

DTC P1456: EVAP SYSTEM LEAK DETECTED (FUEL TANK SYSTEM)

CAUTION: Fuel tank is designed for specific vacuum and pressure conditions. DO NOT deviate from the vacuum and pressure tests indicated in these procedures to prevent damage to EVAP components and/or fuel tank.

NOTE: DTC P1456 is a two-trip code. Once cleared from PCM memory, this code cannot be reproduced in one drive cycle. Additional test drives may be required to reproduce all driving and ambient conditions required to set this code.

NOTE: Fresh fuel has higher volatility that creates greater pressure/vacuum. Optimum condition for testing EVAP control system is fresh fuel and less than a full tank of gas. If possible, to assist in leak detection, add one gallon of fresh fuel to tank just before starting test procedures, as long as it will not fill the tank.

Fuel Tank Filler Cap Check

Ensure fuel tank filler cap is either Gray or Black OEM cap and is tightened at least 3 clicks. Check filler cap seal. If seal is missing or damaged, replace filler cap. If filler cap is okay, go to **EVAP CANISTER PURGE CONTROL SOLENOID VALVE TEST**.

EVAP Canister Purge Control Solenoid Valve Test

1. Disconnect vacuum hose from EVAP canister purge control solenoid valve. Connect vacuum pump/gauge to hose. Using a jumper wire, connect PCM connector "A" (32-pin connector) terminal No. 6 (Red/Yellow wire) to body ground. Turn ignition on. Apply vacuum to EVAP canister purge control solenoid valve. If solenoid valve holds vacuum, go to next step. If solenoid valve does not hold vacuum, solenoid valve is okay at this time. Perform EVAP by-pass solenoid valve test. See **EVAP BY-PASS SOLENOID VALVE TEST**.
2. Turn ignition off. Disconnect EVAP canister purge control solenoid valve electrical connector. Check for continuity between ground and EVAP canister purge control solenoid valve harness connector terminal No. 2 (Red/Yellow wire). If continuity exists, go to next step. If continuity does not exist, repair open in Red/Yellow wire between EVAP canister purge control solenoid valve and PCM connectors. See **WIRING DIAGRAMS** article.
3. Turn ignition on. Measure voltage between ground and EVAP canister purge control solenoid valve harness connector terminal No. 1 (Black/Yellow wire). If battery voltage exists, replace solenoid valve. If battery voltage does not exist, repair open in Black/Yellow wire between EVAP canister purge control solenoid valve and ECU (ECM/PCM) CRUISE CONTROL (15-amp) fuse. See **WIRING DIAGRAMS** article.

EVAP By-Pass Solenoid Valve Test

1. Disconnect vacuum hose from EVAP 2-way valve, and connect vacuum pump/gauge to hose. Install a jumper wire between ground and PCM connector "A" (32-pin connector) terminal No. 3 (Blue wire). See **Fig. 2**. Turn ignition on. Apply vacuum to EVAP 2-way valve. See **Fig. 12**. If 2-way valve holds vacuum, go to next step. If 2-way valve does not hold vacuum, EVAP by-pass solenoid valve and EVAP

2-way valve are okay at this time, proceed to step 4 .

2. Turn ignition off. Disconnect EVAP by-pass solenoid valve connector. Check for continuity between ground and EVAP by-pass solenoid valve harness connector terminal No. 2 (Blue wire). If continuity exists, go to next step. If continuity does not exist, repair open in Blue wire between EVAP by-pass solenoid valve and PCM connectors.
3. Turn ignition on. Measure voltage between ground and EVAP by-pass solenoid valve harness connector terminal No. 1 (Black/Yellow wire). If battery voltage exists, replace EVAP by-pass solenoid valve and "O" rings. If battery voltage does not exist, repair open in Black/Yellow wire between EVAP by-pass solenoid valve and ECU (ECM/PCM) CRUISE CONTROL (15-amp) fuse in driver-side underdash fuse/relay box.
4. Plug upper port of EVAP 2-way valve. Monitor fuel tank pressure (FTP) sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 and PCM connector "C" (31-pin connector) terminal No. 18. See **Fig. 2** and **Fig. 4** . Turn ignition on and slowly apply vacuum to EVAP 2-way valve until voltage drops to about 1.5 volts. See **Fig. 12** . If voltage drops to 1.5 volts and holds for at least 20 seconds, EVAP by-pass solenoid valve and EVAP 2-way valve are okay at this time, proceed to **EVAP CANISTER VENT SHUT VALVE (CVSV) TEST** . If voltage does not drop to 1.5 volts and hold for at least 20 seconds, repair leak between EVAP by-pass solenoid valve, EVAP 2-way valve, FTP sensor and "O" rings.

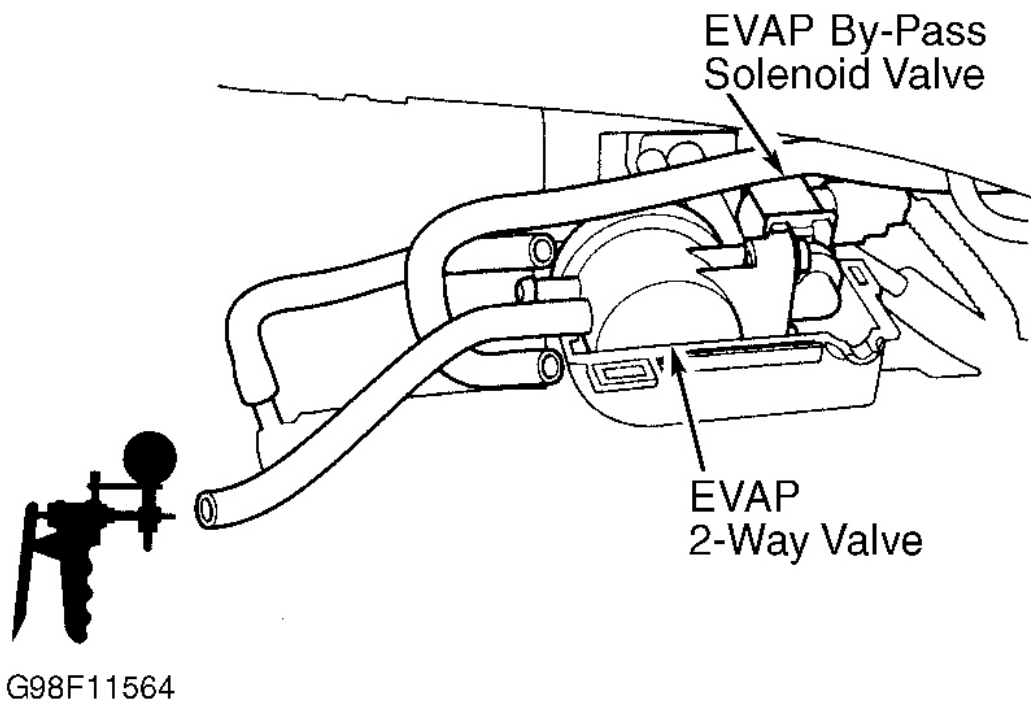


Fig. 12: Locating EVAP 2-Way Valve Vacuum Hoses
 Courtesy of AMERICAN HONDA MOTOR CO., INC.

EVAP Canister Vent Shut Valve (CVSV) Test

1. Disconnect vacuum hose from EVAP canister filter, and connect vacuum pump/gauge. Using a jumper wire, connect PCM connector "A" (32-pin connector) terminal No. 4 (Light Green/White wire) to body ground. See **Fig. 2** . Turn ignition on, and apply vacuum to hose. If EVAP CVSV does not hold vacuum, go to next step. If EVAP CVSV holds vacuum, EVAP CVSV is okay at this time. Perform EVAP canister system leak test. See **EVAP CANISTER SYSTEM LEAK TEST** .
2. Turn ignition off. Disconnect EVAP CVSV electrical connector. Check for continuity between ground and EVAP CVSV harness connector terminal No. 2 (Light Green/White wire). If continuity exists, go to next step. If continuity does not exist, repair open in Light Green/White wire between EVAP CVSV and PCM connectors. See WIRING DIAGRAMS article.
3. Turn ignition on. Measure voltage between ground and EVAP CVSV harness connector terminal No. 1 (Black/Yellow wire). If battery voltage exists, replace EVAP CVSV and "O" ring. If battery voltage does not exist, repair open in Black/Yellow wire between EVAP CVSV and ECU (ECM/PCM) CRUISE CONTROL (15-amp) fuse. See WIRING DIAGRAMS article.

EVAP Canister System Leak Test

1. Turn ignition off. Connect 2 "T" fittings and vacuum pump to hoses between EVAP canister and EVAP 2-way valve as illustrated. See **Fig. 13** . Connect fuel tank pressure (FTP) sensor to one "T" fitting and vacuum pump to second "T" fitting. See **Fig. 13** . Remove vent hose from EVAP canister vent shut valve and cap open port. See **Fig. 14** . Turn ignition on and go to next step.
2. Monitor FTP sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 and PCM connector "C" (31-pin connector) terminal No. 18. See **Fig. 2** and **Fig. 4** . Using vacuum pump, slowly apply vacuum every 1-2 seconds until voltage reading drops to about 1.5 volts. Ensure engine coolant temperature is above 95°F (35°C). Monitor voltage for 20 seconds. If voltage does not drop to 1.5 volts and hold for 20 seconds, go to next step. If voltage drops to 1.5 volts and holds for at least 20 seconds, check EVAP canister vent shut valve line and connections.
3. Turn ignition off. Disconnect quick-connect fitting from EVAP canister, and cap open port. See **Fig. 15** . Turn ignition on. Monitor FTP sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 and PCM connector "C" (31-pin connector) terminal No. 18. See **Fig. 2** and **Fig. 4** . Using vacuum pump, slowly apply vacuum every 1-2 seconds until voltage reading drops to about 1.5 volts. Ensure engine coolant temperature is above 95°F (35°C). Monitor voltage for 20 seconds. If voltage does not drop to 1.5 volts and hold for 20 seconds, go to next step. If voltage drops to 1.5 volts and holds for at least 20 seconds, check On-Board Refueling Vapor Recovery (ORVR) vent line and connections.
4. Turn ignition off. Disconnect purge line hose from canister at metal line and plug hose. See **Fig. 16** . Turn ignition on. Monitor FTP sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 (Light Green wire) and PCM connector "C" (31-pin connector) terminal No. 18 (Green/Black wire). See **Fig. 2** and **Fig. 4** . Using vacuum pump, slowly apply vacuum every 1-2 seconds until voltage reading drops to about 1.5 volts. Ensure engine coolant temperature is above 95°F (35°C). Monitor voltage for 20 seconds. If voltage does not drop to 1.5 volts and hold for 20 seconds, replace EVAP canister. If voltage drops to 1.5 volts and holds for at least 20 seconds, check EVAP canister purge control solenoid valve line and connections. If line and connections are okay, perform EVAP 2-way valve test and ORVR Fuel Tank Vapor Control Valve (FTVCV) test. See ON-BOARD REFUELING VAPOR RECOVERY (ORVR) FUEL TANK VAPOR CONTROL VALVE (FTVCV) under EMISSION SYSTEMS & SUB-SYSTEMS in SYSTEM & COMPONENT TESTING

article.

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EVAP Canister Purge Control Solenoid Valve Test

1. Disconnect vacuum hose from EVAP canister purge control solenoid valve. Connect vacuum pump/gauge to hose. Using a jumper wire, connect PCM connector "A" (32-pin connector) terminal No. 6 (Red/Yellow wire) to body ground. See **Fig. 2** . Turn ignition on. Apply vacuum to EVAP canister purge control solenoid valve. If solenoid valve holds vacuum, go to next step. If solenoid valve does not hold vacuum, solenoid valve is okay at this time. Perform EVAP by-pass solenoid valve test. See **EVAP BY-PASS SOLENOID VALVE TEST** .
2. Turn ignition off. Disconnect EVAP canister purge control solenoid valve electrical connector. Check for continuity between ground and EVAP canister purge control solenoid valve harness connector terminal No. 2 (Red/Yellow wire). If continuity exists, go to next step. If continuity does not exist, repair open in Red/Yellow wire between EVAP canister purge control solenoid valve and PCM connectors. See **WIRING DIAGRAMS** article.
3. Turn ignition on. Measure voltage between ground and EVAP canister purge control solenoid valve harness connector terminal No. 1 (Black/Yellow wire). If battery voltage exists, replace solenoid valve. If battery voltage does not exist, repair open in Black/Yellow wire between EVAP canister purge control solenoid valve and ECU (ECM/PCM) CRUISE CONTROL (15-amp) fuse. See **WIRING DIAGRAMS** article.

EVAP By-Pass Solenoid Valve Test

1. Disconnect vacuum hose from EVAP 2-way valve, and connect vacuum pump/gauge to hose. Turn ignition on. Apply vacuum to EVAP 2-way valve. See **Fig. 12** . If valve does not hold vacuum, go to next step. If valve holds vacuum, EVAP by-pass solenoid valve and EVAP 2-way valve are okay at this time. Perform EVAP Canister Vent Shut Valve (CVSV) test. See **EVAP CANISTER VENT SHUT VALVE (CVSV) TEST** .
2. Turn ignition off. Disconnect EVAP by-pass solenoid valve connector. Check for continuity between ground and EVAP by-pass solenoid valve harness connector terminal No. 2 (Blue wire). If continuity exists, go to next step. If continuity does not exist, replace EVAP by-pass solenoid valve and "O" rings.

3. Disconnect PCM connector "A" (32-pin connector). See **Fig. 2** . Check for continuity between ground and EVAP by-pass solenoid valve harness connector terminal No. 2 (Blue wire). If continuity exists, repair short in Blue wire between EVAP by-pass solenoid valve and PCM connectors. If continuity does not exist, substitute a known-good PCM and retest. See **SUBSTITUTING POWERTRAIN CONTROL MODULE** . If symptom or problem goes away, replace original PCM.

EVAP Canister Vent Shut Valve (CVSV) Test

1. Disconnect vacuum hose from EVAP canister filter, and connect vacuum pump/gauge. See **Fig. 12** . Using a jumper wire, connect PCM connector "A" (32-pin connector) terminal No. 4 (Light Green/White wire) to body ground. See **Fig. 2** . Turn ignition on, and apply vacuum to hose. If EVAP CVSV does not hold vacuum, go to next step. If EVAP CVSV holds vacuum, EVAP CVSV is okay at this time. Perform EVAP canister system leak test. See **EVAP CANISTER SYSTEM LEAK TEST** .
2. Turn ignition off. Disconnect EVAP CVSV electrical connector. Check for continuity between ground and EVAP CVSV harness connector terminal No. 2 (Light Green/White wire). If continuity exists, go to next step. If continuity does not exist, repair open in Light Green/White wire between EVAP CVSV and PCM connectors. See WIRING DIAGRAMS article.
3. Turn ignition on. Measure voltage between ground and EVAP CVSV harness connector terminal No. 1 (Black/Yellow wire). If battery voltage exists, replace EVAP CVSV and "O" ring. If battery voltage does not exist, repair open in Black/Yellow wire between EVAP CVSV and ECU (ECM/PCM) CRUISE CONTROL (15-amp) fuse. See WIRING DIAGRAMS article.

EVAP Canister System Leak Test

1. Turn ignition off. Connect 2 "T" fittings and vacuum pump to hoses between EVAP canister and EVAP 2-way valve as illustrated. See **Fig. 13** . Connect fuel tank pressure (FTP) sensor to one "T" fitting and vacuum pump to second "T" fitting. See **Fig. 13** . Remove vent hose from EVAP canister vent shut valve and cap open port. See **Fig. 14** . Turn ignition on and go to next step.
2. Monitor FTP sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 and PCM connector "C" (31-pin connector) terminal No. 18. See **Fig. 2** and **Fig. 4** . Using vacuum pump, slowly apply vacuum every 1-2 seconds until voltage reading drops to about 1.5 volts. Ensure engine coolant temperature is above 95°F (35°C). Monitor voltage for 20 seconds. If voltage does not drop to 1.5 volts and hold for 20 seconds, go to next step. If voltage drops to 1.5 volts and holds for at least 20 seconds, check EVAP canister vent shut valve line and connections.
3. Turn ignition off. Disconnect quick-connect fitting from EVAP canister, and cap open port. See **Fig. 15** . Turn ignition on. Monitor FTP sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 and PCM connector "C" (31-pin connector) terminal No. 18. See **Fig. 2** and **Fig. 4** . Using vacuum pump, slowly apply vacuum every 1-2 seconds until voltage reading drops to about 1.5 volts. Ensure engine coolant temperature is above 95°F (35°C). Monitor voltage for 20 seconds. If voltage does not drop to 1.5 volts and hold for 20 seconds, go to next step. If voltage drops to 1.5 volts and holds for at least 20 seconds, check On-Board Refueling Vapor Recovery (ORVR) vent line and connections.
4. Turn ignition off. Disconnect purge line hose from canister at metal line and plug hose. See **Fig. 16** . Turn ignition on. Monitor FTP sensor voltage with a scan tool or use a DVOM to measure voltage between PCM connector "A" (32-pin connector) terminal No. 29 and PCM connector "C" (31-pin connector) terminal No. 18. See **Fig. 2** and **Fig. 4** . Using vacuum pump, slowly apply vacuum every 1-2 seconds until voltage reading drops to about 1.5 volts. Ensure engine coolant temperature is above 95°F (35°C).

Monitor voltage for 20 seconds. If voltage does not drop to 1.5 volts and hold for 20 seconds, replace EVAP canister. If voltage drops to 1.5 volts and holds for at least 20 seconds, check EVAP canister purge control solenoid valve line and connections. If line and connections are okay, perform EVAP 2-way valve test and ORVR Fuel Tank Vapor Control Valve (FTVCV) test. See ON-BOARD REFUELING VAPOR RECOVERY (ORVR) FUEL TANK VAPOR CONTROL VALVE (FTVCV) under EMISSION SYSTEMS & SUB-SYSTEMS in SYSTEM & COMPONENT TESTING article.

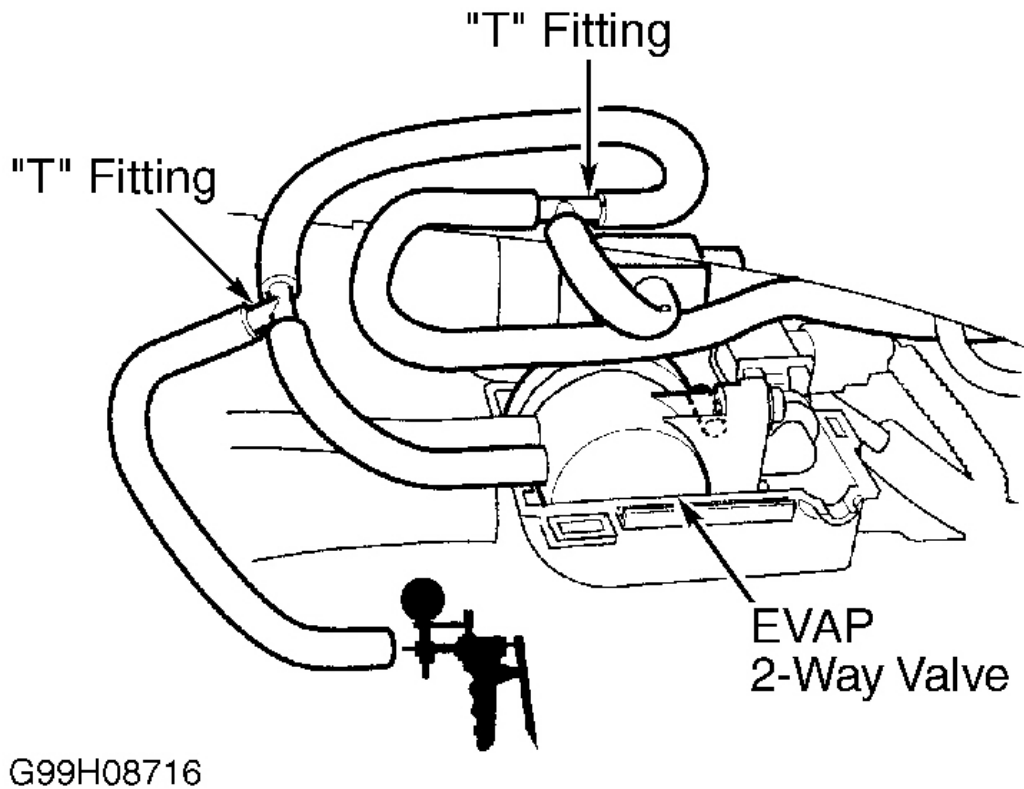


Fig. 13: Connecting 2 "T" Fittings & Vacuum Pump To Hoses
Courtesy of AMERICAN HONDA MOTOR CO., INC.

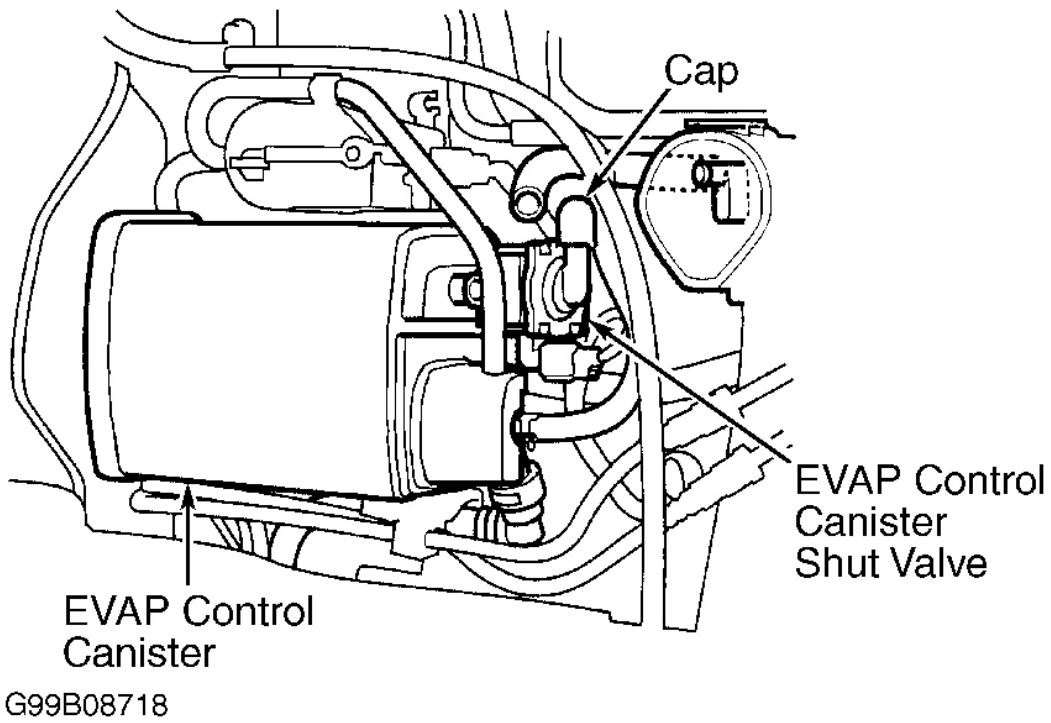
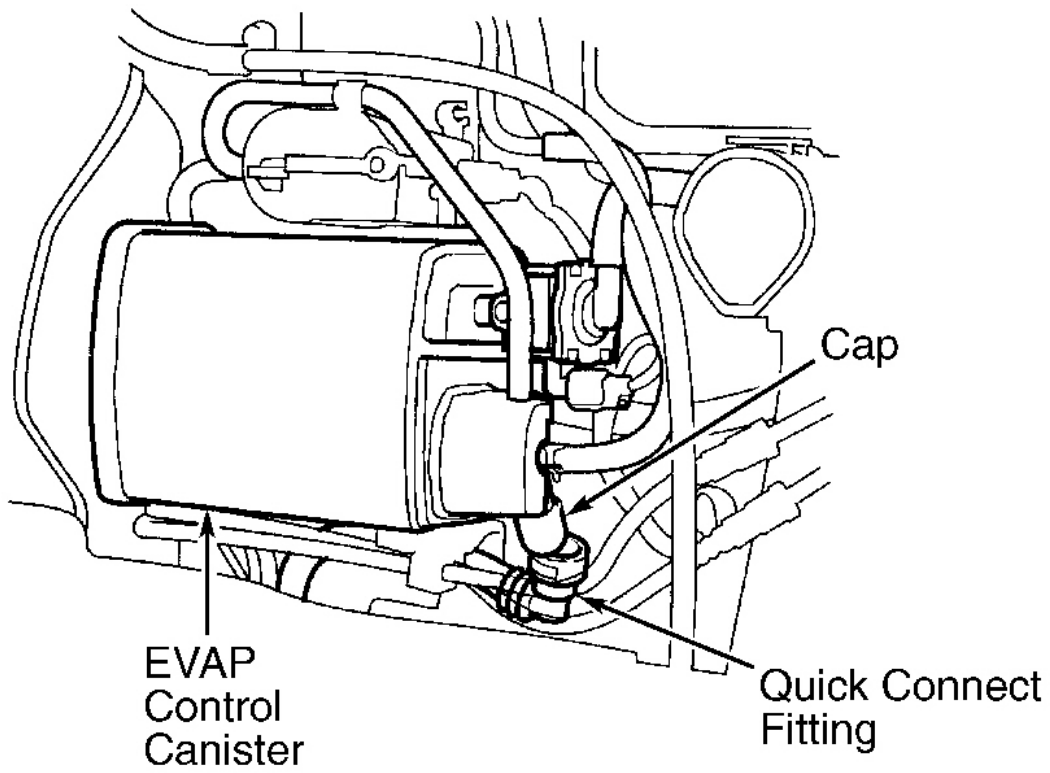
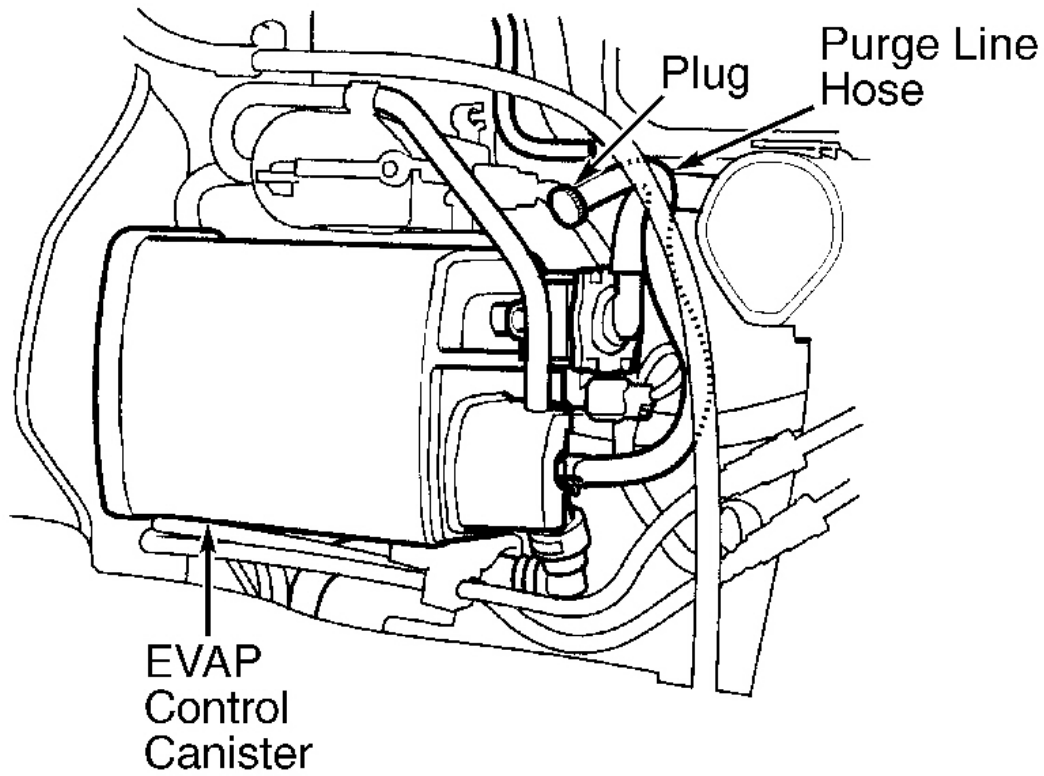


Fig. 14: Removing Vent Hose From EVAP Canister Vent Shut Valve
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 15: Disconnecting Quick-Connect Fitting From EVAP Canister
Courtesy of AMERICAN HONDA MOTOR CO., INC.



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Fig. 16: Disconnecting Purge Line Hose From EVAP Canister
Courtesy of AMERICAN HONDA MOTOR CO., INC.