2004 ENGINE PERFORMANCE

EVAP System - TSX

COMPONENT LOCATION INDEX

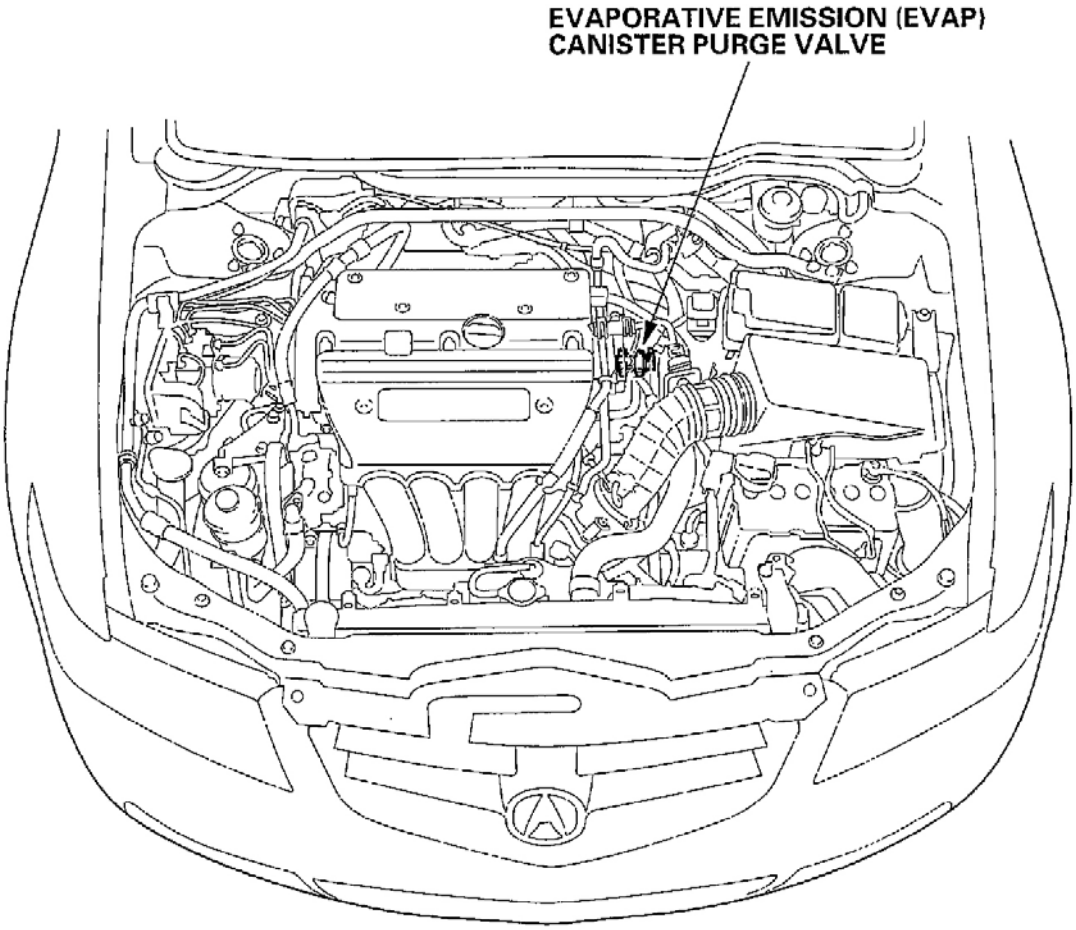

Fig. 1: Locating EVAP System Components (1 Of 2)

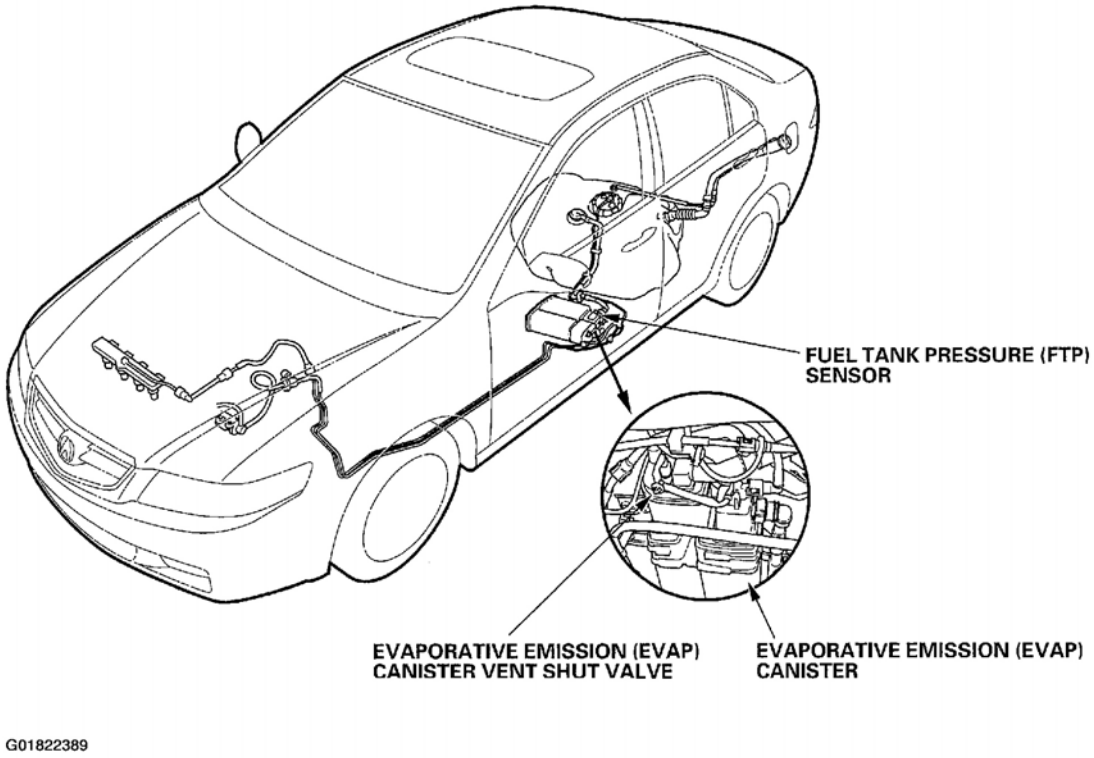

Fig. 2: Locating EVAP System Components (2 Of 2)

DTC TROUBLESHOOTING

DTC TROUBLESHOOTING INDEX

DTC	Description
DTC P0442	EVAP System Small Leak Detected
DTC P0456	EVAP System Very Small Leak Detected
DTC P0443	EVAP Canister Purge Valve Circuit Malfunction
DTC P0451	FTP Sensor Range/Performance Problem
DTC P0452	FTP Sensor Circuit Low Voltage
DTC P0453	FTP Sensor Circuit High Voltage
DTC P0457	EVAP System Leak Detected/Fuel Cap Loose or Missing
DTC P0496	EVAP System High Purge Flow
DTC P0497	EVAP System Low Purge Flow
DTC P0498	EVAP Canister Vent Shut Valve Circuit Low Voltage
DTC P0499	EVAP Canister Vent Shut Valve Circuit High Voltage
DTC P1454	FTP Sensor Range/Performance Problem
DTC P2422	EVAP Canister Vent Shut Valve Stuck Closed Malfunction

DTC P0442: EVAP SYSTEM SMALL LEAK DETECTED; DTC P0456: EVAP SYSTEM VERY

SMALL LEAK DETECTED

NOTE: 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 A973X-041-XXXXX

NOTE: Fresh fuel has a higher volatility that will create greater pressure/vacuum. The optimum condition for testing is less than a full tank of fresh fuel. If possible, to assist in leak detection, add 1 gallon of fresh fuel to the tank (as long as it will not fill the tank) just before starting these procedures.

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

   Is the correct fuel fill cap installed and properly tightened?

   YES: Go to step 2.

   NO: Replace or tighten the cap, then go to step 22 .

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

   Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

   YES: Replace the fuel fill cap or the fuel fill pipe, then go to step 22 .

   NO: Go to step 3.

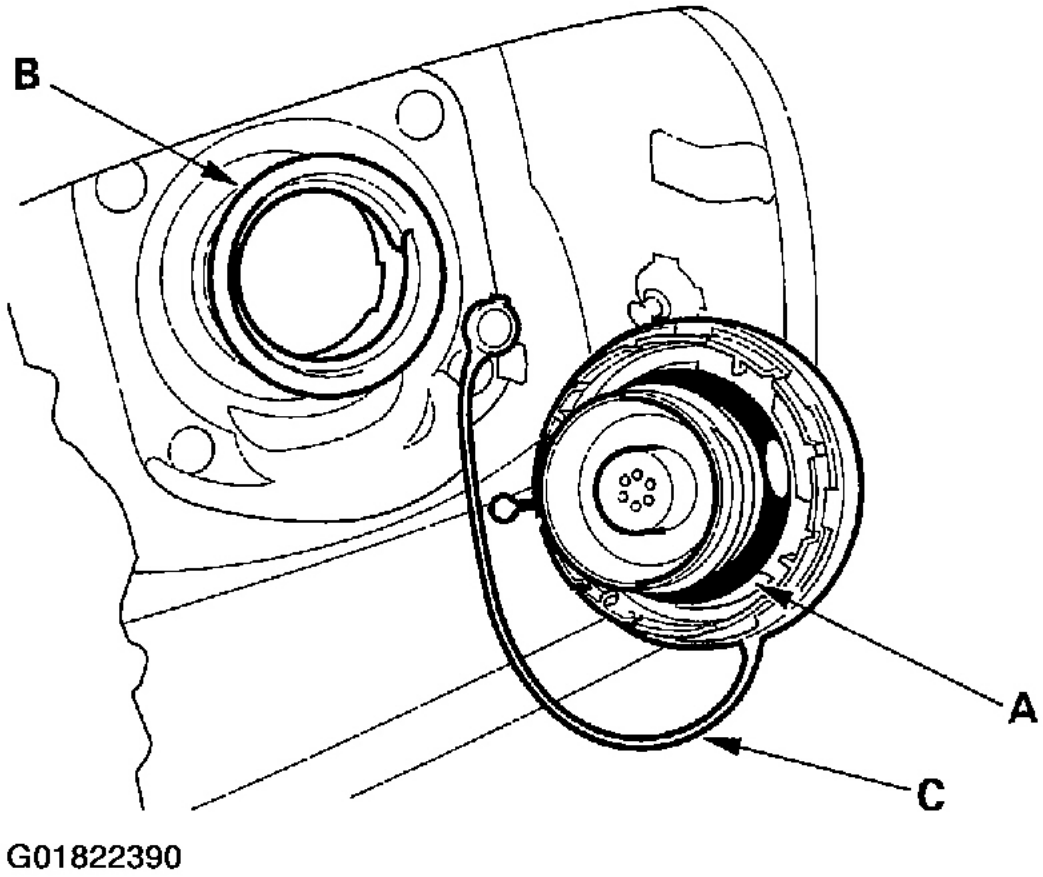

Fig. 3: Checking The Fuel Fill Cap Seal & The Fuel Fill Pipe Mating Surface

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Turn the ignition switch ON (II).
8. Check for a poor connection or damage at the fuel tank vapor recirculation tube (see **EVAPORATIVE EMISSION (EVAP) CONTROL SYSTEM**).

   Is the tube OK?

YES: Go to step 9.

NO:

- Replace the fuel tank vapor recirculation tube, then go to step 22 .
- If necessary, replace the fuel tank (see **FUEL TANK REPLACEMENT**), then go to step22 .

9. Disconnect the fuel tank vapor recirculation tube (A) from the EVAP canister (B), and plug the EVAP canister port (C).

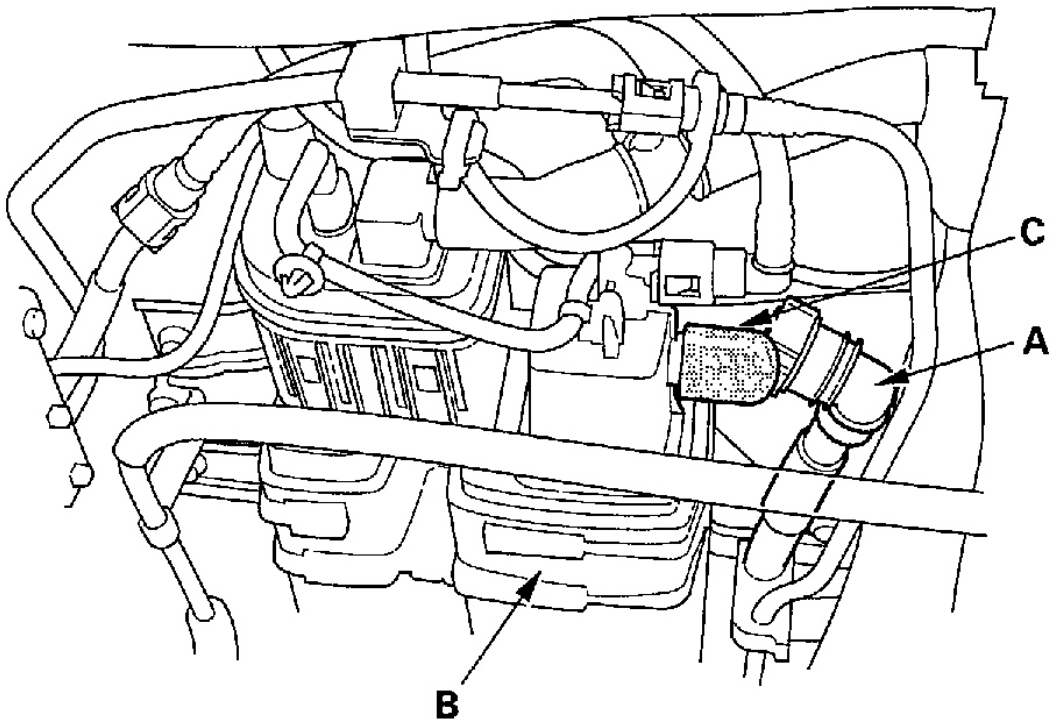

Fig. 4: Disconnecting The Fuel Tank Vapor Recirculation Tube From The EVAP Canister & Plugging The EVAP Canister Port

10. Disconnect the vacuum hose (purge line) from the EVAP canister purge valve (A), in the engine compartment and connect a vacuum pump to the hose.

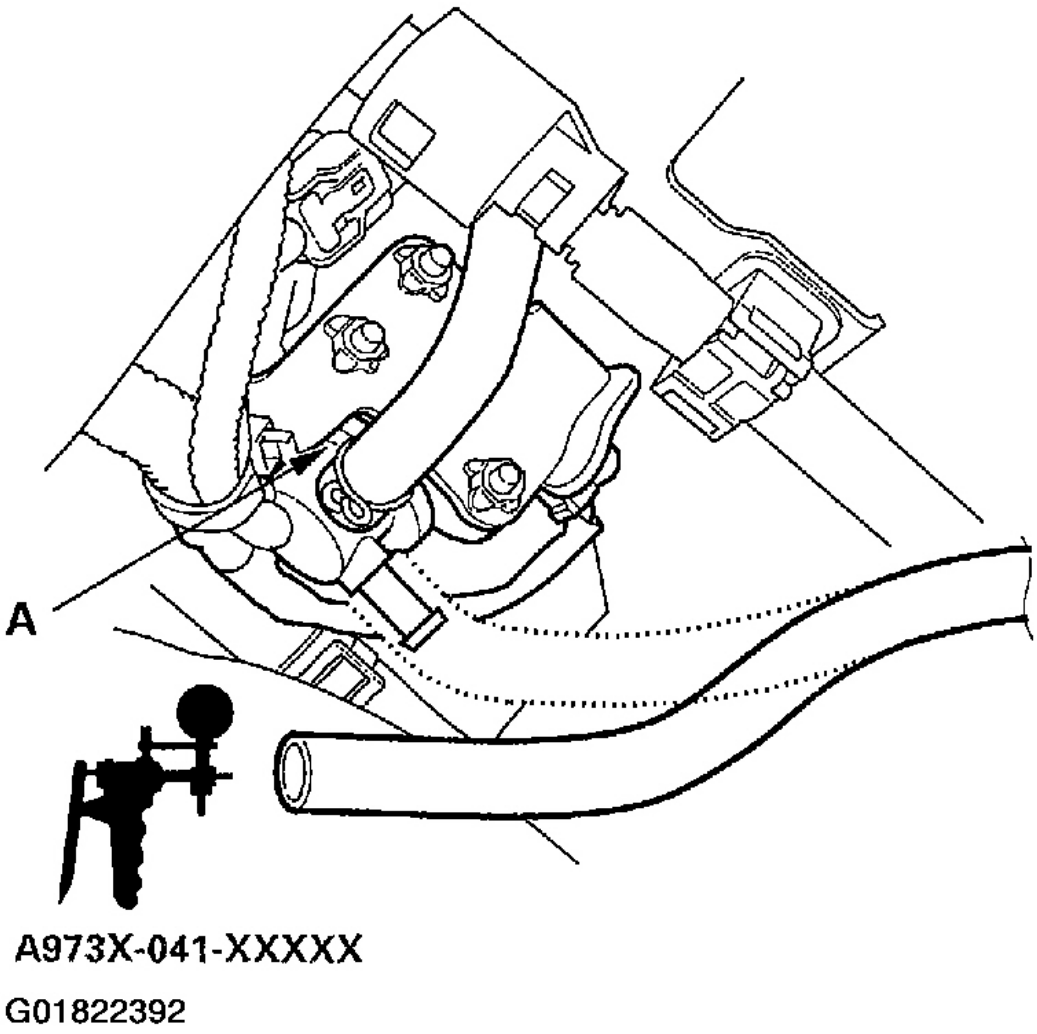

Fig. 5: Disconnecting The Vacuum Hose (Purge Line) From The EVAP Canister Purge Valve

11. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
12. Apply vacuum to the hose until the FTP reads 1.90 V (-0.5 in. Hg, -14.6 mm Hg).
13. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage stay near 0.2 V (0.1 in. Hg, 0.5 mm Hg)?

    YES: Go to step 19 .

    NO: Go to step 14.
14. Do the EVAP CVS OFF in the INSPECTION MENU with the HDS.
15. Disconnect the fresh air hoses (A) from the EVAP canister vent shut valve (B), and plug the EVAP canister vent shut valve ports (C).

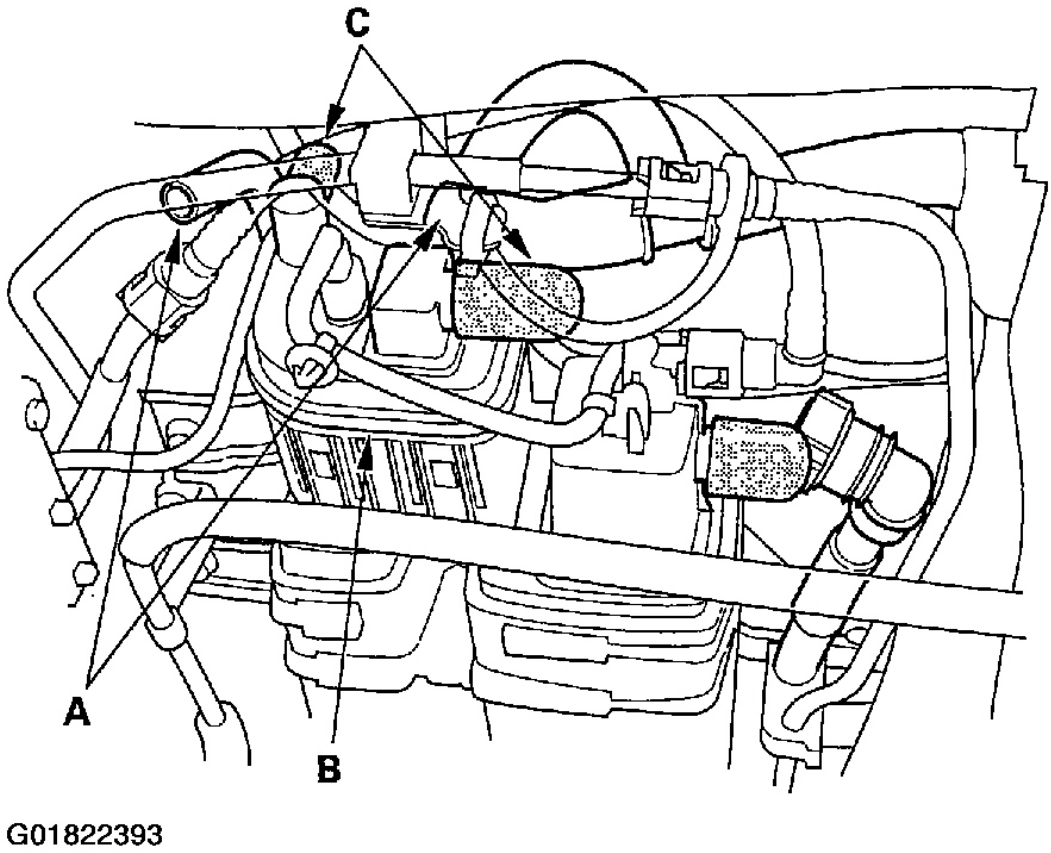

Fig. 6: Disconnecting The Fresh Air Hoses From The EVAP Canister Vent Shut Valve & Plugging The EVAP Canister Vent Shut Valve Ports

16. Apply vacuum to the hose (disconnected in step 10) until the FTP reads 1.90 V (-0.5 in. Hg, -14.6 mm Hg).
17. Monitor the FTP SENSOR in the DATA LIST for 1 minute with the HDS.

    Does the voltage stay near 0.2 V (0.1 in. Hg, 0.5 mm Hg)?

    YES: Replace the EVAP canister vent shut valve, then go to step 21 .

    NO: Go to step 18.
18. Check for a loose or damaged PCS line between the EVAP canister and the EVAP canister purge valve.

    Is the line OK?

    YES: Replace the following parts, then go to step 21 .

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

    NO: Reconnect or repair the PCS hose, then go to step 21 .

19. Do the EVAP CVS OFF in the INSPECTION MENU with the HDS.
20. Check these parts for looseness or damage.
    - Fuel fill pipe
    - Fuel vapor return pipe

    Are the parts OK?

    YES: Check the fuel pump base gasket (see **FUEL PUMP/FUEL GAUGE SENDING UNIT REPLACEMENT**), and check the fuel tank, then go to step 21.

    NO: Repair or replace any damaged parts, then go to step 21.
21. Reconnect all hoses.
22. Turn the ignition switch ON (II).
23. Reset the ECM/PCM with the HDS.
24. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
25. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES: Troubleshooting is complete.

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

DTC P0443: EVAP CANISTER PURGE VALVE CIRCUIT MALFUNCTION

Special Tools Required: Vacuum Pump/Gauge, 0-30 in. Hg A973X-041-XXXXX

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P0443 indicated?

    YES: Go to step 5.

    NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM.
5. Turn the ignition switch OFF, and allow the engine to cool below 131°F (55°C).
6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment and connect a vacuum pump/gauge to the hose.

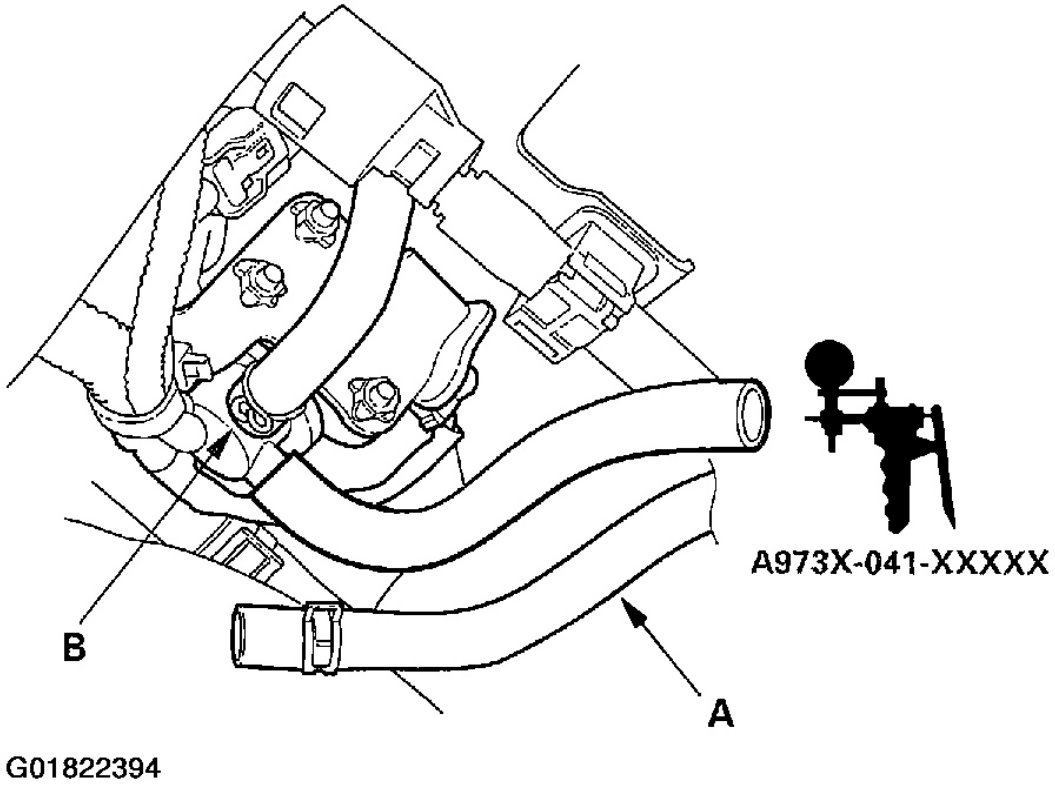

Fig. 7: Disconnecting The Vacuum Hose From The EVAP Canister Purge Valve

7. Start the engine and let it idle.

   Is there vacuum?

   YES: Go to step 8.

   NO: Go to step 14 .
8. Turn the ignition switch OFF.
9. Disconnect the EVAP canister purge valve 2P connector.
10. Check for continuity between EVAP canister purge valve 2P connector No. 2 and body ground.

    Is there continuity?

    YES: Go to step 11.

    NO: Go to step 24 .

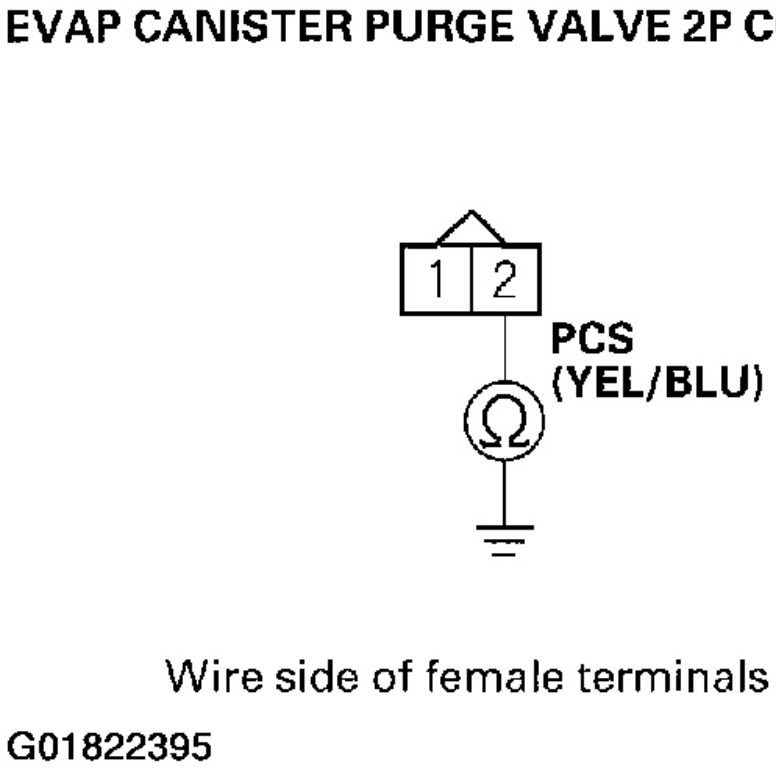

Fig. 8: Checking For Continuity Between EVAP Canister Purge Valve 2P Connector No. 2 & Body Ground

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

Is there continuity?

YES: Repair short in the wire between the EVAP canister purge valve and the ECM/PCM (B21), then go to step 25 .

NO: Go to step 31 .

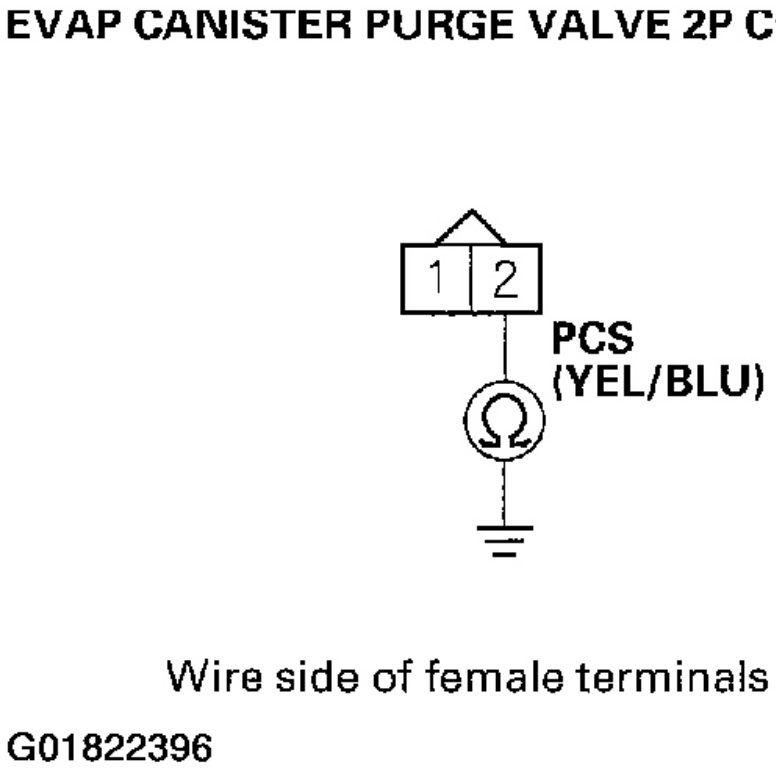

Fig. 9: Checking For Continuity Between EVAP Canister Purge Valve 2P Connector No. 2 & Body Ground

14. Turn the ignition switch OFF.
15. Disconnect the EVAP canister purge valve 2P connector.
16. Turn the ignition switch ON (II).
17. Measure voltage between EVAP canister purge valve 2P connector terminal No. 1 and body ground.

    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 (15A) fuse in the under-dash fuse/relay box, then go to step 26 .

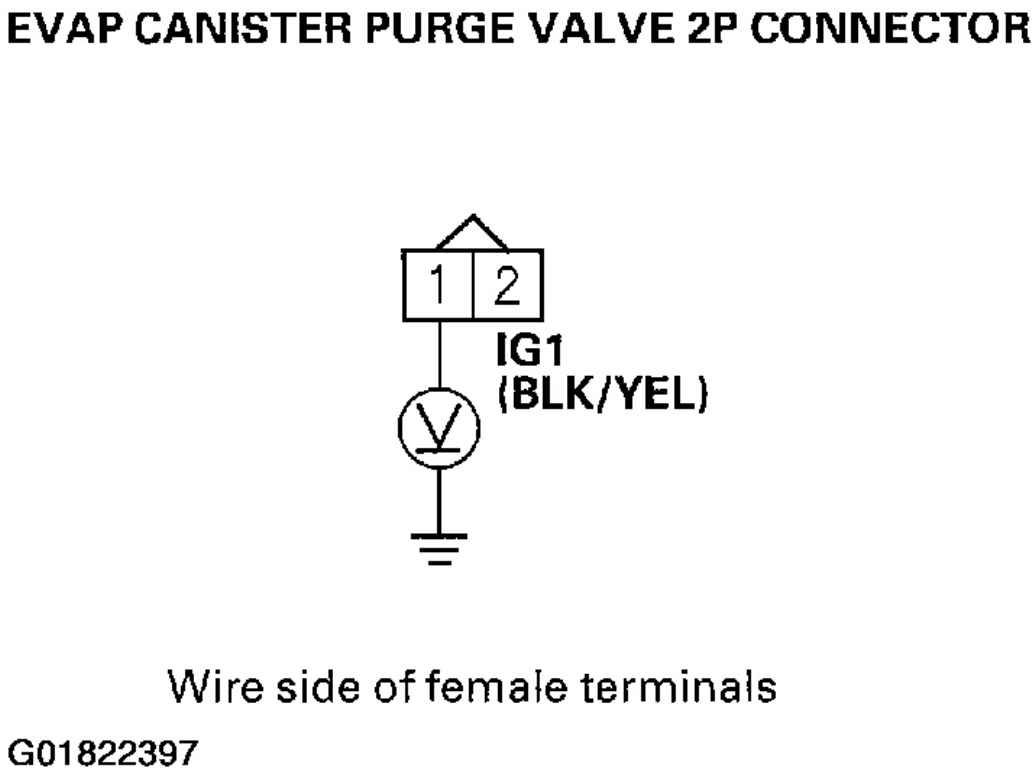

Fig. 10: Measuring Voltage Between EVAP Canister Purge Valve 2P Connector Terminal No. 1 & Body Ground

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

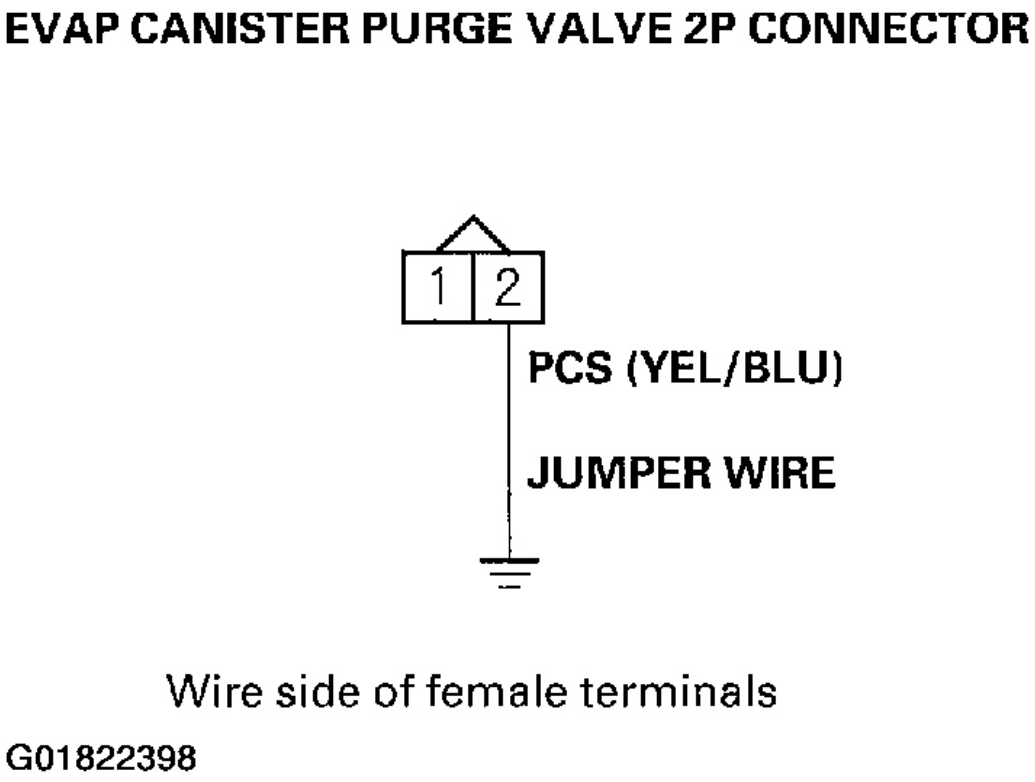

Fig. 11: Connecting EVAP Canister Purge Valve 2P Connector Terminal No. 2 To Body Ground With A Jumper Wire

22. Check for continuity between ECM/PCM connector terminal B21 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 ECM/PCM (B21), then go to step 25 .

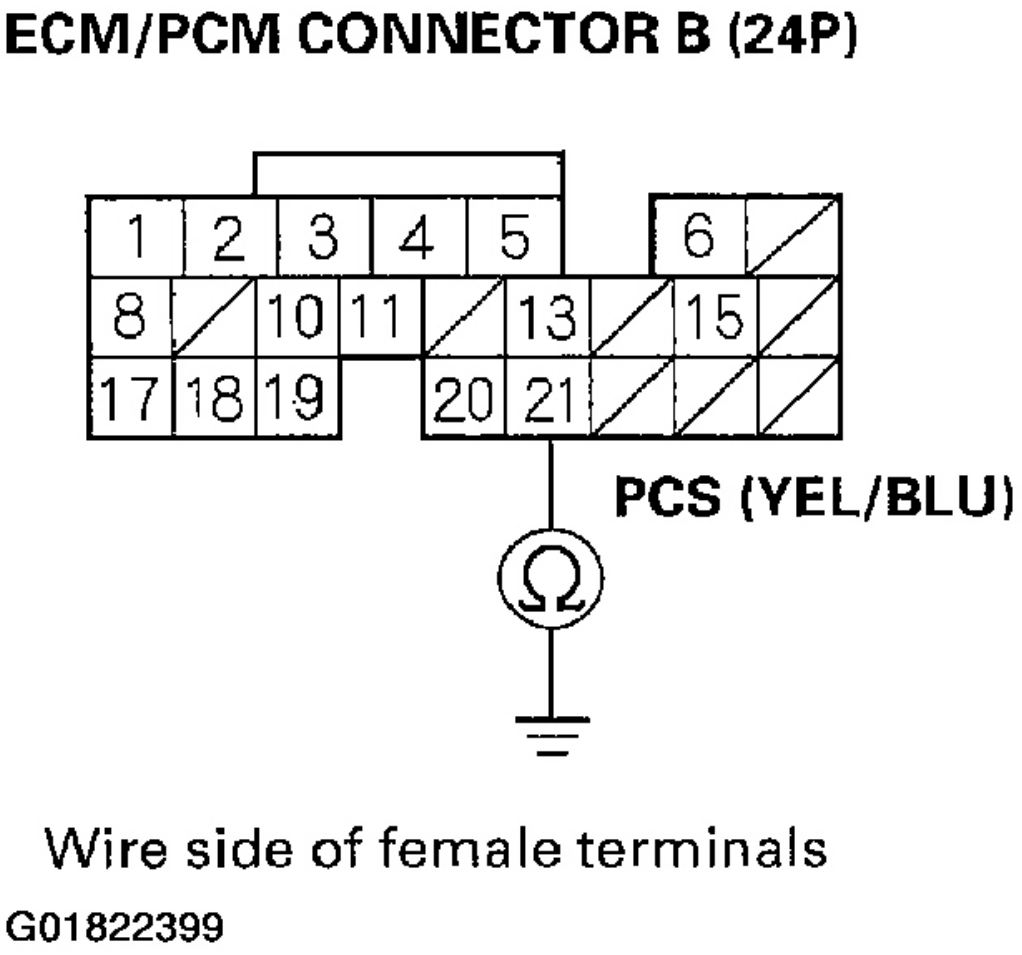

Fig. 12: Checking For Continuity Between ECM/PCM Connector Terminal B21 & Body Ground

23. Measure resistance between EVAP canister purge valve 2P connector terminals No. 1 and No. 2.

Is there about 33 ohm at room temperature?

YES: Go to step 31 .

NO: Go to step 24.

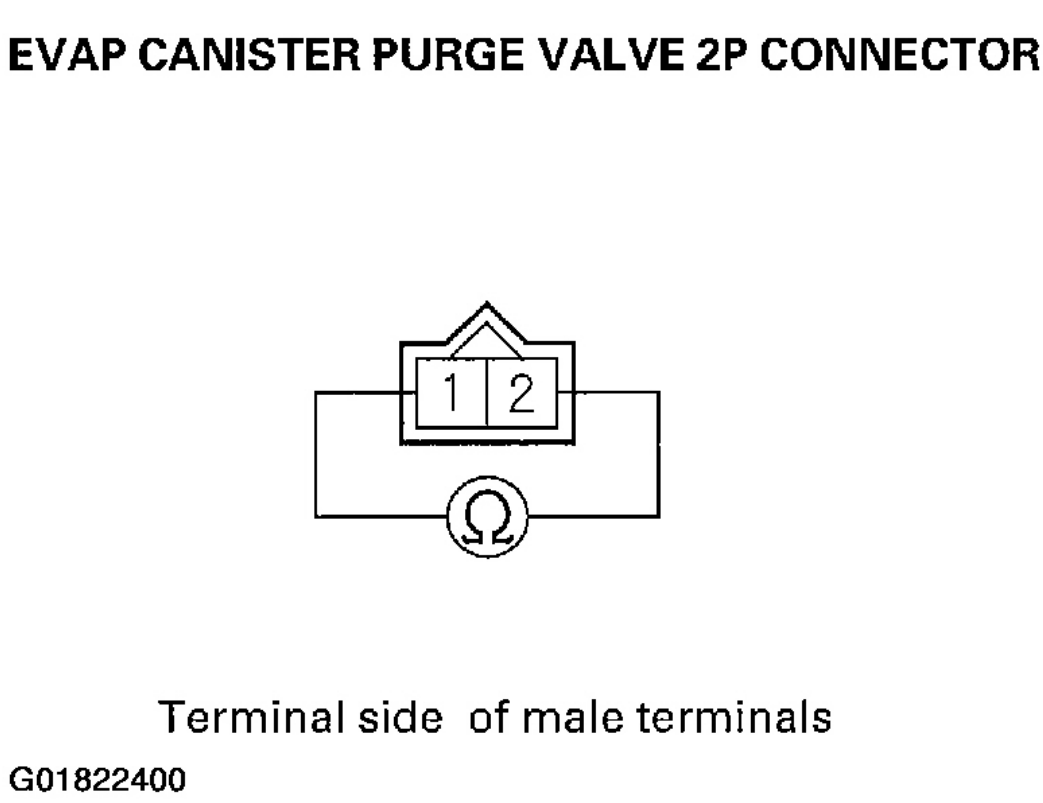

Fig. 13: Measuring Resistance Between EVAP Canister Purge Valve 2P Connector Terminals No. 1 & No. 2

24. Replace the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
25. Reconnect ECM/PCM connector B (24P).
26. Reconnect the EVAP canister purge valve 2P connector.
27. Turn the ignition switch ON (II).
28. Reset the ECM/PCM with the HDS.
29. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Troubleshooting is complete.
31. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
32. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0443 is indicated, check for poor connections or loose terminals at the EVAP canister purge valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0451: FTP SENSOR RANGE/PERFORMANCE PROBLEM

NOTE: If DTC P2422 is stored at the same time as DTC P0451, troubleshoot DTC P2422 first, then recheck for DTC P0451.

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Start the engine, and let it idle 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, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 3 and recheck.
5. Turn the ignition switch OFF.
6. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
7. Turn the ignition switch ON (II).
8. Reset the ECM/PCM with the HDS.
9. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
10. Start the engine, and let it idle for 1 minute.
11. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0451 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 12.
12. Monitor the OBD STATUS for DTC P0451 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 10 and recheck.

DTC P0452: FTP SENSOR CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

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

   YES: Go to step 10 .

   NO: Go to step 7.
7. Install the fuel fill cap.
8. Start the engine.
9. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

   Does the screen indicate FAILED?

   YES: Go to step 10.

   NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. If the screen indicates NOT COMPLETED, go to step 5 and recheck.
10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is about 7.3 kPa (54.7 mm Hg, 2.15 in. Hg), 4.90 V indicated?

    YES: Go to step 20 .

    NO: Go to step 14.
14. Measure voltage between FTP sensor 3P connector terminal No. 1 and body ground.

    Is there about 5 V?

    YES: Go to step 16 .

    NO: Go to step 15.

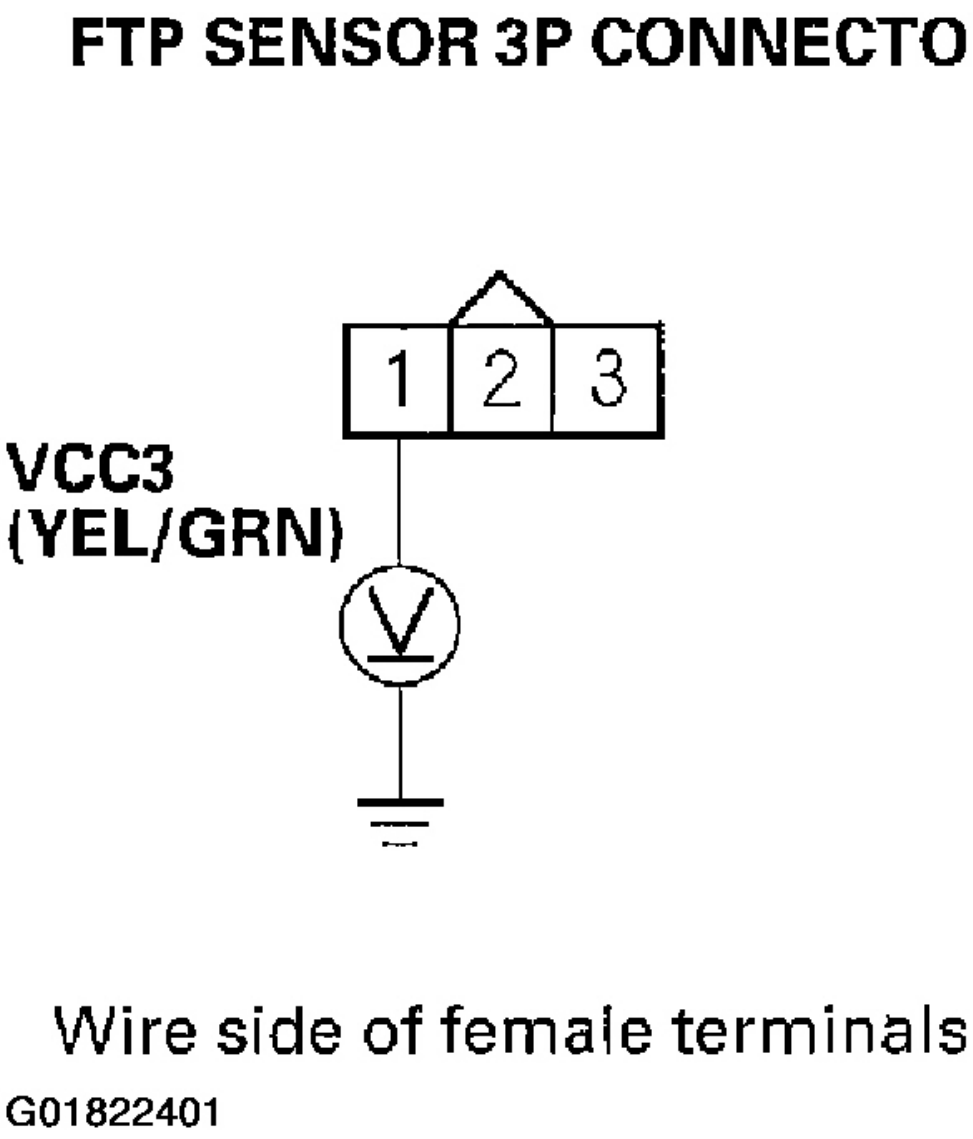

Fig. 14: Measuring Voltage Between FTP Sensor 3P Connector Terminal No. 1 & Body Ground

15. Measure voltage between ECM/PCM connector terminal E5 and body ground.

    Is there 5 V?

    YES: Repair open in the wire between the ECM/PCM (E5) and the FTP sensor, then go to step 23 .

    NO: Go to step 29 .

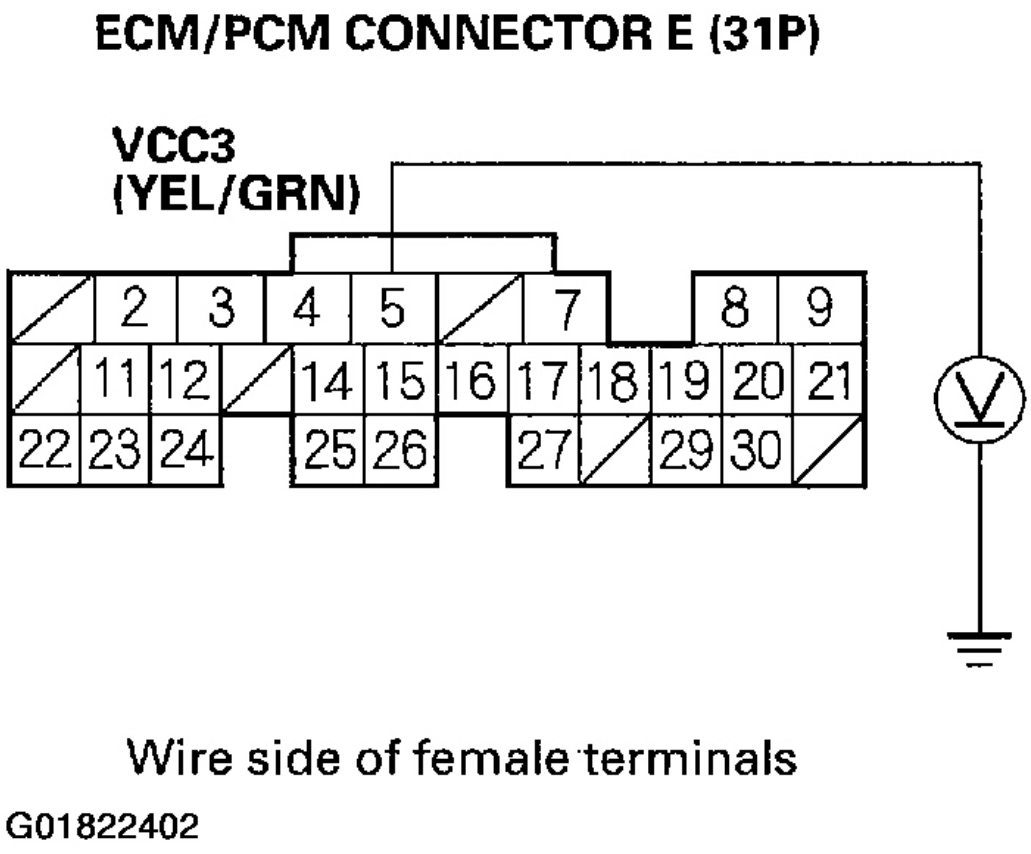

Fig. 15: Measuring Voltage Between ECM/PCM Connector Terminal E5 & Body Ground

16. Turn the ignition switch OFF.
17. Jump the SCS line with the HDS.
18. Disconnect ECM/PCM connector E (31P).
19. Check for continuity between FTP sensor 3P connector terminal No. 2 and body ground.

Is there continuity?

YES: Repair short in the wire between the ECM/PCM (E14) and the FTP sensor, then go to step 22 .

NO: Go to step 29 .

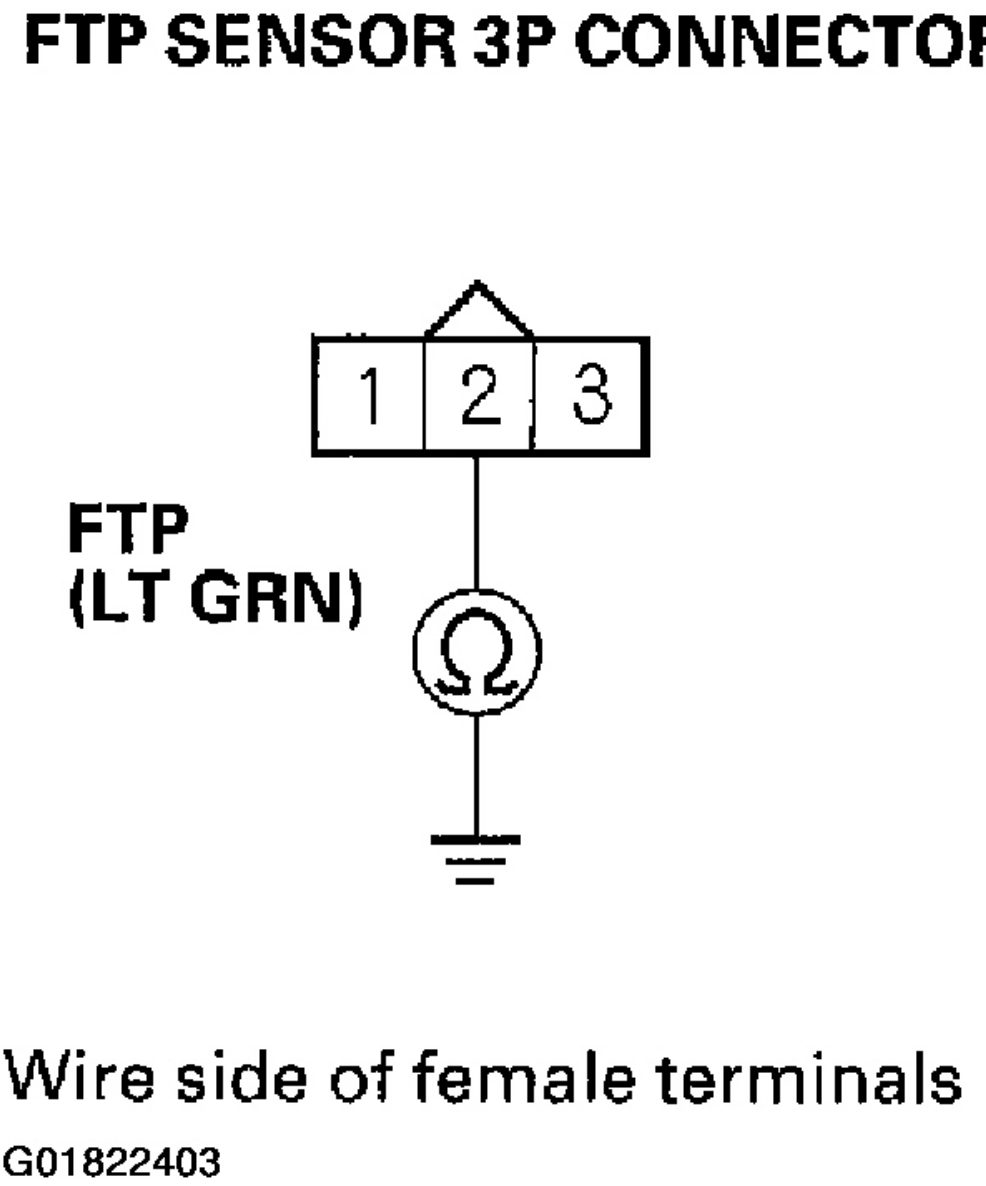

Fig. 16: Checking For Continuity Between FTP Sensor 3P Connector Terminal No. 2 & Body Ground

20. Turn the ignition switch OFF.
21. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
22. Reconnect the ECM/PCM connectors.
23. Reconnect the FTP sensor 3P connector.

24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0452 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 28.
28. Monitor the OBD STATUS for DTC P0452 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 26 and recheck.
29. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0452 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0453: FTP SENSOR CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

   Is about 7.3 kPa (55 mm Hg, 2.16 in. Hg), 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 P0452 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES: Go to step 10.

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

10. Turn the ignition switch OFF.
11. Disconnect the FTP sensor 3P connector.
12. Turn the ignition switch ON (II).
13. Measure voltage between FTP sensor 3P connector terminal No. 2 and body ground.

Is there about 5 V?

YES: Go to step 14.

NO: Go to step 15 .

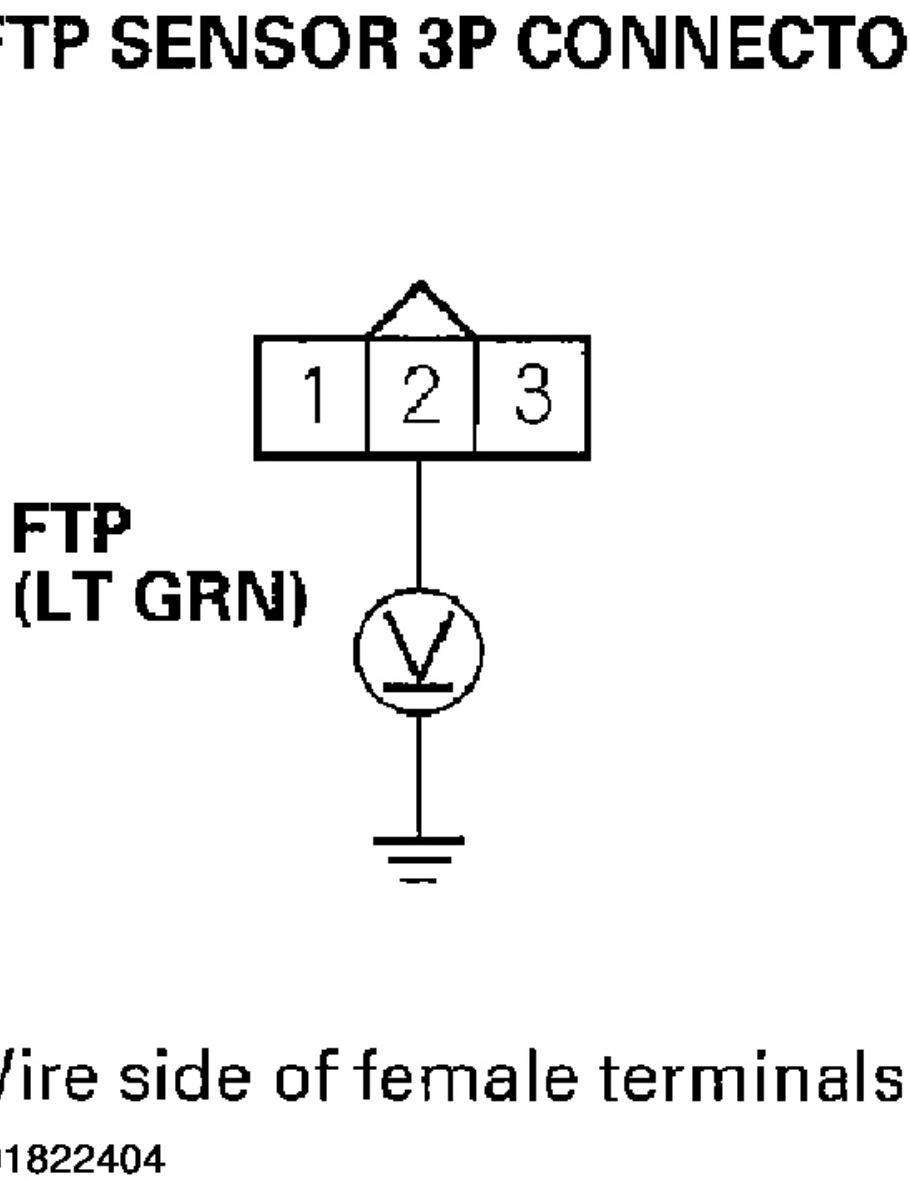

Fig. 17: Measuring Voltage Between FTP Sensor 3P Connector Terminal No. 2 & Body Ground

14. Measure voltage between FTP sensor 3P connector terminals No. 1 and No. 3.

    Is there about 5 V?

    YES: Go to step 20 .

    NO: Repair open in the wire between the ECM/PCM (E4) and the FTP sensor, then go to

step 23 .

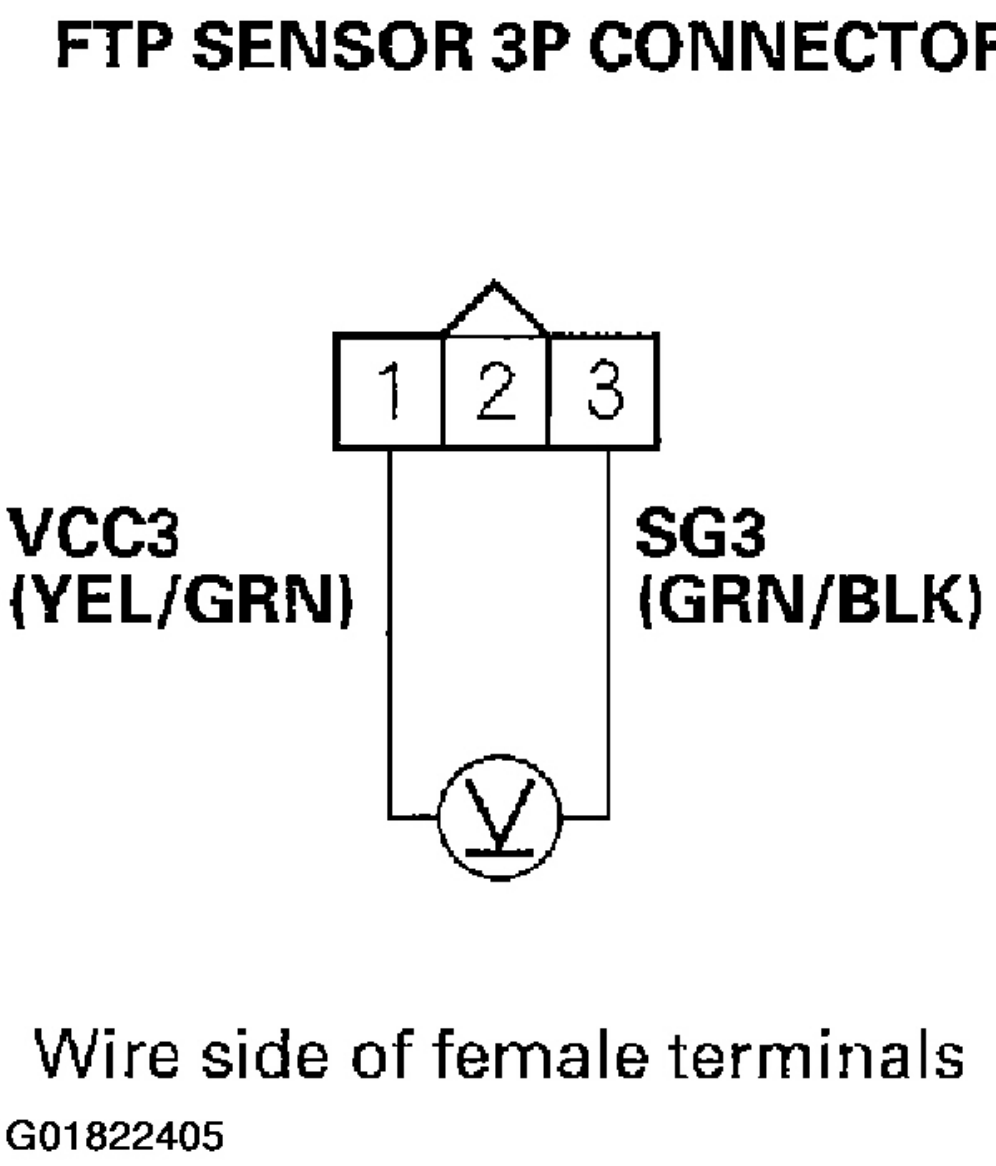

Fig. 18: Measuring Voltage Between FTP Sensor 3P Connector Terminals No. 1 & No. 3

15. Turn the ignition switch OFF.
16. Jump the SCS line with the HDS.
17. Disconnect ECM/PCM connector E (31P).
18. Connect FTP sensor connector terminal No. 2 to body ground with a jumper wire.

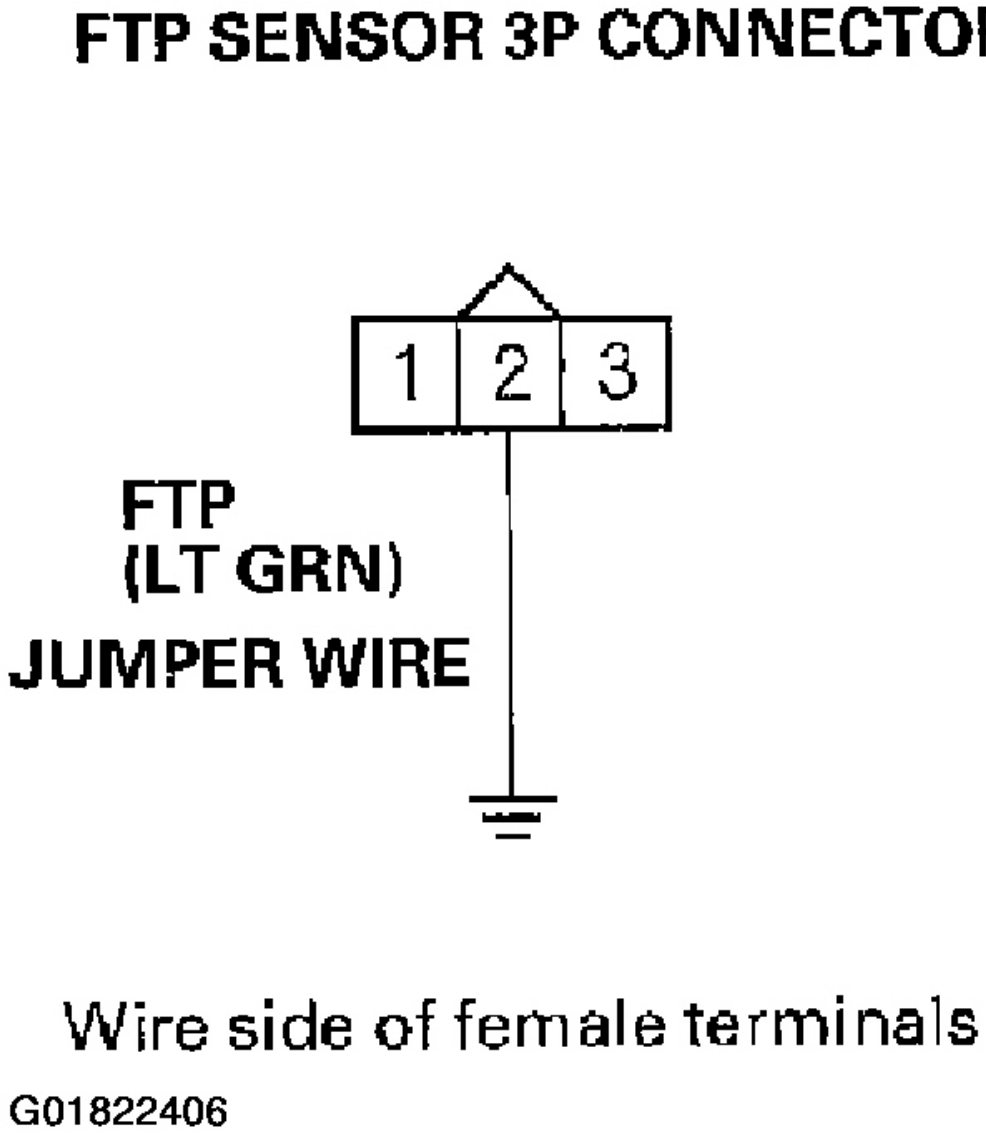

Fig. 19: Connecting FTP Sensor Connector Terminal No. 2 To Body Ground With A Jumper Wire

19. Check for continuity between ECM/PCM connector terminal E14 and body ground.

    Is there continuity?

    YES: Go to step 29 .

    NO: Repair open in the wire between the ECM/PCM (E14) and the FTP sensor, then go to step 22 .

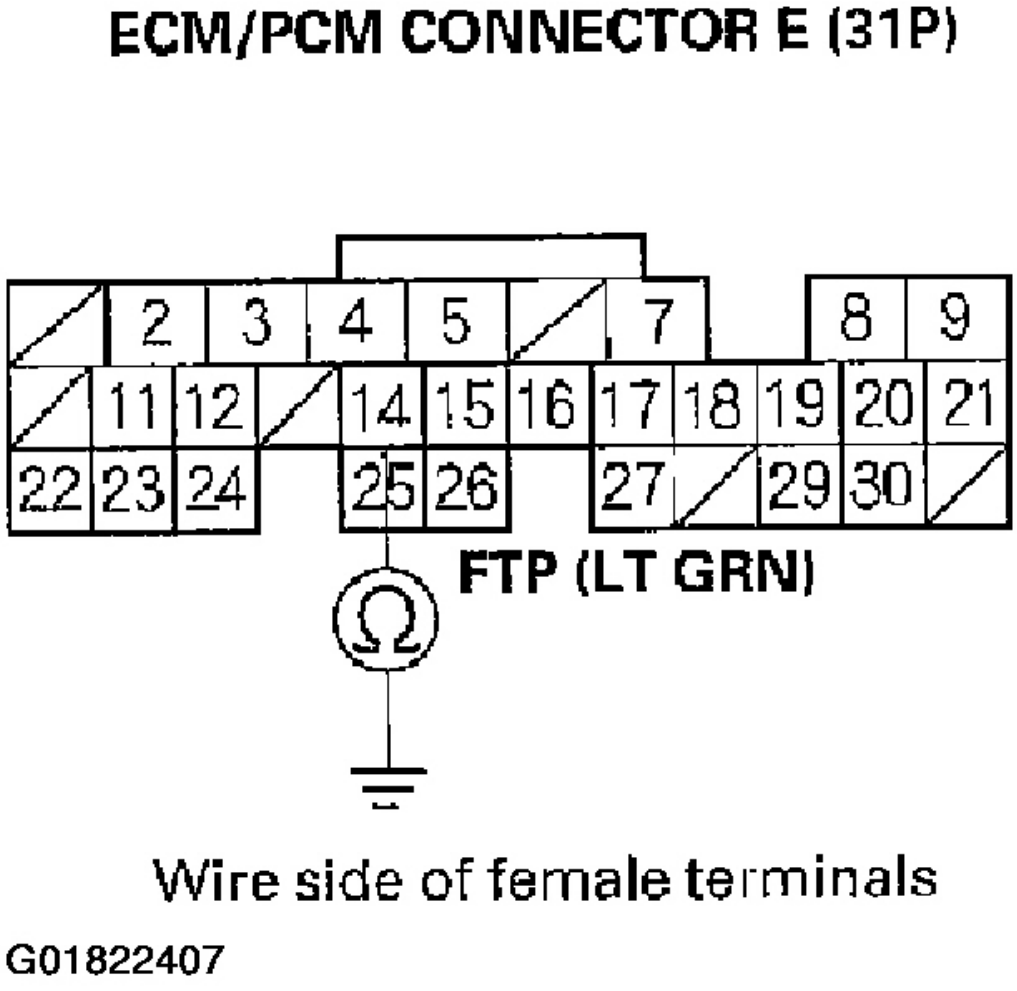

Fig. 20: Checking For Continuity Between ECM/PCM Connector Terminal E14 & Body Ground

20. Turn the ignition switch OFF.
21. Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**).
22. Reconnect ECM/PCM connector E (31P).
23. Reconnect the FTP sensor 3P connector.
24. Turn the ignition switch ON (II).
25. Reset the ECM/PCM with the HDS.
26. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
27. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0453 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 28.

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

Does the screen indicate PASSED?

YES: Troubleshooting is complete.

NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 26 and recheck.

29. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
30. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0453 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0457: EVAP SYSTEM LEAK DETECTED/FUEL CAP LOOSE OR MISSING

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

Is the correct fuel fill cap installed and properly tightened?

YES: Go to step 2.

NO: Replace or tighten the cap, then go to step 19 .

2. Check the fuel fill cap seal (A) and the fuel fill pipe mating surface (B). Verify that the fuel fill cap tether cord (C) is not caught under the cap.

Is the fuel fill cap seal missing or damaged, is the fuel fill pipe damaged, or is the tether cord caught under the cap?

YES: Replace the fuel fill cap or the fuel fill pipe, then go to step 19 .

NO: Go to step 3.

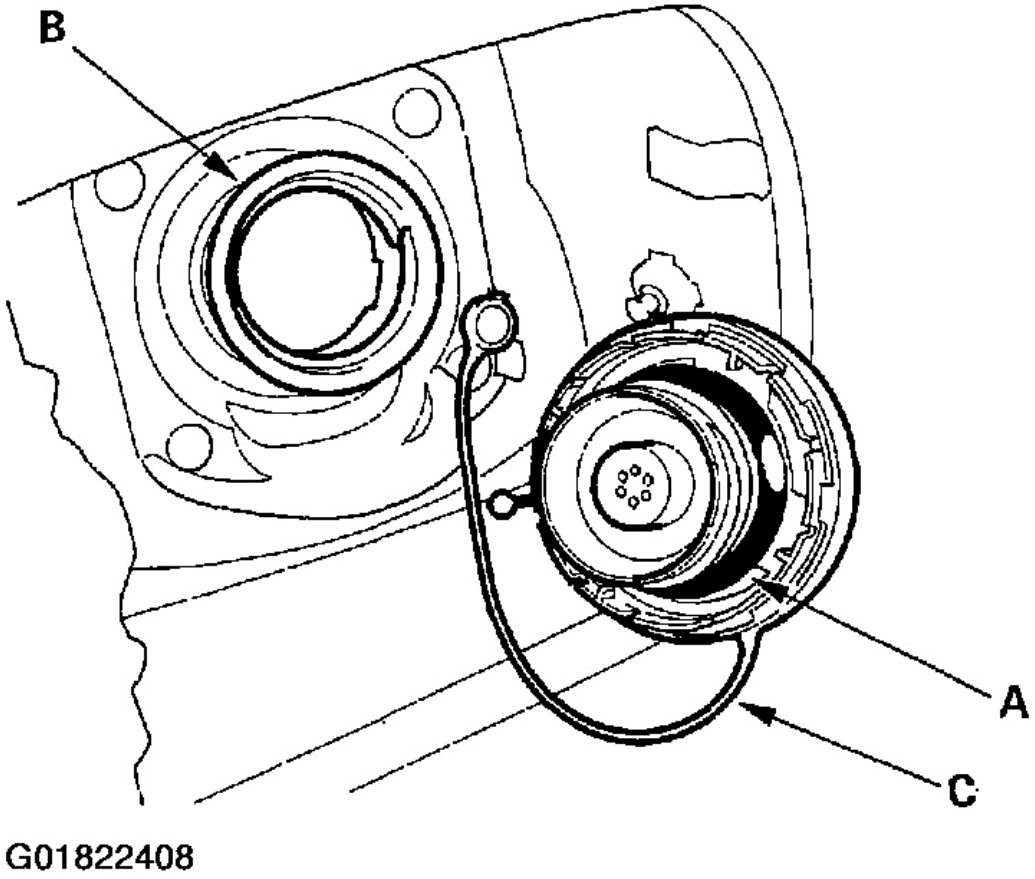

Fig. 21: Checking The Fuel Fill Cap Seal & The Fuel Fill Pipe Mating Surface

3. Turn the ignition switch ON (II).
4. Clear the DTC with the HDS.
5. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM.

   NO: Go to step 6.
6. Turn the ignition switch OFF.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

11. Check the EVAP canister vent shut valve (A) operation.

Does the valve operate?

YES: Check the routing of the EVAP canister vent tube, then go to step 18 .

NO: Go to step 12.

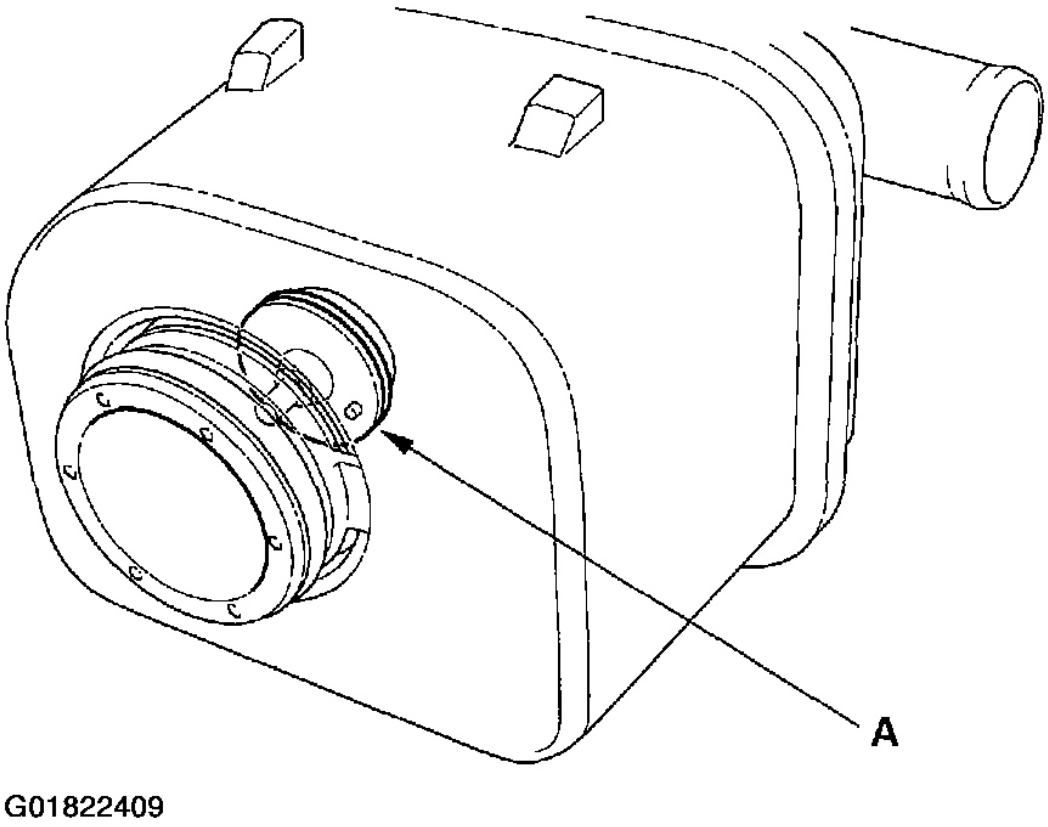

Fig. 22: Checking The EVAP Canister Vent Shut Valve Operation

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Troubleshooting is complete.

NO: Check for poor connections or loose terminals at the FTP sensor or the EVAP canister

vent shut valve and the ECM/PCM, then go to step 16.

18. Reinstall the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
19. Turn the ignition switch ON (II).
20. Reset the ECM/PCM with the HDS.
21. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
22. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

    Is the result OK?

    YES: Troubleshooting is complete.

    NO: Check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM, then go to step 21.

DTC P0496: EVAP SYSTEM HIGH PURGE FLOW

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

   Is the result OK?

   YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

   NO: Go to step 4.
4. Turn the ignition switch OFF.
5. Replace the EVAP canister purge valve (see **EVAP CANISTER PURGE VALVE REPLACEMENT**).
6. Turn the ignition switch ON (II).
7. Reset the ECM/PCM with the HDS.
8. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
9. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

   Is the result OK?

   YES: Troubleshooting is complete.

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

DTC P0497: EVAP SYSTEM LOW PURGE FLOW

Special Tools Required:

- Vacuum pump/Gauge, 0-30 in. Hg A973X-041-XXXXX
- Vacuum/Pressure Gauge, 0-4 in. Hg 07 JAZ-001000B

1. Check the fuel fill cap (the cap must say "If not tightened 3 clicks check engine light may come on").

Is the correct fuel fill cap installed and properly tightened?

YES: Go to step 2.

NO: Replace or tighten the cap, then go to step 22 .

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

Is the result OK?

YES: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the FTP sensor, the EVAP canister purge valve, or the EVAP canister vent shut valve and the ECM/PCM.

NO: Go to step 5.

5. Check for a loose or damaged PCS/CPV line between the intake manifold and the EVAP canister purge valve.

Is the line OK?

YES: Go to step 6.

NO: Reconnect or repair the PCS/CPV line, then go to step 22 .

6. Disconnect the vacuum hose (A) from the EVAP canister purge valve (B) in the engine compartment, and connect a vacuum pump to the EVAP canister purge valve.

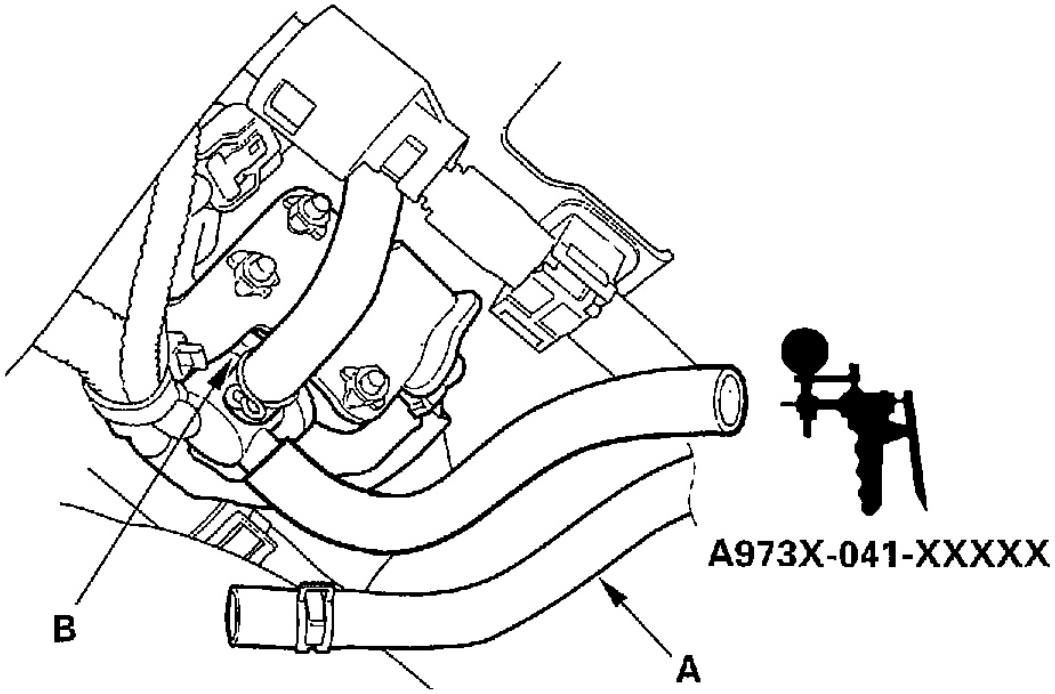

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Fig. 23: Disconnecting The Vacuum Hose From The EVAP Canister Purge Valve

7. Do the EVAP PCS/CPV ON in the INSPECTION MENU with the HDS.
8. Slowly apply about 0.6 in. Hg (15 mm Hg) of vacuum the hose.

   Does it hold vacuum?

   YES: Check for blockage on the PCS/CPV line between the intake manifold and the EVAP canister purge valve. If the vacuum hose is OK, replace the EVAP canister purge valve, then go to step 22 .

   NO: Go to step 9.
9. Reconnect the vacuum hose to the EVAP canister purge valve.
10. Disconnect the vacuum hose from the PCS/CPV line (EVAP canister side), and connect a vacuum pump to the hose.

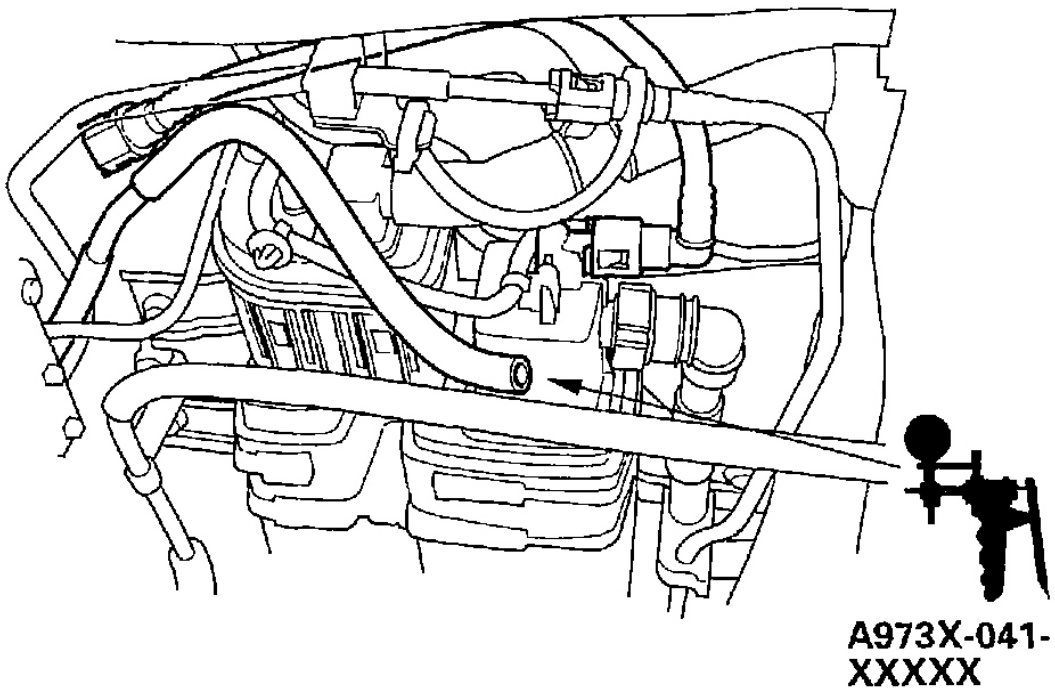

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Fig. 24: Disconnecting The Vacuum Hose From The PCS/CPV Line

11. Do the EVAP PCS/CPV ON in the INSPECTION MENU with the HDS.
12. Slowly apply about 0.6 in. Hg (15 mm Hg) of vacuum to the hose.

    Does it hold vacuum?

    YES: Check for a restricted PCS/CPV line between the EVAP canister purge valve and the EVAP canister, then go to step 22 .

NO: Go to step 13.

13. Remove the FTP sensor with its connector connected (see **FTP SENSOR REPLACEMENT**).
14. Connect a T-fitting (A) from the vacuum gauge and the vacuum pump to the FTP sensor (B) as shown.

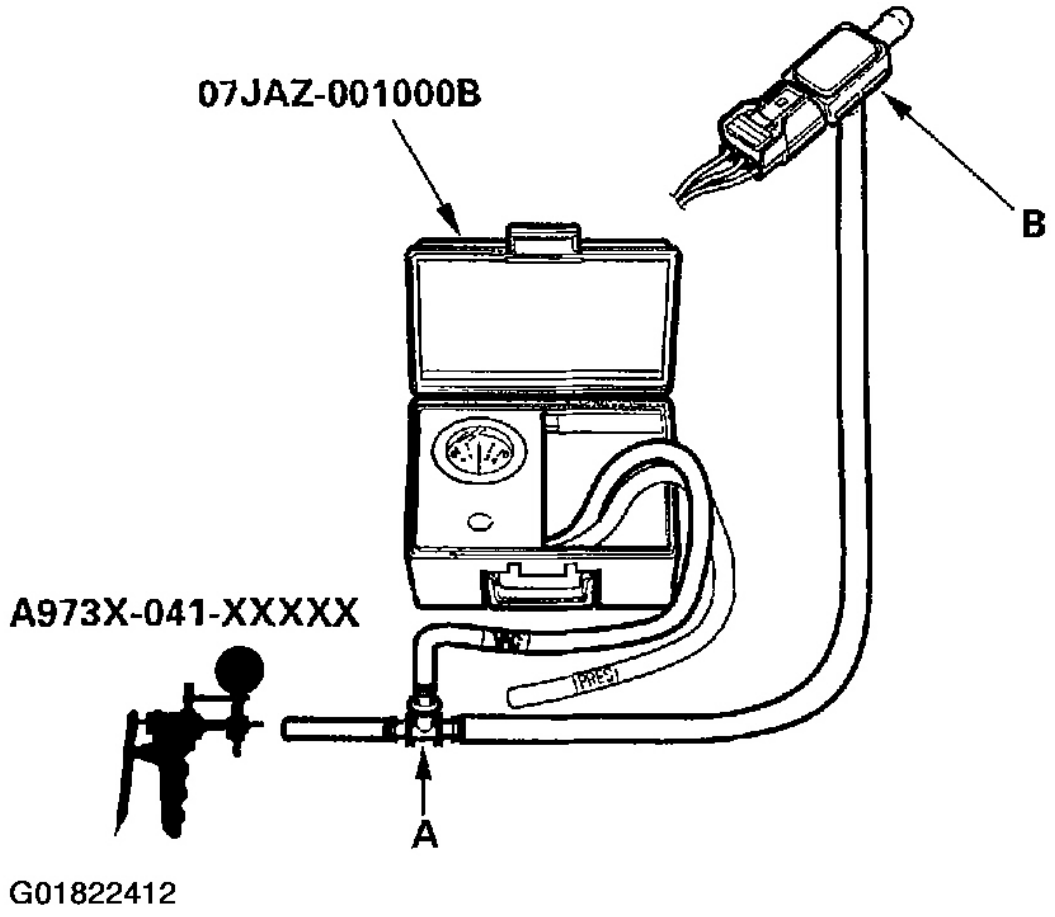

Fig. 25: Connecting A T-Fitting From The Vacuum Gauge & The Vacuum Pump To The FTP Sensor

15. Slowly apply about 0.4 in. Hg (10 mm Hg) of vacuum to the hose.
16. Check the FTP SENSOR in the DATA LIST with the HDS.

    Is the difference more than 1.1 kPa (8 mm Hg, 0.31 in. Hg) before and after applying vacuum?

    YES: Go to step 17.

    NO: Replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 22 .
17. Reconnect the vacuum hose to the PCS/CPV line (EVAP canister side) and reinstall the FTP sensor.
18. Disconnect the vacuum hose (A) from the PCS/CPV line (EVAP canister purge valve side), and connect a

vacuum pump to the hose.

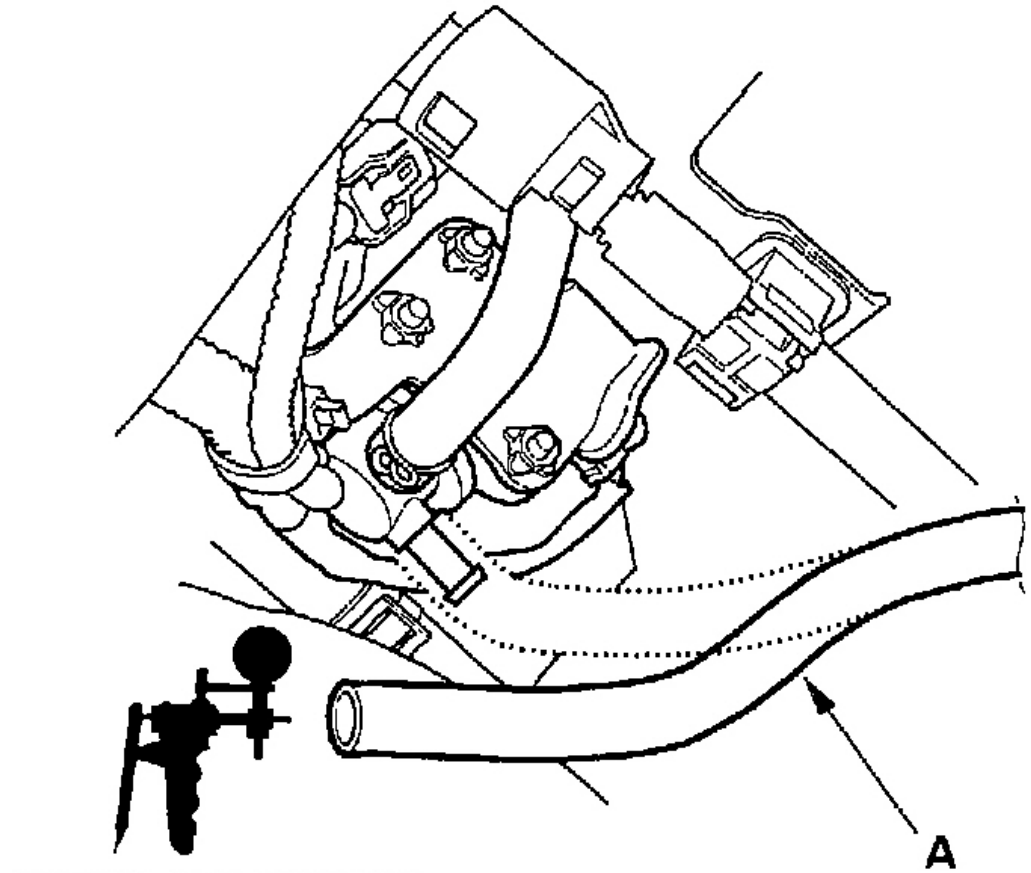

Fig. 26: Disconnecting The Vacuum Hose From The PCS/CPV Line

19. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
20. Slowly apply about 0.6 in. Hg (15 mm Hg) of vacuum to the hose.

    Does the hose hold vacuum?

    YES: Check for blockage at the EVAP canister port, then go to step 21.

    NO: Replace the EVAP canister vent shut valve, then go to step 21.
21. Install the FTP sensor (see **FTP SENSOR REPLACEMENT**).
22. Reconnect all hoses.
23. Turn the ignition switch ON (II).

24. Reset the ECM/PCM with the HDS.
25. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
26. Do the EVAP FUNCTION TEST in the INSPECTION MENU with the HDS.

Is the result OK?

YES: Troubleshooting is complete.

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

DTC P0498: EVAP CANISTER VENT SHUT VALVE CIRCUIT LOW VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, then wait 5 seconds.
3. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P0498 indicated?

YES: Go to step 6 .

NO: Go to step 4.

4. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
5. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Is DTC P0498 indicated?

YES: Go to step 6.

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

6. Turn the ignition switch OFF.
7. Disconnect the EVAP canister vent shut valve 2P connector.
8. Measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

Is there about 25-30 ohm at room temperature?

YES: Go to step 9.

NO: Go to step 12 .

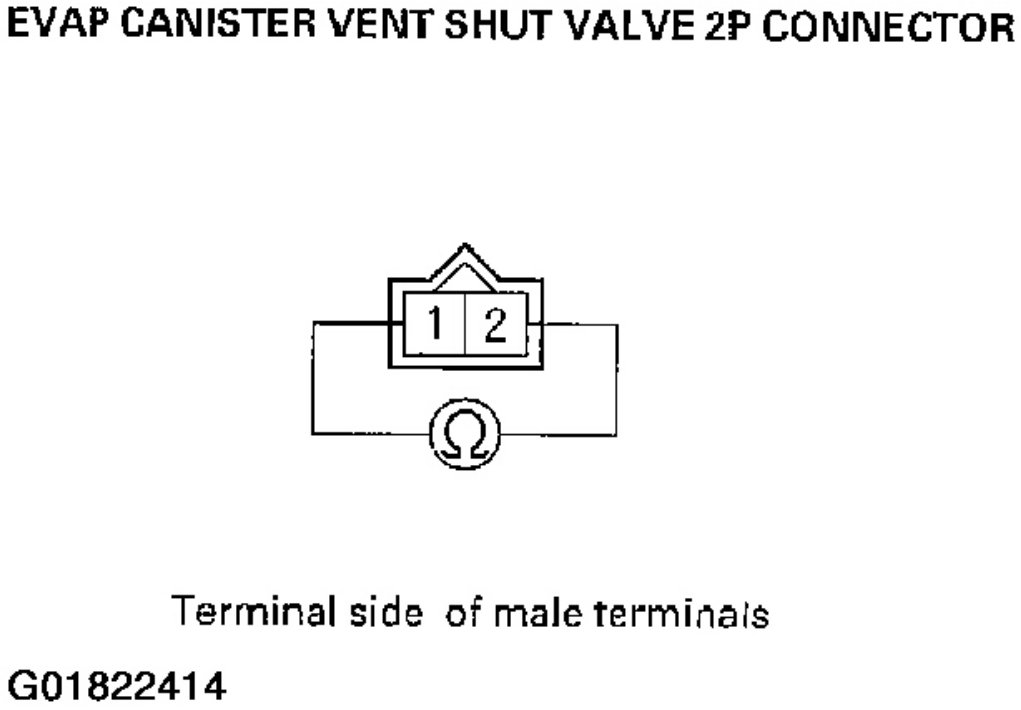

Fig. 27: Measuring Resistance Between EVAP Canister Vent Shut Valve 2P Connector Terminals No. 1 & No. 2

9. Jump the SCS line with the HDS.
10. Disconnect ECM/PCM connector E (31P).
11. Check for continuity between ECM/PCM connector terminal E19 and body ground.

Is there continuity?

YES: Repair short in the wire between the EVAP canister vent shut valve and the ECM/PCM (E19), then go to step 13 .

NO: Go to step 20 .

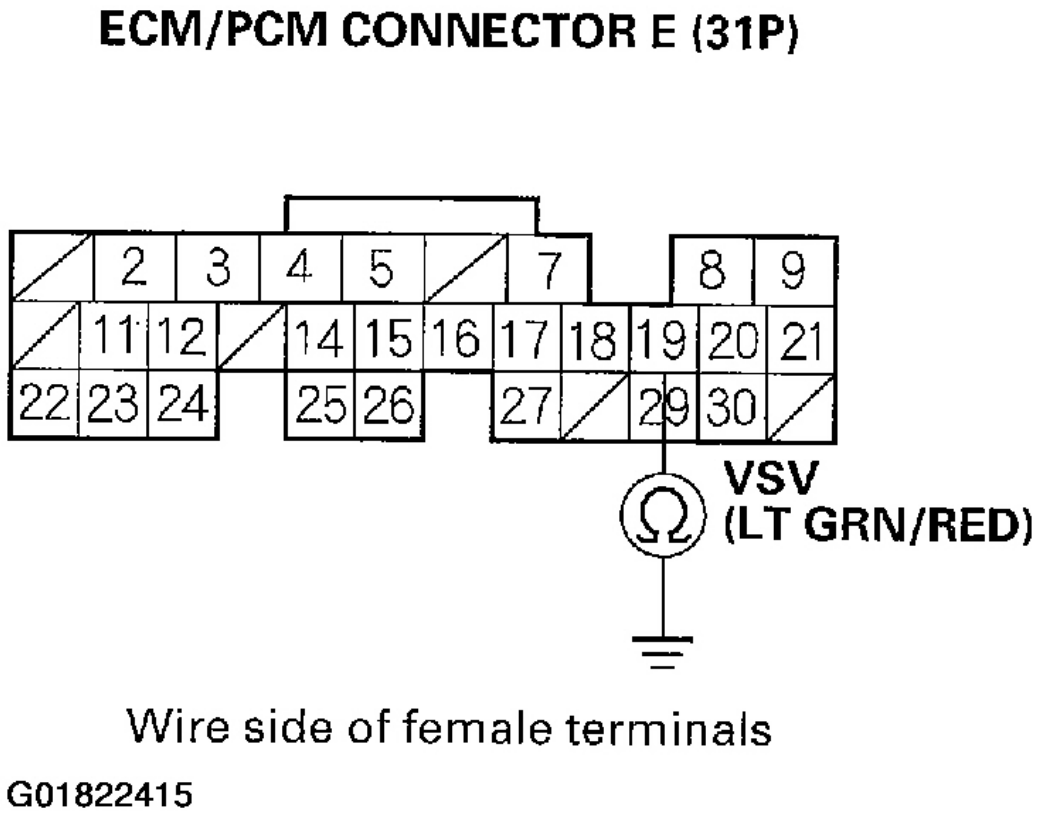

Fig. 28: Checking For Continuity Between ECM/PCM Connector Terminal E19 & Body Ground

12. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
13. Reconnect ECM/PCM connector E (31P).
14. Reconnect the EVAP canister vent shut valve 2P connector.
15. Turn the ignition switch ON (II).
16. Reset the ECM/PCM with the HDS.
17. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
18. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
19. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0498 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

20. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
21. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0498 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P0499: EVAP CANISTER VENT SHUT VALVE CIRCUIT HIGH VOLTAGE

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS, then wait 5 seconds.
3. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
4. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Is DTC P0499 indicated?

    YES: Go to step 5.

    NO: Intermittent failure, system is OK at this time. Check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM.
5. Turn the ignition switch OFF.
6. Disconnect the EVAP canister vent shut valve 2P connector.
7. Turn the ignition switch ON (II).
8. Measure voltage between EVAP canister vent shut valve 2P connector terminal No. 2 and body ground.

    Is there battery voltage?

    YES: Go to step 9.

    NO: Repair open in the wire between the EVAP canister vent shut valve and the No. 18 ACG (15A) fuse in the under-dash fuse/relay box, then go to step 17 .

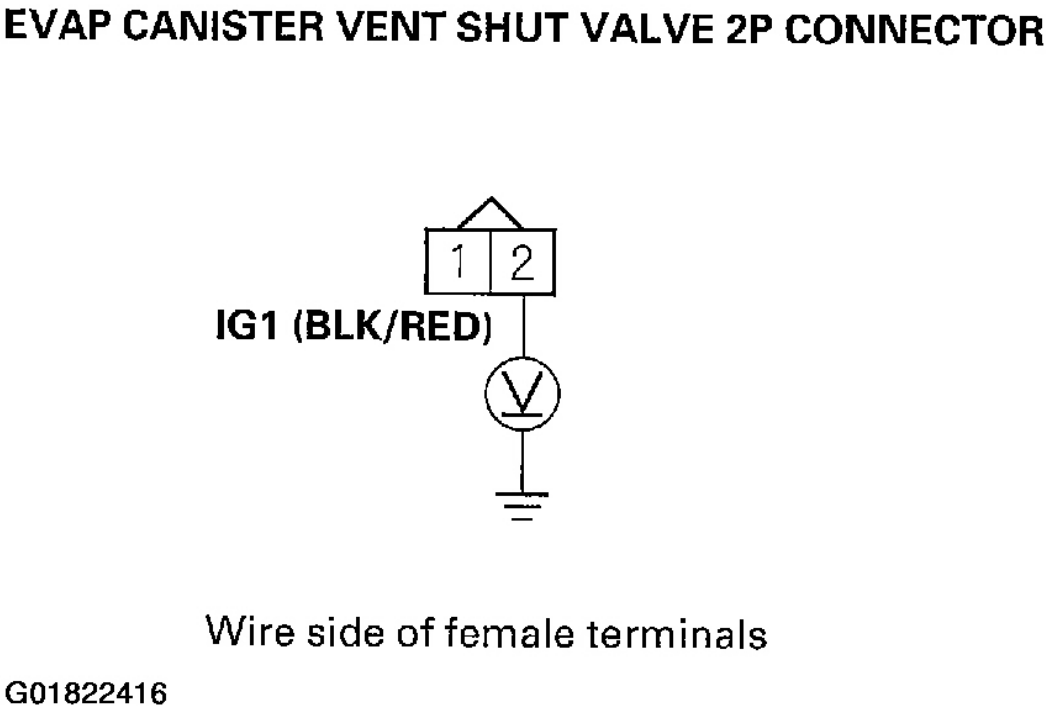

Fig. 29: Measuring Voltage Between EVAP Canister Vent Shut Valve 2P Connector Terminal No. 2 & Body Ground

9. Turn the ignition switch OFF.
10. Measure resistance between EVAP canister vent shut valve 2P connector terminals No. 1 and No. 2.

Is there about 25-30 ohm at room temperature?

YES: Go to step 11.

NO: Go to step 15 .

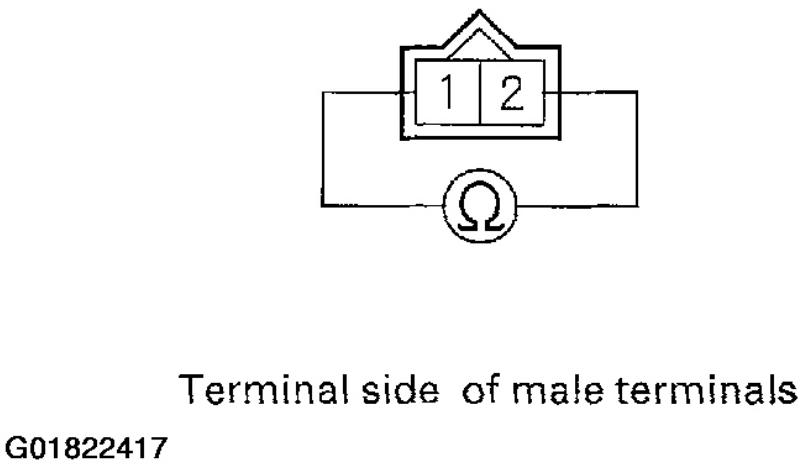

Fig. 30: Measuring Resistance Between EVAP Canister Vent Shut Valve 2P Connector Terminals No. 1 & No. 2

11. Jump the SCS line with the HDS.
12. Disconnect ECM/PCM connector E (31P).
13. Connect EVAP canister vent shut valve 2P connector terminal No. 1 to body ground with a jumper wire.

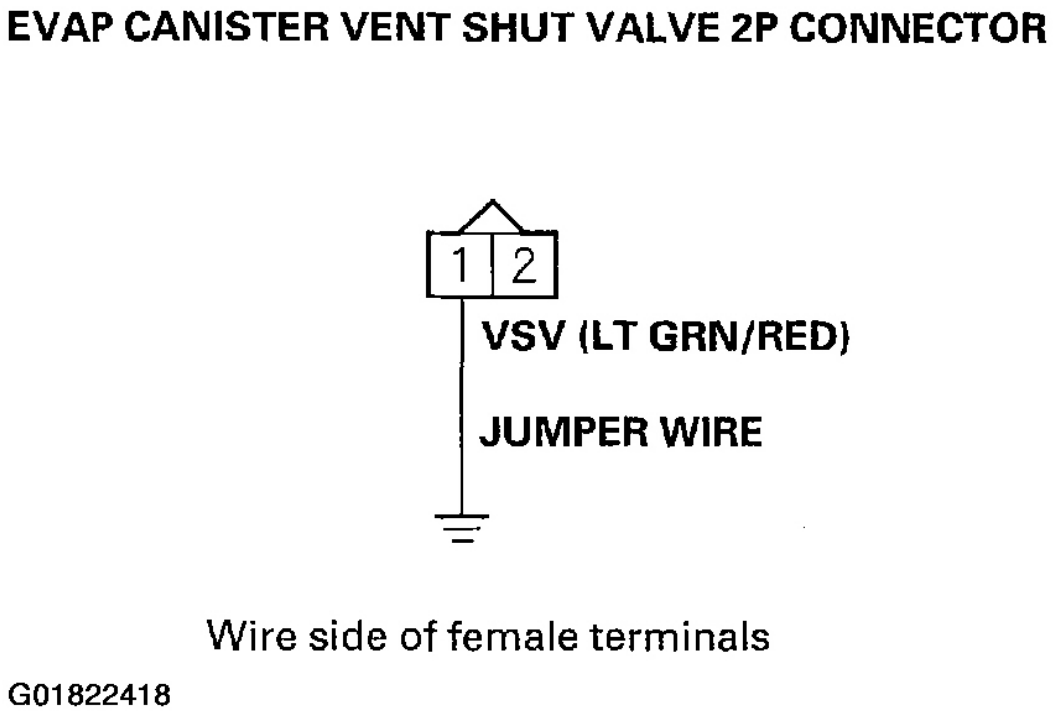

Fig. 31: Connecting EVAP Canister Vent Shut Valve 2P Connector Terminal No. 1 To Body Ground With A Jumper Wire

14. Check for continuity between ECM/PCM connector terminal E19 and body ground.

    Is there continuity?

    YES: Go to step 23 .

    NO: Repair open in the wire between the EVAP canister vent shut valve and the ECM/PCM (E19), then go to step 16 .

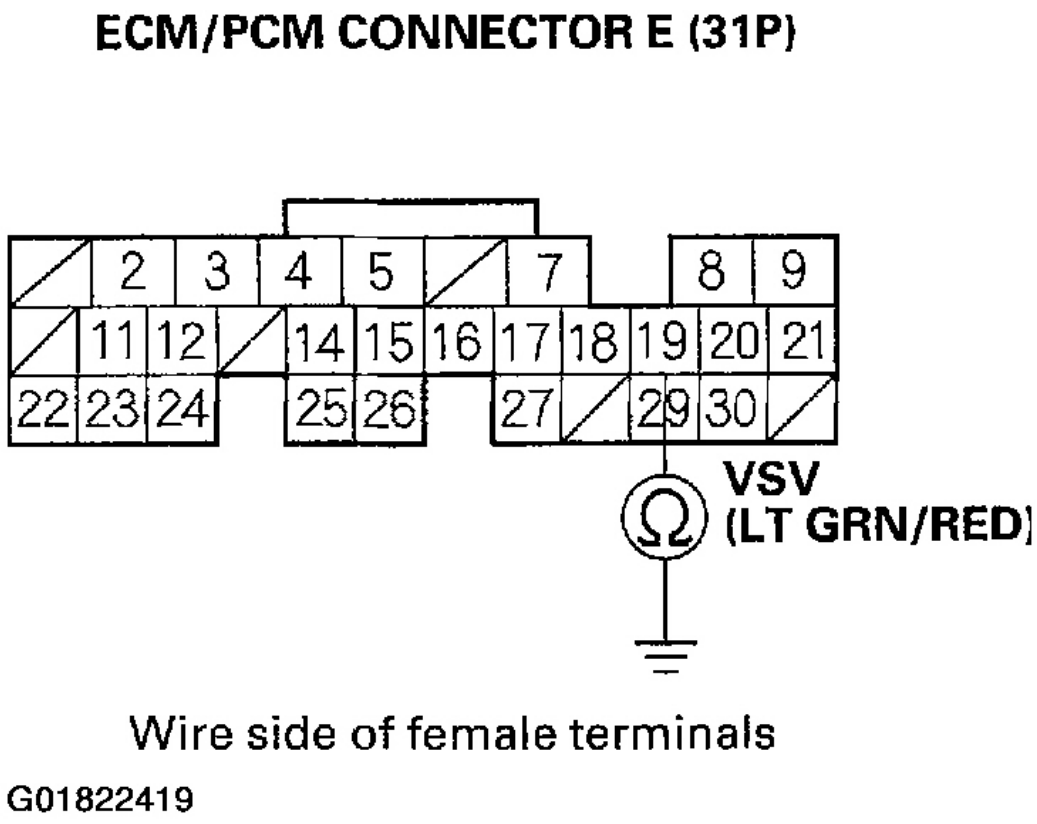

Fig. 32: Checking For Continuity Between ECM/PCM Connector Terminal E19 & Body Ground

15. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
16. Reconnect ECM/PCM connector E (31P).
17. Reconnect the EVAP canister vent shut valve 2P connector.
18. Turn the ignition switch ON (II).
19. Reset the ECM/PCM with the HDS.
20. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
21. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
22. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P0499 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Troubleshooting is complete.

23. Update the ECM/PCM if it does not have the latest software, or substitute a known-good ECM/PCM (see **HOW TO SUBSTITUTE THE ECM/PCM**).
24. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.
25. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P0499 is indicated, check for poor connections or loose terminals at the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: If the ECM/PCM was updated, troubleshooting is complete. If the ECM/PCM was substituted, replace the original ECM/PCM (see **HOW TO REMOVE THE ECM/PCM FOR TESTING**).

DTC P1454: FTP SENSOR RANGE/PERFORMANCE PROBLEM

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Turn the ignition switch OFF.
4. Remove the fuel fill cap, and wait 1 minute.
5. Turn the ignition switch ON (II).
6. Check the FTP SENSOR in the DATA LIST with the HDS.

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

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

    NO: Go to step 7.
7. Remove the FTP sensor (A) from the EVAP canister with its connector connected (see **FTP SENSOR REPLACEMENT**).

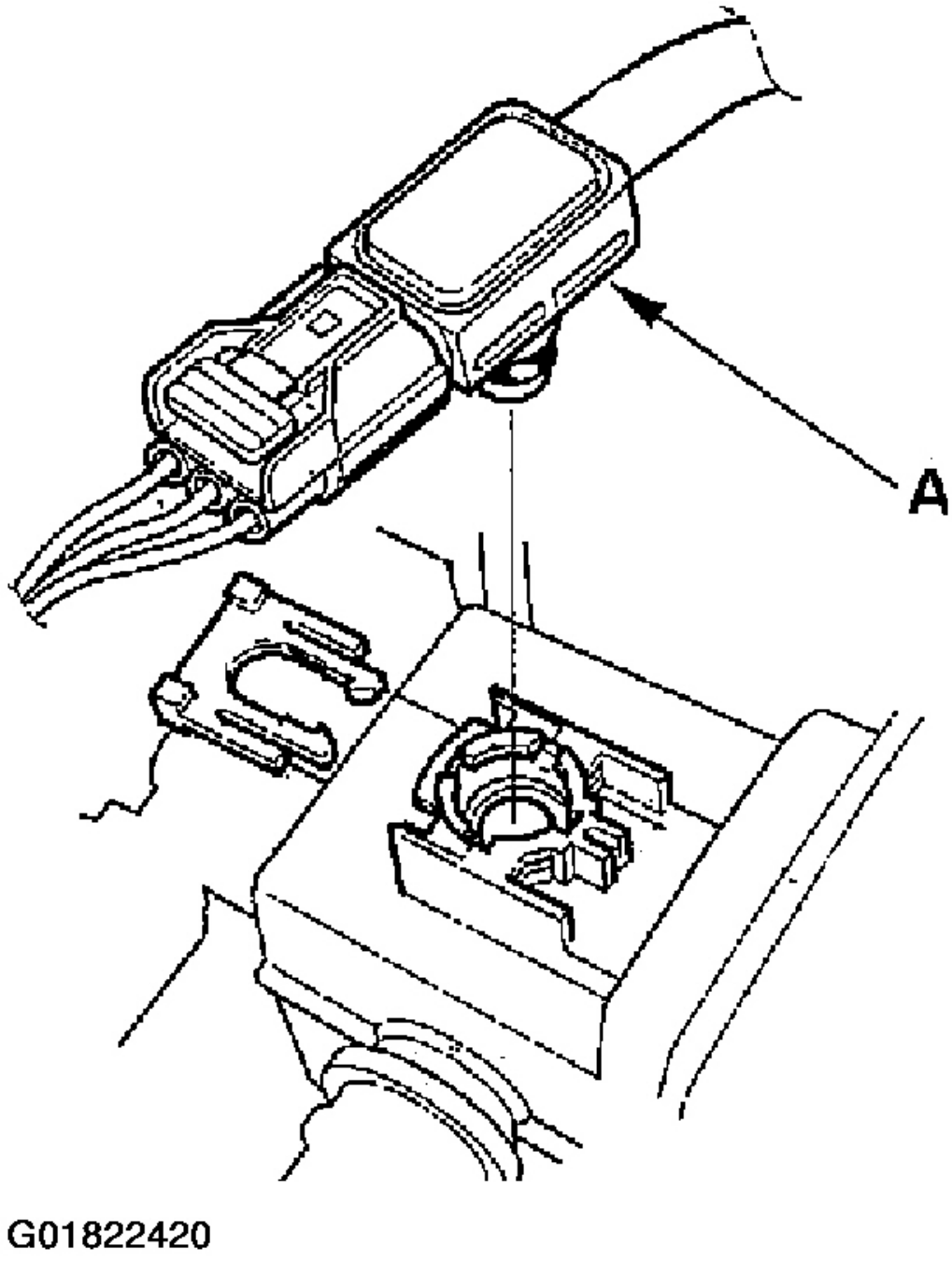

Fig. 33: Removing The FTP Sensor From The EVAP Canister

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

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

YES: Check for debris or clogging at the EVAP canister and the FTP sensor, then go to step 9.

NO: Check for debris or clogging at the FTP sensor air tube. If the tube is OK, replace the FTP sensor (see **FTP SENSOR REPLACEMENT**), then go to step 9.

9. Install the FTP sensor on the EVAP canister.
10. Turn the ignition switch ON (II).
11. Reset the ECM/PCM with the HDS.
12. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
13. Check for Temporary DTCs or DTC in the DTCs MENU with the HDS.

Are any Temporary DTCs or DTCs indicated?

YES: If DTC P1454 is indicated, check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

NO: Go to step 14.

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

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

YES: Troubleshooting is complete.

NO: Check for poor connections or loose terminals at the FTP sensor and the ECM/PCM, then go to step 1 .

DTC P2422: EVAP CANISTER VENT SHUT VALVE STUCK CLOSED MALFUNCTION

1. Turn the ignition switch ON (II).
2. Clear the DTC with the HDS.
3. Open the fuel fill cap for 5 seconds, then tighten it.
4. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
5. Monitor the OBD STATUS for DTC P2422 in the DTCs MENU with the HDS.

Does the screen indicate FAILED?

YES: Go to step 6.

NO: If the screen indicates PASSED, intermittent failure, system is OK at this time. Check for a poor connection or loose terminals at the EVAP canister vent shut valve and ECM/PCM. If the screen indicates NOT COMPLETED, go to step 2 and recheck.

6. Do the DTC CLEAR in the CLEAR MENU with the HDS.
7. Remove the EVAP canister vent shut valve from the EVAP canister (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
8. Connect the 2P connector to the EVAP canister vent shut valve.
9. Turn the ignition switch ON (II).
10. Do the EVAP CVS ON in the INSPECTION MENU with the HDS.

11. Check EVAP canister vent shut valve (A) operation.

    Does the valve operate?

    YES: Check for a blockage in the EVAP canister, then install the EVAP canister vent shut valve, and go to step 14 .

    NO: Go to step 12.

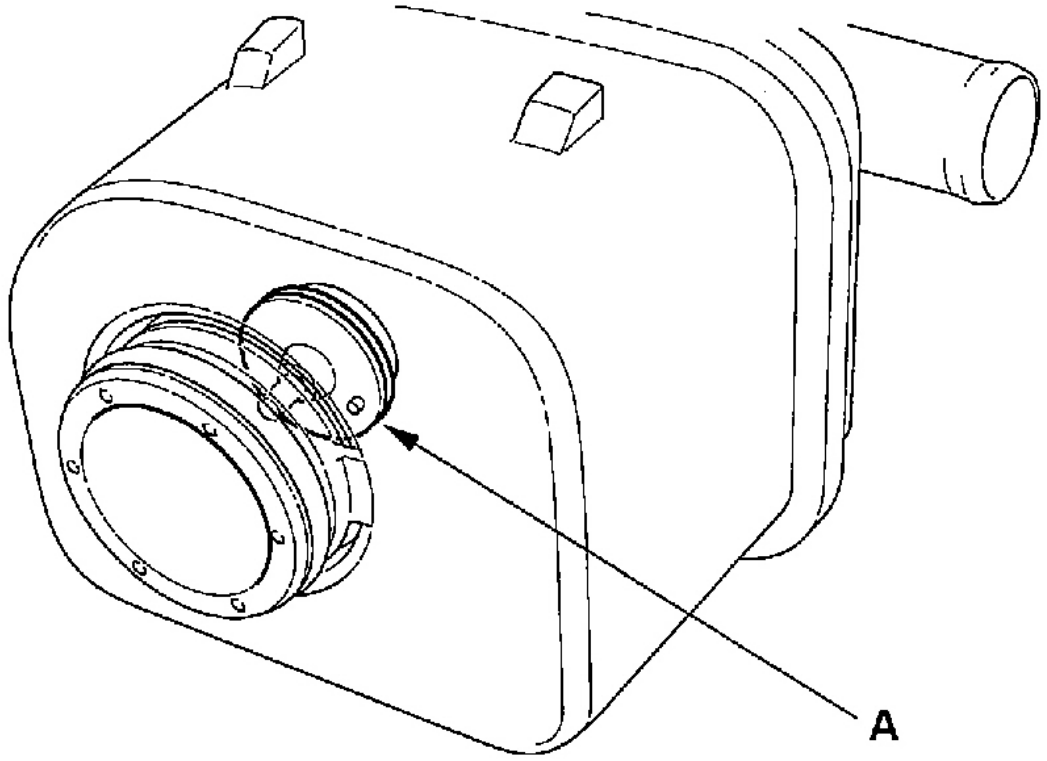

Fig. 34: Checking EVAP Canister Vent Shut Valve Operation

12. Turn the ignition switch OFF.
13. Replace the EVAP canister vent shut valve (see **EVAP CANISTER VENT SHUT VALVE REPLACEMENT**).
14. Turn the ignition switch ON (II).
15. Reset the ECM/PCM with the HDS.
16. Do the ECM/PCM idle learn procedure (see **ECM/PCM IDLE LEARN PROCEDURE**).
17. Turn the ignition switch OFF.
18. Open the fuel fill cap for 5 seconds, then tighten it.

19. Start the engine. Hold the engine speed at 3,000 RPM with no load (in Park or neutral) until the radiator fan comes on, then let it idle.
20. Check for Temporary DTCs or DTCs in the DTCs MENU with the HDS.

    Are any Temporary DTCs or DTCs indicated?

    YES: If DTC P2422 is indicated, check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If any other Temporary DTCs or DTCs are indicated, go to the indicated DTC troubleshooting.

    NO: Go to step 21.
21. Monitor the OBD STATUS for DTC P2422 in the DTCs MENU with the HDS.

    Does the screen indicate PASSED?

    YES: Troubleshooting is complete.

    NO: If the screen indicates FAILED, check for poor connections or loose terminals at the FTP sensor or the EVAP canister vent shut valve and the ECM/PCM, then go to step 1 . If the screen indicates NOT COMPLETED, go to step 16 and recheck.

EVAP CANISTER REPLACEMENT

1. Remove the EVAP canister cover (A).

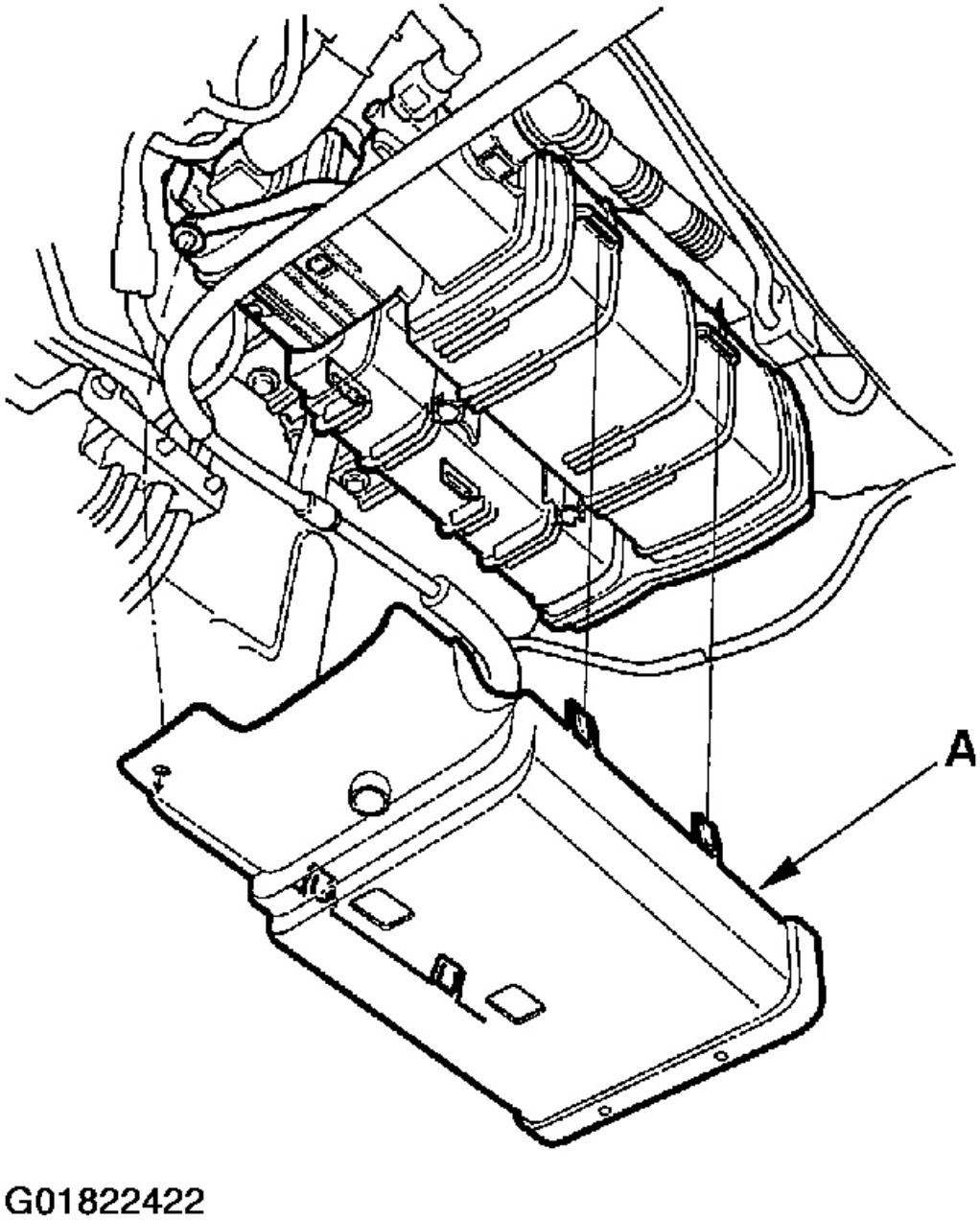

Fig. 35: Removing The EVAP Canister Cover

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

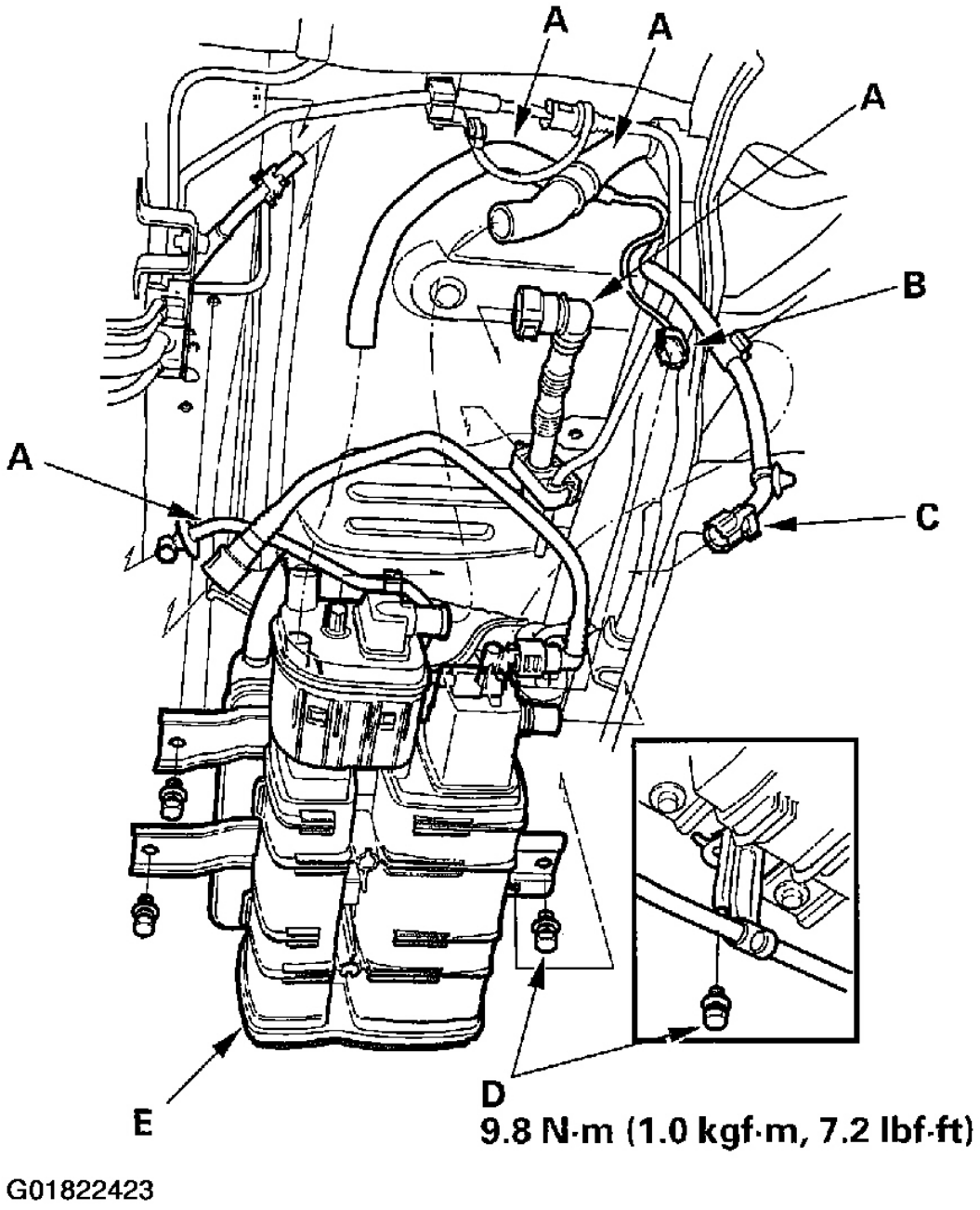

Fig. 36: Removing The Hoses, The FTP Sensor 3P Connector & The EVAP Canister Vent Shut Valve 2P Connector

3. Remove the bolts (D).
4. Remove the EVAP canister assembly (E).
5. Remove the EVAP canister bracket (A).

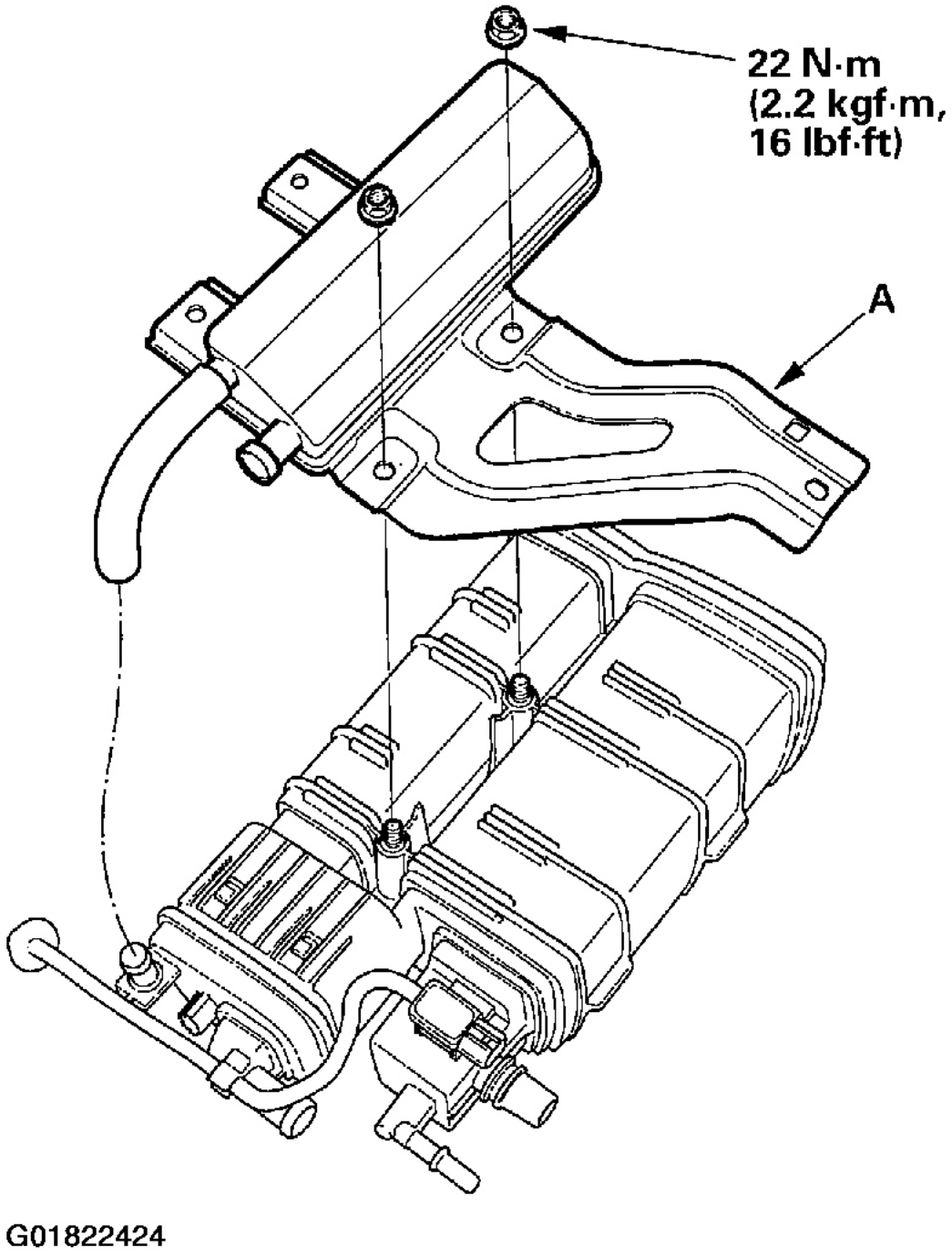

Fig. 37: Removing The EVAP Canister Assembly

6. Install the canister in the reverse order of removal.

FTP SENSOR REPLACEMENT

1. Remove the EVAP canister (see **EVAP CANISTER REPLACEMENT**).
2. Remove the retaining clip (A).

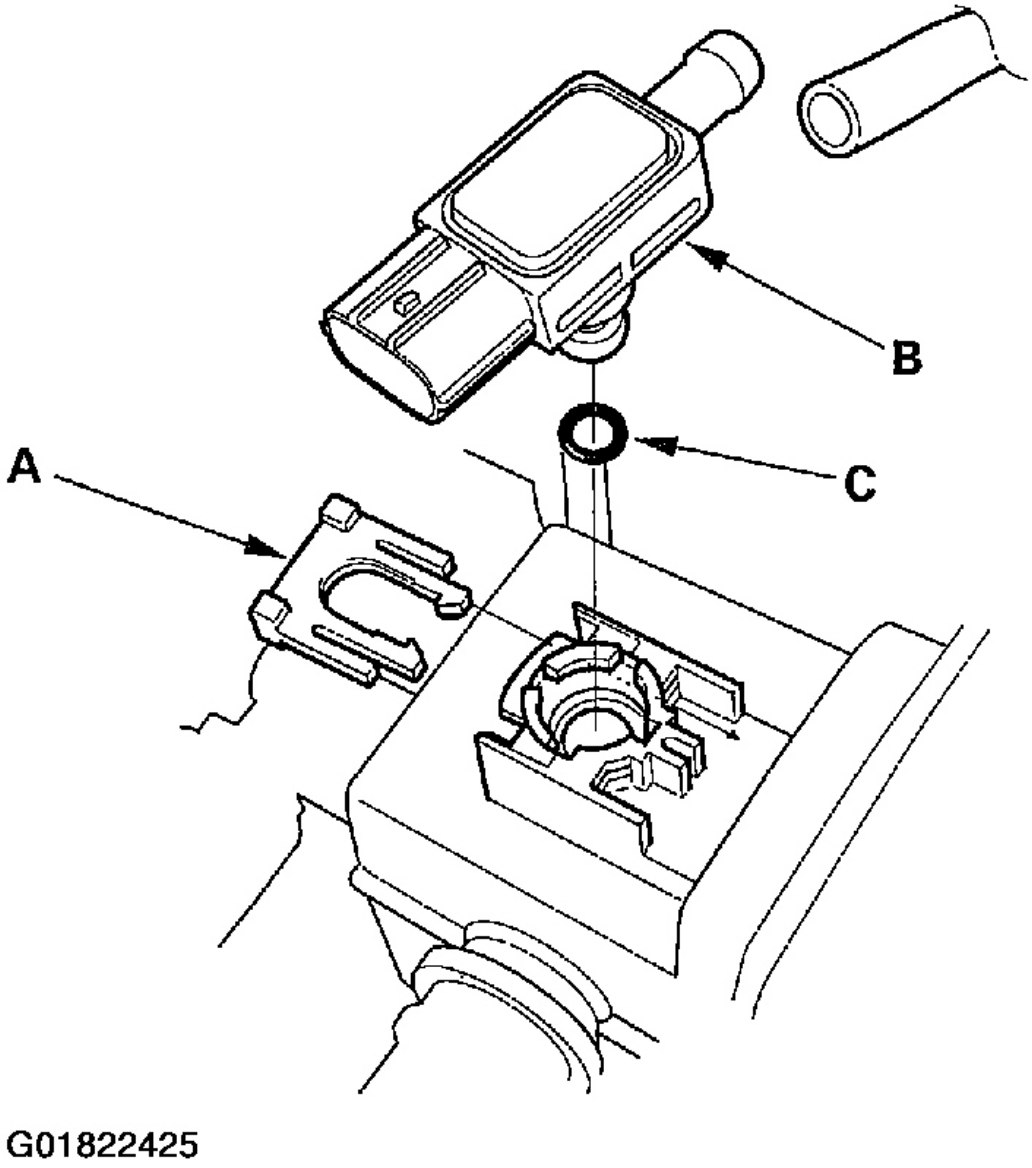

Fig. 38: Removing The FTP Sensor

3. Remove the FTP sensor (B).

4. Install the sensor in the reverse order of removal with a new O-ring (C).

EVAP CANISTER PURGE VALVE REPLACEMENT

1. Disconnect the EVAP canister purge valve 2P connector (A).

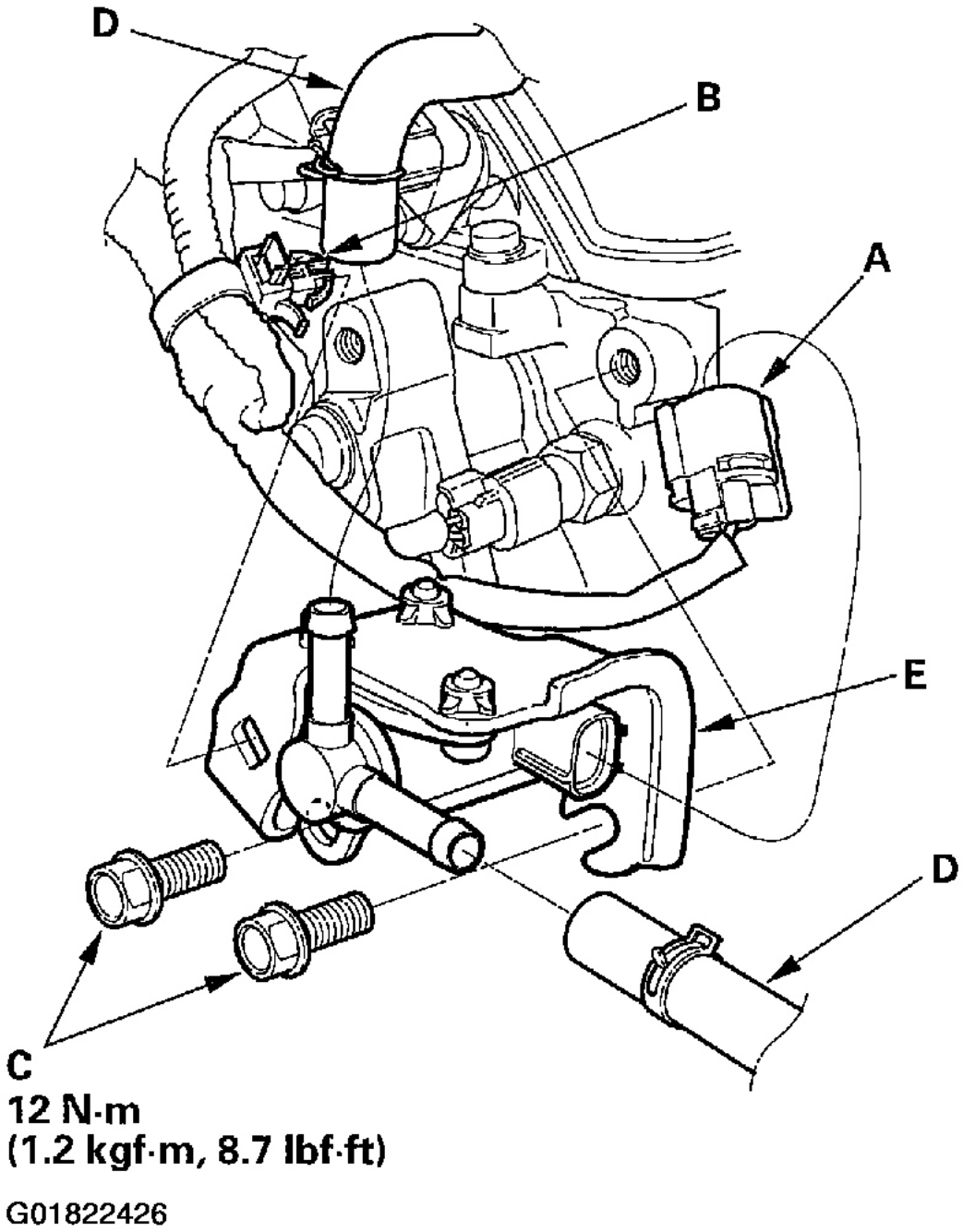

Fig. 39: Disconnecting The EVAP Canister Purge Valve 2P Connector

2. Remove the harness clip (B), the bolts (C) and the hoses (D), then remove the EVAP canister purge valve assembly (E).
3. Remove the screws (A).

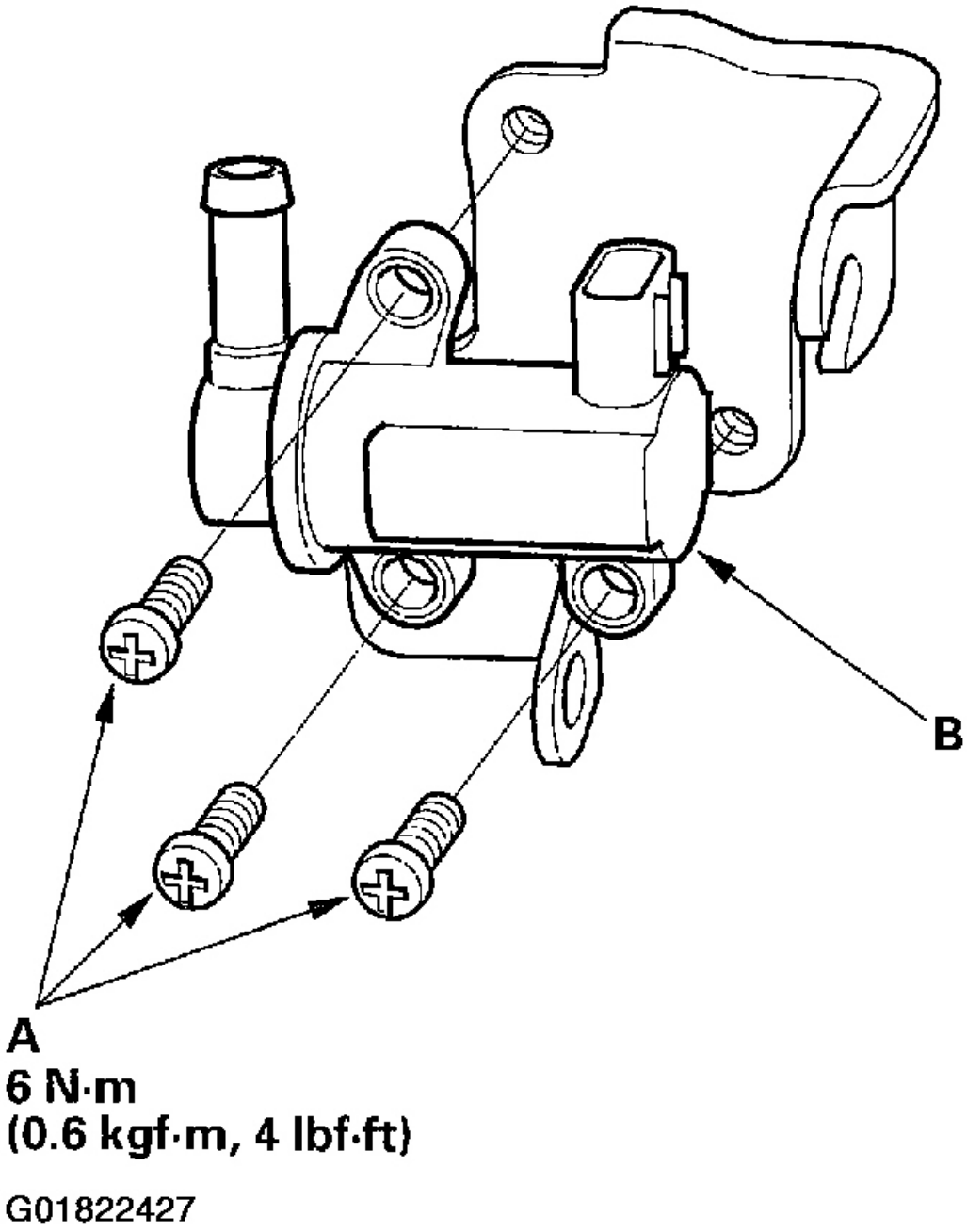

Fig. 40: Removing The EVAP Canister Purge Valve

4. Remove the EVAP canister purge valve (B) from the bracket.
5. Install the valve in the reverse order of removal.

EVAP CANISTER VENT SHUT VALVE REPLACEMENT

1. Remove the EVAP canister (see **EVAP CANISTER REPLACEMENT**).
2. Pry the lock tabs (A) outward and remove the EVAP canister vent shut valve (B).

NOTE: Be careful not to damage the lock tabs.

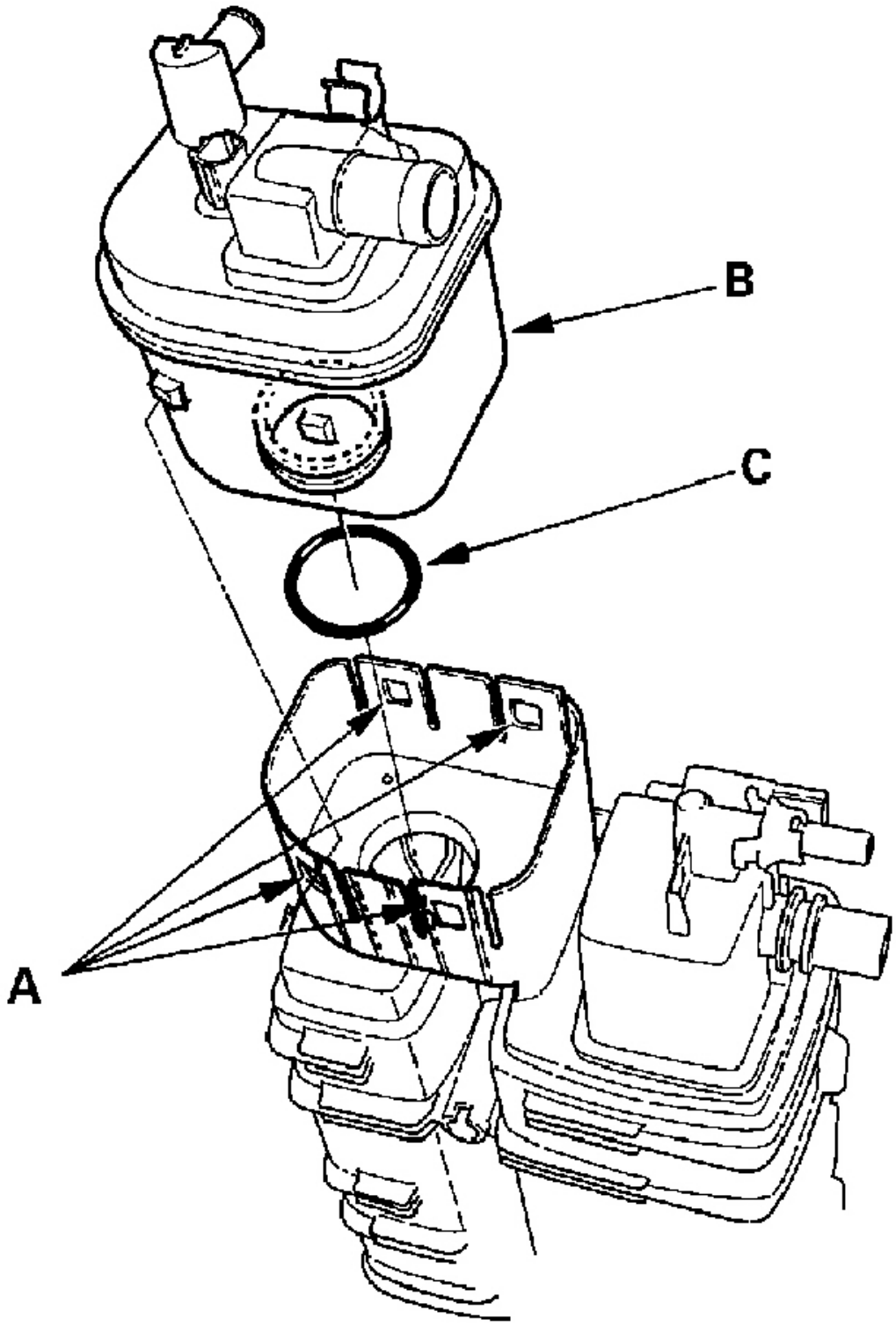

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Fig. 41: Prying The Lock Tabs Outward & Removing The EVAP Canister Vent Shut Valve

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

NOTE: Do not coat the O-ring with oil, etc.