

GENERIC · POWERTRAIN

P2B19

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2B19

Cylinder 5 Injection Pulse Offset Exceeded Learning Limit

P2B19 means the engine computer has learned that the fuel injector for cylinder 5 needs a pulse width correction that has hit the maximum allowed learning limit. The computer monitors crankshaft speed fluctuations and adjusts each injector's pulse width to keep all cylinders contributing equally, and when the required offset for cylinder 5 exceeds the stored limit, it sets this code.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Hybrid propulsion

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- A slight rough idle or vibration that may be more noticeable when the engine is cold
- Intermittent misfire sensation or hesitation during light acceleration
- Slightly reduced fuel economy over time as the computer struggles to balance cylinder 5
- In some cases, a stored misfire code for cylinder 5 may accompany this code

Common causes, most likely first

- 1 Clogged or partially restricted fuel injector on cylinder 5
- 2 Carbon buildup on the intake valve or port for cylinder 5, reducing airflow
- 3 Worn or fouled spark plug on cylinder 5 causing incomplete combustion
- 4 Faulty ignition coil or plug wire for cylinder 5 leading to weak spark
- 5 Vacuum leak near the intake runner for cylinder 5, leaning out that cylinder
- 6 Mechanical issue such as low compression or a sticking valve on cylinder 5
- 7 Corroded or damaged wiring to the cylinder 5 injector causing erratic pulse delivery



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to see when the code set
- 2 Perform a visual inspection of the cylinder 5 injector connector, wiring, and ignition components for damage or corrosion
- 3 Check spark plug condition and gap on cylinder 5, replacing if fouled or worn
- 4 Run a compression test and cylinder leak-down test on cylinder 5 to rule out mechanical faults
- 5 Use a noid light or oscilloscope to verify the injector pulse signal at the cylinder 5 injector
- 6 Perform an injector balance test or remove and flow-test the cylinder 5 injector to check for clogging
- 7 If the injector is restricted, have it professionally cleaned or replaced, then clear the adaptive learning and road-test to confirm the code does not return

What the learning limit really tells you

- The code does not mean the injector has failed electrically; it means the computer has run out of adjustment range while trying to balance cylinder 5, so the root cause is often airflow or compression rather than the injector itself.
- A dirty mass airflow sensor or a general intake leak can skew fueling across all cylinders and push one cylinder's offset past the limit, so check global fuel trims before condemning the cylinder 5 injector.
- Carbon buildup on direct-injection engines is a frequent hidden cause of this code because the intake valves are not washed by fuel, and a top-tier fuel additive will not clean them.
- After any repair, the adaptive learning values must be cleared and a relearn drive cycle performed, otherwise the code may reappear immediately even though the fault is fixed.
- A marginal ignition coil on cylinder 5 can cause the computer to add fuel trying to smooth the misfire, eventually exceeding the offset limit without ever setting a misfire code.

Can I keep driving with P2B19?

You can usually continue driving short distances at moderate speeds, but avoid heavy acceleration or towing until the fault is diagnosed. Prolonged driving with a cylinder imbalance can overheat the catalytic converter and cause secondary damage, so schedule service soon.

Tools that help

- OBD-II scan tool with live data and bidirectional control capability
- Digital multimeter for checking injector resistance and wiring continuity
- Compression tester and cylinder leak-down tester
- Noid light or automotive oscilloscope for injector pulse verification
- Fuel pressure gauge and injector balance tester
- Basic hand tools including spark plug socket and torque wrench



Reading P2B19

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- B** Hybrid propulsion.
- 19** The exact fault within that area.

Often seen with

P0171 System Too Lean (Bank 1) · **P0172** System Too Rich (Bank 1) · **P0205** Injector Circuit/Open - Cylinder 5
· **P0305** Cylinder 5 Misfire Detected · **P2B18** Cylinder 5 Injection Pulse Offset Not Learned

See it working

Watch the animated explainer [How a Refrigerator Works: The Cooling Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2b19/>

