

MAZDA · POWERTRAIN

P1133

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1133 · Mazda

Bank 1 Fuel Control Shifted Lean

P1133 on a Mazda indicates that the powertrain control module has detected the bank 1 fuel control system has shifted lean beyond its calibrated limit, meaning the engine is receiving too much air or not enough fuel on the bank containing cylinder 1. The computer monitors the long-term fuel trim and sets this code when the correction needed to maintain the proper air-fuel ratio exceeds a programmed threshold for a set time.

SYSTEM

Powertrain

CODE TYPE

Mazda specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or intermittent misfire, especially when the engine is cold
- Hesitation or stumble during acceleration
- Reduced fuel economy compared to normal
- Occasional surging or uneven power delivery
- Failed emissions test due to high nitrogen oxide or carbon monoxide levels

Common causes, most likely first

- 1 Vacuum leak from a cracked or disconnected intake hose, intake manifold gasket, or vacuum line
- 2 Contaminated or failing mass airflow sensor sending a lean-biased signal
- 3 Weak or failing fuel pump delivering insufficient volume
- 4 Clogged or restricted fuel filter
- 5 Leaking or stuck-open fuel injector on bank 1
- 6 Faulty upstream oxygen sensor on bank 1 giving an inaccurate reading
- 7 Exhaust leak before the upstream oxygen sensor allowing outside air into the exhaust stream



How to diagnose and fix it

- 1 Connect a scan tool and record freeze-frame data and long-term fuel trim values to confirm the lean condition
- 2 Perform a visual inspection of all intake and vacuum lines for cracks, loose clamps, or disconnected hoses
- 3 Use a smoke machine to pressurize the intake system and locate any hidden vacuum leaks
- 4 Check fuel pressure with a gauge and compare to Mazda specifications; replace the fuel filter if pressure is low
- 5 Clean the mass airflow sensor with a dedicated cleaner and verify its live data readings against expected values
- 6 Inspect the exhaust system for leaks upstream of the bank 1 oxygen sensor and repair as needed
- 7 If all above checks pass, test the upstream oxygen sensor response and replace if sluggish or biased

Hidden causes of a lean bank 1 code

- A dirty mass airflow sensor often reports less air than actually enters the engine, causing the computer to add fuel and eventually set P1133 without any driveability complaint.
Exhaust leaks between the cylinder head and the upstream oxygen sensor can pull in outside air during low-pressure pulses, fooling the sensor into reporting a lean condition that does not exist in the combustion chamber.
- A weak fuel pump may only show up under load; a static fuel pressure test can pass while volume and pressure drop during acceleration, so a dynamic flow test is more reliable.
- On some Mazda engines, a leaking intake manifold gasket at the number one cylinder runner creates a lean condition that is worse when cold and may not trigger a misfire code.
- P1133 can be set by a lazy upstream oxygen sensor that responds slowly to fuel changes, even though it still switches rich and lean; comparing its switching frequency to the downstream sensor helps confirm.

Can I keep driving with P1133?

You can usually drive the vehicle short distances at moderate speeds, but avoid hard acceleration, heavy loads, and sustained high-speed driving until the lean condition is repaired. Prolonged driving with a lean mixture can overheat the catalytic converter and cause expensive damage.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Smoke machine for intake leak detection
- Fuel pressure gauge
- Vacuum gauge
- Digital multimeter
- Mass airflow sensor cleaner



Reading P1133

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

Often seen with

P1134 Oxygen Sensor Heating Circuit Bank 1 + 2 Sensor 2 Short To B · **P1134** Front Oxygen AF Sensor Microcomputer Problem · **P1134** Bank 1 Fuel Control Shifted Rich · **P1134** O2 Sensor Transition Time (Bank 1 Sensor 1) · **P1134** Bank 1 Fuel Control Shifted Rich · **P1134** HO2S Transition Time Ratio · **P1134** O2 Sensor Heater Circuit Signal Intermittent Bank 1 Sensor 1 · **P0101** Mass/Volume Air Flow Circuit Range/Performance · **P0171** System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2) · **P2195** O2 Sensor Signal Stuck Lean (Bank 1 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/mazda-p1133/>

