P20D3: EXHAUST AFTERTREATMENT FUEL INJECTOR B CONTROL CIRCUIT LOW

OVERVIEW

Severity	:	High
DIY Difficulty Level	:	Intermediate
Repair Cost	:	**$350-$850**
Can I Still Drive?	:	**Yes**

What Does The P20D3 Code Mean?

If your diesel powered vehicle has stored a code P20D3, it means that the powertrain control module (PCM) has detected insufficient voltage in the control circuit for the exhaust aftertreatment fuel injector, designated B. The designation B indicates that multiple reductant injectors are in use.

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.

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.

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 O2, NOx, and exhaust temperature sensors (as well as other inputs) to determine the appropriate time for DEF (reductant) injection.

DEF injection must be performed at the appropriate instant and in precise measure in order to maintain an exhaust temperature that is within acceptable parameters and to optimize pollutant filtration.

If the PCM detects insufficient voltage on the control circuit for the EAS fuel injector, a code P20D3 will be stored and a malfunction indicator lamp may be illuminated.

What Are The Symptoms Of The P20D3 Code?

Symptoms of a P20D3 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 P20D3 Code?

Causes for this code may include:

- Bad EAS fuel injector
- Open or shorted circuits in the EAS fuel injection control circuit
- Insufficient DEF in the EAS reservoir
- Bad EAS controller/PCM or programming error

How Can You Fix The P20D3 Code?

A diagnostic scanner, a digital volt/ohmmeter (DVOM), and a source of vehicle specific diagnostic information will be required to diagnose a code P20D3.

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. You may also use your vehicle iformation source to pin-point the exact location of EAS fuel injector A.

Step 4

Use the DVOM to test (voltage drop) 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 injector (solenoid) and test output control circuit voltage.

If voltage is insufficient, suspect that the controller is bad or has experienced a programming error.

Step 5

If the voltage output circuit is within parameters, use the DVOM to test the EAS fuel injector in question. If the injector fails to meet manufacturer's specifications, suspect that it has failed.

Additional notes:

- The EAS fuel injector is simply a solenoid based injector that sprays reductant fluid into the exhaust
- Don't forget ground circuits when voltage drop testing

Severity Description

A stored code P20D3 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 P20D3 being stored.

Reference Sources

P20D3 Exhaust Aftertreatment Fuel Injector B Control Circuit Low, OBD-Codes.