



P02B6

Cylinder 8 - Fuel Trim at Max Limit

This code indicates that the engine computer has reached the maximum authority to adjust fuel delivery for cylinder number 8, meaning the air-fuel mixture for that cylinder is far from the target ratio. The powertrain control module (PCM) has commanded the fuel injector to either add or subtract as much fuel as it can, but the oxygen sensor feedback still shows the mixture is not correct.

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 or under load.
- Reduced engine power or hesitation during acceleration.
- Poor fuel economy due to the engine running rich or lean on that cylinder.
- Possible engine vibration or shaking that varies with engine speed.
- In some cases, a sulfur or rotten egg smell from the exhaust if the mixture is excessively rich.

Common causes, most likely first

- 1 Faulty fuel injector for cylinder 8, such as a clogged nozzle or internal leak.
- 2 Vacuum leak at the intake manifold runner or gasket near cylinder 8.
- 3 Malfunctioning ignition coil or spark plug causing incomplete combustion that affects fuel trim.
- 4 Exhaust leak before the oxygen sensor that skews the feedback signal for that bank.
- 5 Low fuel pressure or restricted fuel filter affecting all cylinders but most noticeable on one.
- 6 Worn or contaminated mass airflow sensor (MAF) sending inaccurate air quantity data.
- 7 Mechanical issue such as low compression or a sticking valve on cylinder 8.



How to diagnose and fix it

- 1 Scan all stored codes and freeze-frame data to confirm the fault is specific to cylinder 8 and not a bank-wide issue.
- 2 Inspect the intake system for vacuum leaks around cylinder 8 using a smoke machine or propane enrichment test.
- 3 Check fuel pressure and volume at the rail to rule out a weak pump or clogged filter.
- 4 Perform a cylinder balance test or swap the ignition coil and spark plug from cylinder 8 to another cylinder to see if the misfire moves.
- 5 Test the fuel injector for cylinder 8 with a noid light and measure its resistance; compare to specifications.
- 6 Perform a compression test and cylinder leak-down test on cylinder 8 to rule out mechanical problems.
- 7 If all else checks out, use a scan tool to monitor short-term and long-term fuel trim for that cylinder while applying carb cleaner to suspect areas to pinpoint a leak.

What a maxed-out fuel trim really tells you

- A fuel trim at its maximum limit does not automatically mean the injector is bad; a vacuum leak or exhaust leak can cause the same reading by fooling the oxygen sensor.
- Many technicians replace the oxygen sensor first, but the sensor is usually reporting a real mixture problem rather than causing it.
- Cylinder-specific fuel trim codes often appear after a recent repair that disturbed the intake or exhaust, such as a manifold gasket replacement.
- A dirty mass airflow sensor can skew fuel trims across all cylinders, but the cylinder with the highest airflow demand may hit the limit first.
- Always check for technical service bulletins (TSBs) for the specific vehicle, as some engines have known issues with intake manifold gaskets or injector connectors.

Can I keep driving with P02B6?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration or towing because the engine is running with an incorrect mixture that can damage the catalytic converter over time. If the check engine light is flashing, stop driving and seek immediate service.

Tools that help

- OBD-II scan tool with live data and fuel trim capabilities
- Vacuum gauge or smoke machine for leak detection
- Fuel pressure test kit
- Compression tester
- Noid light and multimeter for injector testing
- Basic hand tools for swapping coils and plugs



Reading P02B6

- 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).
- B6** The exact fault within that area.

Often seen with

P0172 System Too Rich (Bank 1) · **P0175** System Too Rich (Bank 2) · **P0308** Cylinder 8 Misfire Detected · **P2196** O2 Sensor Signal Stuck Rich (Bank 1 Sensor 1) · **P2198** O2 Sensor Signal Stuck Rich (Bank 2 Sensor 1)

See it working

Watch the animated explainer [How an Automatic Transmission Works, Gear by Gear](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p02b6/>

