YES—Go to step 10.

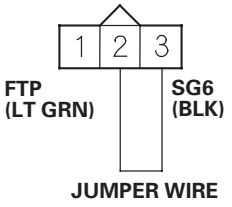
   NO—Go to step 7.
7. Install the fuel fill cap.
8. Start the engine, and let it idle.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

   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 ECM/PCM. If the screen indicates NOT COMPLETED, go to step 4 and recheck.
10. Turn the ignition switch to LOCK (0).
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

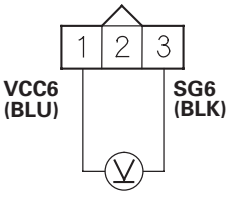
13. Turn the ignition switch to ON (II).
14. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (55 mmHg, 2.16 in.Hg), or 4.7 V or more indicated?

    YES—Go to step 15.

    NO—Go to step 26.
15. Measure the voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there about 5 V?

YES—Go to step 21.

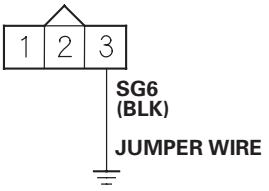
NO—Go to step 16.

(cont'd)

DTC Troubleshooting (cont'd)

16. Turn the ignition switch to LOCK (0).
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector A (44P).
19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

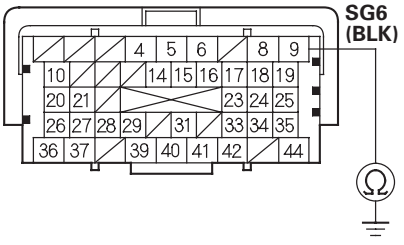
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between ECM/PCM connector terminal A9 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

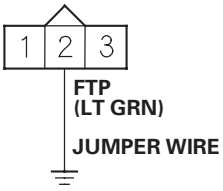
Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the ECM/PCM (A9) and the FTP sensor, then go to step 28.

21. Turn the ignition switch to LOCK (0).
22. Jump the SCS line with the HDS.
23. Disconnect ECM/PCM connector A (44P).
24. Connect FTP sensor 3P connector terminal No. 2 to body ground with a jumper wire.

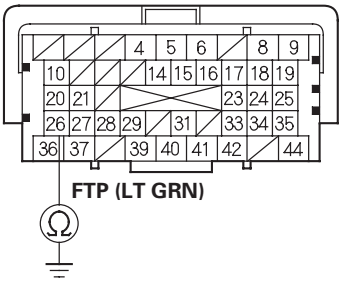
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

25. Check for continuity between ECM/PCM connector terminal A26 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 34.

NO—Repair open in the wire between the ECM/PCM (A26) and the FTP sensor, then go to step 28.

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26. Turn the ignition switch to LOCK (0).

27. Replace the FTP sensor (see page 11-408).

28. Reconnect all connectors.

29. Turn the ignition switch to ON (II).

30. Reset the ECM/PCM with the HDS.

31. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/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 ECM/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 ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

36. Start the engine, and let it idle.

37. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 36. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 38.

38. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 FTP sensor and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 36. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC Troubleshooting (cont'd)

DTC P0455: EVAP System Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

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.

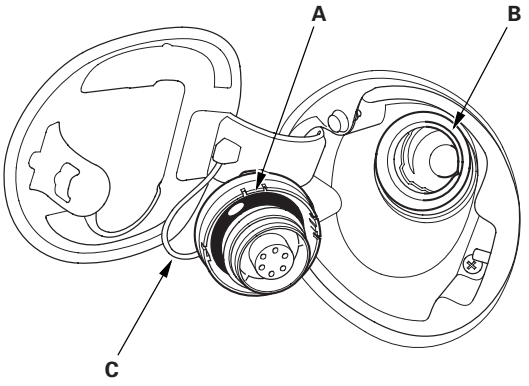
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 turn after it's tight, then it clicks.

   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 30.

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.



   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES—Replace the fuel fill cap or the fuel fill pipe, then go to step 29.

   NO—Go to step 3.

3. Turn the ignition switch to 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 ECM/PCM. ■

   NO—Go to step 6.

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6. Turn the ignition switch to LOCK (0).

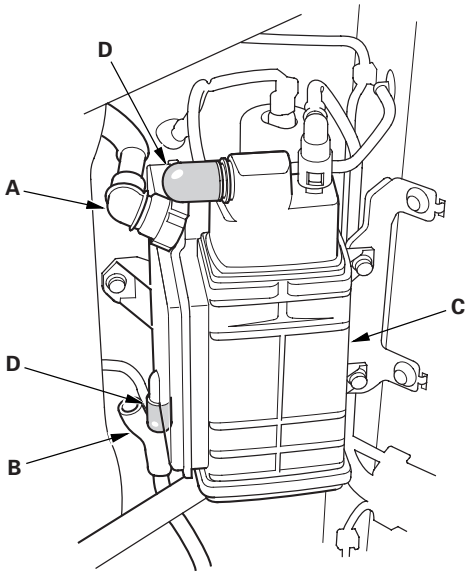
7. Check for a poor connection or damage at the fuel tank vapor recirculation tube.

   Is the tube OK?

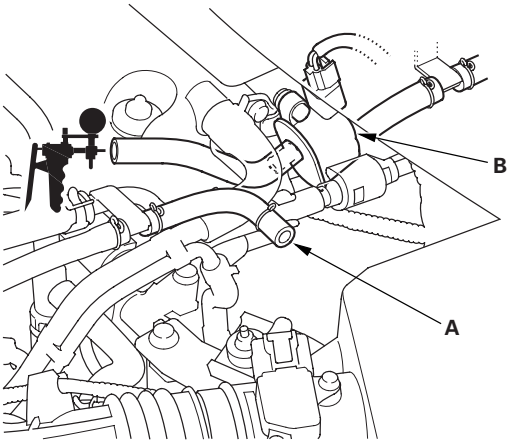
   YES—Go to step 8.

   NO—
   - Replace the fuel tank vapor recirculation tube, then go to step 29.
   - If needed, replace the fuel tank (see page 11-339), then go to step 29.

8. Disconnect the fuel tank vapor recirculation tube (A) and the fresh air hose (B) from the EVAP canister (C), and plug the EVAP canister ports (D).



9. Disconnect the vacuum hose (engine side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the purge valve as shown.



*: This illustration shows K20Z2 engine.

10. Turn the ignition switch ON (II).

11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

12. Apply vacuum to the hose until the FTP reads 1.90 V (—15.1 mmHg, —0.59 in.Hg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

13. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

14. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (0.5 mmHg, 0.1 in.Hg)?

    YES—Go to step 15.

    NO—Go to step 22.

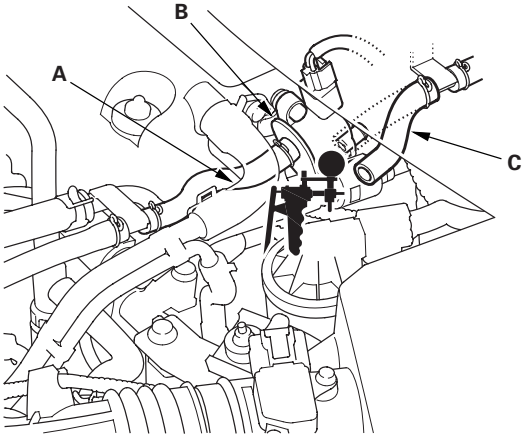
(cont'd)

DTC Troubleshooting (cont'd)

15. Turn the ignition switch to LOCK (0).

16. Disconnect the vacuum pump/gauge from the EVAP canister purge valve.

17. Reconnect the vacuum hose (engine side) (A) to the EVAP canister purge valve (B) and disconnect the vacuum hose (EVAP canister side) (C) from the EVAP canister purge valve, then connect a vacuum pump/gauge 0—30 in.Hg, to the vacuum hose as shown.



*: This illustration shows K20Z2 engine.

18. Turn the ignition switch to ON (II).

19. Apply vacuum to the hose until the FTP reads 1.90 V (—15.1 mmHg, —0.59 in.Hg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

20. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (2.5 mmHg, 0.1 in.Hg)?

    YES—Go to step 21.

    NO—Replace the EVAP canister purge valve (see page 11-409), then go to step 29.

21. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve or a leaking the EVAP canister.

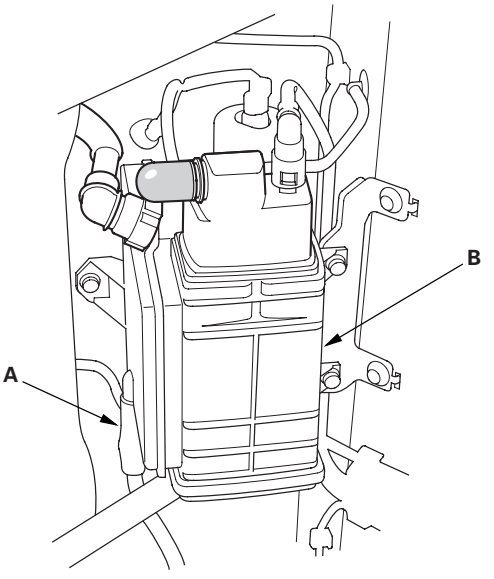
    Are the line and the EVAP canister OK?

    YES—Replace these parts, then go to step 29:

    - FTP sensor O-ring
    - EVAP canister vent shut valve case and O-ring
    - EVAP canister

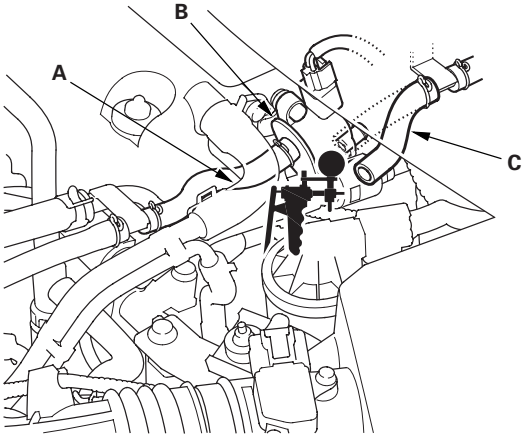
    NO—Reconnect or repair the EVAP canister purge line, then go to step 29.

22. Reconnect the fresh air hose (A) to the EVAP canister (B).



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23. Reconnect the vacuum hose (engine side) (A) to the EVAP canister purge valve (B) and disconnect the vacuum hose (EVAP canister side) (C) from the EVAP canister purge valve, then connect a vacuum pump/gauge 0—30 in.Hg, to the vacuum hose as shown.



*: This illustration shows K20Z2 engine.

24. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

25. Apply vacuum to the EVAP system until the FTP reads 1.90 V (—0.59 in.Hg, —15.1 mmHg).

    NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.

26. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage increase more than 0.2 V (2.5 mmHg, 0.1 in.Hg)?

    YES—Replace the EVAP canister vent shut valve (see page 11-409), then go to step 29.

    NO—Go to step 27.

27. Select EVAP CVS OFF in the INSPECTION MENU.

28. 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 11-335), and check the fuel tank, then go to step 29.

    NO—Repair or replace the damaged parts, then go to step 29.

29. Reconnect all hoses and connectors.

30. Turn the ignition switch to ON (II).

31. Reset the ECM/PCM with the HDS.

32. Do the ECM/PCM idle learn procedure (see page 11-310).

33. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

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

    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 ECM/PCM, then go to step 1.

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DTC Troubleshooting (cont'd)

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).

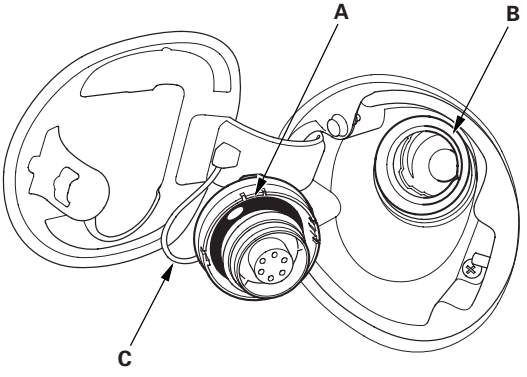
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 turn after it's tight, then it clicks.

   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, then go to step 19.

   NO—Go to step 3.

3. Turn the ignition switch to 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 or the EVAP canister vent shut valve and the ECM/PCM. ■

   NO—Go to step 6.

6. Turn the ignition switch to LOCK (0).

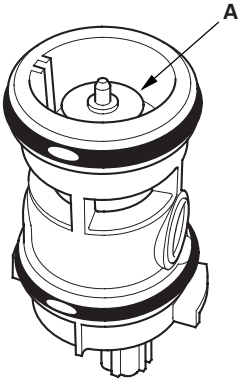
7. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-409).

8. Connect the 2P connector to the EVAP canister vent shut valve.

9. Turn the ignition switch to 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.

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12. Turn the ignition switch to LOCK (0).

13. Replace the EVAP canister vent shut valve (see page 11-409).

14. Turn the ignition switch to ON (II).

15. Reset the ECM/PCM with the HDS.

16. Do the ECM/PCM idle learn procedure (see page 11-310).

17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

18. Reinstall the EVAP canister vent shut valve.

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

DTC P0496: EVAP System High Purge Flow 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 to 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 ECM/PCM. ■

    NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).

5. Replace the EVAP canister purge valve (see page 11-409).

6. Turn the ignition switch to ON (II).

7. Reset the ECM/PCM with the HDS.

8. Do the ECM/PCM idle learn procedure (see page 11-310).

9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

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DTC Troubleshooting (cont'd)

DTC P0497: EVAP System Low Purge Flow Detected

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg, 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

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 installation (The cap must say TIGHTEN TO CLICK. The cap should tighten 1/4 turn after it is tight.).

   Is the fuel fill cap installed and properly tightened?

   YES—Go to step 2.

   NO—Properly install the fuel fill cap, then go to step 23.

2. Turn the ignition switch to ON (II).

3. Clear the DTC with the HDS.

4. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES—Intermittent failure, 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 ECM/PCM. ■

   NO—Go to step 5.

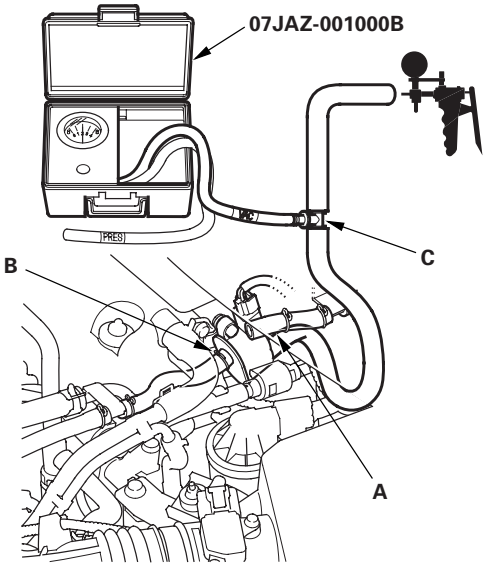
5. Check for a loose or damaged EVAP canister purge line between the intake manifold and the EVAP canister purge valve.

   Is the line OK?

   YES—Go to step 6.

   NO—Reconnect or repair the EVAP canister purge line, then go to step 23.

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) between the vacuum gauge, the vacuum pump/gauge, 0—30 in.Hg, and the vacuum hose as shown.



7. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

8. Slowly apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

   Does it hold vacuum?

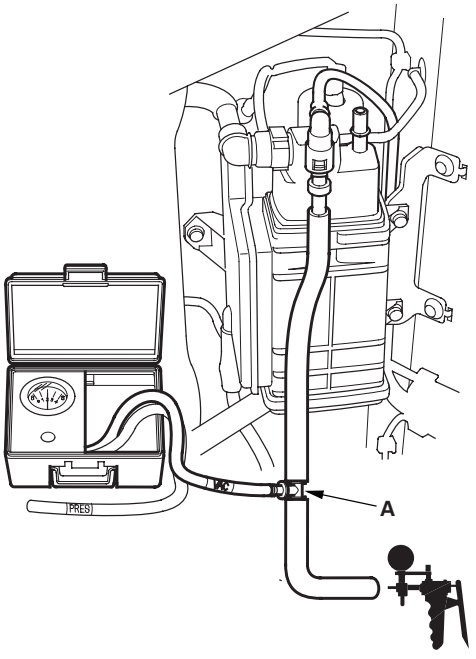
   YES—Replace the EVAP canister purge valve, then go to step 22.

   NO—Go to step 9.

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9. Reconnect the vacuum hose to the EVAP canister purge valve.

10. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, as shown.



11. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

12. Slowly apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

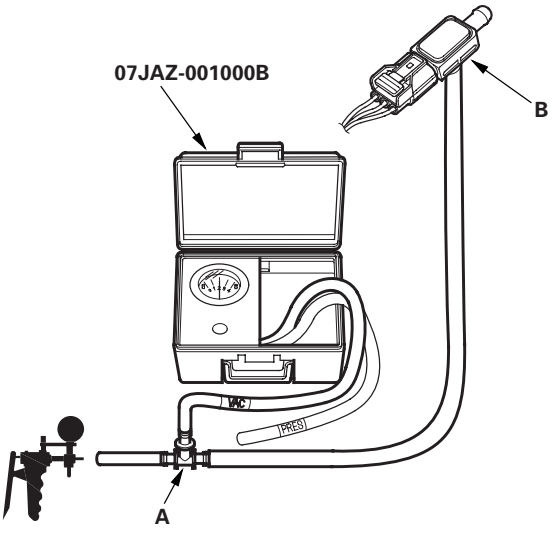
Does it hold vacuum?

YES—Check for a restricted EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, then go to step 22.

NO—Go to step 13.

13. Remove the FTP sensor with its connector connected (see page 11-408).

14. Connect a T-fitting (A) between the vacuum pump/gauge, 0—30 in.Hg, the vacuum pump, and the FTP sensor (B) as shown.



15. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.

16. Slowly apply about 1.3 kPa (10 mmHg, 0.4 in.Hg) of vacuum to the hose.

(cont'd)

DTC Troubleshooting (cont'd)

17. Check the FTP SENSOR in the DATA LIST with the HDS.

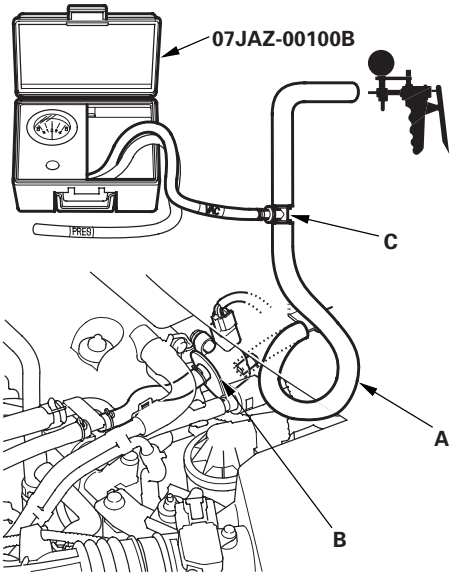
    Is the difference more than 1.1 kPa (8 mmHg, 0.31 in.Hg) before and after applying vacuum?

    YES—Go to step 18.

    NO—Replace the FTP sensor (see page 11-408), then go to step 22.

18. Reconnect the vacuum hoses to the EVAP canister purge line (EVAP canister side), and reinstall the FTP sensor.

19. Disconnect the vacuum hose (purge line) (A) from the EVAP canister purge valve (B), and connect a T-fitting (C) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, as shown.



20. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

21. Slowly apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

    Does the hose hold vacuum?

    YES—Check for a blockage at the EVAP canister port, then go to step 22.

    NO—Replace the EVAP canister vent shut valve (see page 11-409), then go to step 22.

22. Reconnect all hoses.

23. Turn the ignition switch to ON (II).

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-310).

26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES—Troubleshooting is complete. ■

    NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the ECM/PCM, then go to step 1.

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DTC P0497: EVAP System Low Purge Flow Detected

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

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 to 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?

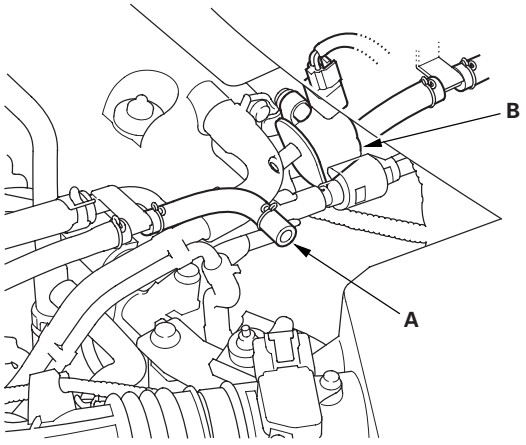
   YES—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the ECM. ■

   NO—Go to step 4.
4. Turn the ignition switch to LOCK (0).
5. Check for poor connections, 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 25.
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).

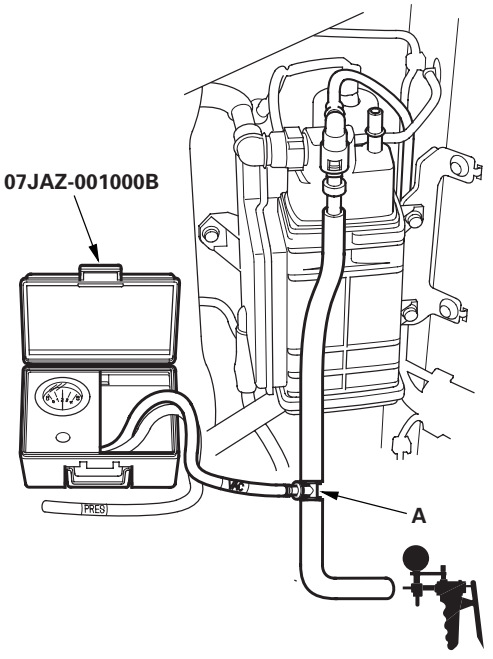


(cont'd)

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DTC Troubleshooting (cont'd)

7. Disconnect the vacuum hose from the purge line (at the EVAP canister side), and connect a T-fitting (A) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, as shown.



8. Apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

9. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

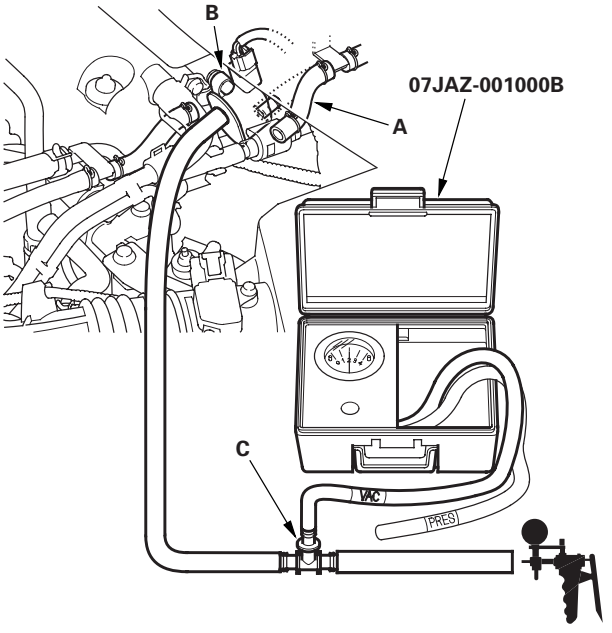
   Does the vacuum release immediately?

   YES—Go to step 15.

   NO—Go to step 10.

10. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

11. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect a T-fitting (C) between the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, and the EVAP canister purge valve as shown.



12. Apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.

13. Turn the ignition switch to ON (II).

14. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

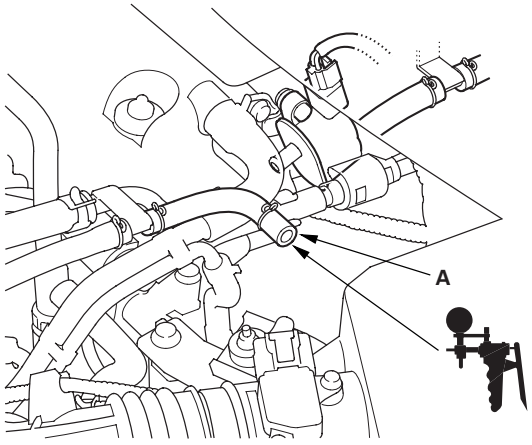
    Does the vacuum release immediately?

    YES—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the EVAP canister, then go to step 25.

    NO—Replace the EVAP canister purge valve (see page 11-409), then go to step 25.

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15. Connect the vacuum pump/gauge, 0—30 in.Hg, to the vacuum hose (A) as shown.



16. Start the engine, and let it idle.

    Is there vacuum?

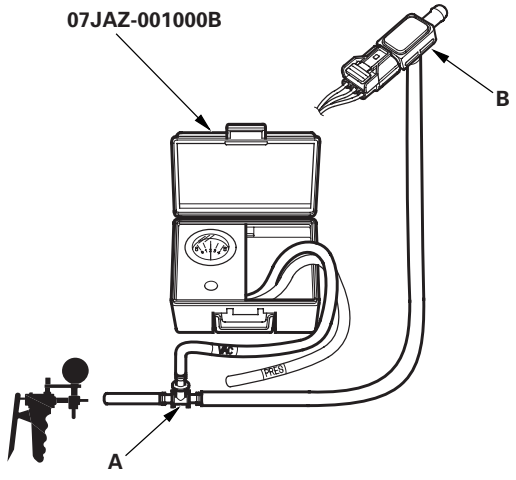
    YES—Go to step 17.

    NO—Check for a blockage at the EVAP purge line between the throttle body and the EVAP canister purge valve, then go to step 25.

17. Turn the ignition switch to LOCK (0).

18. Remove the FTP sensor with its connector connected (see page 11-408).

19. Connect a T-fitting (A) between the vacuum pump/gauge, 0—30 in.Hg and connect the vacuum pump and the FTP sensor (B) as shown.



20. Turn the ignition switch to ON (II).

21. Check and record the FTP SENSOR reading in the DATA LIST with the HDS.

22. Slowly apply about 1.3 kPa (10 mmHg, 0.4 in.Hg) of vacuum to the hose.

23. 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 25.

    NO—Go to step 24.

24. Replace the FTP sensor (see page 11-408).

25. Reconnect all hoses.

26. Turn the ignition switch to ON (II).

27. Reset the ECM with the HDS.

28. Do the ECM idle learn procedure (see page 11-310).

29. 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 ECM, then go to step 1.

DTC Troubleshooting (cont'd)

DTC P0498: EVAP Canister Vent Shut Valve 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 to 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.

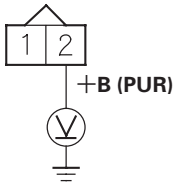
   NO—Go to step 4.
4. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs with the HDS.

   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 ECM/PCM. ■
6. Turn the ignition switch to LOCK (0).
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Turn the ignition switch to ON (II).
9. Measure the 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

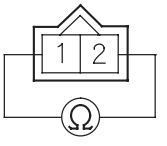
Is there battery voltage?

YES—Go to step 10.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PGM-FI subrelay, then go to step 18.

10. Turn the ignition switch to LOCK (0).
11. At the valve side, measure the 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.

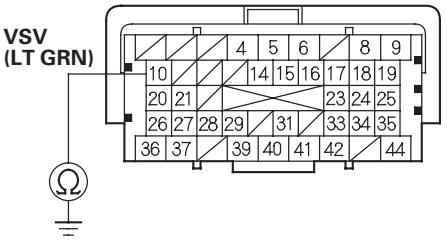
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12. Jump the SCS line with the HDS.

13. Disconnect ECM/PCM connector A (44P).

14. Check for continuity between ECM/PCM connector terminal A10 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

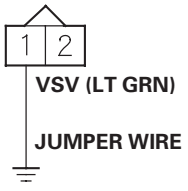
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (A10), 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.

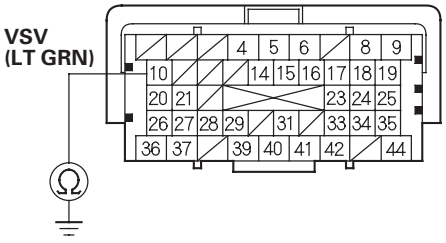
EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



Wire side of female terminals

16. Check for continuity between ECM/PCM connector terminal A10 and body ground.

ECM/PCM CONNECTOR A (44P)



Terminal side of female terminals

Is there continuity?

YES—Go to step 25.

NO—Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (A10), then go to step 18.

17. Replace the EVAP canister vent shut valve (see page 11-409).

18. Reconnect all connectors.

(cont'd)

DTC Troubleshooting (cont'd)

19. Turn the ignition switch to ON (II).

20. Reset the ECM/PCM with the HDS.

21. Do the ECM/PCM idle learn procedure (see page 11-310).

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 ECM/PCM, then go to step 1.

    NO—Go to step 24.

24. Monitor the OBD STATUS for DTC P0498 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 EVAP canister vent shut valve and the ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 22.

25. Reconnect all connectors.

26. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

27. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

28. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1.

    NO—Go to step 29.

29. Monitor the OBD STATUS for DTC P0498 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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 vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 27. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 27.

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DTC P0499: EVAP Canister Vent Shut Valve 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 to 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—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 vent shut valve and the ECM/PCM. ■

5. Update the ECM/PCM if it does not have the latest software (see page 11-227), or substitute a known-good ECM/PCM (see page 11-7).

6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

7. 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 ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 6. If the ECM/PCM was substituted, go to step 1.

   NO—Go to step 8.

8. Monitor the OBD STATUS for DTC P0499 in the DTCs MENU with the HDS.

   Does the screen indicate PASSED?

   YES—If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see page 11-228). 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, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM. If the ECM/PCM was updated, substitute a known-good ECM/PCM (see page 11-7), then go to step 6. If the ECM/PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

DTC Troubleshooting (cont'd)

DTC P1454: FTP Sensor Range/Performance Problem

DTC P2422: EVAP Canister Vent Shut Valve Stuck Closed 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 to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to LOCK (0).
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 (−5 and 5 mmHg, −0.2 and 0.2 in.Hg), or 2.4 and 2.6 V?

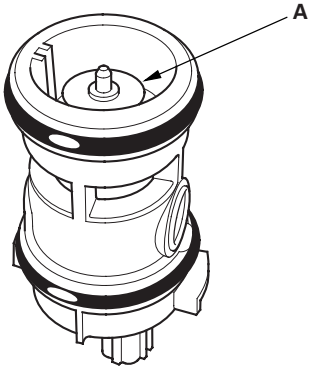
   YES—Go to step 6.

   NO—Go to step 17.
6. Install the fuel fill cap.
7. Clear the DTC with the HDS.
8. Start the engine, and let it idle without load (A/T in P or N, M/T in 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 ECM/PCM. Also check for a blockage in the vent hoses and the drain joint. If the screen indicates NOT COMPLETED, keep idling until a result comes on.
10. Clear the DTC with the HDS.
11. Turn the ignition switch to LOCK (0).
12. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-409).
13. Connect the 2P connector to the EVAP canister vent shut valve.
14. Turn the ignition switch to ON (II).
15. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
16. Check the EVAP canister vent shut valve (A) operation.



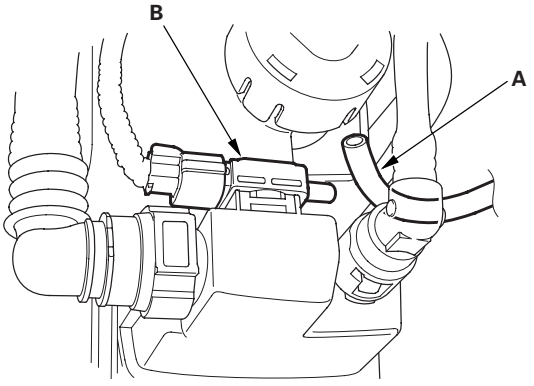
Does the valve operate?

YES—Check for a blockage in the EVAP canister, the vent hoses, and the 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 11-409), then go to step 23.

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17. Disconnect the air tube (A) from the FTP sensor (B).



18. Check the FTP SENSOR in the DATA LIST with the HDS.

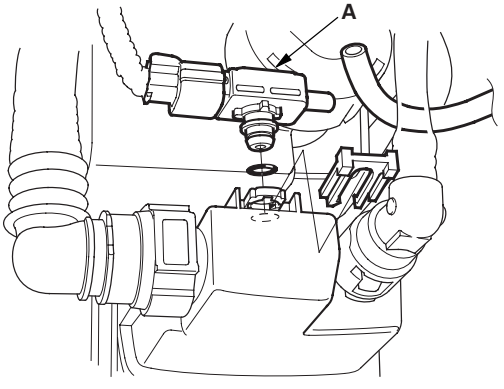
    Is it between −0.67 and 0.67 kPa (−5 and 5 mmHg, −0.2 and 0.2 in.Hg), or 2.4 and 2.6 V?

    YES—Check for a blockage in the FTP sensor air tube or the vent, then go to step 23.

    NO—Go to step 19.

19. Turn the ignition switch to LOCK (0).

20. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see page 11-408).



21. Turn the ignition switch to ON (II).

22. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is it between −0.67 kPa and 0.67 kPa (−5 and 5 mmHg, −0.2 and 0.2 in.Hg), 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 11-408), then go to step 23.

23. Turn the ignition switch to ON (II).

24. Reset the ECM/PCM with the HDS.

25. Do the ECM/PCM idle learn procedure (see page 11-310).

26. Start the engine, and let it idle without load (A/T in P or N, M/T in 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 ECM/PCM, then go to step 1.

    NO—Go to step 28.

(cont'd)

DTC Troubleshooting (cont'd)

28. Monitor the OBD STATUS for DTC P1454 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 ECM/PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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).
- This DTC is representative of an EVAP system purge flow problem. If DTC P145C is indicated alone, troubleshoot P0496 and P0497 using the freeze data for P145C.
- If DTC P0497 and P145C are stored at the same time, check for a poor connection, a blockage, or damage at the EVAP canister purge line between the EVAP canister purge valve and the EVAP canister, or check for a stuck closed EVAP canister purge valve.
- If any of the DTCs listed below are indicated at the same time as DTC P145C, troubleshoot those DTC first, then recheck for P145C:

  P0496, P0497: EVAP system purge flow

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Fuel Cap Warning Message System Troubleshooting

Special Tools Required
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B
- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available

Do this procedure if the fuel cap warning message comes on frequently, or if the message does not go off after the fuel fill cap is tightened and the vehicle is driven several days.

K20Z3 engine

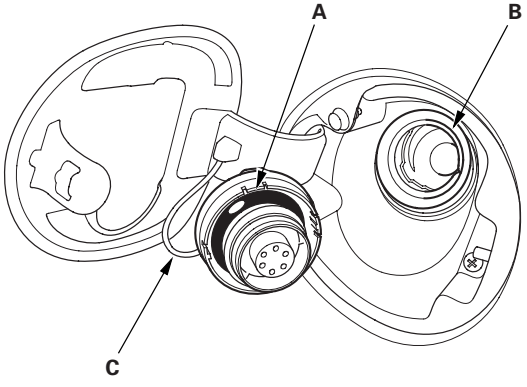
1. Check the fuel fill cap (the cap must say TIGHTEN TO CLICK). It should turn 1/4 after it's tight, then it clicks.

   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, 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 neutral) until the radiator fan comes on, then let it idle for 1 minute.

6. Test drive at 72 km/h (45 mph) for 1 minute or more.

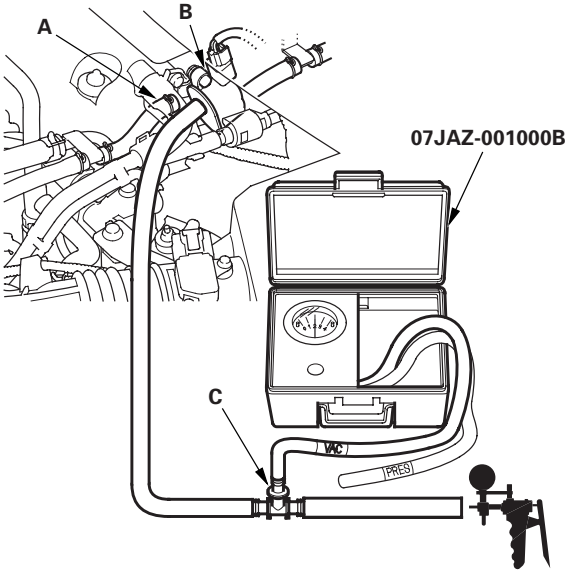
   Does fuel cap warning message come on?

   YES—Go to step 7.

   NO—Intermittent failure, the system is OK at this time. ■

7. Turn the ignition switch to LOCK (0).

8. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) between the vacuum gauge and the vacuum pump/gauge 0—30 in.Hg, and the EVAP canister purge valve as shown.



(cont'd)

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Fuel Cap Warning Message System Troubleshooting (cont'd)

9. Turn the ignition switch to ON (II).
10. Apply about 2 kPa (15 mmHg, 0.6 in.Hg) of vacuum to the hose.
11. Select the EVAP PCS ON in the INSPECTION MENU with the HDS.

    Does the vacuum release immediately?

    YES—Check for a blockage at the EVAP canister purge line between EVAP canister purge valve and the EVAP canister, then go to step 12.

    NO—Replace the EVAP canister purge valve (see page 11-409), then go to step 12.
12. Reconnect all hoses.
13. Turn the ignition switch to ON (II).
14. Reset the ECM with the HDS.
15. Do the ECM idle learn procedure (see page 11-310).
16. Start the engine. Hold the engine speed at 3,000 rpm without load (in neutral) until the radiator fan comes on, then let it idle for 1 minute.
17. Test drive at 72 km/h (45 mph) for 1 minute or more.

    Does the fuel cap message come on?

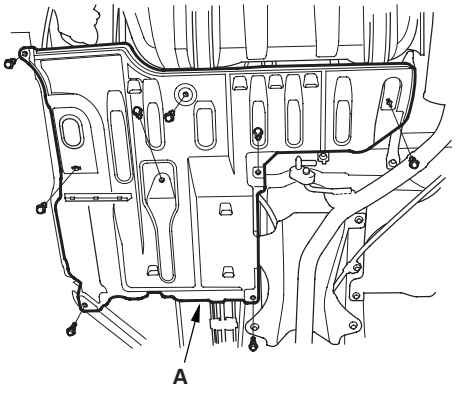
    YES—Go to step 1 and recheck.

    NO—Troubleshooting is complete. ■

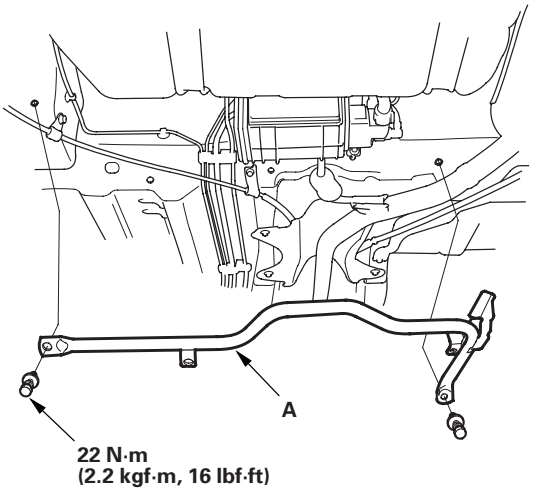
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EVAP Canister Replacement

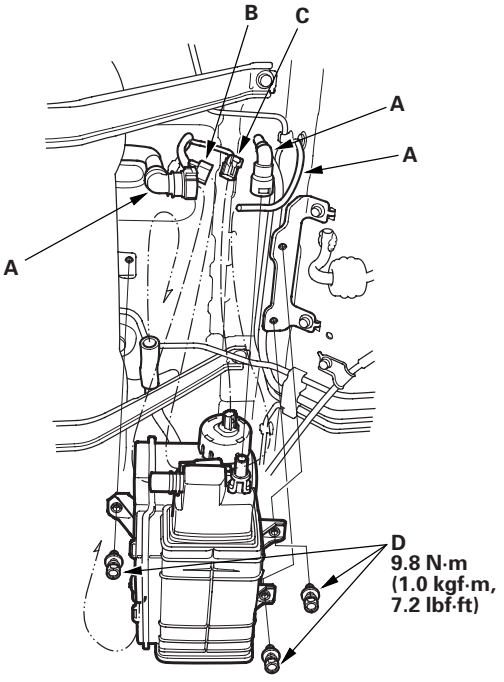
1. Raise the vehicle on a lift.
2. Remove the cover (A).



3. Remove the EVAP canister guard pipe (A).



4. Remove the hoses (A), the FTP sensor connector (B), the EVAP canister vent shut valve connector (C) and the bolts (D).

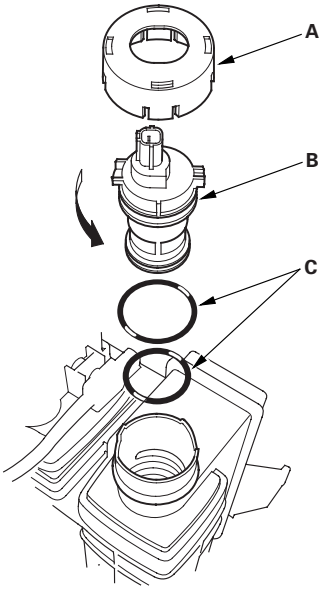


5. Remove the EVAP canister.

(cont'd)

EVAP Canister Replacement (cont'd)

6. Remove the cap (A).



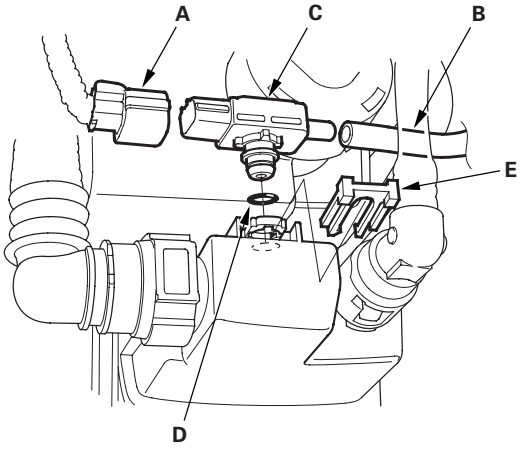
7. Remove the EVAP canister vent shut valve (B).
8. Install the EVAP canister vent shut valve to the new EVAP canister with new O-rings (C).

   NOTE: Do not coat the O-ring with oil.

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

FTP Sensor Replacement

1. Remove the cover (see step 2 on page 11-407).
2. Disconnect the FTP sensor connector (A).

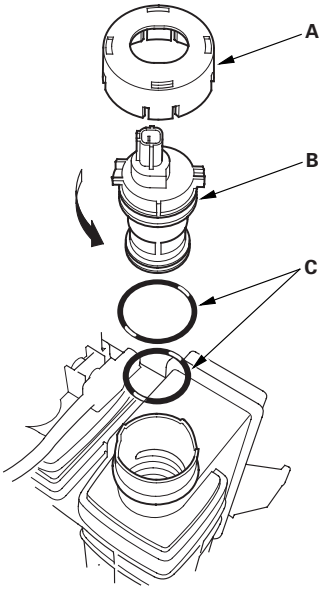


3. Disconnect the hose (B), and then remove the FTP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D) and retainer (E).

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EVAP Canister Replacement (cont'd)

6. Remove the cap (A).



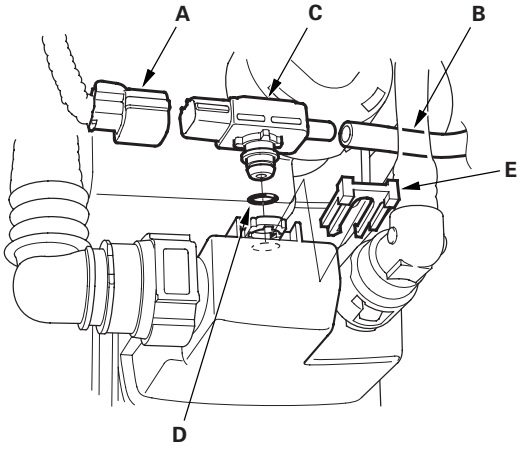
7. Remove the EVAP canister vent shut valve (B).
8. Install the EVAP canister vent shut valve to the new EVAP canister with new O-rings (C).

   NOTE: Do not coat the O-ring with oil.

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

FTP Sensor Replacement

1. Remove the cover (see step 2 on page 11-407).
2. Disconnect the FTP sensor connector (A).

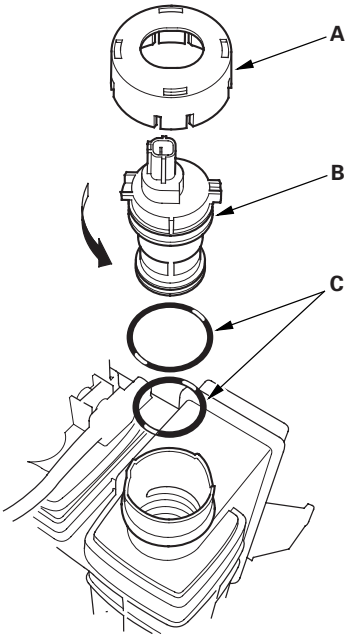


3. Disconnect the hose (B), and then remove the FTP sensor (C).
4. Install the parts in the reverse order of removal with a new O-ring (D) and retainer (E).

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EVAP Canister Vent Shut Valve Replacement

1. Remove the EVAP canister (see page 11-407).
2. Remove the cap (A).

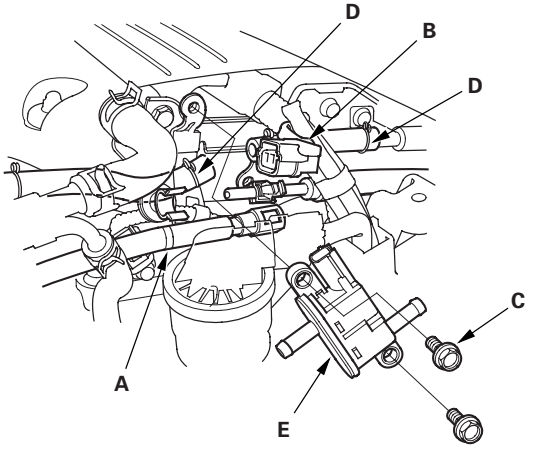


3. Remove the EVAP canister vent shut valve (B).
4. Install the parts in the reverse order of removal with new O-rings (C) and new cap.

   NOTE: Do not coat the O-ring with oil.

EVAP Canister Purge Valve Replacement

1. Remove the engine cover (see step 1 on page 9-3).
2. Remove the air cleaner (see page 11-345).
3. Relieve the fuel pressure (see page 11-322).
4. Remove the fuel line (A).



* : This illustration shows K20Z2 engine.

5. Disconnect the EVAP canister purge valve 2P connector (B).
6. Remove the bolts (C) and the hoses (D), then remove the EVAP canister purge valve (E).
7. Install the parts in the reverse order of removal.

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