

GENERIC · POWERTRAIN

P0051

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0051

HO2S Heater Control Circuit Low (Bank 2 Sensor 1)

P0051 means the engine computer has detected an abnormally low current flow in the heater circuit of the upstream oxygen sensor on bank 2, which is the side of the engine that does not contain cylinder number one. The heater is a small resistive element inside the sensor that warms it quickly so the sensor can report accurate exhaust oxygen content during cold starts and low-load driving.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Low	Intermediate	Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Extended time before the engine enters closed-loop fuel control, causing slightly rough idle when cold
- A small decrease in fuel economy because the sensor stays cold longer than normal
- Occasional hesitation or stumble during the first minute or two of driving after a cold start
- In rare cases, a rich-running condition if the sensor heater failure affects the sensor's signal accuracy

Common causes, most likely first

- 1 Failed oxygen sensor heater element, which is the most common cause and usually means the sensor must be replaced
- 2 Damaged or corroded wiring between the sensor heater circuit and the engine computer, often from heat, vibration, or rodent damage
- 3 Blown fuse that supplies power to the oxygen sensor heater circuit
- 4 Poor electrical connection at the oxygen sensor connector, including loose pins or water intrusion
- 5 Faulty engine computer driver for the heater circuit, which is rare but possible after other causes are ruled out
- 6 Open circuit in the heater ground path, such as a broken wire or bad ground connection



How to diagnose and fix it

- 1 Check the fuse that supplies power to the bank 2 sensor 1 heater circuit and replace it if blown
- 2 Inspect the oxygen sensor connector and wiring for corrosion, loose pins, or physical damage, and repair as needed
- 3 Measure the resistance of the heater element across the sensor-side heater terminals and compare it to the manufacturer's specification
- 4 With the ignition on and the sensor disconnected, check for battery voltage at the power supply wire on the harness side of the connector
- 5 Check for continuity to ground on the heater ground circuit and repair any open circuit
- 6 If the wiring and fuse are good but the heater resistance is out of specification or open, replace the bank 2 sensor 1 oxygen sensor
- 7 Clear the code and verify the repair by running the engine and confirming the heater circuit operates correctly with a scan tool

What the heater circuit really tells you

- A P0051 code does not always mean the oxygen sensor itself is bad; a blown fuse or a damaged wire is just as likely and costs far less to fix.
- The heater element can fail open while the sensor still produces a plausible signal, so the engine may run normally and the only clue is the code.
- Bank 2 sensor 1 is the upstream sensor on the bank that does not contain cylinder one, and on V6 or V8 engines that is often the harder side to reach.
- Some vehicles use a fused power supply shared by multiple oxygen sensor heaters, so a single blown fuse can set several heater codes at once.
- Rodent damage to oxygen sensor wiring is common in vehicles parked outdoors, and the chewed section is often hidden under the intake or near the firewall.

Can I keep driving with P0051?

It is generally safe to continue driving with P0051 because the engine will still run, but the sensor may stay cold longer and fuel economy can suffer slightly. Avoid long periods of idling and have the circuit checked soon, especially if the check engine light flashes or other codes appear.

Tools that help

- OBD-II scan tool
- Digital multimeter
- Fuse puller or test light
- Wire repair kit with crimp connectors and heat shrink
- Oxygen sensor socket
- Vehicle service information for wiring diagrams and resistance specifications



Reading P0051

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 0** Fuel and air metering and auxiliary emission controls.
- 51** The exact fault within that area.

Often seen with

P0031 HO2S Heater Control Circuit Low (Bank 1 Sensor 1) · **P0050** HO2S Heater Control Circuit (Bank 2 Sensor 1) · **P0052** HO2S Heater Control Circuit High (Bank 2 Sensor 1) · **P0135** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1) · **P0155** O2 Sensor Heater Circuit Malfunction (Bank 2 Sensor 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/p0051/>

