

MAZDA · POWERTRAIN

P1137

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1137 · Mazda

HO2S Bank 1 Sensor 2 Not Switching Fuel Control Limit Reached

P1137 on Mazda vehicles means the downstream heated oxygen sensor (HO2S) for bank 1 is not switching as expected, and the powertrain control module (PCM) has reached the limit of its fuel control authority trying to compensate. The PCM monitors the rear sensor's voltage activity and detects that it stays too lean or too rich for too long, indicating a fault in the sensor circuit, the sensor itself, or a fuel mixture issue upstream.

SYSTEM

Powertrain

CODE TYPE

Mazda specific

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- A slight decrease in fuel economy as the PCM struggles to correct the mixture
- Occasional rough idle or hesitation during acceleration if the mixture is significantly off
- Failed emissions test due to incorrect oxygen sensor readings
- In rare cases, a sulfur or rotten egg smell from the exhaust if the mixture is excessively rich

Common causes, most likely first

- 1 Faulty downstream heated oxygen sensor (HO2S) that is slow to respond or stuck
- 2 Wiring damage or corrosion in the HO2S circuit, including connectors and grounds
- 3 Exhaust leak before or near the sensor, allowing outside air to skew readings
- 4 Contaminated sensor from oil, coolant, or silicone poisoning
- 5 Fuel pressure regulator or injector issues causing incorrect mixture
- 6 Vacuum leaks or unmetered air entering the intake
- 7 PCM software or calibration issue requiring reflash



How to diagnose and fix it

- 1 Perform a visual inspection of the downstream HO2S and its wiring for damage, corrosion, or loose connections
- 2 Check for exhaust leaks upstream of the sensor using a smoke test or by listening for ticking sounds
- 3 Use a scan tool to monitor the downstream HO2S voltage and compare it to the upstream sensor to confirm sluggish or stuck behavior
- 4 Test the HO2S heater circuit resistance and supply voltage to rule out a failed heater
- 5 Verify fuel pressure and inspect injectors for proper operation if the sensor appears functional
- 6 Replace the downstream HO2S if testing confirms it is not switching properly
- 7 Clear the codes and perform a drive cycle to verify the repair and ensure the monitor completes

Downstream sensor myths and misdiagnosis traps

- A P1137 does not automatically mean the downstream oxygen sensor is bad; a lazy upstream sensor or a small exhaust leak can cause the same code by skewing the rear sensor's readings.
Many technicians replace the downstream sensor only to have the code return because the root cause was a contaminated sensor from an internal coolant leak or excessive oil consumption.
 - The downstream sensor's primary job is to monitor catalytic converter efficiency, so a P1137 can sometimes be an early warning of converter degradation even before a P0420 sets.
 - On some Mazda models, a weak battery or poor ground can cause intermittent HO2S circuit faults that mimic a failed sensor, so always check powers and grounds first.
- After replacing the sensor, a full drive cycle at highway speed is required for the PCM to relearn and set the readiness monitors; short trips may not clear the code permanently.

Can I keep driving with P1137?

You can usually continue driving with P1137, but avoid heavy acceleration or towing until it is diagnosed, as the engine may be running with an incorrect air-fuel ratio that can damage the catalytic converter over time. Have the fault inspected soon to prevent more costly repairs.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Socket set and oxygen sensor wrench
- Smoke machine for exhaust leak testing
- Fuel pressure gauge



Reading P1137

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

Often seen with

P0136 O2 Sensor Circuit Malfunction (Bank 1 Sensor 2) · **P0137** O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2) · **P0138** O2 Sensor Circuit High Voltage (Bank 1 Sensor 2) · **P0171** System Too Lean (Bank 1) · **P0420** Catalyst System Efficiency Below Threshold (Bank 1)

See it working

Watch the animated explainer [Readiness Monitors and the OBD-II Drive Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/mazda-p1137/>

