

DTC P0446 Evaporative Emission (EVAP) Vent System Performance

Refer to *EVAP System Overview*.

System Description

A RESTRICTED or BLOCKED EVAP VENT PATH is detected by monitoring fuel tank pressure during normal operation (EVAP vent valve/solenoid open, EVAP canister purge valve normal). With the EVAP vent valve open, vacuum level in the system should be very low unless the vent path is blocked. A blockage can be caused by the following conditions:

- Faulty EVAP vent valve (stuck closed)
- Plugged kinked or pinched vent hose
- Shorted EVAP vent valve driver circuit
- Plugged EVAP canister

If any of the conditions described above are present, DTC P0446 will set.

Conditions for Running the DTC

- No TP sensor, ODM, IAT sensor, or MAP sensor DTCs set.
- All conditions for P0440 and P0442 have been met and passed.
- Startup engine coolant temperature is not more than 4°C and 30°C (40°F and 86°F).
- Startup engine is not more than 8°C (14°F).
- Startup Intake air temperature not more than 2°C and 30°C (40°F and 86°F).
- Startup intake air temperature not more than 2°C (4°F).
- Fuel tank level is between 15 percent and 85 percent.
- BARO is more than 75kPa.

Conditions for Setting the DTC

- Fuel tank pressure is less than -10 inch H₂O.
- The condition is present for at least 30 seconds.

Action Taken When the DTC Sets

- The PCM will illuminate the MIL during the first trip in which the diagnostic runs and fails.
- If equipped with traction control, the PCM will command the EBTCM via the serial data circuit to turn OFF traction control and illuminate the TRACTION OFF lamp.
- The PCM will store conditions which were present when the DTC set as Freeze Frame/Failure Records data.

Important: Although this diagnostic is considered type A, it acts like a type B diagnostic. Whenever the EVAP diagnostics report that a system has passed, or if the battery has been disconnected, the diagnostic must fail during 2 consecutive cold start trips before setting a DTC. The initial failure is not reported to the diagnostic executive or displayed on a scan tool. A passing system always reports to the diagnostic executive immediately.

Conditions for Clearing the MIL/DTC

- The PCM will turn the MIL OFF during the third consecutive trip in which the diagnostic has been run and passed.

- The History DTC will clear after 40 consecutive warm-up cycles have occurred without a malfunction.
- The DTC can be cleared by using a scan tool.

Diagnostic Aids

Inspect for the following:

- Kinked, pinched or plugged vent hose
- Reviewing the Fail Records vehicle mileage since the diagnostic test last failed may help determine how often the condition that caused the DTC to be set occurs. This may assist in diagnosing the condition.

Test Description

The numbers below refer to the step numbers on the diagnostic table:

1. The Powertrain On-Board Diagnosis (OBD) System Check prompts you to the basic checks and store the Freeze Frame and Failure Records Data on the scan tool if applicable.
2. If a EVAP vent valve or EVAP purge valve electrical malfunction is present, the purge system will not operate correctly. Repairing the electrical malfunction that caused the additional DTC to set will very likely correct the condition that set this DTC.
3. Inspects for a fuel tank pressure sensor stuck high condition. The fuel tank pressure must be relieved by removing the canister line from the fuel tank or EVAP canister. The fuel fill cap will not relieve the tank pressure due to a check valve in the filler neck. The check valve seals when pressure is applied to prevent vapor from escaping through the filler neck. The scan tool should read within 1.0 inch H₂O of the specified value.
4. Verifies that the fuel tank pressure sensor accurately reacts to EVAP system pressure changes. The EVAP station is pressurizing a sensor that normally reads vacuum. The scan tool reads high pressure at 0 volts and high vacuum at 5 volts. The scan tool can only read a max pressure of 6.0 inch of H₂O (0 volts). However the EVAP service station can pressurize the system to much higher pressures. The scan tool value should be within 0.5 inch H₂O of the specified value.
5. Inspects for a plugged or stuck closed EVAP vent valve. The value should decrease to within 1.0 inch HG of the specified value.

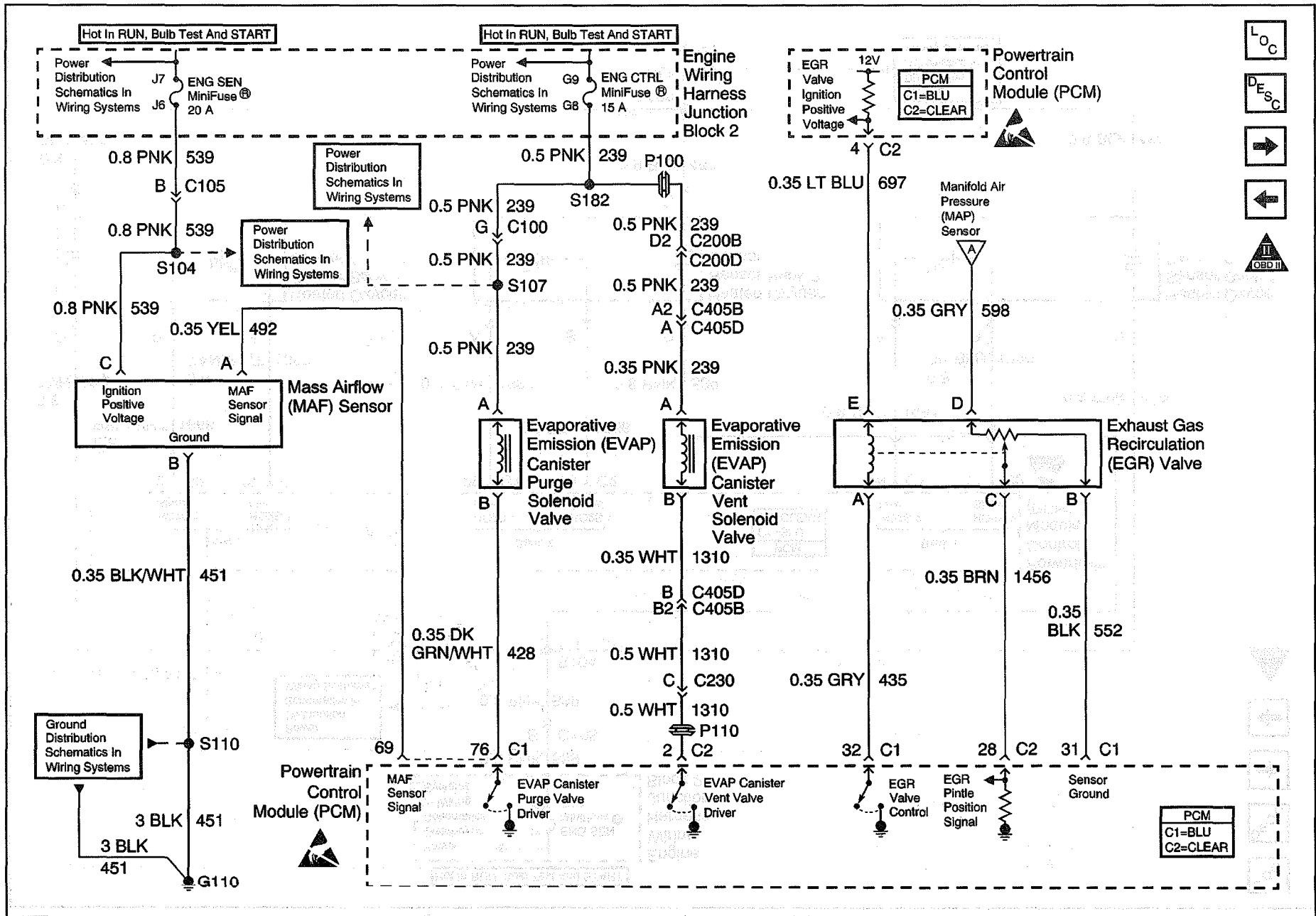
DTC P0446 Evaporative Emission (EVAP) Vent System Performance

Step	Action	Values	Yes	No
1	Did you perform the Powertrain On-Board Diagnostic (OBD) System Check?	—	Go to Step 2	Go to A Powertrain On Board Diagnostic (OBD) System Check
2	<p>Important: Visually/Physically inspect for the following conditions:</p> <ul style="list-style-type: none"> Vacuum or purge lines disconnected. Refer to <i>Emission Hose Routing Diagram</i>. Loose or missing fuel fill cap. <p>Did DTC P0443 Evaporative Emission (EVAP) Purge Solenoid Control Circuit or DTC P0449 Evaporative Emission (EVAP) Vent Solenoid Control Circuit also set?</p>	—	Go to Applicable DTC	Go to Step 3
3	<ol style="list-style-type: none"> Turn OFF the ignition. Disconnect the EVAP canister line from the fuel tank or EVAP canister. This will relieve the fuel tank pressure. Turn ON the ignition, with the engine OFF. With a scan tool, observe the fuel tank pressure parameter. <p>Does the scan tool indicate fuel tank pressure near the specified value?</p>	0 in. H2O	Go to Step 4	Go to Step 11
4	<p>Important: Before continuing with diagnosis, zero the EVAP pressure and vacuum (inches of H2O gauges on the J 41413 EVAP pressure/purge diagnostic station.</p> <ol style="list-style-type: none"> Turn OFF the ignition. Reconnect all EVAP hardware that was previously disconnected. Install the J 41415-40 fuel fill cap adaptor to the fuel fill neck and fuel fill cap. Connect the EVAP station to the fuel tank cap adaptor. Turn ON the ignition, with the engine OFF. With a scan tool, capture Fail Records data for DTC P0446 and clear DTCs With a scan tool, command the vent valve ON (closed) to seal the system. <p>Important: Do not exceed the pressure in the specified value.</p> <ol style="list-style-type: none"> With the EVAP station, attempt to pressurize the EVAP system to the specified value by slowly turning the rotary switch to the PRESSURE position. Monitor the pressure with the gauge on the cart with the rotary switch in the OFF/HOLD position. With a scan tool observe the fuel tank pressure parameter. <p>Does the scan tool indicate fuel tank pressure at the specified value?</p>	5 in. H2O	Go to Step 5	Go to Step 7
5	<ol style="list-style-type: none"> With the EVAP station, maintain EVAP pressure at the first specified (higher) value. With a scan tool, command the vent valve OFF (open) to relieve the pressure through the vent valve. <p>Does the EVAP pressure decrease to near the Second specified (lower) value within 2 minutes with the rotary switch in the OFF/HOLD position?</p>	5 in. H2O 0 in. H2O	Go to Diagnostic Aids	Go to Step 6

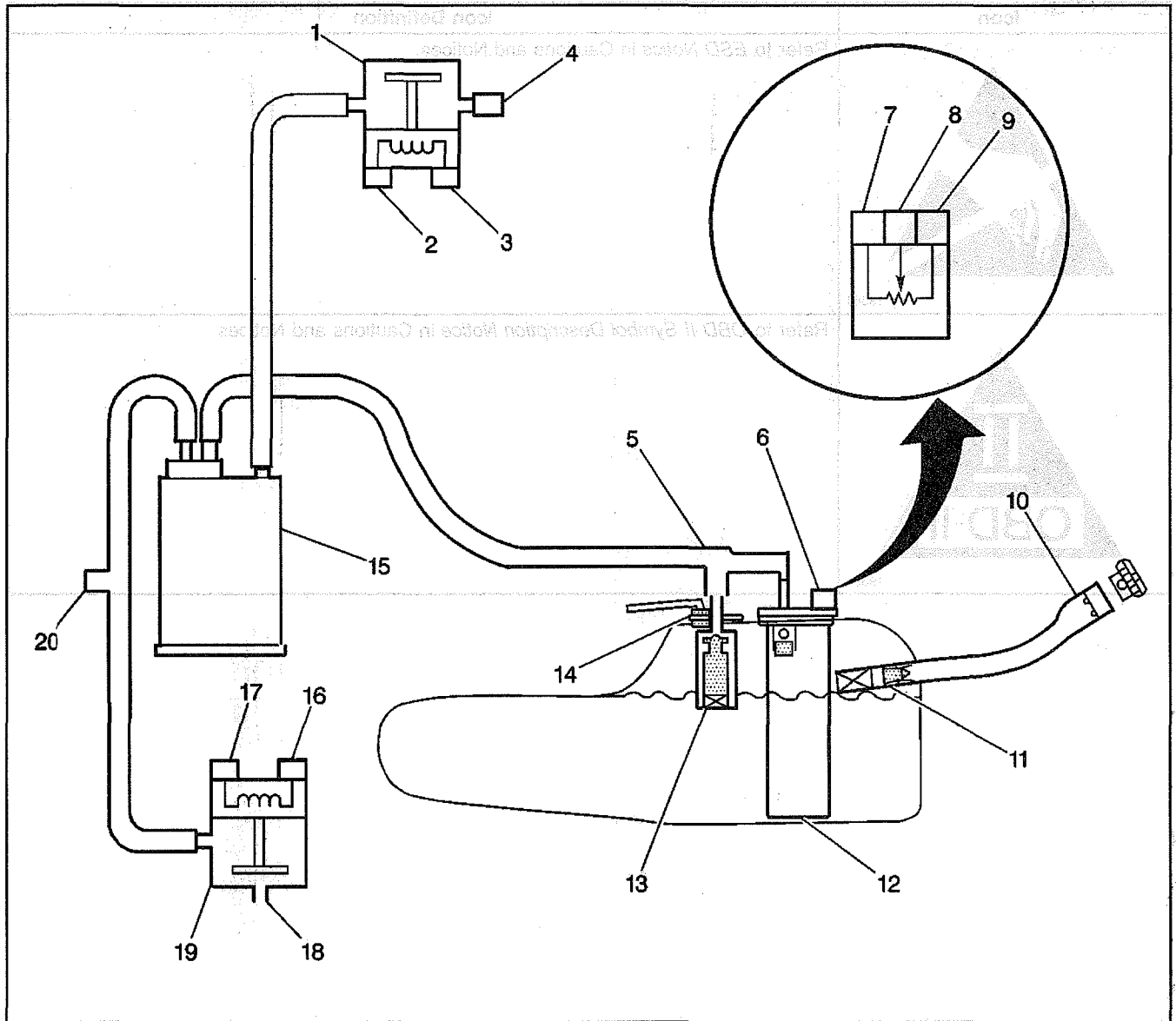
DTC P0446 Evaporative Emission (EVAP) Vent System Performance (cont'd)

Step	Action	Values	Yes	No
6	<ol style="list-style-type: none"> 1. Disconnect the large vent hose (marked AIR) from the EVAP canister. 2. With the EVAP station, switch the rotary switch to purge. 3. Start the vehicle and allow to reach operating temperature 4. With a scan tool, increase EVAP purge to 100 percent. The scan tool will abort the test if the vacuum is above 15 inches H2O. 5. With the EVAP station, monitor the vacuum (inches H2O) gauge on the for 5 seconds while holding the engine speed at 2,500 RPM. <p>Does the vacuum remain less than the specified value?</p>	10 in. H2O	Go to Step 7	Go to Step 9
7	<p>Inspect the vent hose between the EVAP canister and the EVAP vent valve/solenoid for being kinked, pinched, or otherwise blocked.</p> <p>Did you find and correct the condition?</p>	—	Go to Step 12	Go to Step 8
8	<p>Replace the EVAP vent valve. Refer to <i>EVAP Vent Valve Replacement</i></p> <p>Did you complete the replacement?</p>	—	Go to Step 12	—
9	<p>Replace the EVAP canister. Refer to <i>EVAP Canister Replacement</i>.</p> <p>Did you complete the replacement?</p>	—	Go to Step 12	—
10	<p>Inspect for a kinked or restricted canister purge line between the EVAP canister purge valve and EVAP canister.</p> <p>Did you find and correct the condition?</p>	0 in. H2O	Go to Step 12	—
11	<ol style="list-style-type: none"> 1. Turn OFF the ignition. 2. Disconnect the EVAP canister line from the fuel tank or EVAP canister. This will relieve the fuel tank pressure. 3. Turn ON the ignition, with the engine OFF. 4. With a scan tool, observe the fuel tank pressure parameter. <p>Does the scan tool indicate fuel tank pressure near the specified value?</p>	0 in. H2O	Go to Step 10	Go to DTC P0453 Fuel Tank Pressure Sensor Circuit High Voltage
12	<ol style="list-style-type: none"> 1. Reconnect all EVAP hardware that was previously disconnected. 2. Turn ON the ignition, With the engine OFF. 3. With a scan tool, command the vent valve ON (closed) to seal the system. 4. With the EVAP station, pressurize the EVAP system to the first specified (higher) value by slowly turning the rotary switch to the PRESSURE position. Monitor the pressure with the gauge on the cart with the rotary switch in the OFF/HOLD position. 5. With a scan tool, command the EVAP vent valve OFF (open) to relieve the system pressure. <p>Does the pressure decrease to less than the second specified (lower) value within 2 minutes with the rotary switch in the OFF/HOLD position?</p>	5 in. H2O 0 in. H2O	Go to Step 3	System OK

Engine Controls Schematics (MAF Sensor, EVAP System, EGR Valve)



Emission Hose Routing Diagram (EVAP Control System Overview)



200517

Legend

- | | |
|---|--|
| (1) EVAP Vent Valve/Solenoid | (10) Fuel Filler Pipe |
| (2) EVAP Vent Valve/Solenoid Ignition Feed Circuit Terminal | (11) Check Valve (Spitback) |
| (3) EVAP Vent Valve/Solenoid Control Circuit Terminal | (12) Modular Fuel Sender Assembly |
| (4) EVAP Vent Valve/Solenoid Filter | (13) Fuel Limiter Vent Valve (FLVV) |
| (5) EVAP Vapor Lines | (14) Pressure/Vacuum Relief Valve (Optional) |
| (6) Fuel Tank Pressure Sensor | (15) EVAP Canister |
| (7) Fuel Tank Pressure Sensor Ground Circuit Terminal | (16) EVAP Canister Purge Valve/Solenoid Ignition Feed Circuit Terminal |
| (8) Fuel Tank Pressure Sensor Signal Circuit Terminal | (17) EVAP Canister Purge Valve/Solenoid Control Circuit Terminal |
| (9) Fuel Tank Pressure Sensor Circuit 5 Volt Reference Circuit Terminal | (18) Intake Manifold Vacuum Source |
| | (19) EVAP Canister Purge Valve/Solenoid |
| | (20) EVAP Service Port |