

GENERIC · POWERTRAIN

P02C6

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P02C6

Cylinder 12 - Fuel Trim at Max Limit

P02C6 indicates that the engine control module has detected the long-term fuel trim for cylinder 12 has reached its maximum correction limit, meaning the computer is adding or subtracting the most fuel it can to that cylinder and still cannot bring the air-fuel ratio back to target. This points to a persistent imbalance specific to cylinder 12, such as a vacuum leak, fuel delivery problem, or mechanical fault.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Professional	Fuel and air metering (injector circuits)

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-running smell from the exhaust
- Occasional engine surge or uneven running at steady speed

Common causes, most likely first

- 1 Vacuum leak at the intake manifold runner or gasket for cylinder 12
- 2 Faulty fuel injector for cylinder 12, such as a clogged nozzle or stuck open
- 3 Low fuel pressure or restricted fuel delivery affecting that cylinder
- 4 Leaking intake manifold gasket or cracked intake runner
- 5 Worn or misadjusted valve train components on cylinder 12
- 6 Faulty oxygen sensor or wiring affecting fuel trim calculation
- 7 Engine mechanical issue such as low compression on cylinder 12



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data and fuel trim values for all cylinders to confirm the fault is isolated to cylinder 12.
- 2 Inspect the intake manifold and vacuum lines around cylinder 12 for cracks, loose fittings, or leaking gaskets using a smoke machine.
- 3 Check fuel pressure and volume at the rail, and compare injector pulse widths for cylinder 12 against neighbouring cylinders.
- 4 Perform a cylinder balance test or temporarily disable the cylinder 12 injector to see if the fuel trim changes, confirming injector involvement.
- 5 Test the fuel injector for cylinder 12 with a noid light and measure its resistance, then clean or replace it if faulty.
- 6 Run a compression test and cylinder leak-down test on cylinder 12 to rule out mechanical faults.
- 7 Inspect the oxygen sensor and its wiring for contamination or damage, and replace if the signal is erratic or biased.

Cylinder 12 fuel trim traps to avoid

- A maxed-out fuel trim on a single cylinder often comes from a small vacuum leak at the intake port that only affects that runner, not from a failed injector.
- Technicians sometimes replace the oxygen sensor first, but a biased sensor usually affects the whole bank and sets bank-level codes rather than a single-cylinder code.
- Cylinder 12 is on a V12 or large engine, and its location at the rear of the engine bay makes intake gasket leaks and injector access easy to overlook during a quick visual inspection.
- A clogged or restricted fuel injector can cause the fuel trim to max out without setting a misfire code if the imbalance is mild enough.
- Mechanical faults like a worn cam lobe or valve seat on cylinder 12 can mimic fuel trim issues, so a compression test is essential before condemning fuel system parts.

Can I keep driving with P02C6?

You can drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or long trips because continued driving with a maxed-out fuel trim can damage the catalytic converter and worsen engine performance. If the check engine light starts flashing, stop driving and have the vehicle towed.

Tools that help

- OBD-II scan tool with live data and fuel trim graphing
- Smoke machine for intake leak detection
- Fuel pressure gauge
- Noid light and multimeter for injector testing
- Compression tester and cylinder leak-down tester



Reading P02C6

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 2** Fuel and air metering (injector circuits).
- C6** The exact fault within that area.

Often seen with

P0171 System Too Lean (Bank 1) · **P0172** System Too Rich (Bank 1) · **P0200** Injector Circuit Malfunction · **P0300** Random/Multiple Cylinder Misfire Detected · **P0301** Cylinder 1 Misfire Detected

See it working

Watch the animated explainer [How a Starter Motor Works: Pre-Engaged Starter](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p02c6/>

