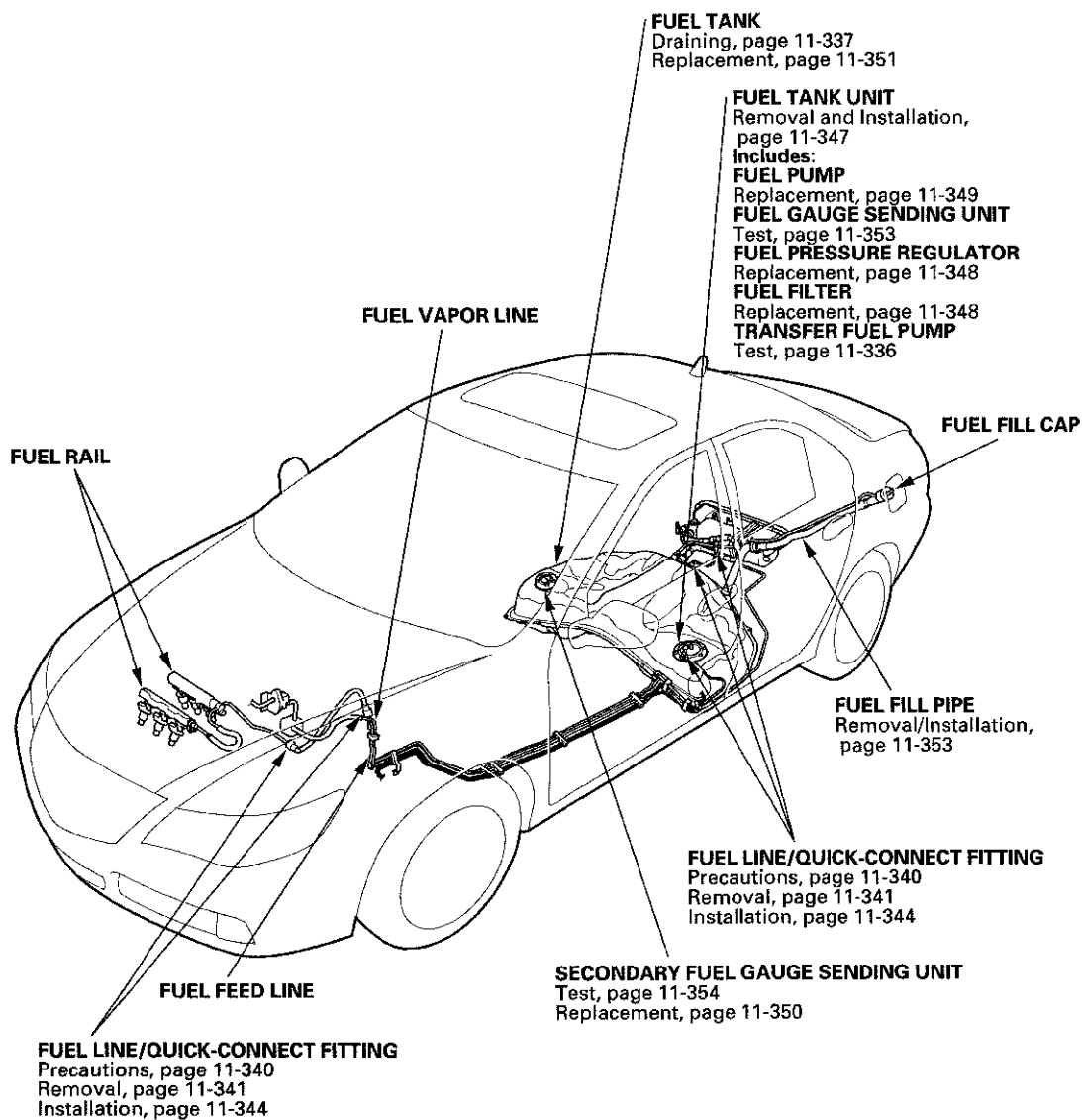
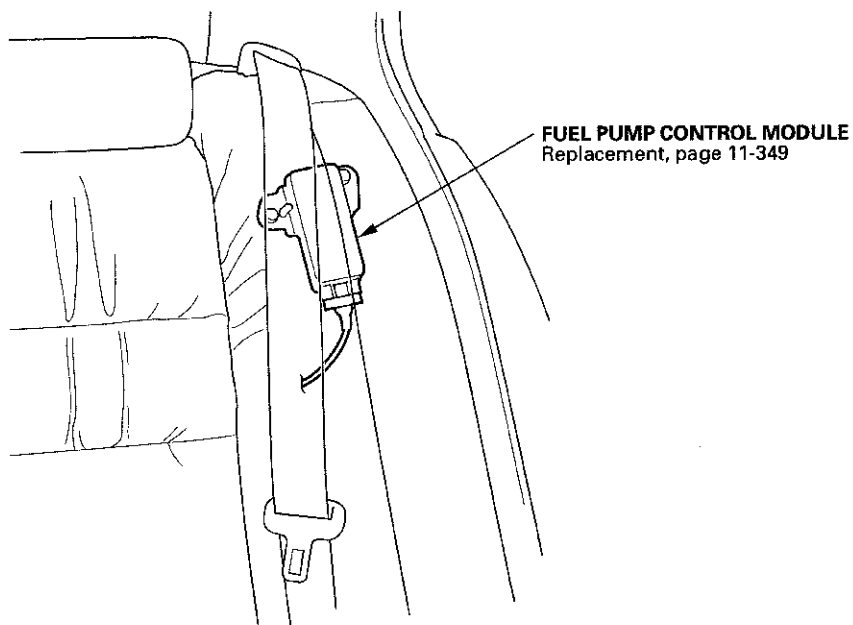
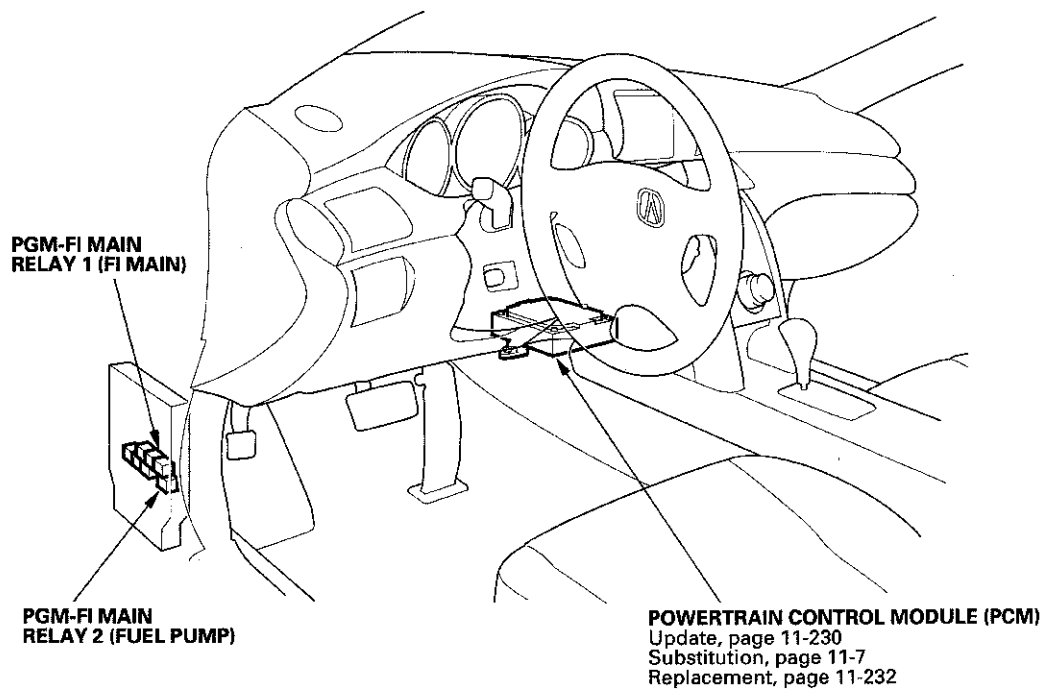


Fuel Supply System

Component Location Index





Fuel Supply System

DTC Troubleshooting

DTC P0461: Fuel Level Sensor (Fuel Gauge Sending Unit) Circuit Range/Performance Problem

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- Because it requires 162 miles (260 km) of driving without refueling to complete this diagnosis, DTC P0461 cannot be duplicated during this troubleshooting.

1. Test the fuel gauge sending unit (see page 11-353).

Is the fuel gauge sending unit OK?

YES—Check for poor connections or loose terminals at the fuel gauge sending unit and the gauge control module. ■

NO—Replace the fuel gauge sending unit (see page 11-349), then go to step 2.

2. Turn the ignition switch to ON (II).
3. Reset the PCM with the HDS.
4. Do the PCM idle learn procedure (see page 11-313).
5. Check for Pending or Confirmed DTCs with the HDS.

Are any Pending or Confirmed 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 Pending or Confirmed 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, the fuel gauge sending unit, and the secondary fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0).
5. Remove the rear seat cushion (see page 20-140).
6. Remove the access panel from the right side of the floor.
7. Disconnect the secondary fuel gauge sending unit 5P connector.
8. Turn the ignition switch to ON (II).
9. Clear the DTC with the HDS, and wait 5 seconds.
10. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check the secondary fuel gauge sending unit (see page 11-354), then go to step 31.

NO—Go to step 11.

11. Turn the ignition switch to LOCK (0).
12. Remove the access panel from the left side of the floor.



13. Disconnect the fuel pump 5P connector.
14. Turn the ignition switch to ON (II).
15. Clear the DTC with the HDS, and wait 5 seconds.
16. Check for Pending or Confirmed DTCs with the HDS.

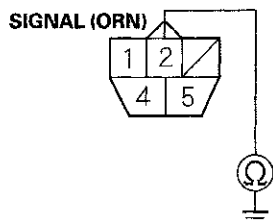
Is DTC P0463 indicated?

YES—Go to step 17.

NO—Go to step 21.

17. Turn the ignition switch to LOCK (0).
18. Remove the gauge control module (see page 22-419).
19. Disconnect gauge control module connector A (20P).
20. Check for continuity between fuel tank unit 5P connector terminal No. 2 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

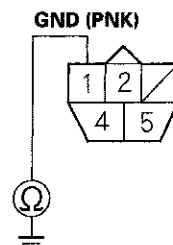
Is there continuity?

YES—Repair short in the wire between the gauge control module (signal line) and the fuel gauge sending unit, then go to step 31.

NO—Go to step 23.

21. Turn the ignition switch to LOCK (0).
22. Check for continuity between fuel tank unit 5P connector terminal No. 1 and body ground.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the fuel tank unit and the secondary fuel gauge sending unit, then go to step 31.

NO—Check the fuel gauge sending unit (see page 11-353).

23. Reconnect gauge control module connector A (20P).
24. Remove the fuel tank unit (see page 11-347) and the secondary fuel gauge sending unit (see page 11-350).
25. Connect the fuel tank unit and the secondary fuel gauge sending unit 5P connector.
26. Turn the ignition switch to ON (II).
27. Clear the DTC with the HDS.

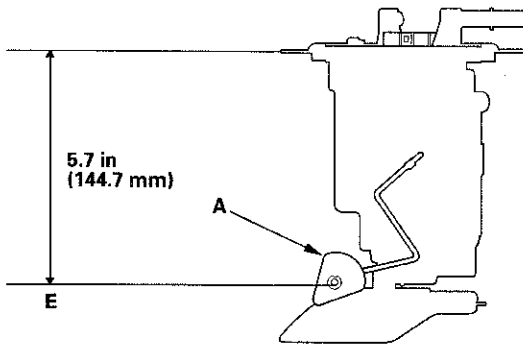
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Fuel Supply System

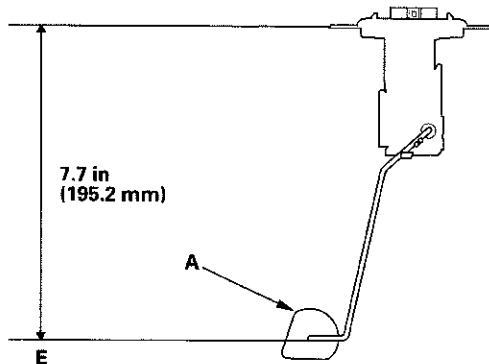
DTC Troubleshooting (cont'd)

28. Set the float (A) to the E position.

Fuel tank unit



Secondary fuel gauge sending unit



29. Check the fuel gauge.

Does the gauge move to the empty position?

YES—Go to step 37.

NO—Replace the gauge control module (see page 22-419), then go to step 30.

30. Turn the ignition switch to LOCK (0).
31. Install the parts in the reverse order of removal.
32. Reconnect all connectors.
33. Turn the ignition switch to ON (II).
34. Reset the PCM with the HDS.
35. Do the PCM idle learn procedure (see page 11-313).
36. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit, then go to step 1.

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

37. Turn the ignition switch to LOCK (0).
38. Install the parts in the reverse order of removal.
39. Turn the ignition switch to ON (II).
40. Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7).
41. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0462 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit. 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 11-232). If any other Pending or Confirmed 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 Pending or Confirmed DTCs with the HDS.

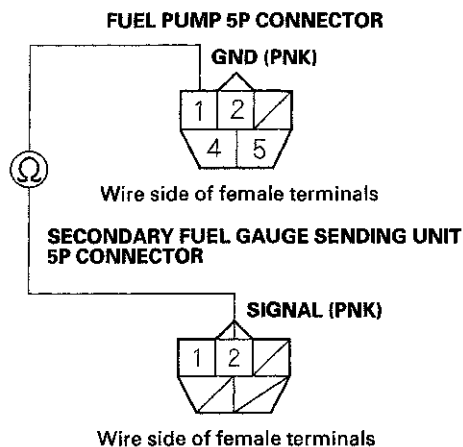
Is DTC P0463 indicated?

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, the fuel gauge sending unit, and the secondary fuel gauge sending unit. ■

4. Turn the ignition switch to LOCK (0).
5. Remove the rear seat cushion (see page 20-140).
6. Remove the access panel from the left side of the floor.
7. Disconnect the fuel pump 5P connector.
8. Remove the access panel from the right side of the floor.
9. Disconnect the secondary fuel gauge sending unit 5P connector.

10. Check for continuity between the fuel gauge sending unit 5P connector terminal No. 1 and the secondary fuel gauge sending unit 5P connector terminal No. 2.



Is there continuity?

YES—Go to step 11.

NO—Repair open in the wire between the fuel gauge sending unit and the secondary fuel gauge sending unit, then go to step 25.

11. Remove the gauge control module (see page 22-419).
12. Disconnect gauge control module connector A (20P).

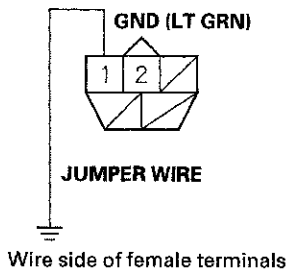
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Fuel Supply System

DTC Troubleshooting (cont'd)

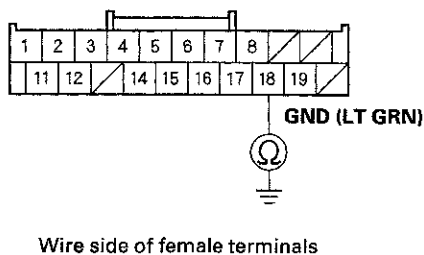
13. Connect secondary fuel gauge sending unit 5P connector terminal No. 1 to body ground with a jumper wire.

SECONDARY FUEL GAUGE SENDING UNIT 5P CONNECTOR



14. Check for continuity between gauge control module connector A (20P) terminal No. 18 and body ground.

GAUGE CONTROL MODULE CONNECTOR A (20P)



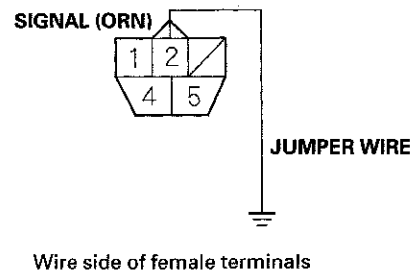
Is there continuity?

YES—Remove the jumper wire, then go to step 15.

NO—Repair open in the wire between the gauge control module and the secondary fuel gauge sending unit, then go to step 25.

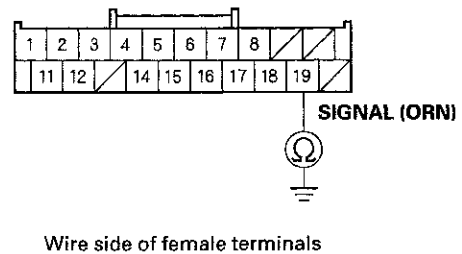
15. Connect fuel pump 5P connector terminal No. 2 to body ground with a jumper wire.

FUEL PUMP 5P CONNECTOR



16. Check for continuity between gauge control module connector A (20P) terminal No. 19 and body ground.

GAUGE CONTROL MODULE CONNECTOR A (20P)



Is there continuity?

YES—Replace the gauge control module (see page 22-419), then go to step 17.

NO—Repair open in the wire between the gauge control module and the fuel gauge sending unit, then go to step 25.



17. Disconnect the jumper wire from the fuel gauge sending unit 5P connector.

18. Remove the fuel tank unit (see page 11-349).

19. Test the fuel gauge sending unit (see page 11-353).

Is the fuel gauge sending unit OK?

YES—Go to step 20.

NO—Replace the fuel gauge sending unit (see page 11-349), then go to step 25.

20. Remove the secondary fuel gauge sending unit (see page 11-350).

21. Test the secondary fuel gauge sending unit (see page 11-354).

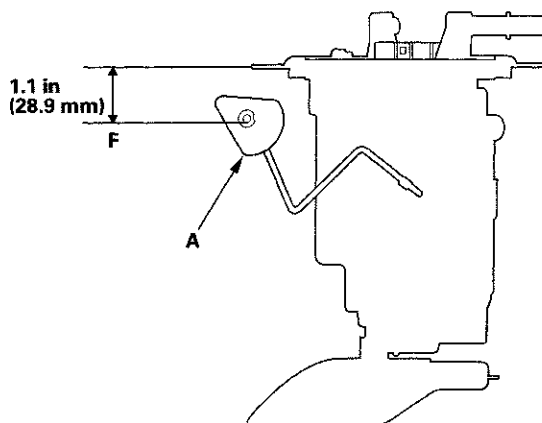
Is the secondary fuel gauge sending unit OK?

YES—Go to step 22.

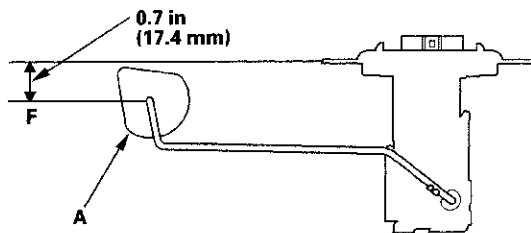
NO—Replace the secondary fuel gauge sending unit (see page 11-350), then go to step 25.

22. Set the float (A) to the F positions.

Fuel tank unit



Secondary fuel gauge sending unit



(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

23. Check the fuel gauge.

Does the gauge move to the full position?

YES—Go to step 31.

NO—Replace the gauge control module (see page 22-419), then go to step 24.

24. Turn the ignition switch to LOCK (0).
25. Install the parts in the reverse order of removal.
26. Reconnect all connectors.
27. Turn the ignition switch to ON (II).
28. Reset the PCM with the HDS.
29. Do the PCM idle learn procedure (see page 11-313).
30. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit, then go to step 1.

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

31. Turn the ignition switch to LOCK (0).
32. Install the parts in the reverse order of removal.
33. Turn the ignition switch to ON (II).
34. Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7).

35. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0463 indicated?

YES—Check for poor connections or loose terminals at the gauge control module, the fuel gauge sending unit, and the secondary fuel gauge sending unit. 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 11-232). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■



DTC P0627: Fuel Pump Control Module System Malfunction

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

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch to the START (III) position.

NOTE: This vehicle has an auto control mode starting system. It keeps the starter motor running after the ignition switch is released for 15 seconds, or until the engine starts.

4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0627 indicated?

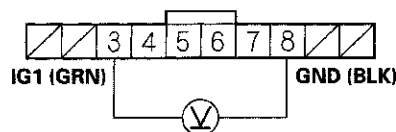
YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2 (FUEL PUMP), the fuel tank unit, and the PCM. ■

5. Turn the ignition switch to LOCK (0).
6. Disconnect the fuel pump control module 10P connector (see page 11-349).

7. Turn the ignition switch to ON (II), and measure the voltage between fuel pump control module 10P connector terminals No. 3 and No. 8 within 2 seconds.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



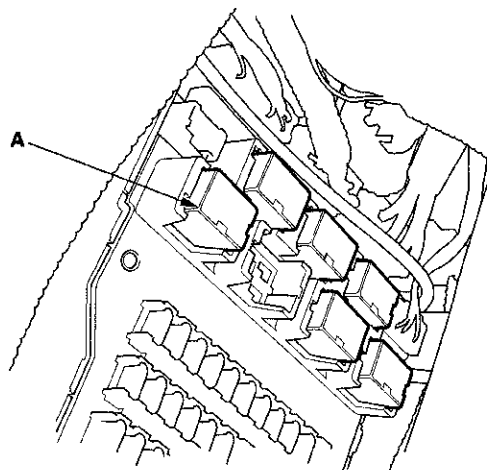
Wire side of female terminals

Is there battery voltage?

YES—Go to step 22.

NO—Go to step 8.

8. Turn the ignition switch to LOCK (0).
9. Remove the left kick panel (see step 3 on page 20-67), then remove PGM-FI main relay 2 (FUEL PUMP) (A) from the driver's under-dash fuse/relay box.



(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

10. Test PGM-FI main relay 2 (FUEL PUMP) (see page 22-93).

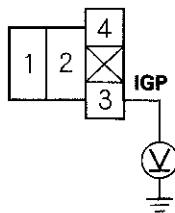
Is PGM-FI main relay 2 (FUEL PUMP) OK?

YES—Go to step 11.

NO—Replace PGM-FI main relay 2 (FUEL PUMP), then go to step 67.

11. Turn the ignition switch to ON (II).
12. Measure the voltage between PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 3 and body ground.

PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

Is there battery voltage?

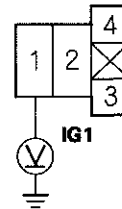
YES—Go to step 13.

NO—

- Replace PGM-FI main relay 1 (FI MAIN), then go to step 67.
- If needed, replace the driver's under-dash fuse/relay box (see page 22-88), then go to step 67.

13. 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

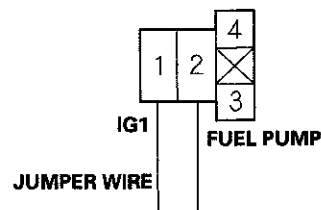
Is there battery voltage?

YES—Go to step 14.

NO—Replace the driver's under-dash fuse/relay box (see page 22-88), then go to step 67.

14. Turn the ignition switch to LOCK (0).
15. 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

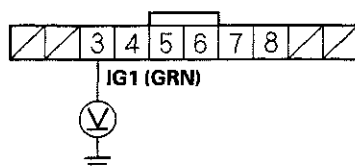


Terminal side of female terminals



16. Turn the ignition switch to ON (II), and measure the voltage between fuel pump control module 10P connector terminal No. 3 and body ground within 2 seconds.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Go to step 17.

NO—

- Repair open in the wire between the driver's under-dash fuse/relay box and the fuel pump control module, then go to step 67.
- If needed, replace the driver's under-dash fuse/relay box (see page 22-88), then go to step 67.

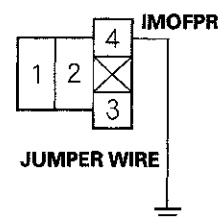
17. Turn the ignition switch to LOCK (0).

18. Jump the SCS line with the HDS.

19. Disconnect PCM connector E (31P).

20. Connect PGM-FI main relay 2 (FUEL PUMP) 4P connector terminal No. 4 to body ground with a jumper wire.

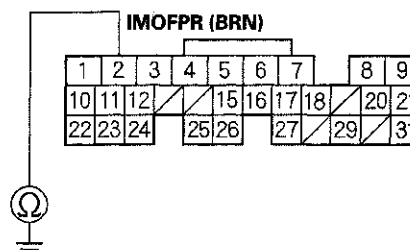
PGM-FI MAIN RELAY 2 (FUEL PUMP) 4P CONNECTOR



Terminal side of female terminals

21. Check for continuity between PCM connector terminal E2 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 73.

NO—Repair open in the wire between the PCM (E2) and PGM-FI main relay 2 (FUEL PUMP), then go to step 67.

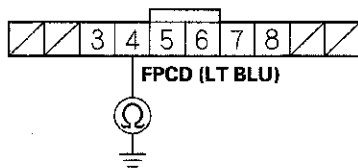
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

22. Turn the ignition switch to LOCK (0).
 23. Reconnect the fuel pump control module 10P connector (see page 11-349).
 24. Turn the ignition switch to ON (II).
 25. Clear the DTC with the HDS.
 26. Turn the ignition switch to LOCK (0).
 27. Turn the ignition switch to ON (II), and check for sound from the fuel pump within 2 seconds.
- Does the fuel pump operate?*
- YES**—Go to step 28.
- NO**—Go to step 47.
28. Turn the ignition switch to LOCK (0).
 29. Disconnect the fuel pump control module 10P connector.
 30. Check for continuity between fuel pump control module 10P connector terminal No. 4 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

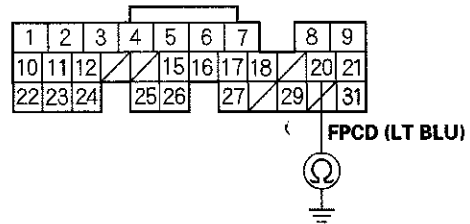
Is there continuity?

YES—Go to step 31.

NO—Go to step 34.

31. Jump the SCS line with the HDS.
32. Disconnect PCM connector E (31P).
33. Check for continuity between PCM connector terminal E20 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

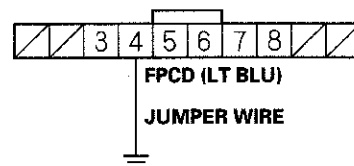
Is there continuity?

YES—Repair short in the wire between the PCM (E20) and the fuel pump control module, then go to step 67.

NO—Go to step 73.

34. Jump the SCS line with the HDS.
35. Disconnect PCM connector E (31P).
36. Connect fuel pump control module 10P connector terminal No. 4 to body ground with a jumper wire.

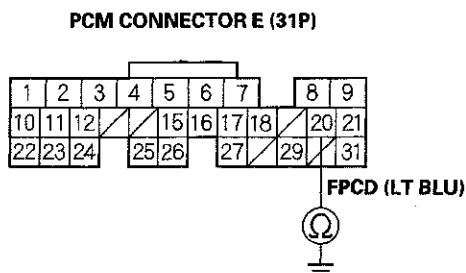
FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals



37. Check for continuity between PCM connector terminal E20 and body ground.



Wire side of female terminals

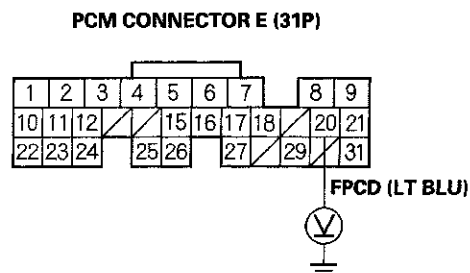
Is there continuity?

YES—Go to step 38.

NO—Repair open in the wire between the PCM (E20) and the fuel pump control module, then go to step 67.

38. Remove the jumper wire from the fuel pump control module 10P connector.
39. Reconnect the fuel pump control module 10P connector and PCM connector E (31P).
40. Turn the ignition switch to ON (II).

41. Measure the voltage between PCM connector terminal E20 and body ground.



Wire side of female terminals

Is there about 8 V or more?

YES—Go to step 42.

NO—Replace the fuel pump control module (see page 11-349), then go to step 67.

42. Turn the ignition switch to LOCK (0).
43. Remove the rear seat cushion (see page 20-140).
44. Remove the access panel from the floor.
45. Disconnect the fuel pump 5P connector.

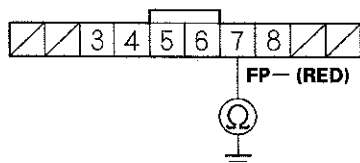
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

46. Check for continuity between fuel pump control module 10P connector terminal No. 7 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

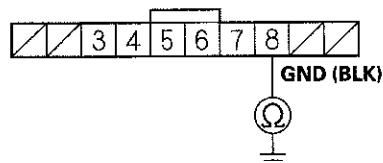
YES—Repair short in the wire between the fuel pump control module (FP— line) and the fuel pump, then go to step 67.

NO—Substitute a known-good fuel pump control module (see page 11-349), then go to step 67 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-349), then go to step 67. If DTC P0627 is indicated, go to step 73.

47. Turn the ignition switch to LOCK (0).
48. Disconnect the fuel pump control module 10P connector (see page 11-349).

49. Check for continuity between fuel pump control module 10P connector terminal No. 8 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

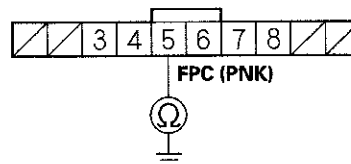
Is there continuity?

YES—Go to step 50.

NO—Repair open in the wire between the fuel pump control module (GND line) and G603, then go to step 67.

50. Check for continuity between fuel pump control module 10P connector terminal No. 5 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

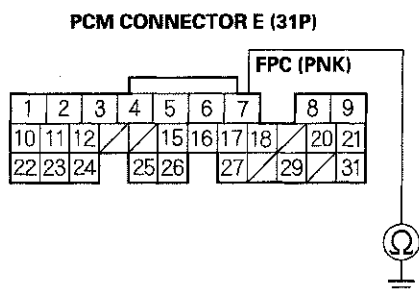
Is there continuity?

YES—Go to step 51.

NO—Go to step 54.



51. Jump the SCS line with the HDS.
52. Disconnect PCM connector E (31P).
53. Check for continuity between PCM connector terminal E7 and body ground.



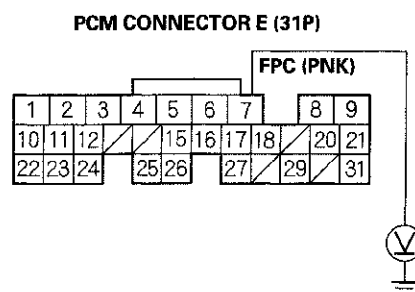
Is there continuity?

YES—Repair short in the wire between the PCM (E7) and the fuel pump control module, then go to step 67.

NO—Go to step 73.

54. Reconnect the fuel pump control module 10P connector.

55. Turn the ignition switch to ON (II), and measure the voltage between PCM connector terminal E7 and body ground within 2 seconds.



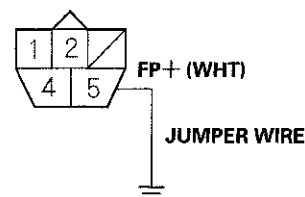
Is there battery voltage?

YES—Go to step 56.

NO—Replace the fuel pump control module (see page 11-349), then go to step 67.

56. Turn the ignition switch to LOCK (0).
57. Remove the rear seat cushion (see page 20-140).
58. Remove the access panel from the floor.
59. Disconnect the fuel pump 5P connector.
60. Disconnect the fuel pump control module 10P connector (see page 11-349).
61. Connect fuel pump 5P connector terminal No. 5 to body ground with a jumper wire.

FUEL PUMP 5P CONNECTOR



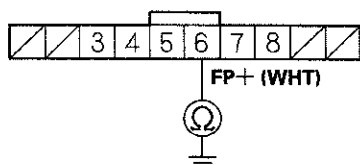
(cont'd)

Fuel Supply System

DTC Troubleshooting (cont'd)

62. Check for continuity between fuel pump control module 10P connector terminal No. 6 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

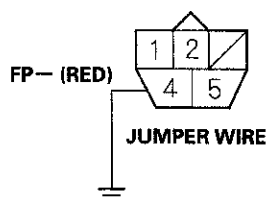
Is there continuity?

YES—Go to step 63.

NO—Repair open in the wire between the fuel pump control module (FP+ line) and the fuel pump, then go to step 67.

63. Connect fuel pump 5P connector terminal No. 4 to body ground with a jumper wire.

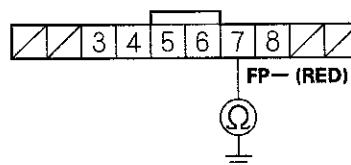
FUEL PUMP 5P CONNECTOR



Wire side of female terminals

64. Check for continuity between fuel pump control module 10P connector terminal No. 7 and body ground.

FUEL PUMP CONTROL MODULE 10P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 65.

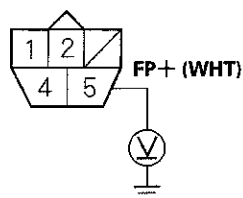
NO—Repair open in the wire between the fuel pump control module (FP- line) and the fuel pump, then go to step 67.

65. Reconnect the fuel pump control module 10P connector.



66. Turn the ignition switch to ON (II), and measure the voltage between fuel pump 5P connector terminal No. 5 and body ground within 2 seconds.

FUEL PUMP 5P CONNECTOR



Wire side of female terminals

Is there battery voltage?

YES—Replace the fuel pump (see page 11-349), then go to step 67.

NO—Substitute a known-good fuel pump control module (see page 11-349), then go to step 67 and recheck. If DTC P0627 is not indicated, replace the original fuel pump control module (see page 11-349), then go to step 67. If DTC P0627 is indicated, go to step 73.

67. Turn the ignition switch to LOCK (0).
68. Reconnect all connectors.
69. Turn the ignition switch to ON (II).
70. Reset the PCM with the HDS.
71. Do the PCM idle learn procedure (see page 11-313).
72. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0627 indicated?

YES—Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2 (FUEL PUMP), the fuel pump, and the PCM, then go to step 1.

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

73. Reconnect all connectors.

74. Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7).

75. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0627 indicated?

YES—Check for poor connections or loose terminals at the fuel pump control module, PGM-FI main relay 2 (FUEL PUMP), the fuel pump, and the PCM. 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 11-232). If any other Pending or Confirmed DTCs are indicated, go to the indicated DTC's troubleshooting. ■

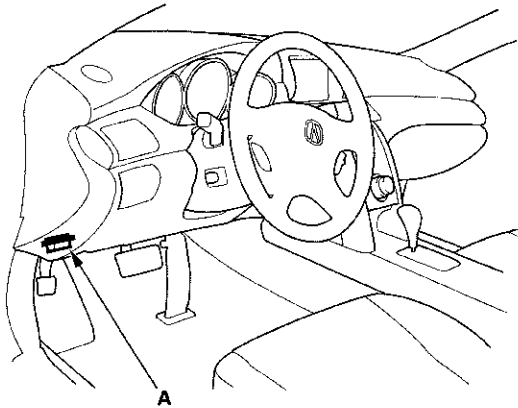
Fuel Supply System

Fuel Pressure Relieving

Before disconnecting fuel lines or hoses, relieve pressure from the system by stopping the fuel pump and disconnecting the fuel tube/quick connect fitting in the engine compartment.

With the HDS

1. 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.



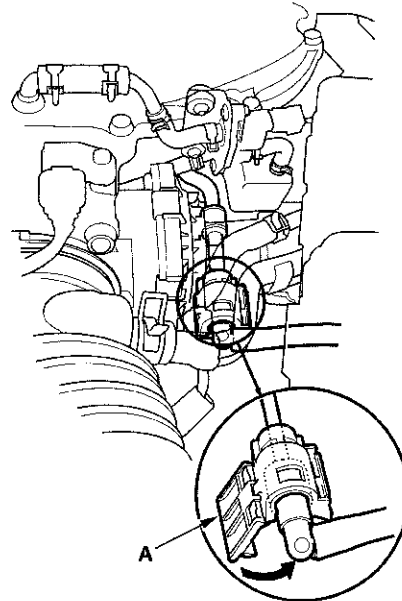
3. Turn the ignition switch to ON (II).
4. Make sure the HDS communicates with the PCM. If it doesn't, go to the DLC circuit troubleshooting (see page 11-211).
5. Turn the ignition switch to LOCK (0).
6. Remove the fuel fill cap to relieve the pressure in the fuel tank.
7. Turn the ignition switch to 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 PCM will continue to operate the fuel pump.
- A Pending or Confirmed DTC may be set during this procedure. Check for DTCs, and clear them as needed (see page 11-4).

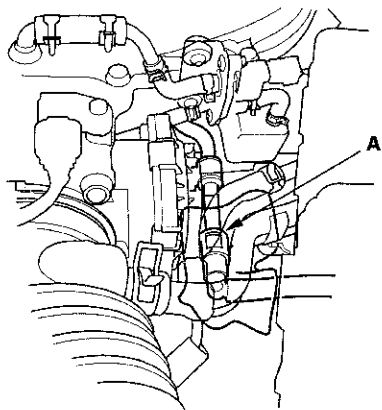
9. Turn the ignition switch to LOCK (0).
10. Do the battery terminal disconnection procedure (see page 22-91).
11. Remove the quick-connect fitting cover (A).



12. Check the fuel quick-connect fitting for dirt, and clean it if needed.



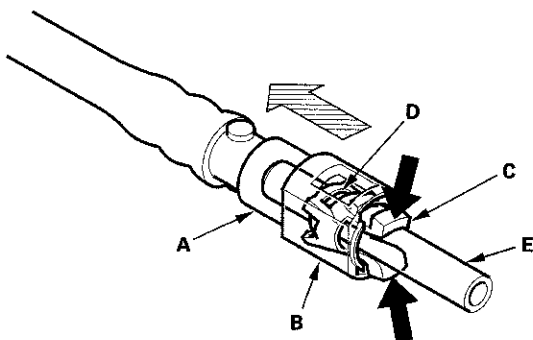
13. Place a rag or a shop towel over the quick-connect fitting (A).



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 5 on page 11-343).

16. Do the battery terminal reconnection procedure (see page 22-91).

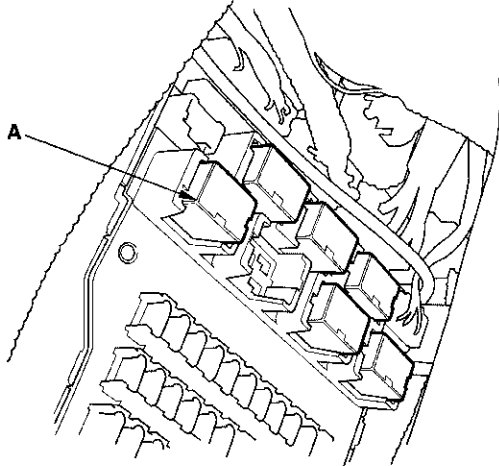
(cont'd)

Fuel Supply System

Fuel Pressure Relieving (cont'd)

Without the HDS

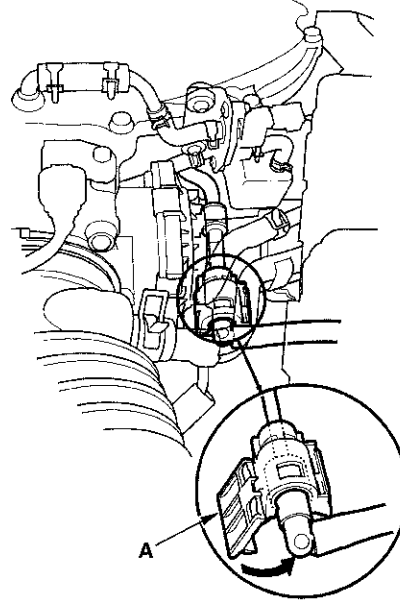
1. Remove the left kick panel (see step 3 on page 20-67).
2. Remove PGM-FI main relay 2 (FUEL PUMP) (A) from the driver's under-dash fuse/relay box.



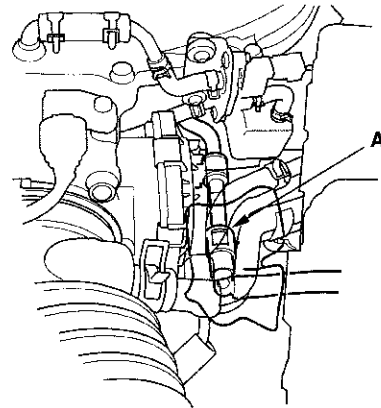
3. Start the engine, and let it idle until it stalls.

NOTE: If any DTCs are stored, clear and ignore them.
4. Turn the ignition switch to LOCK (0).
5. Remove the fuel fill cap to relieve the pressure in the fuel tank.
6. Do the battery terminal disconnection procedure (see page 22-91).

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 a shop towel over the quick-connect fitting (A).



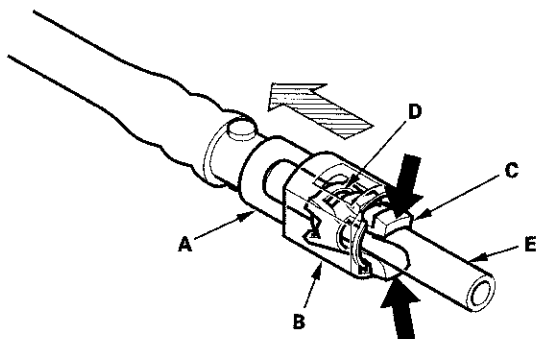


Fuel Pressure Test

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.

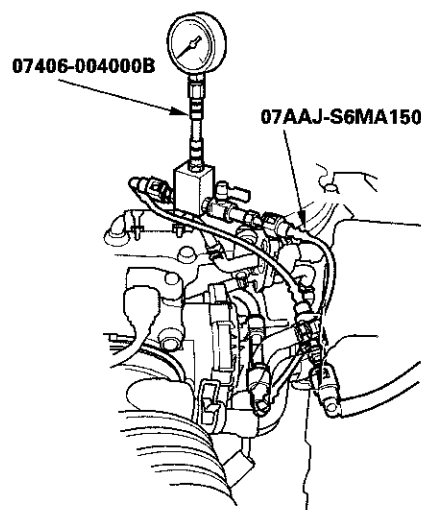


11. After disconnecting the quick-connect fitting, check it for dirt or damage (see step 5 on page 11-343).
12. Do the battery terminal reconnection procedure (see page 22-91).

Special Tools Required

- Fuel pressure gauge 07406-004000B
- Fuel pressure gauge attachment set 07AAJ-S6MA150

1. Relieve the fuel pressure (see page 11-332).
2. 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 to ON (II).
 - If the pump runs, go to step 5.
 - If the pump does not run, refer to the DTC troubleshooting.
5. Read the fuel pressure gauge. The pressure should be 390—440 kPa (4.0—4.5 kgf/cm², 57—64 psi).
 - If the pressure is OK, the test is complete.
 - If the pressure is out of specification, replace the fuel pressure regulator (see page 11-348) and the fuel filter (see page 11-348), then recheck the fuel pressure.

Fuel Supply System

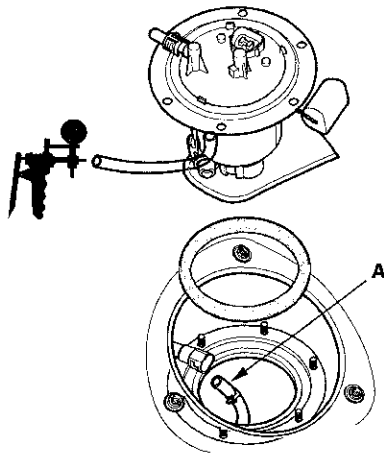
Transfer Fuel Pump Test

Special Tools Required

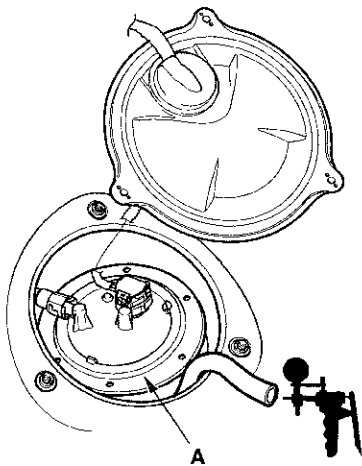
Vacuum pump/gauge, 0–30 in.Hg, Snap-on YA4000A or equivalent, commercially available

NOTE: If the fuel tank is full, drain the fuel (see page 11-337).

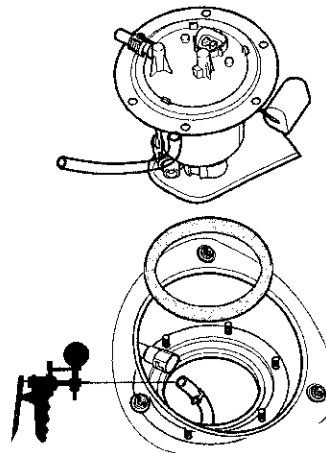
1. Remove the fuel tank unit (see page 11-347).
2. Disconnect the transfer tube (A), then connect a vacuum pump/gauge, 0–30 in.Hg, to the fuel tank unit.



3. Connect the fuel pump 5P connector.
4. Lower the fuel tank unit (A) into the fuel tank until the pick up screen is submerged in the fuel.



5. Turn the ignition switch to ON (II).
6. From the INSPECTION MENU of the HDS, select Fuel Pump ON.
7. Read the vacuum pump/gauge. The vacuum should be 4.0 kPa (1.2 in.Hg, 30 mmHg).
 - If the vacuum is OK, go to step 8.
 - If the vacuum is out of specification, replace the fuel tank unit (see page 11-347), then recheck the fuel vacuum.
8. Connect the vacuum pump/gauge to the transfer tube.



9. Apply vacuum to the transfer tube.
 - If the vacuum holds, replace the fuel tank (see page 11-351).
 - If the vacuum does not hold, the transfer fuel pump and the transfer tube are OK.



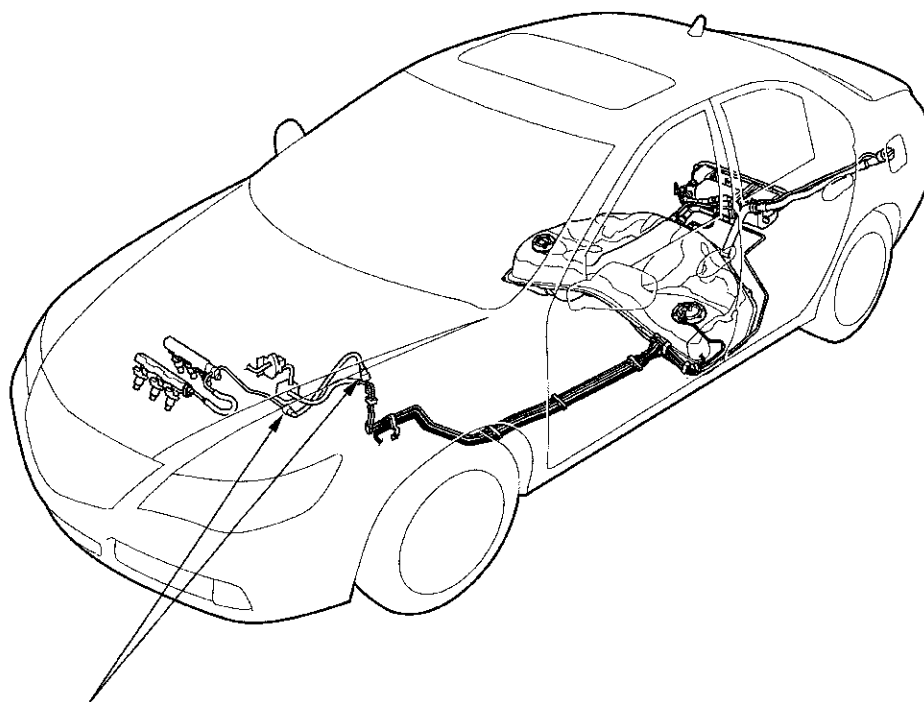
Fuel Tank Draining

1. Remove the secondary fuel gauge sending unit (see page 11-350).
2. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the secondary fuel gauge sending unit side of the tank.
3. Remove the fuel tank unit (see page 11-347).
4. Using a hand pump, a hose, and a container suitable for fuel, draw the fuel from the fuel tank unit side of the tank.

Fuel Supply System

Fuel Line Inspection

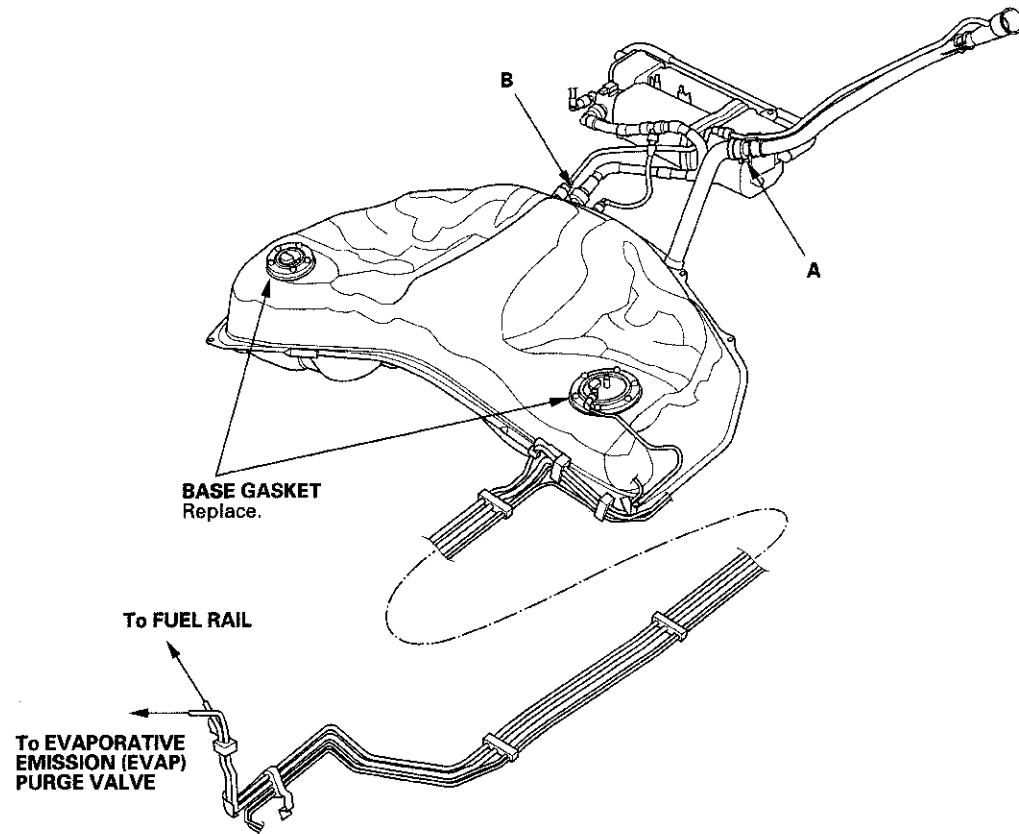
Check the fuel system lines, hoses, and fuel filter for damage, leaks, or deterioration. Replace any damaged parts.



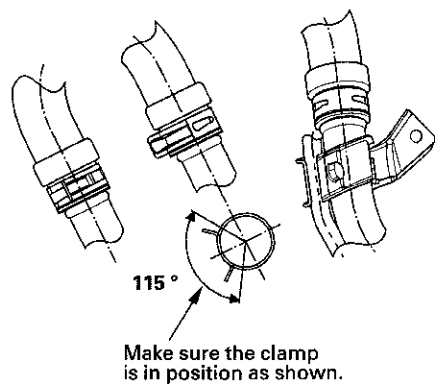
Make sure the connections are secure and the quick-connect fitting covers are firmly locked in place.



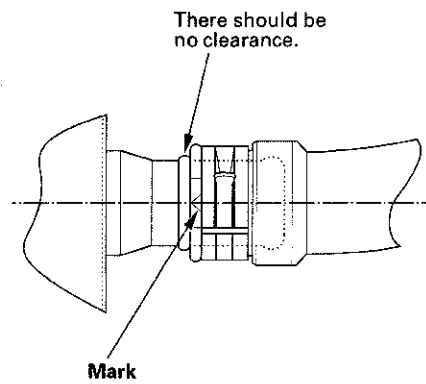
Check all clamps, and make sure they are properly positioned and tightened.



A:



B:

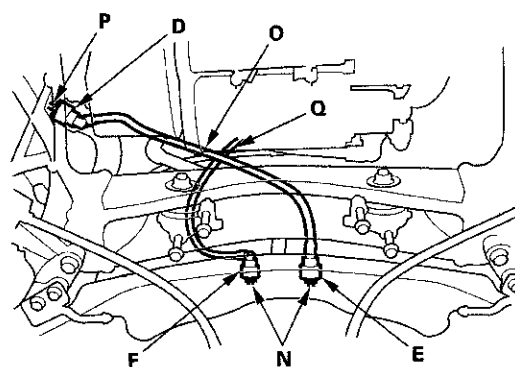
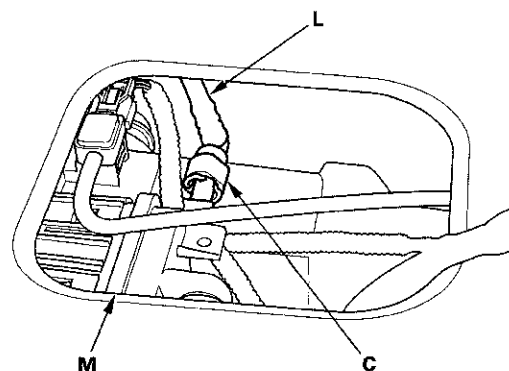
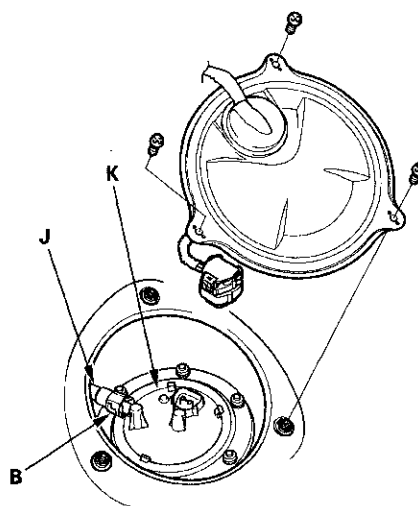
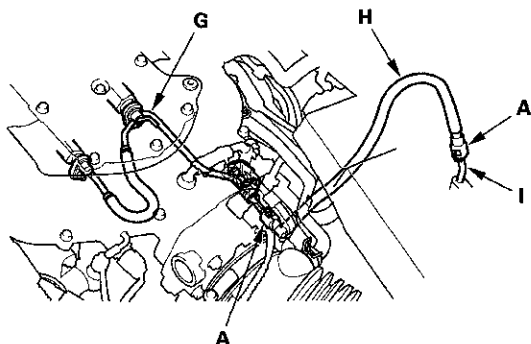


Fuel Supply System

Fuel Line/Quick-Connect Fitting Precautions

The fuel line/quick-connect fittings (A, B, C, D, E, and F) connect the fuel joint hose (G) to the fuel feed hose (H), the fuel feed hose to the fuel hose (I), the fuel line (J) to the fuel tank unit (K), the fuel vapor line (L) to the EVAP canister (M), the fuel tank (N) to the fuel tank vapor recirculation tube (O), the fuel tank vapor recirculation tube to the fuel fill pipe (P), and the fuel tank to the fuel tank vapor control line (Q). When removing or installing the fuel feed hose, the fuel tank unit, or the fuel tank, or when disconnecting or connecting the quick-connect fitting, pay attention to the following:

- The fuel feed hoses, the fuel lines, 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 lines, 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 lines, and the quick-connect fittings, be careful not to bend or twist them excessively. Replace them if they are damaged.





A disconnected quick-connect fitting can be reconnected, but the retainer on the mating line cannot be reused once it has been removed from the line. Replace the retainer when:

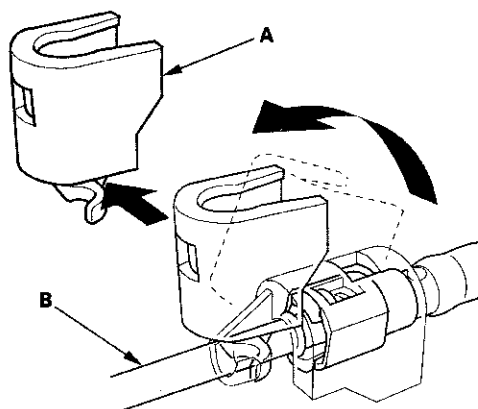
- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel gauge sending unit.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- it has been removed from the line.
- it is damaged.
- Use the same manufacturer retainer and the same size when replacing the retainer.

Location	Manufacturer	Retainer color	Line diameter
A	Tokai	Blue green	0.3 in (8 mm)
B	Sanoh	White	0.4 in (9.5 mm)
C	Sanoh	White	0.4 in (9.5 mm)
D	Tokai	Natural	0.5 in (11.8 mm)
E	Tokai	Natural	0.5 in (11.8 mm)
F	Tokai	Green	0.2 in (6.3 mm)

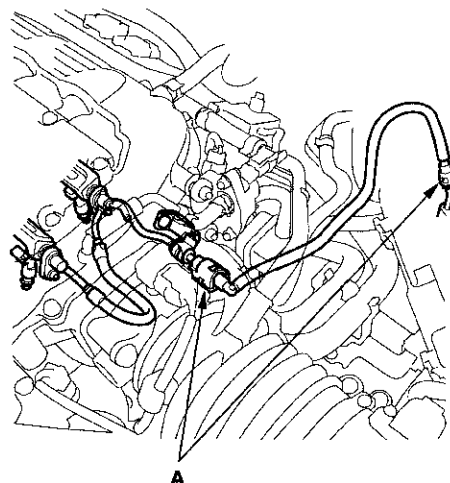
Fuel Line/Quick-Connect Fitting Removal

NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-340).

1. If equipped, remove the quick-connect fitting cover from the fuel line. Raise the cover (A) from the fuel line (B), and remove it as shown.



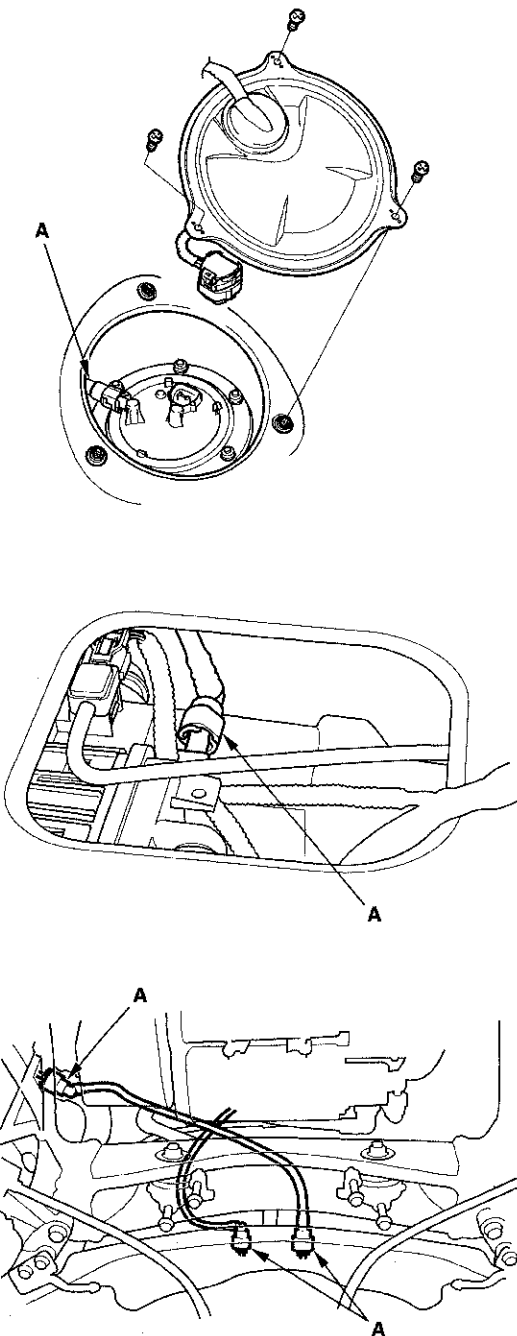
2. Relieve the fuel pressure (see page 11-332).
3. Check the fuel quick-connect fittings (A) for dirt, and clean them if needed.



(cont'd)

Fuel Supply System

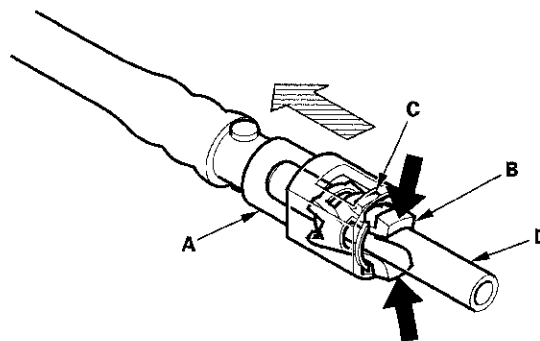
Fuel Line/Quick-Connect Fitting Removal (cont'd)



4. Place a rag or a 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:

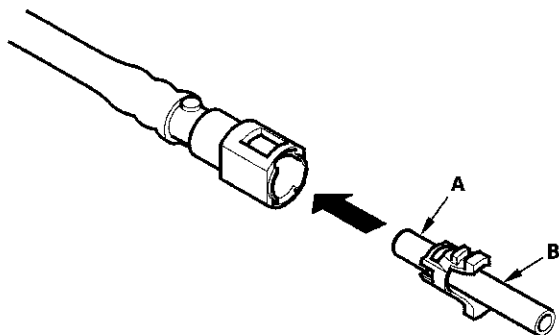
- Be careful not to damage the line (D) or other parts. Do not use tools.
- If the connector does not move, keep the retainer tabs pressed down, and alternately pull and push the connector until it comes off easily.
- Do not remove the retainer from the line; once removed, the retainer must be replaced with a new one.





5. Check the contact area (A) of the line (B) for dirt or damage.

- If it is dirty, clean it, then dry it with compressed air.
- If it is damaged, replace the fuel filter or the fuel feed line.

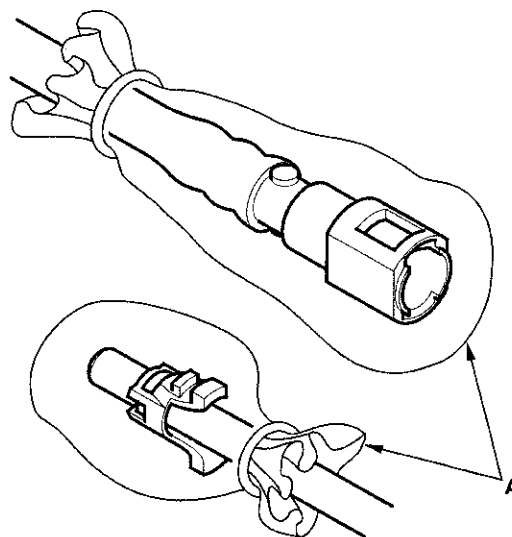


6. To prevent damage and keep foreign matter out, cover the disconnected connector and line ends with plastic bags (A).

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 line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel pressure regulator.
- replacing the fuel gauge sending unit.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- it has been removed from the line.
- it is damaged.

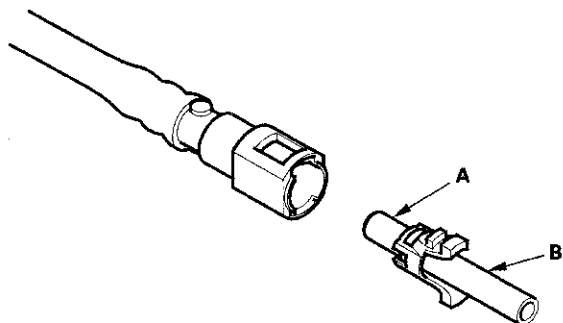


Fuel Supply System

Fuel Line/Quick-Connect Fitting Installation

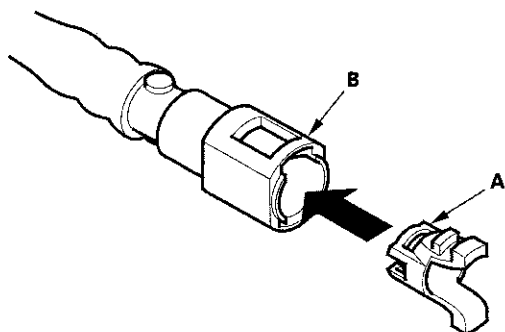
NOTE: Before you work on the fuel lines and fittings, read the Fuel Line/Quick-Connect Fitting Precautions (see page 11-340).

1. Check the contact area (A) of the line (B) for dirt or damage, and clean it if needed.

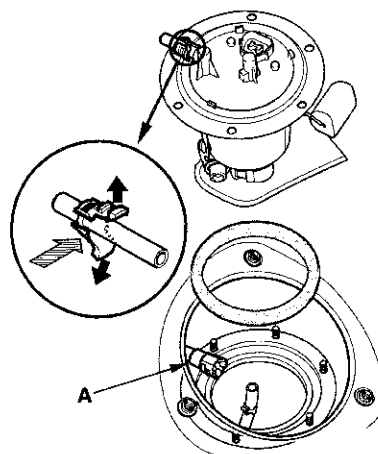
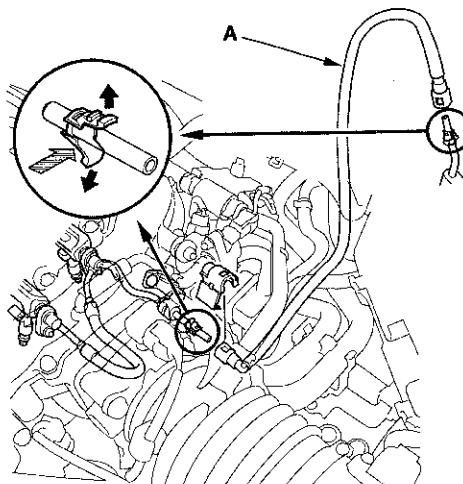


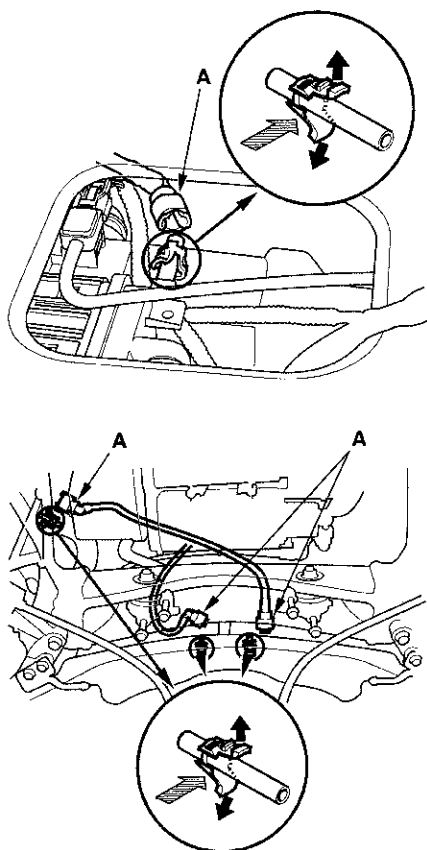
2. Insert a new retainer (A) into the connector (B) if the retainer is damaged, or after:

- replacing the fuel rail.
- replacing the fuel line.
- replacing the fuel pump.
- replacing the fuel filter.
- replacing the fuel pressure regulator.
- replacing the fuel gauge sending unit.
- replacing the EVAP canister.
- replacing the fuel fill pipe.
- replacing the fuel tank.
- removing the retainer from the line.
- Use the same manufacturer retainer and the same size when replacing the retainer (see page 11-340).



3. Before connecting a new fuel tube/quick-connect fitting assembly (A), remove the old retainer from the mating line.

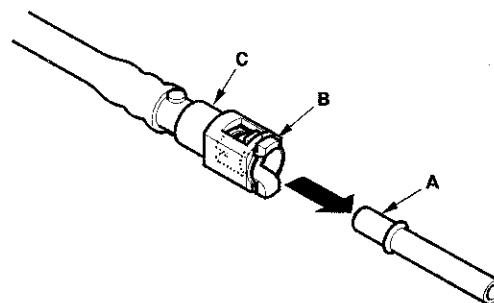




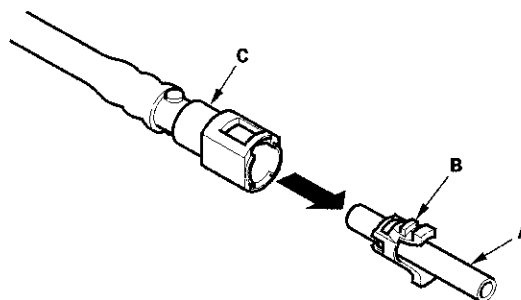
4. Align the quick-connect fittings with the line (A), and align the retainer locking tabs (B) with the connector grooves (C). Then press the quick-connect fittings onto the line until both retainer tabs lock with a clicking sound.

NOTE: If it is hard to connect, put a small amount of new engine oil on the line end.

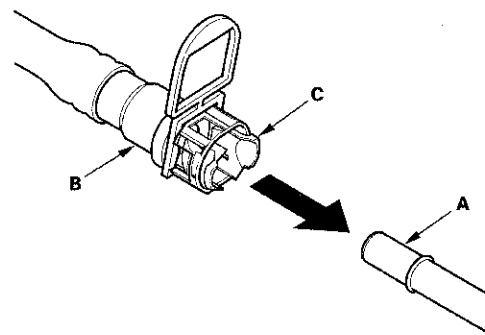
Connection with new retainer



Reconnection to existing retainer



Connection to new fuel line



(cont'd)

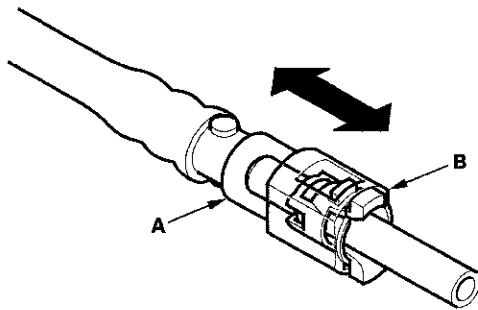
Fuel Supply System

Fuel Line/Quick-Connect Fitting Installation (cont'd)

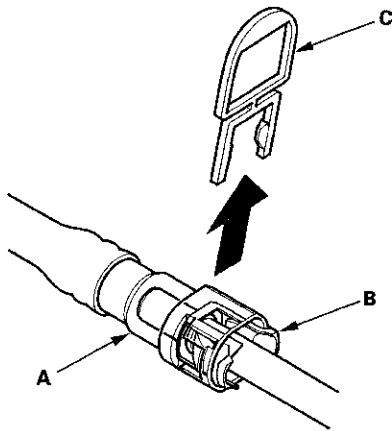
5. When you reconnect the connector with the old retainer, make sure the connection is secure and the tabs (A) are firmly locked into place; check visually and also by pulling the connector (B). When you replace the fuel line with a new one, make sure you remove the ring pull (C) upwards after you confirm 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.

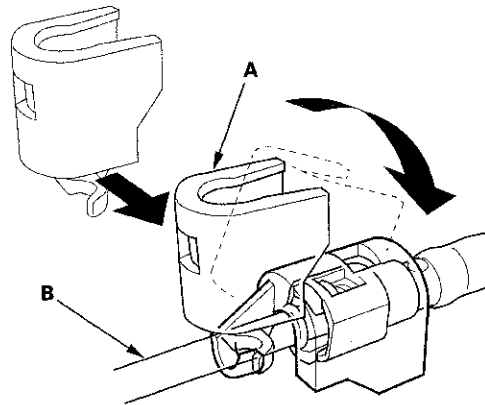
Reconnection to existing retainer



Connection to new fuel line



6. Do the battery terminal reconnection procedure (see page 22-91), 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 for fuel leaks.
7. If equipped, install the quick-connect fitting cover. Set the groove of the cover (A) on the fuel line (B) as shown, then install it. Make sure the cover is firmly locked in place.

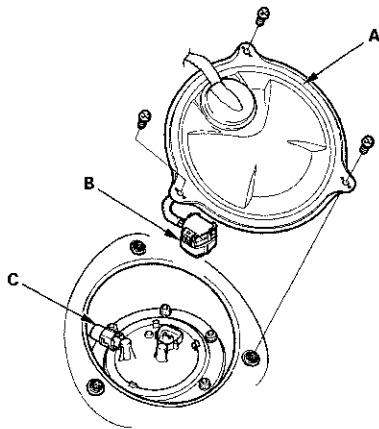




Fuel Tank Unit Removal and Installation

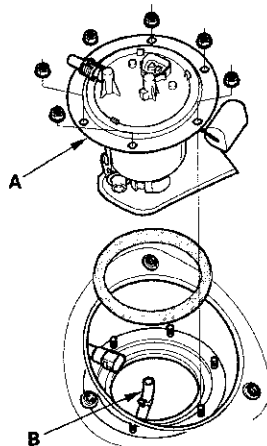
Removal

1. Relieve the fuel pressure (see page 11-332).
2. Remove the fuel fill cap.
3. Remove the rear seat cushion (see page 20-140).
4. Remove the access panel (A) from the left side of the floor.



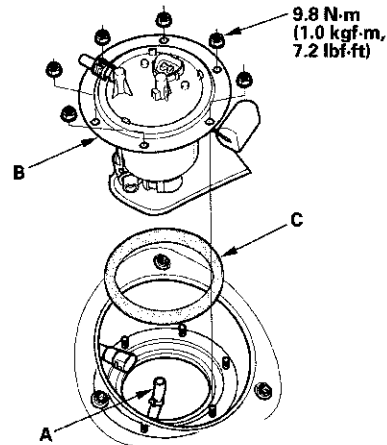
5. Disconnect the fuel tank pump 5P connector (B).
6. Disconnect the quick-connect fitting (C) from the fuel tank unit.
7. Remove the fuel tank unit (A), and disconnect the transfer tube (B).

NOTE: If the fuel tank is full, drain the fuel (see page 11-337).

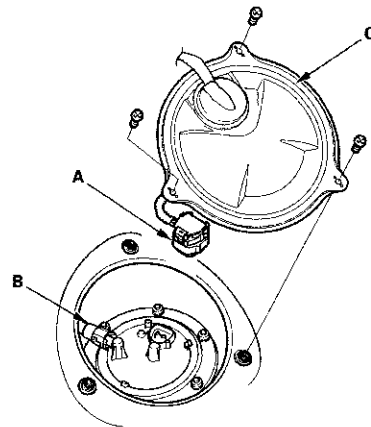


Installation

1. Connect the transfer tube (A).



2. Install the fuel tank unit (B) in the reverse order of removal with a new base gasket (C).
3. Connect the fuel tank unit 5P connector (A), then connect the quick-connect fitting (B).



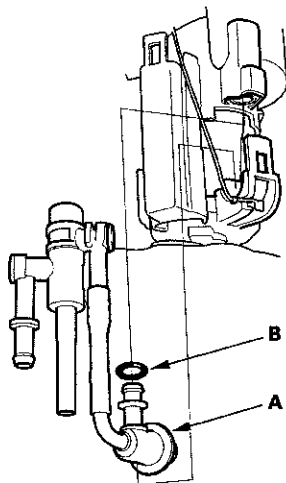
4. Install the fuel fill cap.
5. Turn the ignition switch to ON (II) (but do not operate the starter motor). The fuel pump will run for about 2 seconds, and fuel pressure rises. Repeat this two or three times, then check for fuel leaks.
6. Install the access panel (C).
7. Install the rear seat cushion (see page 20-140).

Fuel Supply System

Fuel Pressure Regulator Replacement

NOTE: If the fuel tank is full, drain the fuel (see page 11-337).

1. Remove the fuel tank unit (see page 11-347).
2. Remove the fuel pressure regulator (A).



3. Install the parts in the reverse order of removal with a new O-ring (B).

NOTE:

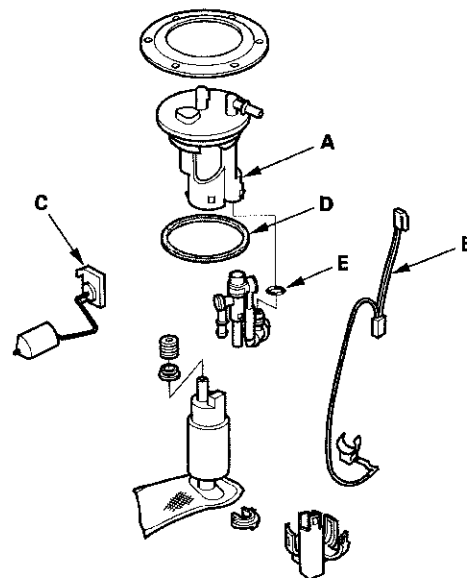
- Coat the O-rings with clean engine oil; do not use any other oils or fluids.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the pressure regulator replacement kit.

Fuel Filter Replacement

The fuel filter should be replaced whenever the fuel pressure drops below the specified value (see page 11-335), after making sure that the fuel pump and the fuel pressure regulator are OK.

NOTE: If the fuel tank is full, drain the fuel (see page 11-337).

1. Remove the fuel tank unit (see page 11-347).
2. Remove the fuel filter set (A).



3. Check these items before installing the fuel tank unit:

- When connecting the wire harness (B), make sure the connection is secure and the connectors are firmly locked into place.
- When installing the fuel gauge sending unit (C), make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.

4. Install the parts in the reverse order of removal with a new base gasket (D) and a new O-ring (E).

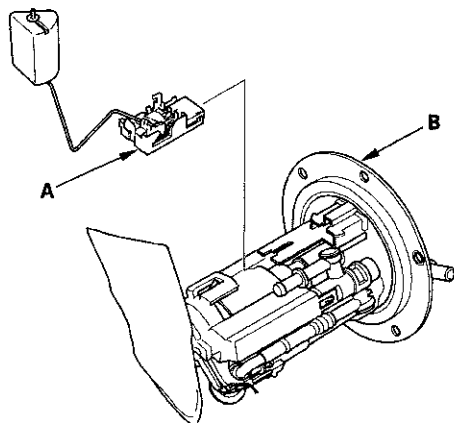
NOTE:

- Coat the O-rings with clean engine oil; do not use any other oils or fluids.
- Do not pinch the O-rings during installation.
- Use all the new parts supplied in the fuel filter replacement kit.



Fuel Pump/Fuel Gauge Sending Unit Replacement

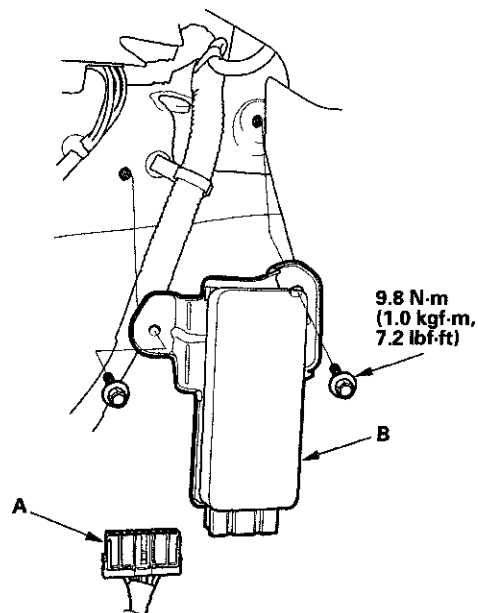
1. Remove the fuel tank unit (see page 11-347).
2. Remove the fuel level sensor (fuel sending unit) (A) from the fuel tank unit (B).



3. Before installing the fuel tank unit. Make sure the connection is secure. 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 11-347).

Fuel Pump Control Module Replacement

1. Remove the rear seat-back (see page 20-140).
2. Disconnect the fuel pump control module connector (A).

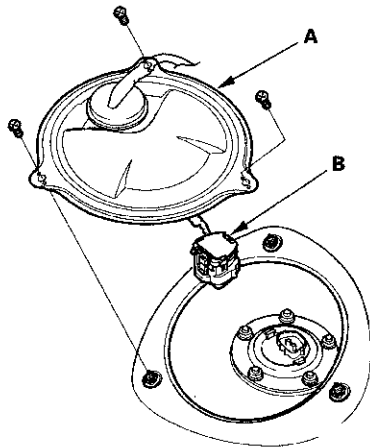


3. Remove the fuel pump control module (B).
4. Install the parts in the reverse order of removal.

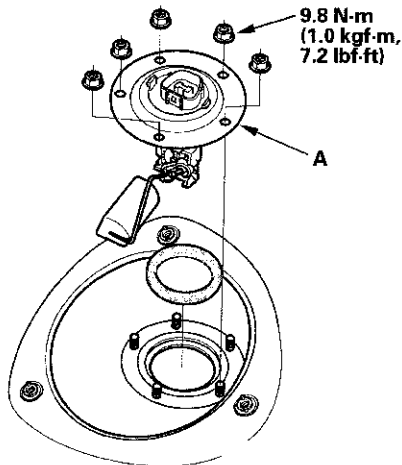
Fuel Supply System

Secondary Fuel Gauge Sending Unit Replacement

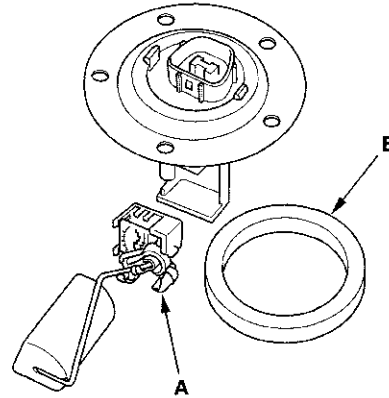
1. Relieve the fuel pressure (see page 11-332).
2. Remove the fuel cap.
3. Remove the rear seat cushion (see page 20-140).
4. Remove the access panel (A) from the right side of the floor.



5. Disconnect the secondary fuel gauge sending unit 5P connector (B).
6. Remove the secondary fuel gauge sending unit (A).



7. Remove the fuel gauge sending unit (A).



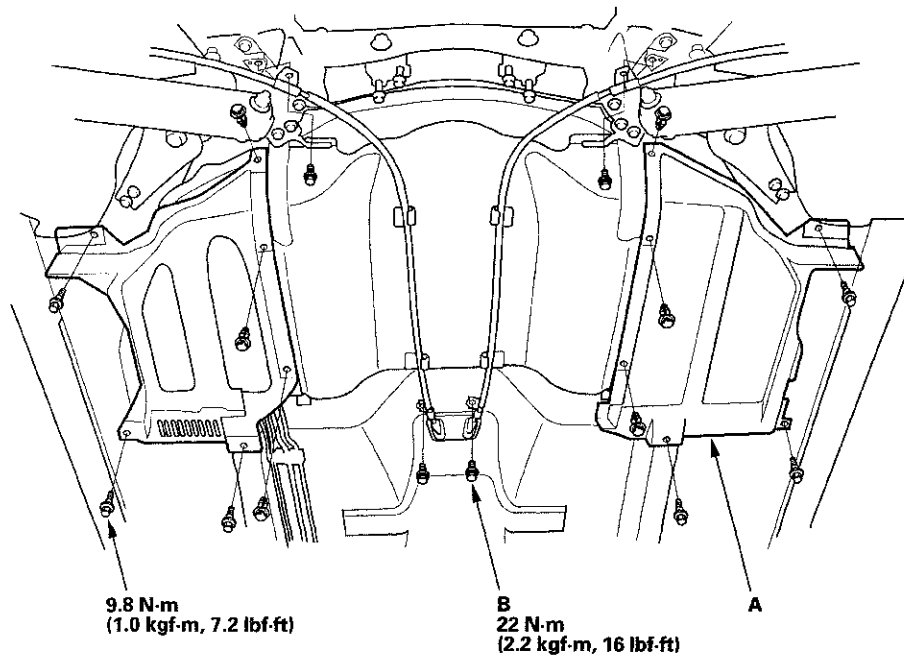
8. Install the parts in the reverse order of removal with a new base gasket (B).

NOTE: When installing the fuel gauge sending unit, make sure the connection is secure and the connector is firmly locked into place. Be careful not to bend or twist it excessively.



Fuel Tank Replacement

1. Drain the fuel tank (see page 11-337).
2. Reinstall the fuel tank unit and the secondary fuel gauge sending unit without connecting the fuel tank unit 5P connector, the secondary fuel gauge sending unit 5P connector and the quick -connect fitting.
3. Remove the propeller shaft (see page 16-44).
4. Remove the rear differential (see page 15-101).
5. Raise the vehicle on a lift.
6. Remove the fuel tank covers (A) and parking brake cable bolts (B).

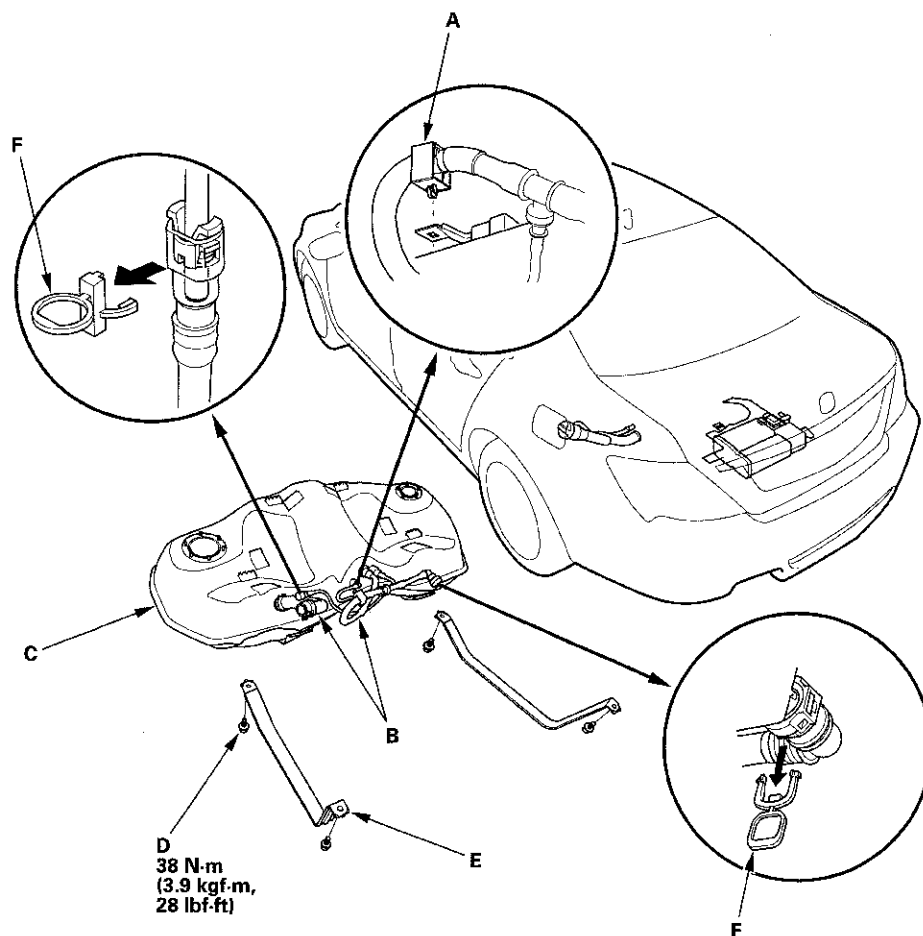


(cont'd)

Fuel Supply System

Fuel Tank Replacement (cont'd)

7. Remove the clip (A) from the EVAP canister bracket.



8. Disconnect the hoses (B). Slide back the clamps, then twist the hoses as you pull to avoid damaging them.
9. Place a jack or other support under the tank (C).
10. Remove the strap bolts (D), and the straps (E).
11. Remove the fuel tank. If it sticks to the undercoat on its mount, carefully pry it off the mount.
12. Install the parts in the reverse order of removal.

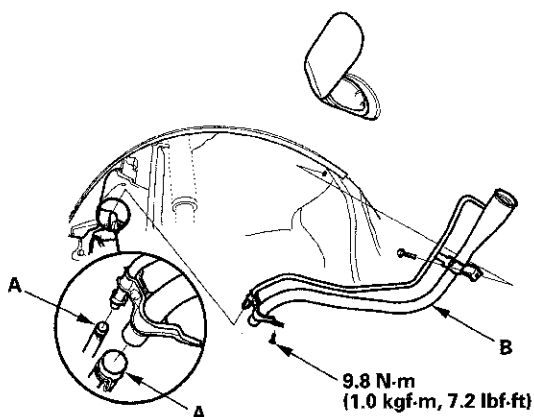
NOTE:

- The new fuel vent hose and the fuel vent return hose have ring pull (F) at the connectors. When you connect the hoses and confirm that the connections are secure, remove the ring pulls by pulling them down.
- Before connecting the fuel fill pipe and the quick-connect fitting, check for dirt, and clean it if needed, taking care not to damage the fuel fill pipe and other parts.



Fuel Fill Pipe Removal/Installation

1. Drain the fuel tank (see page 11-337).
2. Remove the left rear damper (see page 18-38).
3. Remove the fuel fill cap.
4. Disconnect the fuel fill tubes (A), from the fuel fill pipe (B).



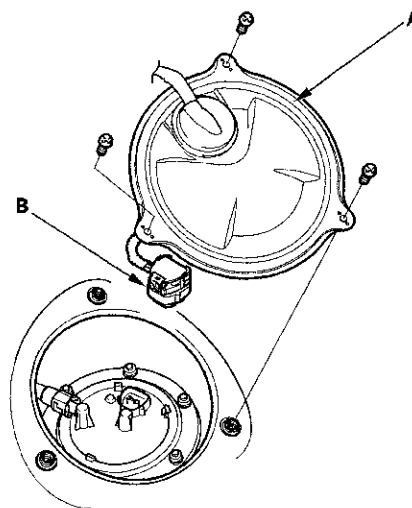
5. Remove the bolts and the fuel fill pipe.
6. Install the parts in the reverse order of removal.

NOTE: Before connecting the fuel fill pipe and the quick-connect fitting, check for dirt, and clean it if needed, taking care not to damage the fuel fill pipe and other parts.

Fuel Gauge Sending Unit Test

NOTE: For the fuel gauge system circuit diagram, refer to the Gauges Circuit Diagram (see page 22-399).

1. Do multiplex integrated control system troubleshooting test mode A (see page 22-131).
 - If no problem is found, go to step 2.
 - If DTC B1175 is indicated, go to the DTC B1175 troubleshooting (see page 22-413).
2. Check the No. 21 METER (10 A) fuse in the driver's under-dash fuse/relay box.
3. Do the gauge drive circuit check (see page 22-396).
 - If the fuel gauge needle sweeps from the minimum to maximum position and then returns to minimum, the gauge is OK. Go to step 4.
 - If the fuel gauge needle does not sweep correctly, replace the gauge control module and retest.
4. Turn the ignition switch to LOCK (0).
5. Remove the rear seat cushion (see page 20-140).
6. Remove the access panel (A) from the left side of the floor.



7. Disconnect the fuel pump 5P connector (B).

(cont'd)

Fuel Supply System

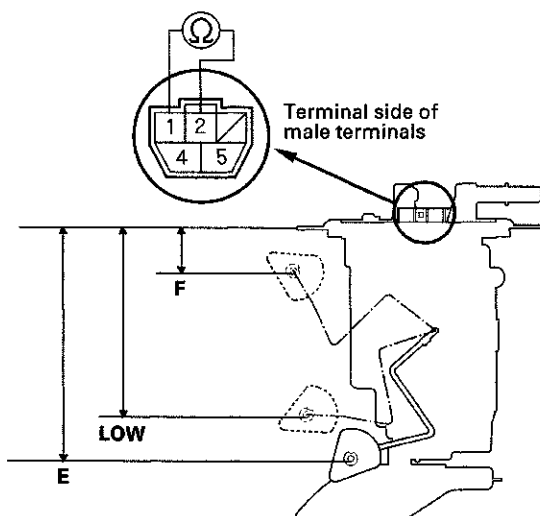
Fuel Gauge Sending Unit Test (cont'd)

8. Remove the fuel tank unit from the fuel tank (see page 11-347).
9. Measure the resistance between the No. 1 and No. 2 terminals of the fuel pump 5P connector with the float at E (EMPTY), LOW (LOW FUEL INDICATOR), and F (FULL) positions.

- If you do not get the following readings, replace the fuel gauge sending unit (see page 11-349).
- If the fuel gauge sending unit test is OK, do the secondary fuel gauge sending unit test (see page 11-354).

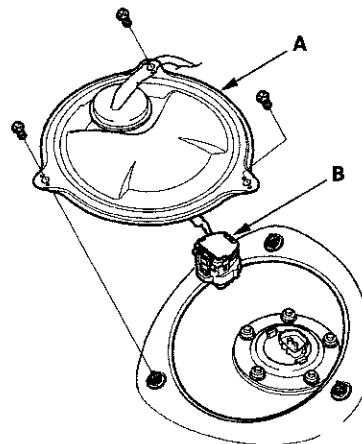
Float Position	F 1.1 in (28.9 mm)	LOW 4.7 in (118.1 mm)	E 5.7 in (144.7 mm)
Resistance (Ω)	9 to 11	217.3 to 243.1	284.1 to 294.1

NOTE: Remove the No. 15 BACK UP (40 A) fuse from the under-hood fuse/relay box for at least 30 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.



Secondary Fuel Gauge Sending Unit Test

1. Remove the rear seat cushion (see page 20-140).
2. Remove the access panel (A) from the right side of the floor.



3. Disconnect the secondary fuel gauge sending unit 5P connector (B).

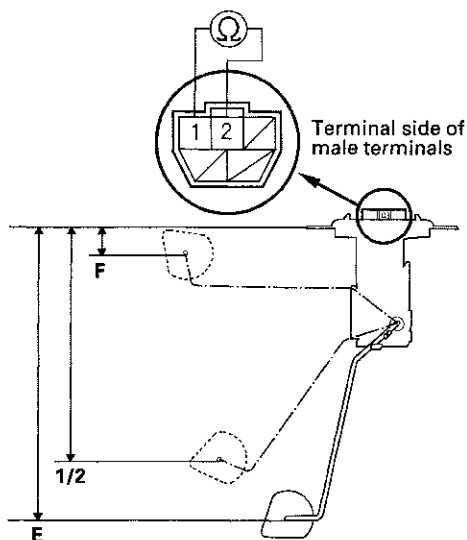


Low Fuel Indicator Test

4. Remove the secondary fuel gauge sending unit from the fuel tank (see page 11-350).
5. Measure the resistance between the No. 1 and No. 2 terminals of the fuel pump 5P connector with the float at E (EMPTY), 1/2 (HALF FULL), and F (FULL) positions.

Float Position	F 0.7 in (17.4 mm)	1/2 6.8 in (171.6 mm)	E 7.7 in (195.2 mm)
Resistance (Ω)	9 to 11	445.0 to 455.0	485.9 to 495.9

NOTE: Remove the No. 15 BACK UP (40 A) fuse from the under-hood fuse/relay box for at least 10 seconds after completing troubleshooting, otherwise it may take up to 20 minutes for the fuel gauge to indicate the correct fuel level.



1. Do the gauge self-diagnostic function (see page 22-396).

- If the low fuel indicator flashes, go to step 2.
- If the low fuel indicator does not flash, replace the gauge control module assembly.

2. Check for body electrical system DTCs.

- If any DTCs are indicated, go to the indicated DTC's troubleshooting.
- If no DTCs are indicated, go to step 3.

3. Do the fuel gauge sending unit test (see page 11-353), and secondary fuel gauge sending unit test (see page 11-354).