



P2C5E

Cylinder 7 Fuel Injector B Offset Learning At Min Limit

P2C5E indicates that the powertrain control module has learned a fuel injector offset correction for cylinder 7 that has reached its minimum allowable limit, meaning the injector is flowing more fuel than expected and the computer can no longer lean it out. The code is set when the adaptive learning value for that injector's offset stays pinned at the bottom of its range during the learning routine.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Hybrid propulsion

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Rough idle or misfire sensation, especially when the engine is cold
- Slight decrease in fuel economy due to rich operation on cylinder 7
- Black sooty exhaust or a strong fuel odor from the tailpipe in more severe cases
- Occasional hesitation or stumble during acceleration
- Long-term fuel trim readings that are unusually negative on the affected bank

Common causes, most likely first

- 1 Leaking or dripping fuel injector on cylinder 7, causing excess fuel delivery
- 2 Sticking or partially open injector pintle due to carbon buildup or contamination
- 3 High fuel pressure from a faulty pressure regulator or restricted return line
- 4 Wiring harness chafing or corrosion at the injector connector causing intermittent over-fueling signals
- 5 Failed injector driver inside the powertrain control module holding the injector open longer than commanded
- 6 Restricted intake or exhaust flow specific to cylinder 7 that skews the offset learning
- 7 Use of incorrect or contaminated fuel that has damaged the injector internally



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data and fuel trim values to confirm the code is current and not history
- 2 Perform a visual inspection of the cylinder 7 injector connector and harness for corrosion, chafing, or loose pins
- 3 Check fuel pressure with a gauge and compare to specification to rule out a high-pressure condition
- 4 Run an injector balance test or cylinder contribution test to compare cylinder 7 against the others
- 5 Remove and flow-test the cylinder 7 injector, or swap it with a known-good injector from another cylinder to see if the code follows
- 6 If the injector tests bad, replace it and clear adaptive learning so the PCM can relearn the offset
- 7 If the injector and wiring test good, check for PCM software updates or a faulty driver circuit before condemning the module

What the offset learning limit really means

- A min-limit offset code does not automatically mean the injector is faulty; a restricted intake or exhaust path on that cylinder can skew the learning value just as easily.
- Technicians often replace the injector without first checking fuel pressure, and a failing pressure regulator can mimic a leaking injector on one cylinder.
- The adaptive offset learning can be skewed by a dirty mass airflow sensor or a vacuum leak that affects only one bank, so check fuel trims on both banks before condemning cylinder 7.
- After replacing the injector, the PCM must complete a relearn drive cycle; clearing the code without allowing the relearn to finish will often cause it to return.
- Intermittent connector faults at the injector can set this code without any drivability complaint, so a wiggle test of the harness is a worthwhile cheap check.

Can I keep driving with P2C5E?

The vehicle is generally safe to drive to a repair shop, but avoid heavy acceleration and long trips because continued rich operation on cylinder 7 can foul the spark plug and damage the catalytic converter over time. If the check engine light begins flashing or the engine runs very rough, stop driving and have it towed.

Tools that help

- OBD-II scan tool with live data and bidirectional controls
- Fuel pressure gauge
- Digital multimeter for harness and injector resistance checks
- Noid light or injector pulse tester
- Mechanic's stethoscope or screwdriver for listening to injector operation
- Basic hand tools for injector removal and replacement



Reading P2C5E

- P** Powertrain: engine, transmission and emissions.
- 2** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- C** Hybrid propulsion.
- 5E** The exact fault within that area.

Often seen with

P0172 System Too Rich (Bank 1) · **P0175** System Too Rich (Bank 2) · **P0307** Cylinder 7 Misfire Detected · **P2C5D** Cylinder 6 Fuel Injector B Offset Learning At Max Limit · **P2C5F** Cylinder 7 Fuel Injector B Offset Learning At Max Limit

See it working

Watch the animated explainer [How a Car Clutch Works: Diaphragm Clutch Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2c5e/>

