

P042E: EXHAUST GAS RECIRCULATION A CONTROL STUCK OPEN

OVERVIEW

Severity	:	<div>High</div>
DIY Difficulty Level	:	<div>Intermediate</div>
Repair Cost	:	\$250-\$450
Can I Still Drive?	:	Yes

What Does The P042E Code Mean?

If your vehicle has stored a code P042E, it means that the powertrain control module (PCM) has detected a problem with the exhaust gas recirculation (EGR) valve control system.

In the case of the P042E, the valve appears (to the PCM) to be stuck in the open position. The designation A applies to a particular position or stage of the step-down EGR valve control system, which is explained below.

The EGR system is responsible for allowing the engine to consume a portion of the unburned fuel from the exhaust system. The EGR system is necessary to reduce harmful levels of nitrogen oxide (NOx) created as a side effect of gasoline and diesel engine operation.

The focal point of the EGR system is an electronically controlled (EGR) valve which opens to allow exhaust gases to re-enter the engine intake. The PCM uses input signals from the throttle position sensor (TPS), vehicle speed sensor (VSS), and the crankshaft position sensor (CKP), to determine when conditions are right to open/close the EGR valve.

Vehicles which exhibit this type of code are equipped with a step-down EGR valve. The step-down EGR valve operates in stages according to the degree which the throttle is opened, how much load is placed on the engine, and how fast the vehicle is moving.

In some models, the position of the EGR valve plunger is also monitored by the PCM. If the desired position of the EGR valve (as commanded by the PCM) is different from the actual position, a code P042E will be stored and a malfunction indicator lamp (MIL) may be illuminated. Most vehicles will require multiple ignition cycles (with a failure) before MIL illumination will occur.

What Are The Symptoms Of The P042E Code?

Symptoms of a P042E EGR trouble code may include:

- Rough engine idle
- Diminished fuel efficiency
- Excessively lean exhaust
- Other drivability codes may be stored

What Are The Potential Causes Of The P042E Code?

Causes for this P042E code may include:

- Defective EGR valve
- EGR valve plunger clogged by carbon or other debris
- EGR control solenoid/valve is bad
- Open or shorted wiring/connectors in the EGR A control circuit
- Faulty DPFE sensor
- Bad EGR valve position sensor
- PCM malfunction or PCM programming error

How Can You Fix The P042E Code?

A diagnostic scanner, digital volt/ohmmeter, and a reliable vehicle information source are among the tools required to diagnose a code P042E.

Step 1

Visual inspection of all EGR system related wiring and connectors is an ideal precursor to diagnosing a code P042E. Repair or replace any corroded or burned components as required.

Step 2

Continue by connecting the scanner to the diagnostic port and retrieving all stored codes and freeze frame data. Write all this down as it will prove helpful if the P042E is an intermittent code. Now, clear the codes and test drive the vehicle to see if the code is reset.

Step 3

If the code is reset, connect the scanner and observe the data stream. Check the desired EGR position (typically measured in percentage) and actual EGR position as reflected on the data stream display. Within a matter of milliseconds, they should be identical. If the actual EGR position indicates that it is opened too far, suspect that a piece of carbon has clogged the plunger opening or that the EGR valve is defective.

Step 4

Obviously, the easiest method for inspecting the EGR plunger would be to remove the valve and have a look. Unfortunately, the location of the EGR valve on some models makes EGR valve removal (and reinstallation) less than convenient. If the EGR valve can be easily removed for inspection, that would be my first step (particularly if the vehicle in question has more than 100K miles). Carbon fouling and passage clogging are pretty common problems for high-mileage vehicles. If the plunger appears to be impaired, remove the obstruction and retest the EGR system.

Step 5

If no obstruction is discovered in the EGR valve plunger opening, follow manufacturer's recommendations for testing the EGR actuator solenoids with the DVOM. Step down EGR valves may use multiple solenoids to affect the full spectrum of EGR system operation.

Step 6

If the EGR system for the vehicle in question uses an EGR valve position sensor, it is likely integrated into the valve itself. Follow manufacturer's recommendations, as well as the connector pinout charts and vehicle wiring diagrams found in your vehicle information source, to test individual components. Replace defective parts as required and retest the system.

Step 7

The DVOM may be used to test individual circuits between the PCM connector and the EGR valve connector. All related controllers must be disconnected from the circuit before testing begins.

Notes:

- Carbon deposits are caused by the high levels of detergent found in modern fuels
- After repairs are performed, allow the PCM to enter readiness mode before assuming they were successful

Reference Sources

[P042E Exhaust Gas Recirculation A Control Stuck Open](#), OBD-Codes.