

P000E: FUEL VOLUME REGULATOR CONTROL EXCEEDED LEARNING LIMIT

OVERVIEW

Severity	:	Medium
DIY Difficulty Level	:	Advanced
Repair Cost	:	\$100-\$300
Can I Still Drive?	:	Yes (Short-term only)

What Does The P000E Code Mean?

If your vehicle has stored a code P000E, it means that the powertrain control module (PCM) has detected a problem with the fuel volume regulator (fuel metering control valve).

The malfunction is related to the PCM's ability to control fuel volume to the engine. The learning limit is the degree to which the PCM is programmed to adapt in order to actuate the solenoid of the fuel volume control valve.

In my personal experience, the electronic fuel volume control system is used only on diesel engines with a common rail fuel injection system. Use caution when servicing the high-pressure fuel system.

The fuel volume regulator is composed of two parts which work in conjunction. An electronically controlled solenoid actuates an in-line valve which restricts fuel volume accordingly. In some cases, the fuel volume regulator may have an integrated fuel volume sensor as well. Other vehicle applications utilize a fuel volume sensor in the fuel supply line or fuel injector rail. A fuel return line allows excess fuel to be safely diverted back to the fuel tank when volume must be reduced.

The fuel volume regulator is typically positioned in the fuel supply line between the fuel tank and the fuel rail. It is an electronically controlled valve which is completely open during regular operation (when it is not energized). When it becomes necessary for the PCM to restrict fuel volume, the fuel volume control regulator circuit is completed using varying degrees of voltage. The

valve is opened or closed according to the amount of voltage applied to the circuit.

The fuel volume sensor signal is input to the PCM which takes the necessary steps to adjust fuel volume via the regulator. If the input signal from the fuel volume sensor indicates that actual fuel volume cannot be controlled sufficiently by the PCM, a code P000E will be stored and a malfunction indicator lamp may be illuminated.

What Are The Symptoms Of The P000E Code?

Symptoms of a P000E engine code may include:

- Diminished engine performance
- Excessive black smoke from exhaust
- Decreased fuel efficiency
- Other drivability codes may be stored

What Are The Potential Causes Of The P000E Code?

Causes for this code may include:

- Bad fuel volume regulator control valve
- Fuel pump malfunction
- Defective fuel volume sensor
- Open or shorted circuits in the fuel volume control system
- Faulty PCM or PCM programming error

How Can You Fix The P000E Code?

Tools

Tools you may need to diagnose a P000E code may include:

- Diagnostic scanner
- Digital volt/ohmmeter (DVOM)
- Manual fuel pressure gauge with adapters
- Reliable vehicle information source

I would typically begin my diagnosis with locating the vehicle diagnostic port and connecting the scanner. I would retrieve all stored codes and related data for use as my diagnosis unfolds. Next, I would clear the codes and test-drive the vehicle (if possible) to see which codes return (if any).

Search technical service bulletins for any which match the symptoms, stored codes, and vehicle in question. The appropriate TSB will aid you tremendously in diagnosing this code.

If the P000E is immediately reset, proceed by using the fuel pressure gauge to check fuel system pressure and measure fuel volume. Use your vehicle information source to obtain specifications regarding fuel pressure and fuel volume. Follow fuel volume and fuel pressure testing guidelines closely as the high-pressure fuel system may cause serious bodily injury if mishandled.

If fuel volume is within manufacturer's specifications:

Use the DVOM to check for reference voltage at the fuel volume sensor. A 5-volt reference signal is the norm but check your vehicle information source for exact specifications pertaining to the vehicle in question. If no reference voltage signal is discovered at the fuel volume sensor connector, check the corresponding circuit at the PCM connector. Disconnect all related controllers prior to using the DVOM to test resistance and continuity. If no reference voltage is detected at the PCM connector, suspect a PCM problem or a programming error. If reference voltage is discovered at the fuel volume sensor connector, use the DVOM to check for a ground. If no ground is discovered, trace the ground back to its source as described in your vehicle information source. Make circuit repairs as required.

If both reference voltage and a ground are discovered at the fuel volume sensor connector, use the DVOM to test the fuel volume sensor itself. Your vehicle information source should yield specifications and procedures to aid you in carrying out this task. If the sensor fails to comply with specs, consider it defective.

If fuel volume is not within manufacturer's specifications:

Test fuel volume as it input into the fuel volume regulator valve. If fuel volume input is below specifications, suspect that the fuel pump is defective or that the (in tank) fuel filter is clogged. If input fuel volume is within specifications, check output fuel volume at the regulator. If output fuel volume is not within specifications, use the DVOM to test the fuel volume regulator solenoid according to manufacturer's specifications.

The fuel volume regulator is often confused with the fuel pressure regulator. Don't make this mistake.

Severity Description

As is the case with any high-pressure fuel system related code, the P000E should be addressed with some degree of urgency.

Reference Sources

[P000E: Fuel Volume Regulator Control Exceeded Learning Limit](#), OBD-Codes.