P20DF: EXHAUST AFTERTREATMENT FUEL PRESSURE SENSOR CIRCUIT LOW

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$250-$400**
Can I Still Drive?	:	**Yes**

What Does The P20DF Code Mean?

A stored a code P20DF in your diesel powered vehicle means that the powertrain control module (PCM) has detected insufficient voltage in the fuel pressure sensor circuit for the exhaust aftertreatment system.

The exhaust aftertreatment system (also called selective catalyst reduction system) is used to enhance the capabilities of the exhaust catalyst system. It may consist of one or more of these items; diesel oxidation catalyst, diesel particulate filter, reductant injection system, ammonia slip catalyst, and a nitrogen oxide (NOx) trap.

The reductant injection system is typically composed of at least one reductant injector, a reductant fuel storage tank, and high-pressure reductant fuel lines. A high-pressure, electronic pump is normally situated in the tank or in the fuel supply line. An EAS fuel pressure sensor allows the controller to monitor system pressure when the supply pump is activated. It is within this circuit that a malfunction has been perceived when a code P20DF is stored.

Among other things, exhaust aftertreatment systems (EAS) are responsible for the injection of reductant compound/diesel exhaust fluid (DEF) into the exhaust in front of the diesel particulate filter, NOx trap, and/or the catalytic converter via an automated fluid storage and injection system.

Precisely timed DEF injections elevate the temperature of the various filtration elements and allow

them to perform more efficiently. Introducing DEF into the catalyst system promotes filtration element longevity and allows fewer harmful exhaust emissions to be released into the atmosphere.

The EAS and catalyst systems are monitored and controlled by either the PCM or a stand-alone controller (which interacts with the PCM). The controller monitors the reductant fluid injection system pressure, O2, NOx, and exhaust temperature sensors (as well as other inputs) to determine the appropriate time for DEF (reductant) injection.

If the PCM detects insufficient voltage on the circuit for the EAS fuel pressure sensor, a code P20DF will be stored and a malfunction indicator lamp may be illuminated.

What Are The Symptoms Of The P20DF Code?

Symptoms of a P20DF trouble code may include:

- Diminished engine performance
- Excessive black smoke from vehicle exhaust
- Reduction in fuel efficiency
- Other EAS/SCR related codes

What Are The Potential Causes Of The P20DF Code?

Causes for this code may include:

- Defective EAS fuel pressure sensor
- Bad EAS fuel supply pump
- Open or shorted wiring in the EAS fuel pressure sensor circuit
- Bad EAS controller/PCM or programming error

How Can You Fix The P20DF Code?

A diagnostic scanner, a digital volt/ohmmeter (DVOM), and a source of vehicle specific diagnostic information will be required to diagnose a code P20DF.

Locating a technical service bulletin (TSB) that matches the vehicle year, make, and model; as well as the engine size, code/s stored, and symptoms exhibited, could yield helpful diagnostic information.

Step 1

I like to begin my diagnosis with a visual inspection of the EAS wiring harnesses and connectors. Burnt or damaged wiring and or connectors should be repaired or replaced before proceeding.

Step 2

I would continue by plugging the scanner into the vehicle diagnostic connector and retrieving all stored codes and pertinent freeze frame data. Consider writing this information down before clearing the codes. Test drive the vehicle until the PCM either enters readiness mode or the code is reset.

Step 3

If the PCM enters readiness mode at this time, the code is intermittent and may be much more difficult to diagnose If this is the case, the conditions which contributed to the code being stored may need to worsen before an accurate diagnosis can be made.

If the code is immediately reset, completing the next step of your diagnosis will require that you search your vehicle information source to obtain diagnostic flow charts, connector pin-out charts, connector face views, as well as component testing procedures and specifications.

Step 4

Use the DVOM to test (voltage drop) on all EAS fuel supply system grounds. Continue by testing the power supply to the EAS control system. Test fuses with the circuit loaded to avoid misdiagnosis. If the appropriate power (battery voltage) and ground circuits are discovered, use the scanner to activate the EAS fuel pump and test output control circuit voltage.

If voltage is insufficient, test the EAS fuel pump relay. If no input voltage is detected, suspect that the controller is bad or has experienced a programming error. If input voltage is present on the relay but output voltage is not detected, suspect that the relay is bad.

Step 5

If the EAS power supply voltage output circuit is within parameters, use the DVOM to test the EAS fuel pressure sensor and fuel pump. If any of these components fails to meet manufacturer's specifications, suspect that it has failed.

Additional note:

- Don't forget ground circuits when voltage drop testing

Severity Description

A stored code P20DF should be considered severe and addressed as quickly as possible. The EAS system may be damaged as a result of the conditions which contributed to the code P20DF being stored.

Reference Sources

P20DF Exhaust Aftertreatment Fuel Pressure Sensor Circuit Low, OBD-Codes.