

GM · POWERTRAIN

P1170

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1170 · GM

Bank to Bank Fuel Trim Offset

P1170 on GM vehicles indicates that the engine control module (ECM) has detected a significant difference in long-term fuel trim between bank 1 and bank 2, meaning one side of the engine is running richer or leaner than the other. The ECM sets this code when the bank-to-bank fuel trim offset exceeds a calibrated threshold, typically around 20 percent, signaling an imbalance in fuel delivery or air metering.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Medium	Professional	Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or misfire, especially when the engine is cold
- Reduced fuel economy due to one bank running excessively rich or lean
- Hesitation or stumble during acceleration
- Black smoke or sulfur smell from the exhaust if one bank is running very rich
- Possible catalytic converter damage over time if the imbalance persists

Common causes, most likely first

- 1 Faulty oxygen sensor on one bank, providing a biased signal to the ECM
- 2 Leaking or clogged fuel injector on one bank, causing unequal fuel delivery
- 3 Vacuum leak affecting only one bank, such as a cracked intake manifold gasket
- 4 Exhaust leak before the oxygen sensor on one bank, introducing false air
- 5 Wiring or connector issue in the oxygen sensor circuit for one bank
- 6 Mechanical engine problem, such as low compression or a faulty valve on one bank
- 7 Contaminated mass airflow sensor (MAF) causing uneven fuel trim corrections



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data and fuel trim values for both banks to confirm the imbalance
- 2 Inspect for vacuum leaks and exhaust leaks, focusing on the intake and exhaust manifolds for the affected bank
- 3 Test the oxygen sensors on both banks for proper switching and compare their signals
- 4 Check fuel injectors for balance by performing an injector balance test or inspecting for leaks
- 5 Verify fuel pressure and inspect the fuel filter for restrictions
- 6 Inspect wiring and connectors at the oxygen sensors and ECM for corrosion or damage
- 7 Perform a compression test or cylinder leak-down test if mechanical issues are suspected

When fuel trim points to one bank

- A common misdiagnosis is replacing both oxygen sensors when only one is biased; always compare bank 1 and bank 2 sensor signals before condemning parts.
- An exhaust leak before the oxygen sensor on one bank can introduce outside air and skew fuel trim, mimicking a faulty sensor.
- Fuel trim imbalance can be caused by a sticking fuel injector that does not set a misfire code, so injector balance testing is crucial.
- On V6 and V8 engines, a failed intake manifold gasket often affects only one bank, leading to P1170 without other codes.
- P1170 can be set by a contaminated mass airflow sensor that causes the ECM to adjust fuel trim unevenly between banks, so check MAF readings first.

Can I keep driving with P1170?

You can drive the vehicle short distances to a repair shop, but avoid heavy acceleration or towing, as prolonged driving with a bank imbalance can damage the catalytic converter and worsen fuel economy.

Tools that help

- OBD-II scan tool with live data and fuel trim capabilities
- Vacuum gauge
- Fuel pressure gauge
- Injector balance tester
- Digital multimeter
- Compression tester



Reading P1170

- P** Powertrain: engine, transmission and emissions.
- 1** Manufacturer-specific code (GM): its meaning depends on the make.
- 1** Fuel and air metering.
- 70** The exact fault within that area.

Often seen with

P0171 System Too Lean (Bank 1) · **P0172** System Too Rich (Bank 1) · **P0174** System Too Lean (Bank 2) · **P0175** System Too Rich (Bank 2) · **P0300** Random/Multiple Cylinder Misfire Detected

See it working

Watch the animated explainer [How a Refrigerator Works: The Cooling Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1170/>

