

P0176: FUEL COMPOSITION SENSOR CIRCUIT MALFUNCTION

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Intermediate
Repair Cost	:	\$90-\$500
Can I Still Drive?	:	Yes (Short-term only)

What Does The P0176 Code Mean?

There are four trouble codes commonly associated with fuel composition sensor circuit malfunctions. This circuit is also referred to as the flex fuel sensor circuit and the OBDII codes that are triggered by the Engine Control Module (ECM) when this circuit malfunctions are [P0176](#), [P0177](#), [P0178](#) and [P0179](#).

The fuel composition sensor circuit monitors the amount of ethanol in the gasoline on a flex fuel engine. The amount of ethanol can vary every time you fill up the tank requiring appropriate adjustments for optimal performance and fuel economy. The fuel composition sensor circuit sends a signal to the ECM based on the ethanol level. The ECM adjusts the ignition timing and fuel injector pulse width accordingly to burn the fuel more efficiently. The end result is improved performance, reduced pollution and increased fuel economy.

Code P0176 is set when the ECM detects any malfunction within the fuel composition sensor circuit.

Trouble code P0176 is triggered by the ECM when it receives a signal that is abnormal or out of range. This code identifies various malfunctions within the circuit and the issue may be physical, mechanical or electrical. In most circumstances the presence of a P0178 or P0179 is a very good indication that the problem is electrical in nature.

What Are The Symptoms Of The P0176 Code?

Symptoms of a P0176 engine code may include:

- Increased fuel consumption
- Poor performance
- Check Engine Light illuminated
- Engine stalls

What Are The Potential Causes Of The P0176 Code?

Typically, potential causes for this code include:

- Faulty fuel cap
- Contaminated fuel
- Faulty fuel composition sensor
- Corroded or damaged connector
- Damaged or restricted fuel line
- Faulty or damaged wiring
- Faulty ECM

How Can You Fix The P0176 Code?

Note: The first step in the troubleshooting process for any malfunction is to research the Technical Service Bulletins for the specific vehicle by year, model and power plant. In some circumstances this can save a lot of time in the long run by pointing you in the right direction.

Basic Steps

- Examine the condition of the fuel cap
- Examine the condition of the fuel for contamination
- Visually inspect the circuit connections and wiring
- Visually inspect the condition of the fuel lines for obvious defects
- Check electrical connections for security and corrosion

Advanced Steps

Note: The advanced steps become very vehicle specific and require the appropriate advanced equipment to perform accurately. These procedures require a digital multi meter and the specific technical references for the vehicle. Voltage requirements will vary based on the specific year, model and engine in the vehicle.

Circuit Checks

With the key in the off position and with the sensor and ECM connected check for power and ground referencing the appropriate technical data. Ground should always read 0 volts and power should be 5 volts or 12 volts based on the vehicle and the system configuration. The specific technical manual or online reference material for your vehicle will guide you through this process. If all of these readings are correct the associated component most likely requires replacement. Frequency checks are recommended in some troubleshooting procedures to specifically pinpoint the source of the malfunction.

If this process identifies the absence of a power source or ground, continuity testing may be required to check the integrity of the wiring. Continuity tests should always be performed with the power removed from the circuit and the normal readings should be 0 ohms of resistance unless otherwise specified by the technical data. Resistance or no continuity is an indication of faulty wiring that must be repaired or replaced.

Hopefully, the information in this article has been helpful to point you in the right direction to correct the problem with your fuel composition sensor circuit malfunction. This article is strictly informational and the specific technical data and service bulletins for your vehicle should always take priority.

Reference Sources

[P0176: Fuel Composition Sensor Circuit Malfunction](#), OBD-Codes.