

DTC P0446

System Description

This DTC tests the Evaporative Emission (EVAP) System for a restricted or blocked EVAP vent path. The control module commands the EVAP canister purge solenoid valve Open and the EVAP canister vent solenoid valve Closed. This allows vacuum to be applied to the EVAP system. Once a calibrated vacuum level has been reached, the control module commands the EVAP canister purge solenoid valve Closed and the EVAP canister vent solenoid valve Open. The control module monitors the fuel tank pressure (FTP) sensor for a decrease in vacuum. If the vacuum does not decrease to near 0 inches H₂O in a calibrated time, this DTC sets.

The following table illustrates the relationship between the ON and OFF states, and the Open or Closed states of the EVAP canister purge and vent solenoid valves.

Control Module Command	EVAP Canister Purge Solenoid Valve	EVAP Canister Vent Solenoid Valve
ON	Open	Closed
OFF	Closed	Open

DTC Descriptor

This diagnostic procedure supports the following DTC:

DTC P0446 Evaporative Emission (EVAP) Vent System Performance

Conditions for Running the DTC

- DTCs P0106, P0107, P0108, P0112, P0113, P0116, P0117, P0118, P0120, P0121, P0122, P0123, P0131, P0132, P0133, P0134, P0135, P0136, P0137, P0138, P0140, P0141, P0151, P0152, P0153, P0154, P0155, P0156, P0157, P0158, P0160, P0161, P0220, P0442, P0443, P0449, P0451, P0452, P0453, P0454, P0455, P0464, P0502, P0503, P1111, P1112, P1114, P1115, P1121, P1122, P1125, P2135 are not set.
- The ignition voltage is between 10-18 volts.
- The barometric pressure (BARO) is greater than 75 kPa.
- The fuel level is between 15-85 percent.
- The engine coolant temperature (ECT) is between 4-30°C (39-86°F).
- The intake air temperature (IAT) is between 4-30°C (39-86°F).
- The start up ECT and IAT are within 9°C (16°F) of each other.
- DTC P0446 runs once per cold start when the above conditions are met.

Conditions for Setting the DTC

- The fuel tank pressure sensor is less than -12 inches H2O.
- The above condition is present for more than 5 seconds.

Action Taken When the DTC Sets

- The control module illuminates the malfunction indicator lamp (MIL) on the second consecutive ignition cycle that the diagnostic runs and fails.
- The control module records the operating conditions at the time the diagnostic fails. The first time the diagnostic fails, the control module stores this information in the Failure Records. If the diagnostic reports a failure on the second consecutive ignition cycle, the control module records the operating conditions at the time of the failure. The control module writes the operating conditions to the Freeze Frame and updates the Failure Records.

Conditions for Clearing the MIL/DTC

- The control module turns OFF the malfunction indicator lamp (MIL) after 3 consecutive ignition cycles that the diagnostic runs and does not fail.
- A current DTC, Last Test Failed, clears when the diagnostic runs and passes.
- A history DTC clears after 40 consecutive warm-up cycles, if no failures are reported by this or any other emission related diagnostic.
- Clear the MIL and the DTC with a scan tool.

Diagnostic Aids

- When using the Evaporative Emission System Tester (EEST) to apply pressure, you can regulate the amount of pressure by activating the remote switch ON and OFF while observing pressure in the EVAP system using a scan tool. DO NOT use more than 5 inches H2O. More than 5 inches H2O applied to the EVAP system can cause the canister vent solenoid valve to temporarily remain in the closed position, which could lead to misdiagnosis in this procedure.
- An intermittent condition could be caused by a damaged EVAP vent housing, a temporary blockage at the EVAP canister vent solenoid valve inlet, or a pinched vent hose. A blockage in the vent system will also cause a poor fuel fill problem.
- For intermittent conditions, refer to [Testing for Intermittent Conditions and Poor Connections](#) .
- An EVAP canister, vent hose, or vent solenoid valve that has restricted flow may cause this DTC to set. Using a purge solenoid valve command with a scan tool will allow vacuum to be applied to the system instead of pressure. With the EVAP canister vent solenoid valve open and the EVAP canister purge solenoid valve commanded to 100 percent, vacuum should not increase to more than 9 inches H2O.

Step	Action	Values	Yes	No
Schematic Reference: Evaporative Emissions Hose Routing Diagram				
1	Did you perform the Diagnostic System Check - Vehicle?	--	Go to Step 2	Go to Diagnostic System

				Check - Vehicle
2	<p>Inspect the Evaporative Emission (EVAP) System for the following conditions:</p> <ul style="list-style-type: none"> • A damaged EVAP canister vent solenoid valve--Refer to Evaporative Emission Canister Vent Solenoid Valve Replacement . • A pinched EVAP vent hose • A damaged EVAP canister--Refer to Evaporative Emission Canister Replacement . <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 3
3	<ul style="list-style-type: none"> • Turn OFF the ignition. • Remove the fuel filler cap. • Turn ON the ignition, with the engine OFF. <p>Is the fuel tank pressure sensor parameter within the specified range?</p>	-1 to +1 in H2O	Go to Step 4	Go to Step 9
4	<ul style="list-style-type: none"> • Turn OFF the ignition. • Connect the J 41413-200 Evaporative Emission System Tester (EEST) power supply clips to a known good 12-volt source. • Install the J 41415-40 Fuel Tank Cap Adapter or GE-41415-50 Fuel Tank Cap Adapter to the fuel fill pipe. • Connect the fuel fill cap to the J 41415-40 or to GE-41415-50 . • Connect the J 41413-200 nitrogen/smoke supply hose to J 41415-40 or to GE-41415-50 . • Turn ON the ignition, with the engine OFF. • Command the EVAP canister vent solenoid valve closed with a scan tool. • Turn the nitrogen/smoke valve on the J 41413-200 control panel to NITROGEN. <p>Important: DO NOT exceed the specified value in this step. Exceeding the specified value may cause the EVAP canister vent</p>	5 in H2O 1 in H2O	Go to Step 5	Go to Step 7

	<p style="color: red;">solenoid valve to remain closed, or produce incorrect test results.</p> <ul style="list-style-type: none"> Use the remote switch to pressurize the EVAP system to the first specified value. Observe the fuel tank pressure sensor in H2O with a scan tool. Command the EVAP canister vent solenoid valve open with a scan tool. <p>Is the fuel tank pressure sensor parameter less than the second specified value?</p>			
5	<ul style="list-style-type: none"> Connect the J 41413-200 nitrogen/smoke supply hose and the vehicle fuel fill cap to the J 41415-40 or GE-41415-50. Start the engine. Allow the engine to idle. Use the purge/seal function to seal the system with a scan tool. Command the EVAP canister purge solenoid valve to 20 percent. Observe the vacuum/pressure gage of the J 41413-200 and the FTP parameter on the scan tool. Allow the vacuum to increase on the gage of the J 41413-200 until it reaches approximately 16 inches H2O. <p>Did the pressure reading on the J 41413-200 gage agree with the scan tool FTP parameter until the vacuum reached the abort limit on the scan tool?</p>	--	Go to Step 6	Go to Step 9
6	Did the FTP parameter on a scan tool display more than the specified value?	3.2 V	Go to Diagnostic Aids	Go to Step 12
7	<p>Disconnect the EVAP vent hose from the EVAP canister vent solenoid valve.</p> <p>Is the fuel tank pressure sensor parameter less than the specified value?</p>	1 in H2O	Go to Step 13	Go to Step 8
8	<p>Disconnect the EVAP vent hose from the EVAP canister.</p> <p>Is the fuel tank pressure sensor parameter less than the specified value?</p>	1 in H2O	Go to Step 11	Go to Step 14

9	<p>Test for an intermittent and for a poor connection at the fuel tank pressure (FTP) sensor. Refer to Testing for Intermittent Conditions and Poor Connections and Connector Repairs .</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 10
10	<p>Test the low reference circuit of the FTP sensor for an open or high resistance. Refer to Circuit Testing and Wiring Repairs .</p> <p>Did you find and correct the condition?</p>	--	Go to Step 15	Go to Step 12
11	<p>Repair the pinched or restricted EVAP vent hose.</p> <p>Did you complete the repair?</p>	--	Go to Step 15	--
12	<p>Replace the FTP sensor. Refer to Fuel Tank Pressure Sensor Replacement .</p> <p>Did you complete the replacement?</p>	--	Go to Step 15	--
13	<p>Replace the EVAP canister vent solenoid valve. Refer to Evaporative Emission Canister Vent Solenoid Valve Replacement .</p> <p>Did you complete the replacement?</p>	--	Go to Step 15	--
14	<p>Replace the EVAP canister. Refer to Evaporative Emission Canister Replacement .</p> <p>Did you complete the replacement?</p>	--	Go to Step 15	--
15	<ul style="list-style-type: none"> • Turn OFF the ignition. • Remove the fuel filler cap. • Turn ON the ignition, with the engine OFF. <p>Is the fuel tank pressure sensor parameter within the specified range?</p>	-1 to +1 in H2O	Go to Step 16	Go to Step 2
16	<p>Important: DO NOT exceed the specified value in this step. Exceeding the specified value may produce incorrect test results.</p>	5 in H2O 1 in H2O	Go to Step 17	Go to Step 2

	<ul style="list-style-type: none"> • Turn OFF the ignition. • Reconnect all disconnected components. • Connect J 41413-200 to the fuel fill pipe. • Turn ON the ignition, with the engine OFF. • Command the EVAP canister vent solenoid valve closed with a scan tool. • Turn the nitrogen/smoke valve on the J 41413-200 control panel to NITROGEN. • Use the remote switch to pressurize the EVAP system to the first specified value. • Observe the fuel tank pressure sensor in H2O with a scan tool. • Command the EVAP canister vent solenoid valve open with a scan tool. <p>Is the fuel tank pressure sensor parameter less than the second specified value?</p>			
17	<p>Observe the Capture Info with a scan tool.</p> <p>Have any other DTCs not been diagnosed?</p>	--	<p>Go to Diagnostic Trouble Code (DTC) List - Vehicle</p>	System OK