

GENERIC · POWERTRAIN

# P03B1

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

## P03B1

### Cylinder 3 Pressure Variation High

P03B1 means the powertrain control module has detected that cylinder 3 is producing an abnormally high pressure variation during the combustion cycle, based on crankshaft speed fluctuations or cylinder pressure sensor data. The engine computer compares each cylinder's contribution to smooth rotation and flags cylinder 3 when its pressure pulses deviate beyond the calibrated limit.

| 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 at first
- Rough idle or a noticeable shake that may be worse when the engine is cold
- Misfire-like shudder or hesitation during light acceleration
- Reduced fuel economy as the computer adjusts fuel trim to compensate
- Intermittent flashing check engine light under load if the variation becomes severe
- Slight loss of power or uneven acceleration felt through the seat and steering wheel

### Common causes, most likely first

- 1 Faulty fuel injector for cylinder 3 delivering an inconsistent spray pattern or incorrect quantity
- 2 Worn or misadjusted ignition components specific to cylinder 3, such as a spark plug with excessive gap or a failing coil
- 3 Mechanical issue inside cylinder 3, including low compression from worn rings, a leaking valve, or a damaged camshaft lobe
- 4 Carbon buildup on the intake valve or injector tip causing uneven combustion in that cylinder
- 5 Contaminated or degraded engine oil affecting variable valve timing response on that cylinder bank
- 6 A failing cylinder pressure sensor or crankshaft position sensor signal that falsely reports variation
- 7 Vacuum leak or intake manifold gasket leak near cylinder 3 that leans out that specific runner



## How to diagnose and fix it

- 1 Scan all stored and pending codes, then check freeze-frame data to confirm the fault occurred under specific load and temperature conditions
- 2 Inspect the spark plug and ignition coil for cylinder 3, swapping the coil to another cylinder to see if the code follows
- 3 Perform a compression test and, if compression is low, a cylinder leak-down test to rule out mechanical faults
- 4 Use a noid light or injector balance test to verify the cylinder 3 injector is firing and flowing correctly
- 5 Check for vacuum leaks around the intake runner for cylinder 3 using a smoke machine or carburetor cleaner while watching fuel trims
- 6 Verify crankshaft position sensor signal integrity with an oscilloscope if the pressure variation reading seems inconsistent with mechanical tests
- 7 After repairs, clear codes and perform a relearn or drive cycle to confirm the pressure variation returns to normal

## What a pressure variation code really means

- A high pressure variation reading on one cylinder often traces to a marginal ignition coil that still fires but with a weak spark, which many technicians miss because the coil passes a basic resistance test.
- The code does not always mean the cylinder is mechanically failing; a dirty fuel injector or a small vacuum leak at that runner can create enough imbalance to set P03B1 without any compression loss.
- Swapping the ignition coil and spark plug to a different cylinder is the fastest way to see whether the fault follows the component or stays with cylinder 3, and it costs nothing but time.
- Carbon buildup on direct-injection engines can cause cylinder-specific pressure variation that clears after a professional intake valve cleaning, so do not condemn the engine before inspecting the valves.
- A failing crankshaft position sensor or a damaged reluctor wheel can produce phantom pressure variation codes because the computer calculates pressure from crank speed fluctuations, not from a real pressure sensor on many engines.

## Can I keep driving with P03B1?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or sustained high-speed driving until the fault is diagnosed. If the check engine light flashes or the engine runs very rough, stop driving and arrange a tow to prevent catalytic converter damage.



## Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Compression gauge and cylinder leak-down tester
- Noid light or injector balance tester
- Vacuum smoke machine
- Oscilloscope for crankshaft and injector signal analysis
- Basic hand tools including spark plug socket and torque wrench

## Reading P03B1

|           |                                                                      |
|-----------|----------------------------------------------------------------------|
| <b>P</b>  | Powertrain: engine, transmission and emissions.                      |
| <b>0</b>  | Generic (SAE) code: it means the same thing on every OBD-II vehicle. |
| <b>3</b>  | Ignition system and misfire.                                         |
| <b>B1</b> | The exact fault within that area.                                    |

## Often seen with

**P0171** System Too Lean (Bank 1) · **P0203** Injector Circuit Malfunction - Cylinder 3 · **P0300** Random/Multiple Cylinder Misfire Detected · **P0303** Cylinder 3 Misfire Detected · **P0353** Ignition Coil C Primary/Secondary Circuit Malfunction

## See it working

Watch the animated explainer [How a Jet Engine Works: Two-Spool Turbofan](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p03b1/>

