

JAGUAR · POWERTRAIN

P1178

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1178 · Jaguar

Long Term Fuel Trim Too Lean Banks 1 And 2 (AMFR)

P1178 on Jaguar vehicles means the engine control module has detected that the long term fuel trim on both banks has reached its lean correction limit, so the engine is running too lean and the computer can no longer add enough fuel to compensate. The AMFR label refers to the adaptive mixture feedback routine that stores this lean bias after repeated closed-loop corrections.

SYSTEM

Powertrain

CODE TYPE

Jaguar specific

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other symptoms besides the warning light
- Rough idle or intermittent misfire when the engine is cold or under light load
- Hesitation or flat spots during acceleration as the mixture leans out
- Reduced fuel economy despite the lean condition because the module may enrich elsewhere
- Occasional stalling at idle or after deceleration
- Failed emissions test with high nitrogen oxide or carbon monoxide readings

Common causes, most likely first

- 1 Unmetered air entering through a split intake hose, failed intake gasket, or loose intake clamp
- 2 Leaking or contaminated mass air flow sensor reporting less air than actually enters the engine
- 3 Weak or failing fuel pump delivering insufficient volume at higher demand
- 4 Clogged fuel filter or restricted fuel line reducing pressure to the injectors
- 5 Dirty or partially blocked fuel injectors on both banks
- 6 Faulty upstream oxygen sensors biased lean on both banks
- 7 Low fuel pressure caused by a failing fuel pressure regulator or a leaking in-tank hose



How to diagnose and fix it

- 1 Connect a scan tool and record long term fuel trim on both banks at idle and at 2500 rpm to confirm the lean bias before touching parts
- 2 Smoke-test the intake system to find unmetered air leaks at hoses, gaskets, and the PCV system
- 3 Clean the mass air flow sensor with dedicated cleaner and verify its live reading against expected airflow
- 4 Measure fuel pressure and volume at the rail, then compare with the Jaguar specification for the engine
- 5 Replace the fuel filter if pressure drops under load and inspect the in-tank hose for splits
- 6 Perform an injector balance or flow test and clean or replace injectors if delivery is uneven
- 7 Recheck fuel trims after repairs and clear the adaptive memory so the module relearns the mixture

Why both banks lean together matters

- A lean condition on both banks at once almost always points to a shared cause such as fuel supply or unmetered air, not to two separate oxygen sensors failing together.
- A vacuum leak that only appears when the engine is cold can set P1178 without any leak showing on a warm smoke test, so test the intake system cold as well.
- Jaguar adaptive mixture feedback can store this code after a battery disconnect or module reset if the engine is started before the module relearns, so check for recent electrical work.
- A restricted exhaust or a failing catalytic converter can skew oxygen sensor readings lean on both banks and mimic a fuel delivery fault.
- Low fuel pressure that only drops under load will not show on a static rail pressure test, so always check pressure while revving the engine.

Can I keep driving with P1178?

You can drive gently to a workshop, but avoid hard acceleration and sustained high-speed driving because a prolonged lean mixture raises combustion temperatures and can damage valves and catalytic converters. If the engine misfires, stalls, or the check engine light flashes, stop driving and arrange a tow.

Tools that help

- OBD-II scan tool with live fuel trim and mass air flow data
- Smoke machine for intake leak testing
- Fuel pressure gauge with a long hose for road testing
- Digital multimeter for sensor and wiring checks
- Injector balance tester or flow bench
- Hand tools for intake and fuel system access



Reading P1178

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

Often seen with

P1177 Oxygen Sensor Correction Behind Catalyst Bank 1 Limit Attain · **P1179** Linear Oxygen Sensor Pump Current Short To Ground · **P1177** Long Term Fuel Trim Too Rich Banks 1 And 2 (FMFR) · **P1179** Long Term Fuel Trim Too Rich Banks 1 And 2 (AMFR) · **P1177** Synchronization Fault · **P1177** O2 Sensor Slow Response Bank 2 · **P1179** O2 Sensor Signal Circuit Slow Switching From Rich to Lean Ba · **P0171** System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2) · **P0300** Random/Multiple Cylinder Misfire Detected

See it working

Watch the animated explainer [Master the Four-Stroke Engine Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/jaguar-p1178/>

