



P02B7

Cylinder 8 - Fuel Trim at Min Limit

P02B7 means the engine computer has detected that cylinder 8's fuel trim has reached its minimum correction limit, so the powertrain control module can no longer lean out the mixture for that cylinder. The computer is reporting that the long-term or short-term fuel trim value for cylinder 8 has hit the richest allowable correction, indicating that cylinder is running too rich and the system cannot compensate any further.

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

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or misfire sensation, especially when the engine is cold
- Black sooty exhaust smoke or a strong fuel odor from the tailpipe
- Decreased fuel economy and a rich-running smell around the vehicle
- Possible hesitation or stumble during acceleration under load
- Elevated hydrocarbon emissions that may cause an emissions test failure

Common causes, most likely first

- 1 Leaking or stuck-open fuel injector on cylinder 8 delivering too much fuel
- 2 Faulty or contaminated mass airflow sensor reporting incorrect air volume
- 3 Vacuum leak affecting only cylinder 8, such as a cracked intake manifold gasket runner
- 4 Worn or fouled spark plug on cylinder 8 causing incomplete combustion and false rich readings
- 5 Failed oxygen sensor or air-fuel ratio sensor giving skewed feedback to the computer
- 6 Restricted or leaking positive crankcase ventilation system altering cylinder 8's air-fuel mixture
- 7 Mechanical fault such as low compression or a sticking valve on cylinder 8



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data plus long-term and short-term fuel trim values for both banks to confirm cylinder 8 is the only affected cylinder
- 2 Inspect the spark plug and ignition coil for cylinder 8 for fouling, wear, or oil contamination and replace as needed
- 3 Perform a fuel injector balance test or swap the cylinder 8 injector with a known-good injector to see if the rich condition moves
- 4 Check for vacuum leaks at the intake manifold runner and injector seals for cylinder 8 using a smoke machine or carburetor cleaner
- 5 Verify mass airflow sensor operation by comparing live data to expected values and cleaning or replacing it if contaminated
- 6 Test the upstream oxygen sensor or air-fuel ratio sensor response with a scan tool to rule out a lazy or biased sensor
- 7 Run a compression test and cylinder leak-down test on cylinder 8 to rule out mechanical causes before replacing expensive parts

Cylinder 8 fuel trim traps to avoid

- A rich fuel trim limit on only one cylinder almost always points to that cylinder's injector or ignition, not to a global sensor like the mass airflow meter, so avoid replacing the mass airflow sensor first.
- A misfiring cylinder can dump unburned fuel into the exhaust, causing the oxygen sensor to report a rich condition and set a fuel trim code even though the root cause is ignition-related.
- Fuel trim codes for a single cylinder can be set by a leaking injector that drips fuel when the engine is off, which floods that cylinder on startup and skews the trim readings.
- Some vehicles use individual cylinder fuel trim monitoring that is sensitive to intake manifold runner tuning valves or variable valve timing faults, so check those systems if the injector and ignition check out.
- A stuck-open purge valve on the evaporative emissions system can feed fuel vapor into the intake and cause rich fuel trim codes that appear to affect one cylinder more than others.

Can I keep driving with P02B7?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or long trips because the rich condition can foul the spark plug and damage the catalytic converter over time. If the check engine light is flashing or the engine is misfiring badly, stop driving and have it towed.



Tools that help

- OBD-II scan tool with live fuel trim and freeze-frame data capability
- Fuel injector balance tester or a known-good injector for swap testing
- Smoke machine for intake and vacuum leak detection
- Compression gauge and cylinder leak-down tester
- Digital multimeter for sensor and injector circuit testing
- Spark plug socket and ignition coil removal tools

Reading P02B7

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).
B7	The exact fault within that area.

Often seen with

P0172 System Too Rich (Bank 1) · **P0175** System Too Rich (Bank 2) · **P02B6** Cylinder 8 - Fuel Trim at Max Limit · **P02B8** Cylinder 8 - Injector Restricted · **P0308** Cylinder 8 Misfire Detected

See it working

Watch the animated explainer [How Push-Button Start Works: Keyless Ignition](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p02b7/>

