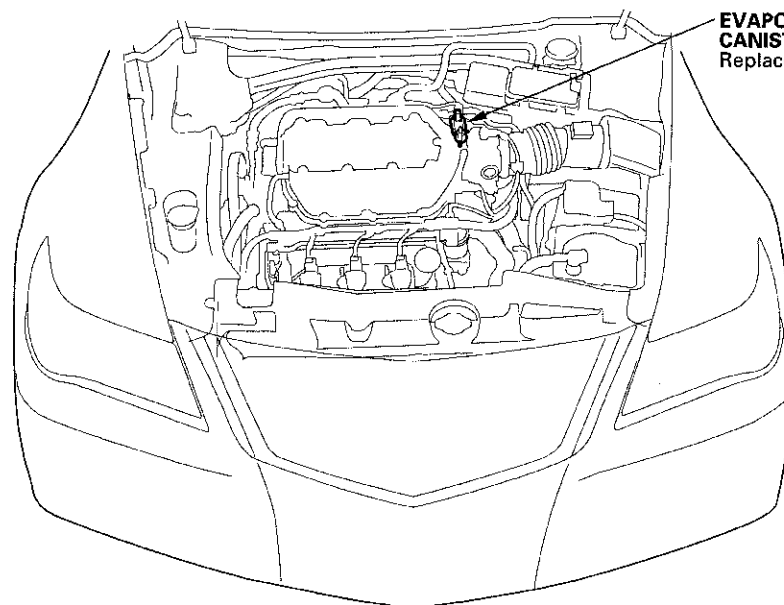


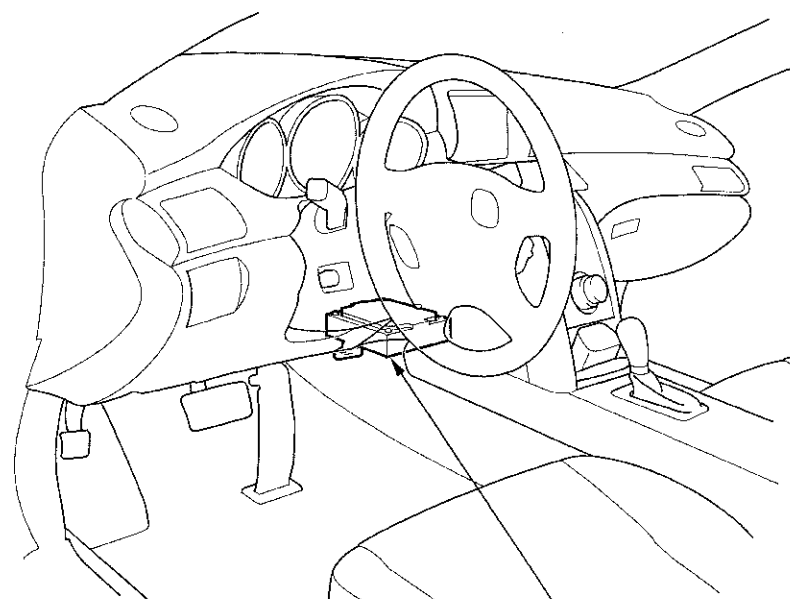
EVAP System



Component Location Index



**EVAPORATIVE EMISSION (EVAP)
CANISTER PURGE VALVE**
Replacement, page 11-423

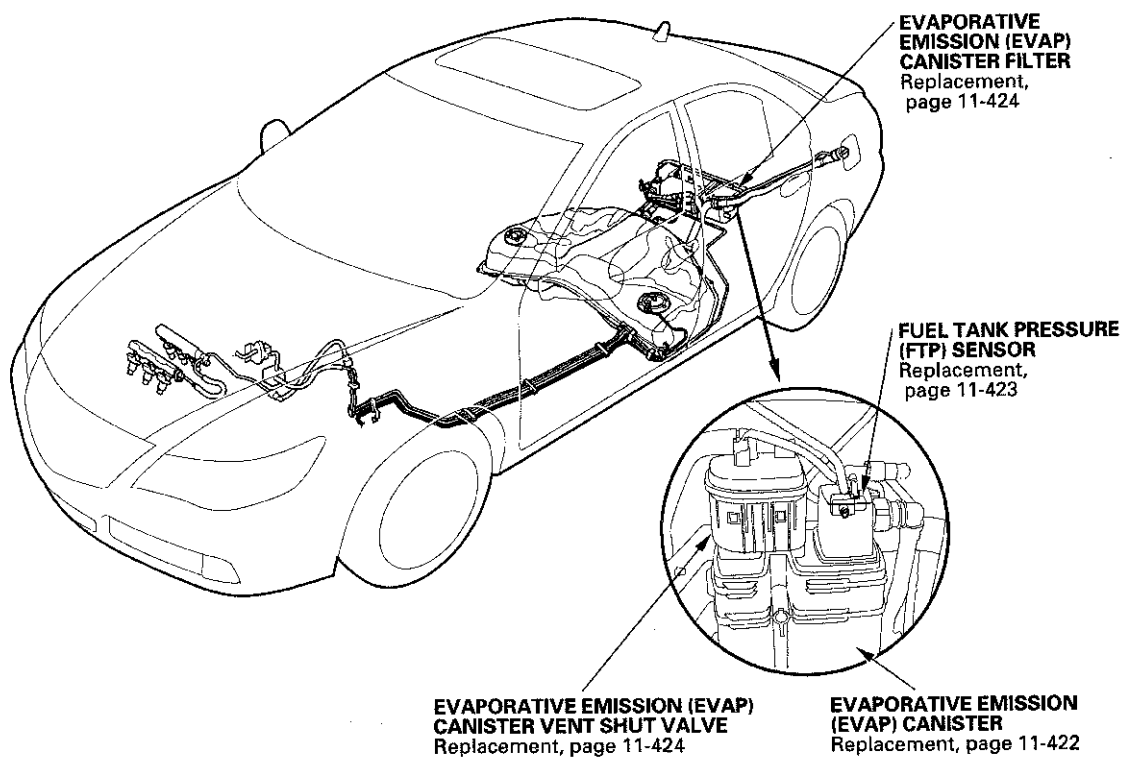


POWERTRAIN CONTROL MODULE (PCM)
Update, page 11-230
Substitution, page 11-7
Replacement, page 11-232

(cont'd)

EVAP System

Component Location Index (cont'd)





DTC Troubleshooting

DTC P0443: EVAP Canister Purge Valve Circuit Malfunction

Special Tools Required

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

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

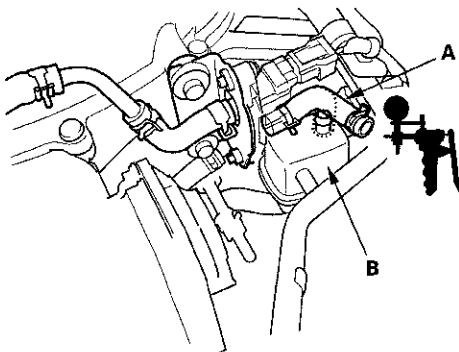
1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 rpm without load (in P or N) until the radiator fan comes on, then let it idle.
4. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0443 indicated?

YES—Go to step 5.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. ■

5. Turn the ignition switch to LOCK (0), and allow the engine to cool to below 140 °F (60 °C).
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve joint (B) in the engine compartment, and connect a vacuum pump/gauge, 0—30 in.Hg, to the hose.



7. Start the engine, and let it idle.

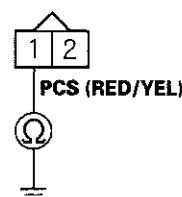
Is there vacuum?

YES—Go to step 8.

NO—Go to step 14.

8. Turn the ignition switch 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. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Go to step 11.

NO—Go to step 24.

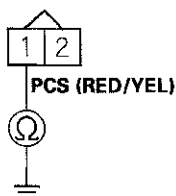
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

11. Jump the SCS line with the HDS.
12. Disconnect PCM connector B (24P).
13. Check for continuity between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

Is there continuity?

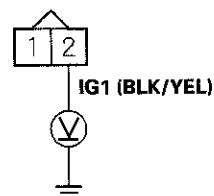
YES—Repair short in the wire between the EVAP canister purge valve and the PCM (B2), then go to step 25.

NO—Go to step 31.

14. Turn the ignition switch 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. 2 and body ground.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals

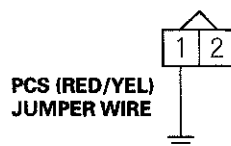
Is there battery voltage?

YES—Go to step 18.

NO—Repair open in the wire between the EVAP canister purge valve and the No. 18 ACG (15 A) fuse in the driver's under-dash fuse/relay box, then go to step 25.

18. Turn the ignition switch to LOCK (0).
19. Jump the SCS line with the HDS.
20. Disconnect PCM connector B (24P).
21. Connect EVAP canister purge valve 2P connector terminal No. 1 to body ground with a jumper wire.

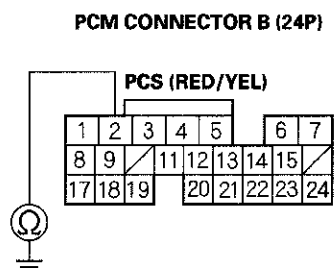
EVAP CANISTER PURGE VALVE 2P CONNECTOR



Wire side of female terminals



22. Check for continuity between PCM connector terminal B2 and body ground.



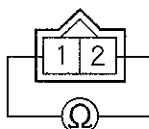
Is there continuity?

YES—Go to step 23.

NO—Repair open in the wire between the EVAP canister purge valve and the PCM (B2), then go to step 25.

23. At the valve side, measure the resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

EVAP CANISTER PURGE VALVE 2P CONNECTOR



Terminal side of male terminals

Is there about 23–26 Ω at room temperature?

YES—Go to step 31.

NO—Go to step 24.

24. Replace the EVAP canister purge valve (see page 11-423).

25. Reconnect all connectors.

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

27. Reset the PCM with the HDS.

28. Do the PCM idle learn procedure (see page 11-313).

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

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM, then go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed 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 EVAP canister purge valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

31. Reconnect all connectors.
32. 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).
33. Start the engine, then let it idle.
34. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0443 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 33. If the PCM was substituted, go to step 1.

NO—Go to step 35.

35. Monitor the OBD STATUS for DTC P0443 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-232). If any other Pending or Confirmed 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 EVAP canister purge valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 33. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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 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 11-423).
7. Turn the ignition switch to ON (II).
8. Reset the PCM with the HDS.
9. Do the PCM idle learn procedure (see page 11-313).
10. Start the engine, and let it idle for 1 minute.



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

Is DTC P0451 indicated?

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

NO—Go to step 12.

12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 11, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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 (-2.16 in.Hg, -55 mmHg), or 0.3 V or less indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

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.

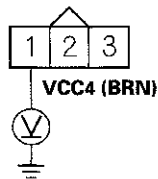
Is about -7.3 kPa (-2.16 in.Hg, -55 mmHg), or 0.3 V or less indicated?

YES—Go to step 20.

NO—Go to step 14.

14. Measure the voltage between FTP sensor 3P connector terminal No. 1 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

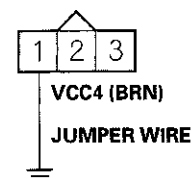
Is there about 5 V?

YES—Go to step 24.

NO—Go to step 15.

15. Turn the ignition switch to LOCK (0).
16. Jump the SCS line with the HDS.
17. Disconnect PCM connector E (31P).
18. Connect FTP sensor 3P connector terminal No. 1 to body ground with a jumper wire.

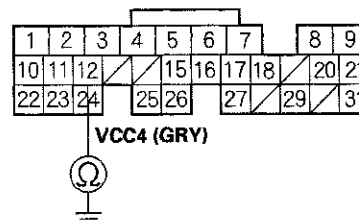
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

19. Check for continuity between PCM connector terminal E12 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

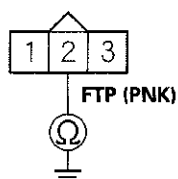
YES—Go to step 32.

NO—Repair open in the wire between the PCM (E12) 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 PCM connector E (31P).
23. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

FTP SENSOR 3P CONNECTOR



Wire side of female terminals

Is there continuity?

YES—Repair short in the wire between the PCM (E29) and the FTP sensor, then go to step 26.

NO—Go to step 32.

24. Turn the ignition switch to LOCK (0).
25. Replace the FTP sensor (see page 11-423).
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 P0452 indicated?

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

NO—Go to step 31.

31. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 30, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

32. Reconnect all connectors.
33. Update the PCM if it does not have the latest software (see page 11-230), or substitute a known-good PCM (see page 11-7).
34. Start the engine, and let it idle.
35. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0452 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1.

NO—Go to step 36.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

36. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-232). If any other Pending or Confirmed 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 PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 34. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

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 (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 10.

NO—Go to step 7.

7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES—Go to step 10.

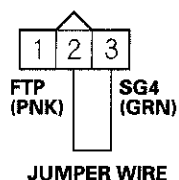
NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor and the PCM. If the screen indicates NOT COMPLETED, go to step 6 and recheck.

10. Turn the ignition switch 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.

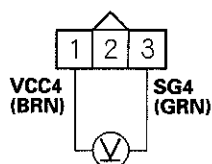
Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 15.

NO—Go to step 25.

15. Measure 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.

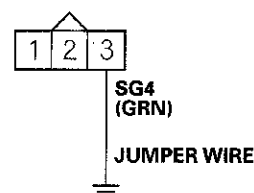
16. Turn the ignition switch to LOCK (0).

17. Jump the SCS line with the HDS.

18. Disconnect PCM connector E (31P).

19. Connect FTP sensor 3P connector terminal No. 3 to body ground with a jumper wire.

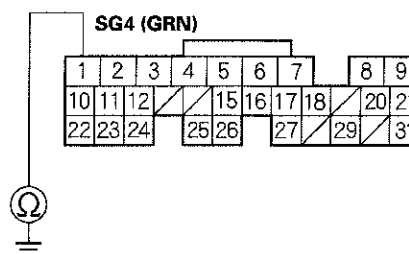
FTP SENSOR 3P CONNECTOR



Wire side of female terminals

20. Check for continuity between PCM connector terminal E1 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

Is there continuity?

YES—Go to step 33.

NO—Repair open in the wire between the PCM (E1) and the FTP sensor, then go to step 27.

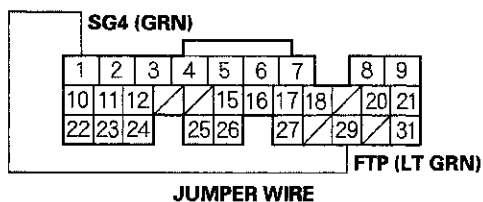
(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

21. Turn the ignition switch to LOCK (0).
22. Connect PCM connector terminals E1 and E29 with a jumper wire.

PCM CONNECTOR E (31P)



Wire side of female terminals

23. Turn the ignition switch to ON (II).
24. Check the FTP SENSOR in the DATA LIST with the HDS.

Is about 7.3 kPa (2.16 in.Hg, 55 mmHg), or 4.7 V or more indicated?

YES—Go to step 33.

NO—Repair open in the wire between the PCM (E29) and the FTP sensor, then go to step 27.

25. Turn the ignition switch to LOCK (0).
26. Replace the FTP sensor (see page 11-423).
27. Reconnect all connectors.

28. Turn the ignition switch to ON (II).
29. Reset the PCM with the HDS.
30. Do the PCM idle learn procedure (see page 11-313).
31. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0453 indicated?

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

NO—Go to step 32.

32. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—Troubleshooting is complete. If any other Pending or Confirmed DTCs were indicated in step 31, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

33. Reconnect all connectors.
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. Start the engine, and let it idle.

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

Is DTC P0453 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 35. If the PCM was substituted, go to step 1.

NO—Go to step 37.

37. Monitor the OBD STATUS for DTC P0453 in the DTCs MENU with the HDS.

Does the screen indicate PASSED?

YES—If the PCM was updated, troubleshooting is complete. If the PCM was substituted, replace the original PCM (see page 11-232). If any other Pending or Confirmed DTCs were indicated in step 36, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 35. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P0455: EVAP System Large Leak Detected

DTC P0456: EVAP System Very Small Leak Detected

NOTICE

The fuel system is designed to allow specified maximum vacuum and pressure conditions. Do not deviate from the vacuum and pressure tests as indicated in these procedures. Excessive pressure/vacuum would damage the EVAP components or cause eventual fuel tank failure.

Special Tools Required

- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B

NOTE:

- 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 best 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.

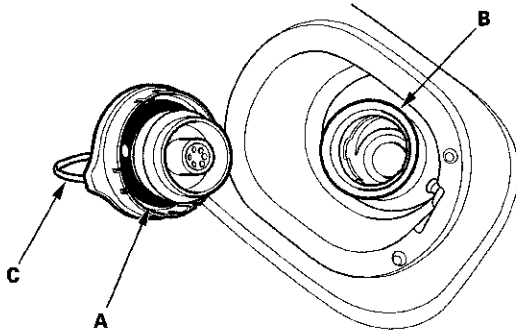
NO—Replace or tighten the cap, then go to step 29.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

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, the EVAP canister vent shut valve, and the PCM. ■

NO—Go to step 6.

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.

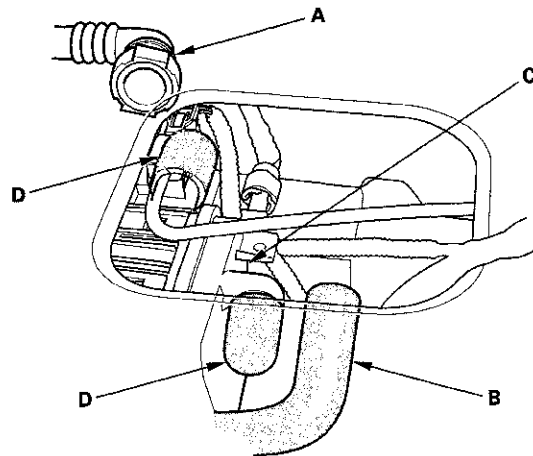
NO—

- Replace the fuel tank vapor recirculation tube, then go to step 29.
- If needed, replace the fuel tank (see page 11-351), then go to step 29.

8. Remove the trunk floor trim panel.

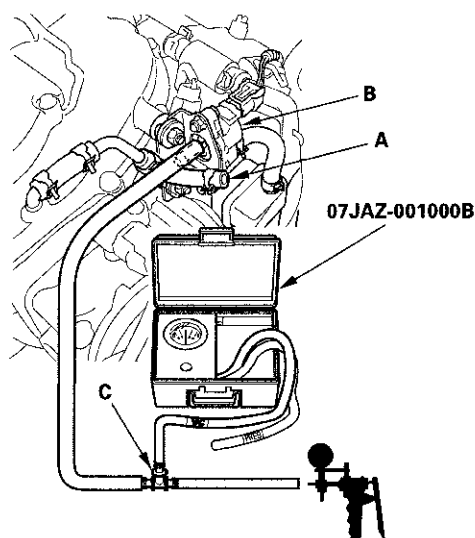
9. Remove the EVAP access panel from the floor.

10. Disconnect the fuel tank vapor recirculation tube (A) and the fresh air hose (B) from the EVAP canister (C), and plug the EVAP canister port (D).





11. Disconnect the vacuum hose (engine side) (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a T-fitting (C) from the vacuum gauge and the vacuum pump/gauge, 0—30 in.Hg, to the hose as shown.



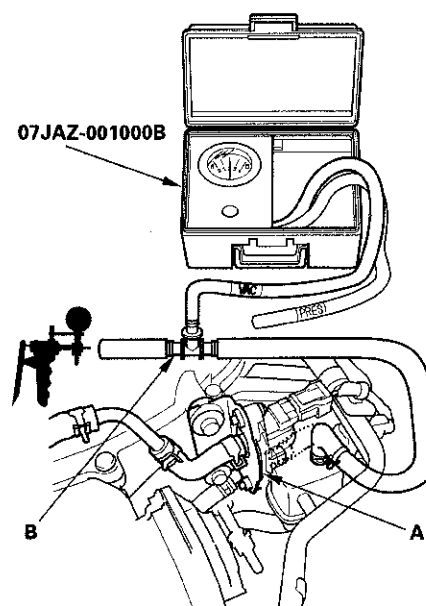
12. Turn the ignition switch to ON (II).
13. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
14. Apply vacuum to the hose until the FTP reads 1.90 V (0.59 in.Hg, -15.1 mmHg).
- NOTE: Be careful not to exceed the vacuum. If you do, the FTP sensor can be damaged.
15. Select EVAP PCS OFF in the INSPECTION MENU with the HDS, then disconnect the vacuum pump/gauge.
16. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

YES—Go to step 17.

NO—Go to step 22.

17. Reconnect the vacuum hose (engine side) to the EVAP canister purge valve.
18. Disconnect the vacuum hose (EVAP canister side) from EVAP canister purge valve (A) in the engine compartment, and connect a T-fitting (B) from the vacuum gauge and the vacuum pump/gauge to the hose as shown.



19. Apply vacuum to the hose 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.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

20. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 0.5 mmHg)?

YES—Go to step 21.

NO—Replace the EVAP canister purge valve (see page 11-423), then go to step 30.

21. Check for a loose or damaged EVAP canister purge line between the EVAP canister and the EVAP canister purge valve, or a leaking EVAP canister purge valve.

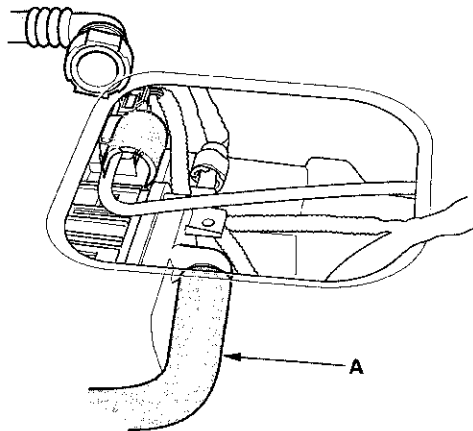
Are the line and the EVAP canister purge valve OK?

YES—Replace these parts, then go to step 30:

- FTP sensor O-ring
- EVAP canister vent shut valve case and O-ring
- EVAP canister

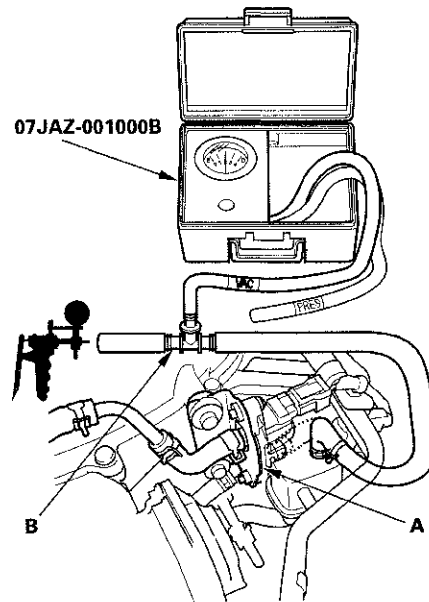
NO—Reconnect or repair the EVAP canister purge hose, then go to step 30.

22. Reconnect the fresh air hose (A).



23. Reconnect the vacuum hose (engine side) to the EVAP canister purge valve.

24. Disconnect the vacuum hose (EVAP canister side) from EVAP canister purge valve (A) in the engine compartment, and connect a T-fitting (B) from the vacuum gauge and the vacuum pump/gauge to the hose as shown.



25. Select the CVS ON in the INSPECTION MENU with the HDS.

26. Apply vacuum to the fuel tank vapor recirculation tube (disconnected in step 10) 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.

27. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

Does the voltage increase more than 0.2 V (0.1 in.Hg, 2.5 mmHg)?

YES—Replace the EVAP canister vent shut valve, then go to step 30.

NO—Go to step 28.



28. Select EVAP CVS OFF in the INSPECTION MENU with the HDS.

29. 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 11-347) and the fuel tank, then go to step 30.

NO—Repair or replace the damaged part(s), then go to step 30.

30. Reconnect all hoses and connectors.

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

32. Reset the PCM with the HDS.

33. Do the PCM idle learn procedure (see page 11-313).

34. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 35.

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

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

Is DTC P0455 and/or P0456 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

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

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 PCM. ■

NO—Go to step 4.

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

5. Replace the EVAP canister purge valve (see page 11-423).

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

7. Reset the PCM with the HDS.

8. Do the PCM idle learn procedure (see page 11-313).

9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 10.

NO—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

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

Is DTC P0496 indicated?

YES—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, the EVAP canister vent shut valve, and the PCM, then go to step 1.

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

DTC P0497: EVAP System Low Purge Flow Detected

Special Tools Required

- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B

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

1. Turn the ignition switch to ON (II).
2. Clear the DTC with the HDS.
3. Select EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

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

NO—Go to step 4.

4. Turn the ignition switch to LOCK (0).
5. Check for a poor connection, a blockage, or damage at the EVAP canister purge line between the throttle body and the EVAP canister.

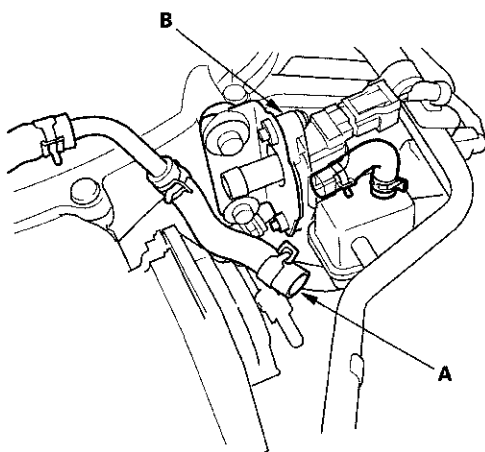
Is the line OK?

YES—Go to step 6.

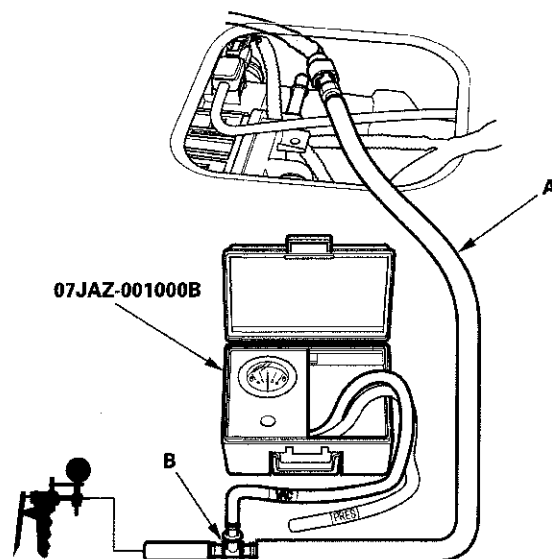
NO—Reconnect or repair the EVAP canister purge line, then go to step 24.



6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B).



7. Disconnect the vacuum hose (A) from the purge line (at the EVAP canister side), and connect the vacuum pump/gauge, 0–30 in.Hg, to the hose with a T-fitting (B) as shown.



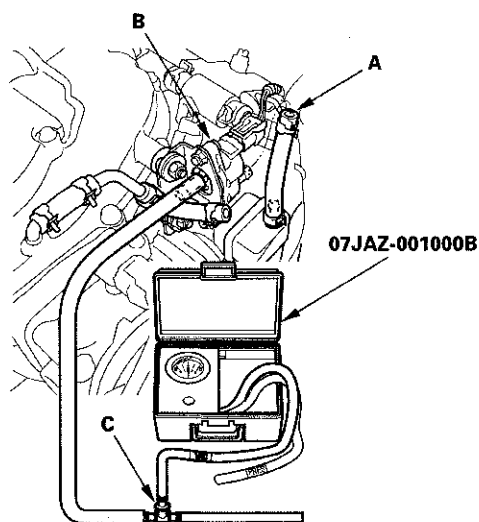
8. Turn the ignition switch to ON (II).
9. Apply about 2 kPa (0.6 in. Hg, 15 mmHg) of vacuum to the hose.
10. Select EVAP PCS ON in the INSPECTION MENU with the HDS.
- Does the vacuum release immediately?*
- YES**—Go to step 15.
- NO**—Go to step 11.
11. Select EVAP PCS OFF in the INSPECTION MENU with the HDS.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

12. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B). Connect a T-fitting (C) from the vacuum gauge, and connect the vacuum pump/gauge, 0—30 in.Hg, and EVAP canister purge valve as shown.



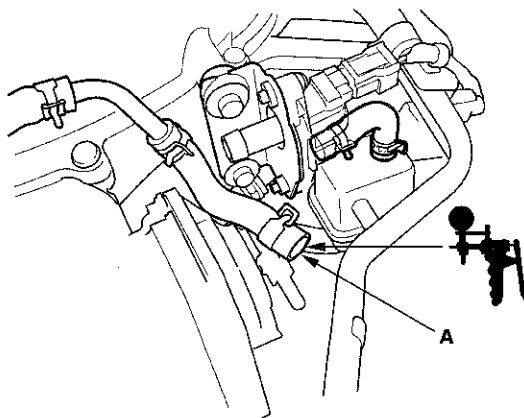
13. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.
14. Select EVAP PCS ON in the INSPECTION MENU with the HDS.

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 24.

NO—Replace the EVAP canister purge valve (see page 11-423), then go to step 24.

15. Connect the vacuum pump to the vacuum hose (A) as shown.



16. Start the engine, and let it idle.

Is there vacuum?

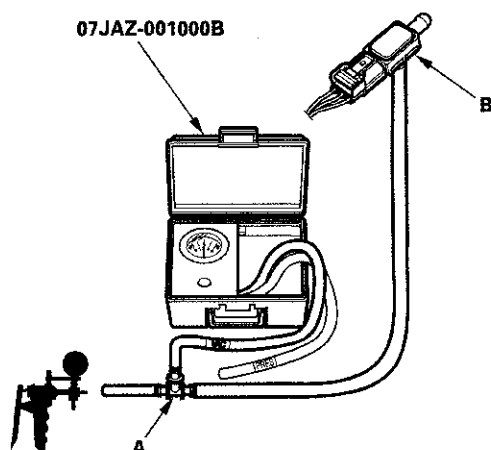
YES—Go to step 17.

NO—Check for a blockage in the vacuum hose between the EVAP canister purge valve and the intake manifold, then go to step 24.

17. Turn the ignition switch to LOCK (0).
18. Remove the FTP sensor with its connector connected (see page 11-423).



19. Connect a T-fitting (A) from the vacuum pump/gauge, 0—30 in.Hg, and connect the vacuum pump to 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 (0.4 in.Hg, 10 mmHg) 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 a blockage at the EVAP canister port, then go to step 24.

NO—Replace the FTP sensor (see page 11-423), then go to step 24.

24. Turn the ignition switch to ON (II).
25. Reset the PCM with the HDS.
26. Do the PCM idle learn procedure (see page 11-313).
27. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES—Go to step 28.

NO—Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, and the PCM, then go to step 1.

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

Is DTC P0497 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister purge valve, the FTP sensor, 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. ■

EVAP System

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 Pending or Confirmed 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 Pending or Confirmed DTCs with the HDS.

Is DTC P0498 indicated?

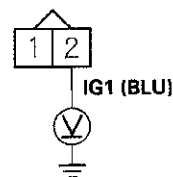
YES—Go to step 6.

NO—Intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. ■

6. Turn the ignition switch 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.

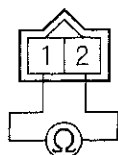
NO—Repair open in the wire between the EVAP canister vent shut valve and the PGM-FI subrelay, then go to step 18.

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?

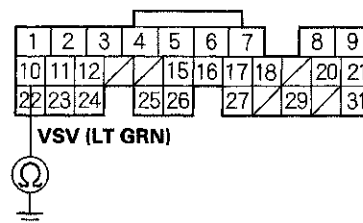
YES—Go to step 12.

NO—Go to step 18.

12. Turn the ignition switch to LOCK (0).
13. Jump the SCS line with the HDS.
14. Disconnect PCM connector E (31P).

15. Check for continuity between PCM connector terminal E10 and body ground.

PCM CONNECTOR E (31P)



Wire side of female terminals

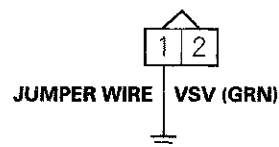
Is there continuity?

YES—Repair short in the wire between the EVAP canister vent shut valve and the PCM (E10), then go to step 19.

NO—Go to step 16.

16. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

EVAP CANISTER VENT SHUT VALVE 2P CONNECTOR



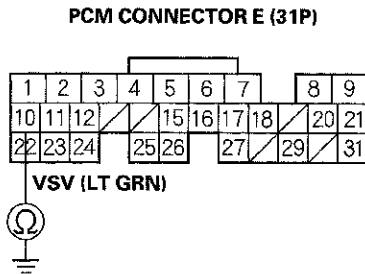
Wire side of female terminals

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

17. Check for continuity between PCM connector terminal E10 and body ground.



Wire side of female terminals

Is there continuity?

YES—Go to step 26.

NO—Repair open in the wire between the EVAP canister vent shut valve and the PCM (E10), then go to step 19.

18. Replace the EVAP canister vent shut valve (see page 11-424).
19. Reconnect all connectors.

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

21. Reset the PCM with the HDS.

22. Do the PCM idle learn procedure (see page 11-313).

23. Select EVAP CVS ON in the INSPECTION MENU with the HDS.

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

Is DTC P0498 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1.

NO—Go to step 25.

25. 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 Pending or Confirmed DTCs were indicated in step 24, go to the indicated DTC's troubleshooting. ■

NO—If the screen indicates FAILED, check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, go to step 23.



26. Reconnect all connectors.
27. 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).
28. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
29. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0498 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 28. If the PCM was substituted, go to step 1.

NO—Go to step 30.

30. Monitor the OBD STATUS for DTC P0498 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 11-232). If any other Pending or Confirmed 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 EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 28. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 28.

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 Pending or Confirmed 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 PCM. ■

5. 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).
6. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
7. Check for Pending or Confirmed DTCs with the HDS.

Is DTC P0499 indicated?

YES—Check for poor connections or loose terminals at the EVAP canister vent shut valve and the PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1.

NO—Go to step 8.

(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

8. Monitor the OBD STATUS for DTC P0499 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 11-232). If any other Pending or Confirmed 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 PCM. If the PCM was updated, substitute a known-good PCM (see page 11-7), then go to step 6. If the PCM was substituted, go to step 1. If the screen indicates NOT COMPLETED, go to step 6.

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

Is it between -0.67 and 0.67 kPa (-0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?

YES—Go to step 7.

NO—Go to step 18.

7. Install the fuel fill cap.
8. Clear the DTC with the HDS.
9. Start the engine. Hold the engine speed at 3,000 rpm without load (in P or N) until the radiator fan comes on, then let it idle.
10. Monitor the OBD STATUS for DTC P1454 in the DTCs MENU with the HDS.

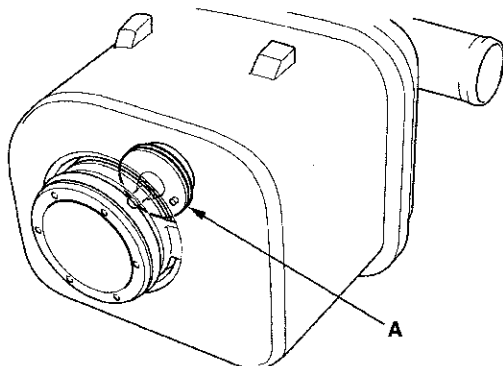
Does the screen indicate FAILED?

YES—Go to step 11.

NO—If the screen indicates PASSED, intermittent failure, the system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM. 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.



11. Clear the DTC with the HDS.
12. Turn the ignition switch to LOCK (0).
13. Remove the EVAP canister vent shut valve from the EVAP canister (see page 11-424).
14. Connect the 2P connector to the EVAP canister vent shut valve.
15. Turn the ignition switch to ON (II).
16. Select EVAP CVS ON in the INSPECTION MENU with the HDS.
17. Check the EVAP canister vent shut valve (A) operation.



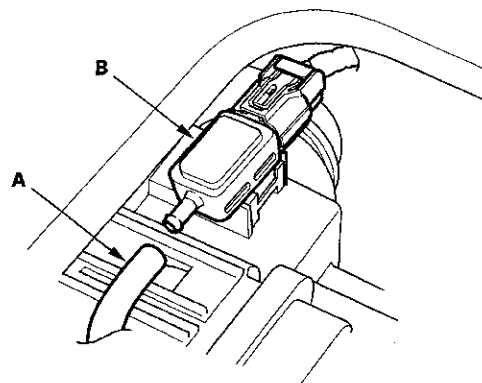
Does the valve operate?

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 26.

NO—Replace the EVAP canister vent shut valve (see page 11-424), then go to step 26.

18. Remove the trunk front trim panel (see page 20-83).
19. Remove the access panel from the floor (see page 11-423).

20. Disconnect the air tube (A) from the FTP sensor (B).



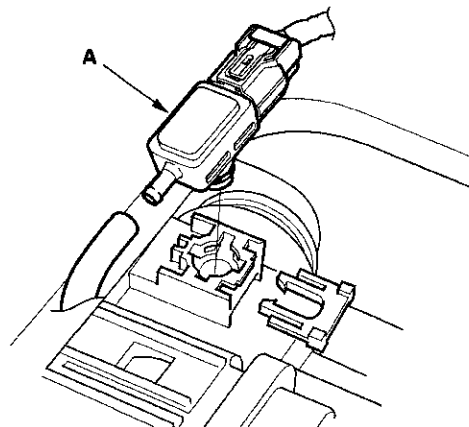
21. Check the FTP SENSOR in the DATA LIST with the HDS.

*Is it between -0.67 kPa and 0.67 kPa
(-0.2 and 0.2 in.Hg, -5 and 5 mmHg), or
 2.4 and 2.6 V?*

YES—Check for a blockage in the FTP sensor air tube, then go to step 26.

NO—Go to step 22.

22. Turn the ignition switch to LOCK (0).
23. Remove the FTP sensor (A) from the EVAP canister with its connector connected.



(cont'd)

EVAP System

DTC Troubleshooting (cont'd)

24. Turn the ignition switch to ON (II).
25. Check the FTP SENSOR in the DATA LIST with the HDS.
- Is it between -0.67 kPa and 0.67 kPa (-0.2 and 0.2 in.Hg, -5 and 5 mmHg), or 2.4 and 2.6 V?*
- YES**—Check for debris or clogging at the EVAP canister and the FTP sensor port, then go to step 26.
- NO**—Replace the FTP sensor (see page 11-423), then go to step 26.
26. Turn the ignition switch to ON (II).
27. Reset the PCM with the HDS.
28. Do the PCM idle learn procedure (see page 11-313).
29. Start the engine. Hold the engine speed at 3,000 rpm without load (in P or N) until the radiator fan comes on, then let it idle.
30. Check for Pending or Confirmed DTCs with the HDS.
- Is DTC P1454 and/or P2422 indicated?*
- YES**—Check for poor connections or loose terminals at the FTP sensor, the EVAP canister vent shut valve, and the PCM, then go to step 1.
- NO**—Go to step 31.
31. Monitor the OBD STATUS for DTC P1454 and/or P2422 in the DTCs MENU with the HDS.
- Does the screen indicate PASSED?*
- YES**—Troubleshooting is complete. If any other Pending or Confirmed 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, the EVAP canister vent shut valve, and the PCM, then go to step 1. If the screen indicates NOT COMPLETED, keep idling until a result comes on.

DTC P145C: EVAP System Purge Flow Malfunction

NOTE:

- Before you troubleshoot, record all freeze data and any on-board snapshot, and review the general troubleshooting information (see page 11-3).
- If DTC P145C is indicated alone, do the troubleshooting for DTC P0496 and P0497 using 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 a stuck closed EVAP canister purge valve.
- If any of DTCs listed below are indicated at the same time as DTC P145C, troubleshoot those DTCs first, then recheck for P145C.

P0496, P0497: EVAP system purge flow



Fuel Cap Warning Message System Troubleshooting

Special Tools Required

- Vacuum pump/gauge, 0—30 in.Hg, Snap-on YA4000A or equivalent, commercially available
- Vacuum/pressure gauge, 0—4 in.Hg 07JAZ-001000B

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.

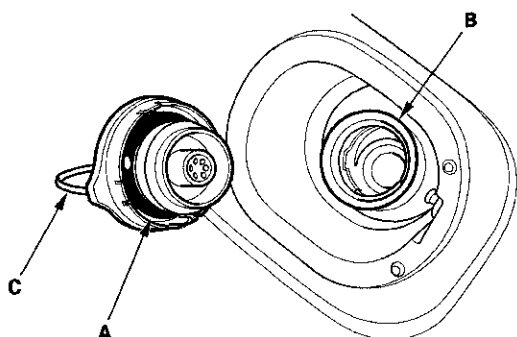
1. Check the fuel fill cap (the cap must say **TIGHTEN TO CLICK**). It should turn 1/4 after it's tight, then it clicks.

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 P or N) until the radiator fan comes on, then let it idle for 1 minute.

6. Test drive at 45 mph (72 km/h) for 1 minute or more.

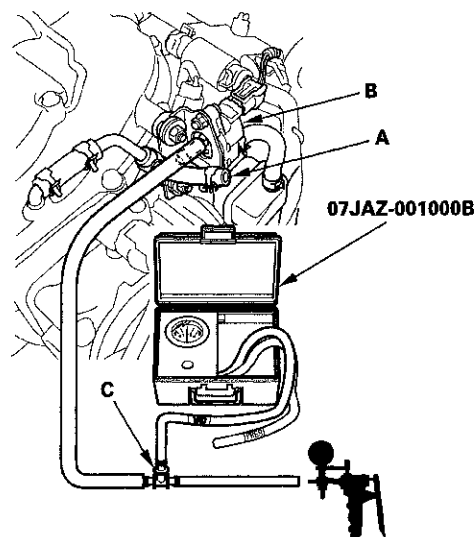
Does the fuel fill cap warning message come on?

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, then connect a T-fitting (C) from the vacuum gauge, and connect the vacuum pump/gauge 0—30 in.Hg, to the EVAP canister purge valve as shown.



(cont'd)

EVAP System

Fuel Cap Warning Message System Troubleshooting (cont'd)

9. Turn the ignition switch to ON (II).
 10. Apply about 2 kPa (0.6 in.Hg, 15 mmHg) of vacuum to the hose.
 11. 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 12.
- NO**—Replace the EVAP canister purge valve (see page 11-423), then go to step 12.
12. Install the parts in the reverse order of removal.
 13. Turn the ignition switch to ON (II).
 14. Reset the PCM with the HDS.
 15. Do the PCM idle learn procedure (see page 11-313).
 16. Test-drive at 45 mph (72 km/h) for 1 minute or more.

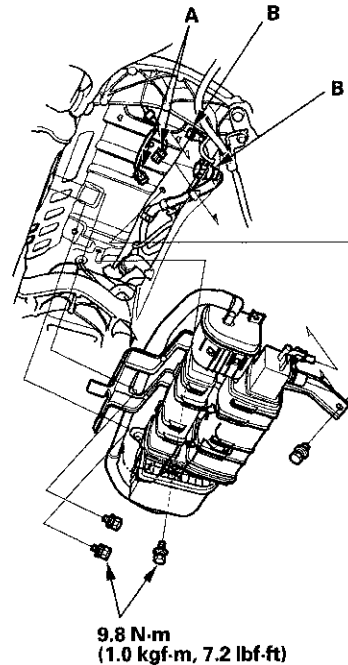
Does the fuel cap warning message come on?

YES—Go to step 1 and recheck.

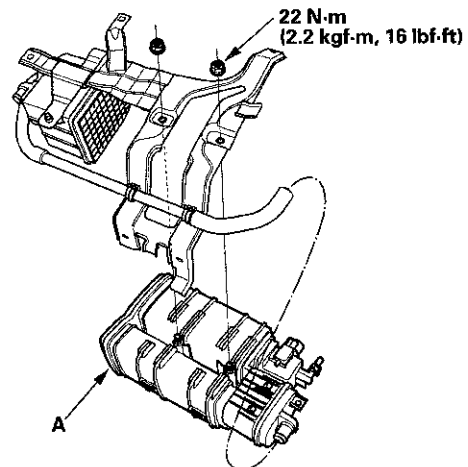
NO—Troubleshooting is complete. ■

EVAP Canister Replacement

1. Remove the propeller shaft (see page 16-44).
2. Remove the rear differential (see page 15-101).
3. Disconnect the connectors (A) and the hoses (B).



4. Remove the EVAP canister (A).

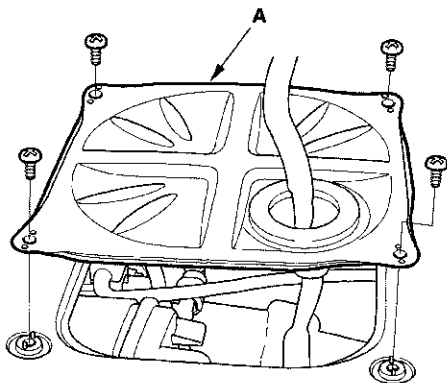


5. Install the parts in the reverse order of removal.

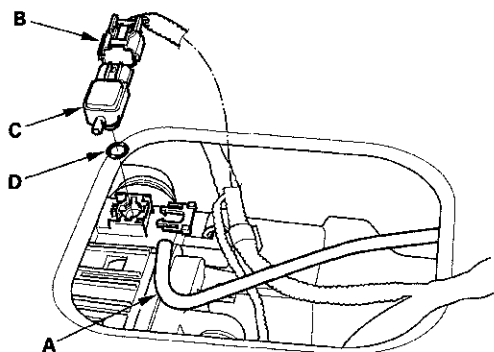


FTP Sensor Replacement

1. Remove the trunk front trim panel (see page 20-83).
2. Remove the access panel (A) from the floor.



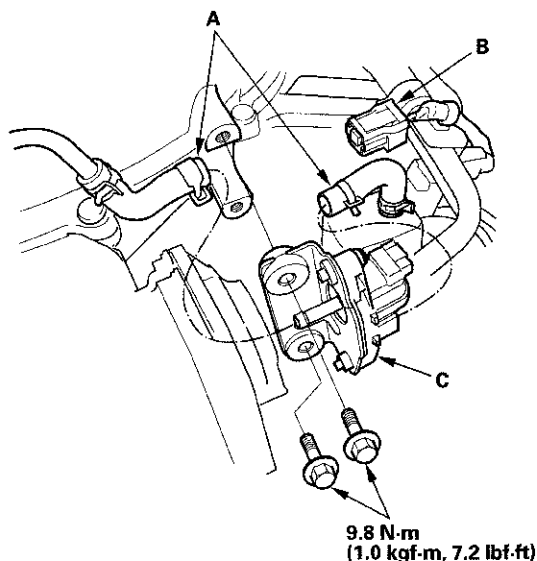
3. Disconnect the hose (A) and the FTP sensor 3P connector (B).



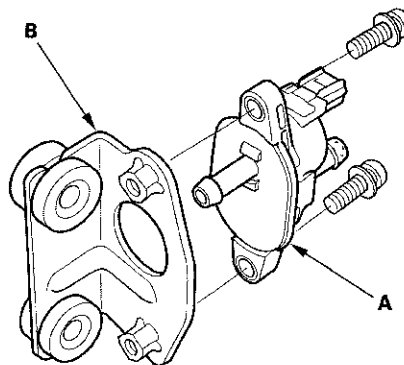
4. Remove the FTP sensor (C).
5. Install the parts in the reverse order of removal with a new O-ring (D).

EVAP Canister Purge Valve Replacement

1. Remove the engine cover (see step 2 on page 9-3).
2. Disconnect the hoses (A) and the EVAP canister purge valve 2P connector (B).



3. Remove the EVAP canister purge valve and the bracket (C).
4. Remove the EVAP canister purge valve (A) from the bracket (B).

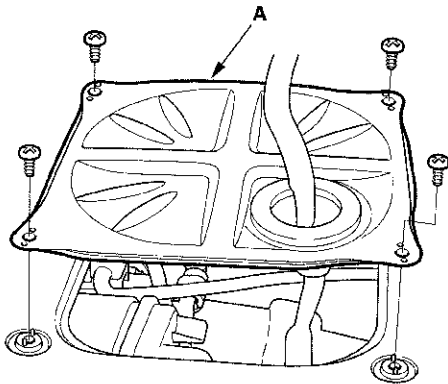


5. Install the parts in the reverse order of removal.

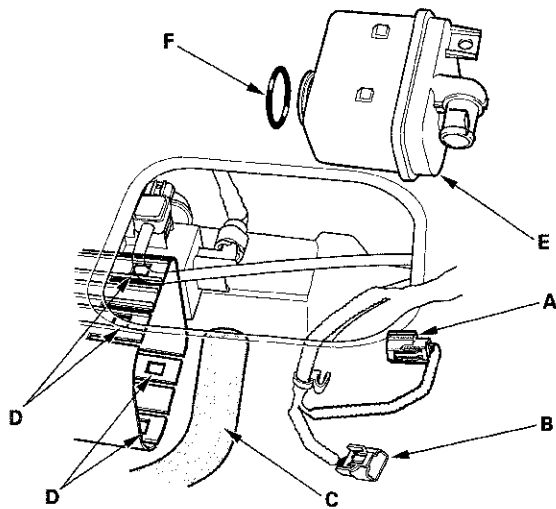
EVAP System

EVAP Canister Vent Shut Valve Replacement

1. Remove the trunk front trim panel (see page 20-83).
2. Remove the access panel (A) from the floor.



3. Disconnect the EVAP canister vent shut valve 2P connector (A), FTP sensor 3P connector (B), and the hose (C).



4. Pry the lock tabs (D) outward, and remove the EVAP canister vent shut valve (E).

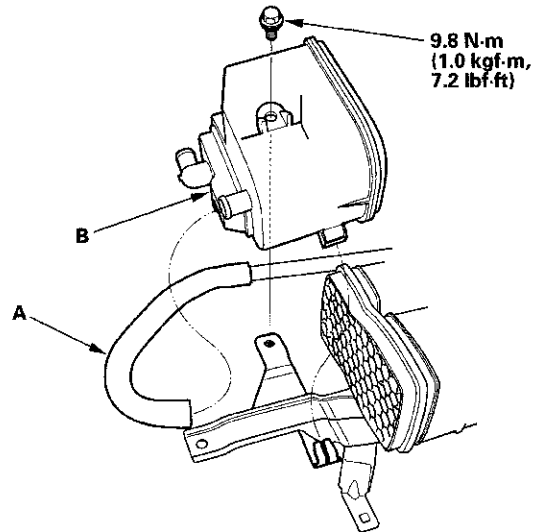
NOTE: Be careful not to damage the lock tabs.

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

NOTE: Do not coat the new O-ring with oil or other lubricants.

EVAP Canister Filter Replacement

1. Remove the EVAP canister (see page 11-422).
2. Disconnect the hose (A).



3. Remove the EVAP canister filter (B).
4. Install the parts in the reverse order of removal.