

BMW · POWERTRAIN

P1087

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1087 · BMW

O2 Sensor Circuit Slow Response in Lean Control Range Bank 1 Sensor 1

P1087 on BMW vehicles means the engine computer has detected that the upstream oxygen sensor on bank 1 is responding too slowly when the fuel system is trying to correct a lean condition. The sensor's voltage is not switching as quickly as the computer expects, so the engine control unit flags the slow response and may limit its ability to fine-tune fuel delivery.

SYSTEM

Powertrain

CODE TYPE

BMW specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Often no symptoms besides the warning light, especially in early stages
- Intermittent rough idle or slight hesitation during acceleration
- Noticeably worse fuel economy over time
- A faint sulfur or rotten egg smell from the exhaust in some cases
- Occasional stumble or surge when the engine is cold
- Failed emissions test due to high or erratic readings

Common causes, most likely first

- 1 Aging or contaminated oxygen sensor (bank 1 sensor 1) that has lost its switching speed
- 2 Exhaust leaks upstream of the sensor, allowing outside air to skew readings
- 3 Oil or coolant contamination from internal engine leaks reaching the sensor
- 4 Wiring damage or corroded connector pins at the sensor or harness
- 5 A lazy sensor caused by excessive silicone or fuel additives in the fuel system
- 6 Rarely, a failing engine control unit driver circuit for the sensor heater



How to diagnose and fix it

- 1 Inspect the sensor wiring and connector for chafing, corrosion, or loose pins
- 2 Check for exhaust leaks between the cylinder head and the sensor using a smoke test
- 3 Verify the sensor's heater circuit resistance and supply voltage with a multimeter
- 4 Use a scan tool to watch live oxygen sensor voltage switching and compare to a known-good sensor
- 5 Replace the upstream oxygen sensor if it is slow or contaminated
- 6 Clear the fault memory and perform a drive cycle to confirm the code does not return
- 7 If the code persists, check for underlying rich or lean conditions that may have damaged the new sensor

What BMW techs check before replacing the sensor

- A slow oxygen sensor code often appears after an exhaust repair that left a small leak upstream, so always smoke-test the exhaust before condemning the sensor.
- Oil consumption or a failing valve cover gasket can contaminate the sensor with ash, causing slow response without setting a heater circuit code.
- On some BMW engines, a dirty mass airflow sensor can make the oxygen sensor appear lazy because the fuel trim is already skewed; check fuel trims first.
- The code can be set by a sensor that is simply old and tired, but it can also be a symptom of a failing catalytic converter that is not yet throwing its own code.
- After replacing the sensor, a full drive cycle including several cold starts and steady-speed cruising is needed before the monitor will run and confirm the fix.

Can I keep driving with P1087?

You can usually drive the car short distances to a repair shop, but avoid heavy acceleration or towing until the fault is fixed. Prolonged driving with a slow sensor can damage the catalytic converter and increase emissions, so schedule diagnosis soon.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Smoke machine for exhaust leak testing
- Oxygen sensor socket
- Basic hand tools (ratchet, extensions, wrenches)



Reading P1087

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

Often seen with

P0130 O2 Sensor Circuit Malfunction (Bank 1 Sensor 1) · **P0133** O2 Sensor Circuit Slow Response (Bank 1 Sensor 1) · **P0171** System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2) · **P0420** Catalyst System Efficiency Below Threshold (Bank 1)

See it working

Watch the animated explainer [How a Six-Speed Manual Gearbox Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/bmw-p1087/>

