

DTC P0450 or P0451

Diagnostic Instructions

- Perform the [Diagnostic System Check - Vehicle](#) prior to using this diagnostic procedure.
- Review [Strategy Based Diagnosis](#) for an overview of the diagnostic approach.
- [Diagnostic Procedure Instructions](#) provides an overview of each diagnostic category.

DTC Descriptors

DTC P0450: Fuel Tank Pressure (FTP) Sensor Circuit

DTC P0451: Fuel Tank Pressure (FTP) Sensor Performance

Typical Scan Tool Data

FTP Sensor

Circuit	Short to Ground	Open	Short to Voltage
<i>Operating Conditions:</i> Engine operating in Closed Loop at idle			
<i>Parameter Normal Range:</i> 0.2-4.8 V			
5-Volt Reference Voltage	0 V	0 V	5 V
FTP Sensor Signal	0 V	0 V	5 V
Low Reference	--	4.2 V	--

Circuit/System Description

The control module monitors the fuel tank pressure (FTP) sensor signal in order to detect vacuum decay and excess vacuum during the evaporative emission (EVAP) diagnostic test. The control module supplies a 5-volt reference and a low reference circuit to the FTP sensor. This DTC sets if the engine control module (ECM) detects one of the following conditions:

- The FTP sensor signal voltage is not within a calibrated range on a cold start-up.
- The FTP sensor signal oscillates greater than a calibrated amount when vehicle speed is less than 30 km/h (50 mph).

The following table illustrates the relationship between FTP sensor signal voltage and the EVAP system pressure/vacuum.

FTP Sensor Signal Voltage	Fuel Tank Pressure
High, Approximately 1.5 Volts or More	Negative Pressure/Vacuum
Low, Approximately 1.5 Volts or Less	Positive Pressure

Conditions for Running the DTC

© 2011 General Motors Corporation. All rights reserved.

P0450

- DTC P0100, P0101, P0102, P0103, P0116, P0117, P0118, P0119, P0443, P0449, P0458, P0459, P0498, P0499, P050A, P0506, P0507, P0700, P2227, P2228, or P2229 is not set.
- The engine is operating.
- The ambient air temperature is greater than -7°C ($+19^{\circ}\text{F}$).
- The vehicle speed is less than 30 km/h (19 mph).
- The ECM has commanded the EVAP canister vent valve open for greater than 3 seconds.
- DTC P0450 runs continuously once the above conditions are met for approximately 25 seconds.

P0451

- DTC P0100, P0101, P0102, P0103, P0116, P0117, P0118, P0119, P0443, P0449, P0458, P0459, P0498, P0499, P050A, P0506, P0507, P0700, P2227, P2228, or P2229 is not set.
- The engine is operating for greater than 25 seconds.
- The engine is idling.
- The ambient air temperature is greater than -7°C ($+19^{\circ}\text{F}$).
- The vehicle speed is greater than 10 km/h (6 mph) for greater than 29 seconds.
- The BARO is greater than 68 kPa.
- The fuel level is between 12-88 percent.
- The ECM has commanded the EVAP canister purge solenoid OFF.
- The ECM has commanded the EVAP canister vent valve closed for greater than 4 seconds.
- DTC P0451 runs continuously once the above conditions are met for approximately 25 seconds.

Or

- DTC P0100, P0101, P0102, P0103, P0116, P0117, P0118, P0119, P0443, P0449, P0458, P0459, P0498, P0499, P050A, P0506, P0507, P0700, P2227, P2228, or P2229 is not set.
- The engine is operating.
- The BARO is greater than 68 kPa.
- The fuel level is between 12-88 percent.
- The ECM has commanded the EVAP canister purge solenoid OFF.
- The ECM has commanded the EVAP canister vent valve open.
- The vehicle speed is between 10-76 km/h (6-47 mph).
- DTC P0451 runs continuously once the above conditions are met for approximately 7 seconds.

Conditions for Setting the DTC

P0450

The ECM detects that the FTP sensor signal oscillates greater than 3.26 in. H₂O (6.09 mm/Hg) for 4 seconds, or for a cumulative of 30 seconds.

P0451

- The ECM detects that the FTP is less than -14.1 in. H₂O (-26.2 mm/Hg) or greater than 5.7 in. H₂O (10.6 mm/Hg) for 4 seconds or for a cumulative of 30 seconds.
Or
- The ECM detects a change in the zero point of FTP sensor signal greater than +/- 2.73 in. H₂O (5.10 mm/Hg) from the zero point at start up for 4 seconds, or a cumulative of 30 seconds.

Action Taken When the DTC Sets

- DTC P0450 is Type B DTC.
- DTC P0451 is Type B DTC.

Conditions for Clearing the MIL/DTC

- DTC P0450 is Type B DTC.
- DTC P0451 is Type B DTC.

Diagnostic Aids

- A blocked or clogged EVAP canister vent may set these DTCs.
- A large leak in the EVAP system could cause these DTCs to set.

Reference Information

Schematic Reference

[Engine Controls Schematics](#)

Connector End View Reference

[Component Connector End Views](#)

Description and Operation

[Fuel System Description](#)

Electrical Information Reference

- [Circuit Testing](#)
- [Connector Repairs](#)
- [Testing for Intermittent Conditions and Poor Connections](#)
- [Wiring Repairs](#)

DTC Type Reference

[Powertrain Diagnostic Trouble Code \(DTC\) Type Definitions](#)

Scan Tool Reference

[Control Module References](#) for scan tool information

Special Tools

- [J 41413-SPT](#) High Intensity White Light
- [J 41413-VLV](#) EVAP Port Vent Fitting Tool
- [J 41413-200](#) Evaporative Emissions System Tester (EEST)
- [J 41413-300](#) EVAP Cap and Plug Kit
- [CH-48096](#) EVAP Service Port Access Tool
- [GE-41415-50](#) Fuel Tank Cap Adapter

Circuit/System Testing

1. Remove the fuel fill cap. Connect the [GE-41415-50](#) to the fuel tank filler neck. Connect the [J 41413-200](#) to the [GE-41415-50](#).
2. Seal the system using the Purge Seal function with a scan tool.
3. Pressurize the EVAP system with nitrogen to 5 inches H2O. Compare the Fuel Tank Pressure Sensor parameter to the [J 41413-200](#) pressure/vacuum gage. The FTP sensor should be within 1 inch H2O of the pressure/vacuum gage.
If the FTP is not within 1 inch H2O of the pressure/vacuum gage, replace the FTP sensor.
4. Command the vent solenoid valve OPEN with a scan tool.
If the FTP sensor parameter is not 0 inch H2O, replace the FTP sensor.

Repair Instructions

Perform the [Diagnostic Repair Verification](#) after completing the diagnostic procedure.

- [Fuel Tank Pressure Sensor Replacement](#)
- [Control Module References](#) for ECM replacement, setup, and programming