

GENERIC · POWERTRAIN

P03E3

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P03E3

Cylinder 8 Pressure Variation High

P03E3 means the powertrain control module (PCM) has detected that cylinder 8 is producing a pressure variation that is higher than the calibrated limit during the combustion stroke. The PCM monitors crankshaft speed fluctuations to infer each cylinder's contribution, and it sets this code when cylinder 8's variation exceeds the expected value.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Ignition system and misfire

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or a noticeable shake, especially when the engine is cold
- Misfire-like shudder or hesitation during acceleration
- Reduced engine power or a limp-home mode in some vehicles
- Poor fuel economy or an increase in exhaust emissions
- Occasional engine stumble or surge at steady cruising speeds

Common causes, most likely first

- 1 Faulty fuel injector for cylinder 8, such as a clogged nozzle or electrical failure
- 2 Worn or damaged spark plug, ignition coil, or spark plug wire for cylinder 8
- 3 Mechanical issue in cylinder 8, such as low compression from worn rings, valves, or a head gasket leak
- 4 Vacuum leak or intake manifold gasket leak affecting cylinder 8's air supply
- 5 Exhaust restriction or a faulty variable valve timing component affecting cylinder 8
- 6 Contaminated fuel or a fuel pressure problem that disproportionately affects one cylinder
- 7 Wiring or connector issue in the fuel injector or ignition circuit for cylinder 8



How to diagnose and fix it

- 1 Perform a visual inspection of the cylinder 8 ignition components and fuel injector wiring for damage or loose connections
- 2 Swap the ignition coil and spark plug from cylinder 8 with a known-good cylinder to see if the code follows the components
- 3 Use a scan tool to check for pending or stored misfire codes and review freeze-frame data to confirm the operating conditions
- 4 Run a compression test and a cylinder leak-down test on cylinder 8 to rule out mechanical problems
- 5 Check fuel injector operation with a noid light or injector balance test, and clean or replace the injector if necessary
- 6 Inspect the intake manifold and vacuum lines for leaks near cylinder 8
- 7 If all else checks out, perform a crankshaft position sensor relearn or PCM software update as recommended by the manufacturer

Cylinder 8 pressure variation is not always a misfire

- A pressure variation code can be set by a marginally performing injector that does not trigger a traditional misfire code, so injector balance testing is often more revealing than a simple misfire counter.
- Mechanical problems like a worn cam lobe or a sticking valve can cause high pressure variation on one cylinder without any ignition or fuel fault, so compression testing is essential before replacing parts.
- Some vehicles use this code to flag a failing high-pressure fuel pump or a clogged fuel filter that affects cylinder 8 first due to fuel rail design, so fuel pressure testing under load is a smart step.
- A dirty mass airflow sensor or a vacuum leak can skew fuel trims and cause one cylinder to run lean, setting this code even though the root cause is not cylinder-specific.
- After repairs, a relearn or adaptation reset may be required for the PCM to relearn the crankshaft variation, otherwise the code may return immediately.

Can I keep driving with P03E3?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or prolonged idling because continued driving with a pressure variation can damage the catalytic converter and worsen engine performance. If the check engine light is flashing, stop driving and seek immediate service.

Tools that help

- OBD-II scan tool with live data and misfire monitoring
- Compression tester
- Cylinder leak-down tester
- Noid light or fuel injector balance tester
- Vacuum gauge
- Basic hand tools and a multimeter



Reading P03E3

- 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.
- E3** The exact fault within that area.

Often seen with

P0171 System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2) · **P0208** Injector Circuit/Open - Cylinder 8 · **P0300** Random/Multiple Cylinder Misfire Detected · **P0308** Cylinder 8 Misfire Detected

See it working

Watch the animated explainer [How a Car Thermostat Works: Wax Pellet and Cooling Fan](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p03e3/>

