P0215: ENGINE SHUTOFF SOLENOID MALFUNCTION

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$174-$280**
Can I Still Drive?	:	**Yes**

What Does The P0215 Code Mean?

When your OBD-II equipped vehicle exhibits a code P0215, it means that the powertrain control module (PCM) has detected a malfunction in the shutoff solenoid for the engine.

Most commonly, the engine shutoff solenoid interferes with the fuel supply to the engine under certain specific circumstances. These circumstances may include (but are not limited to) a vehicle collision, vehicle roll-over, extreme engine overheating, or extreme loss of oil pressure to the engine. The engine shutoff solenoid system is most frequently utilized in diesel powered vehicles but not exclusively.

Typically, the engine shutoff solenoid is positioned in the fuel delivery system. It consists of an electronically controlled solenoid (which operates a valve type actuator), and some method for rerouting fuel back to the storage tank when the engine shutoff solenoid is activated. The PCM uses inputs from various engine and body position sensors to determine when fuel shutoff is required. When this occurs, the PCM provides a voltage signal to the engine cutoff relay (which forwards it to the solenoid) and the solenoid is activated. Once it is activated, the valve prevents fuel from reaching the engine and diverts it back to the fuel storage tank via a specially designed low pressure return line.

The PCM constantly monitors engine shutoff solenoid circuit resistance (and the resultant changes in voltage), when the ignition switch is in the ON position. If the PCM detects a level of voltage from the engine shutoff solenoid circuit that varies from what has been programmed, a code P0215 will

be stored and a malfunction indicator lamp (MIL) may be illuminated. In some vehicles multiple failure cycles will be necessary for MIL illumination.

What Are The Symptoms Of The P0215 Code?

Symptoms of a P0215 trouble code may include:

- There are frequently no symptoms when a P0215 is stored
- Engine won't start
- Other fuel system codes
- Lean exhaust codes

What Are The Potential Causes Of The P0215 Code?

Possible causes for this code may include:

- Defective engine cutoff solenoid
- Faulty engine shutoff relay
- Malfunctioning tilt angle indicator (if so equipped)
- Open or shorted circuit in engine cutoff system
- Bad oil pressure sending unit
- Faulty engine temperature sensor
- Bad PCM or PCM programming error

How Can You Fix The P0215 Code?

I would like to have access to a diagnostic scanner, a digital volt/ohmmeter (DVOM), and a reliable vehicle information source before attempting to diagnose a code P0215.

If there are engine oil pressure or engine over temperature codes present, diagnose and repair those before tackling this one. Certain specialty (usually with a focus on off-roading) vehicles utilize a vehicle tilt angle indicator in the engine shutoff system, if this is applicable to the vehicle in question, rectify any codes that are pertinent before addressing the P0215 as well.

Engine shutoff systems are very diverse. Many different input signals are used by the PCM to determine whether engine shutoff is warranted. One automaker may use the level of oil pressure and another may use vehicle tilt angle. Consult your vehicle information source for the specifics of the engine shutoff system in question.

Connect the scanner to the diagnostic port of the vehicle and retrieve al stored codes and freeze frame data. Make a record of this information as it will likely be helpful as your diagnosis proceeds. Now, clear the codes and test-drive the vehicle to see if the code is reset.

- If the code is not immediately reset, drive the vehicle normally until the PCM enters readiness

mode. If this happens, chances are that the problem is intermittent or can be attributed to a vehicle collision or tilt angle condition that has been rectified. In any case, if the PCM enters readiness mode, there is nothing left to diagnose
- If the code is reset before the PCM enters readiness mode, a malfunction persists and will have to be addressed
- Use the DVOM to test the engine shutoff solenoid by following the specifications located in the vehicle information source. Place the DVOM on the ohms setting to measure continuity and resistance. Unplug the connector from the shutoff solenoid and connect the test leads of the DVOM to the pins as instructed in the vehicle information source. If the solenoid fails to comply with manufacturer's specifications; it should be replaced
- If the engine shutoff solenoid does comply with specs, use the DVOM to test for voltage and ground at the connector. If neither is found, check the corresponding pins of the PCM connector for their presence. If there are no voltage and ground signals at (the appropriate pins of) the PCM connector, suspect a defective PCM or a PCM programming error. If either are discovered at the PCM connector but are absent from the solenoid connector, suspect a faulty relay or an open circuit

Additional diagnostic note: If the vehicle in question has been involved in a collision or if the vehicle tilt angle has been extreme, clearing the code may be enough to rectify your malfunction

Severity Description

Since the conditions which contribute to a stored code P0215 may also result in a no-start condition, it should be classified as severe.

Reference Sources

P0215: Engine Shutoff Solenoid Malfunction, OBD-Codes.