

GENERIC · POWERTRAIN

P2C5F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2C5F

Cylinder 7 Fuel Injector B Offset Learning At Max Limit

P2C5F indicates that the engine control module has learned the maximum allowable offset for the fuel injector on cylinder 7, meaning the injector's electrical or hydraulic performance has drifted beyond what the software can compensate for. The computer detects this when the injector's offset learning value hits its upper limit during closed-loop fuel control, signaling a fault in the injector circuit or the injector itself.

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

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or misfire felt as a shake or stumble, especially when cold
- Reduced engine power or hesitation during acceleration
- Poor fuel economy or a rich/lean exhaust smell
- Intermittent misfire code for cylinder 7 stored alongside P2C5F
- Engine may enter limp mode in severe cases

Common causes, most likely first

- 1 Faulty fuel injector on cylinder 7 (clogged, leaking, or electrically degraded)
- 2 Wiring harness damage or poor connection at the cylinder 7 injector connector
- 3 Corrosion or loose pins in the injector electrical circuit
- 4 Engine control module software calibration issue or internal driver fault
- 5 Low fuel pressure or contaminated fuel affecting injector performance
- 6 Mechanical engine issue such as low compression on cylinder 7

How to diagnose and fix it

- 1 Inspect the cylinder 7 injector connector and wiring for damage, corrosion, or loose pins
- 2 Measure injector resistance and compare to manufacturer specification
- 3 Check fuel pressure and quality; test for contaminated fuel
- 4 Perform a cylinder balance or injector contribution test to confirm the faulty injector
- 5 Swap the cylinder 7 injector with a known-good one from another cylinder to see if the code follows
- 6 Replace the faulty fuel injector and clear the adaptive learning values
- 7 Verify repair by road-testing and confirming the offset learning returns to normal range



What the offset learning value really tells you

- The offset learning value is the ECM's long-term correction for injector flow variation; hitting the max limit means the injector is flowing outside the normal range, but it does not always mean the injector is electrically dead.
- A dirty or partially clogged injector can cause this code without setting a misfire code, so injector cleaning or replacement may be needed even if the engine runs smoothly.
- Wiring issues at the injector connector are a common cause that is often overlooked; always check for chafed wires or corrosion before replacing the injector.
- Low fuel pressure or a weak fuel pump can force the ECM to max out injector offset learning on one or more cylinders, so check fuel delivery before condemning the injector.
- After replacing the injector, the ECM must relearn the offset; clearing adaptive values and performing a relearn drive cycle is essential to prevent the code from returning.

Can I keep driving with P2C5F?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration or towing because a misfire can damage the catalytic converter. If the engine is running very rough or flashing the check engine light, stop driving and seek immediate service.

Tools that help

- OBD-II scan tool with bidirectional control and live data
- Digital multimeter
- Fuel pressure gauge
- Injector test light or noid light
- Basic hand tools for connector and injector access

Reading P2C5F

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

Often seen with

P0207 Injector Circuit/Open - Cylinder 7 · **P0307** Cylinder 7 Misfire Detected · **P2149** Fuel Injector Group 'B' Supply Voltage Circuit/Open · **P2C5E** Cylinder 7 Fuel Injector B Offset Learning At Min Limit · **P2C60** Cylinder 8 Fuel Injector B Offset Learning At Min Limit



See it working

Watch the animated explainer **Four-Stroke Engine Cutaway: Intake to Exhaust** on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2c5f/>

