

GENERIC · POWERTRAIN

P03E2

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P03E2

Cylinder 8 Pressure Variation Low

P03E2 indicates that the powertrain control module has detected an abnormally low pressure variation signature from cylinder 8 during the combustion cycle, typically derived from crankshaft speed fluctuations or ionization current analysis. The computer compares each cylinder's contribution to engine speed or combustion quality and flags cylinder 8 when its variation falls below the expected threshold, suggesting a mechanical or fueling issue specific to that cylinder.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Ignition system and misfire

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or a noticeable vibration that may be more pronounced when the engine is cold
- Slight misfire sensation or hesitation during acceleration, especially under load
- Decreased fuel economy due to inefficient combustion in cylinder 8
- In some cases, a flashing check engine light if the misfire becomes severe enough to risk catalytic converter damage

Common causes, most likely first

- 1 Faulty fuel injector for cylinder 8, such as a clogged nozzle or internal electrical failure
- 2 Worn or misadjusted spark plug, or a failing ignition coil dedicated to cylinder 8
- 3 Mechanical issue within cylinder 8, such as low compression from worn rings, a bad valve, or a faulty lifter
- 4 Vacuum leak or intake manifold gasket leak affecting the air/fuel mixture at cylinder 8
- 5 Exhaust leak near the cylinder 8 exhaust port that skews the pressure reading
- 6 Contaminated engine oil or incorrect oil viscosity affecting variable valve timing operation
- 7 Wiring or connector fault in the cylinder 8 injector or ignition circuit



How to diagnose and fix it

- 1 Perform a visual inspection of the cylinder 8 ignition coil, spark plug, and injector connectors for damage or corrosion
- 2 Swap the ignition coil and spark plug from cylinder 8 to another cylinder to see if the code follows the components
- 3 Conduct a compression test and a cylinder leak-down test on cylinder 8 to rule out mechanical faults
- 4 Use a scan tool to monitor live misfire counters and fuel trim data while manipulating the throttle to confirm the affected cylinder
- 5 Check for vacuum leaks using a smoke machine or propane enrichment around the intake manifold and cylinder 8 ports
- 6 Test the fuel injector for cylinder 8 with a noid light and measure its resistance against the manufacturer's specification
- 7 If all electrical and mechanical checks pass, perform an injector balance test or replace the injector as a last resort

Cylinder 8 pressure variation pitfalls

- A low pressure variation code on a single cylinder often points to a mechanical fault rather than an ignition or fueling problem, so compression testing should not be skipped.
- Some engines use ionization current across the spark plug to measure pressure variation, and a worn spark plug can corrupt that signal even if the plug still fires normally.
- The code can be set by a dirty or failing mass airflow sensor that leans out one cylinder more than others, so fuel trim data across all cylinders is worth reviewing.
- A leaking exhaust manifold gasket near cylinder 8 can create a pressure pulse that the computer misinterprets as low variation, mimicking an internal engine fault.
- After repairs, the code may persist until the misfire monitor completes several drive cycles, so clearing the code and test-driving is essential before assuming the fix failed.

Can I keep driving with P03E2?

You can usually continue driving if the check engine light is steady and the engine runs smoothly, but avoid heavy acceleration or towing until the fault is diagnosed. If the light flashes or the engine runs rough, stop driving to prevent catalytic converter damage.

Tools that help

- OBD-II scan tool with live data and misfire counter capability
- Compression tester and cylinder leak-down tester
- Spark plug socket and torque wrench
- Noid light and digital multimeter
- Smoke machine for vacuum leak detection



Reading P03E2

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 3** Ignition system and misfire.
- E2** The exact fault within that area.

Often seen with

P0171 System Too Lean (Bank 1) · **P0300** Random/Multiple Cylinder Misfire Detected · **P0307** Cylinder 7 Misfire Detected · **P0308** Cylinder 8 Misfire Detected · **P219A** Bank 1 Air-Fuel Ratio Imbalance

See it working

Watch the animated explainer [How an Elevator Works: Traction Lift in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p03e2/>

