

GENERIC · POWERTRAIN

P0151

OBD-II TROUBLE CODE

P0151

O2 Sensor Circuit Low Voltage (Bank 2 Sensor 1)

P0151 means the powertrain control module (PCM) has detected a low-voltage condition on the upstream oxygen sensor circuit for bank 2, the side of the engine that does not contain cylinder number one. The sensor is reporting a signal below the expected range for the current operating conditions, so the PCM cannot trust its air-fuel ratio feedback from that bank.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Rough idle or uneven running, especially when the engine is cold
- Reduced fuel economy as the PCM defaults to a richer mixture on bank 2
- Hesitation or stumble during acceleration
- Failed emissions test due to high carbon monoxide or hydrocarbon readings
- Occasionally a sulfur or rotten-egg smell from the exhaust when running rich

Common causes, most likely first

- 1 Failed upstream oxygen sensor on bank 2 (most common cause)
- 2 Open or shorted sensor signal wire, or a poor ground connection in the sensor circuit
- 3 Contaminated sensor from coolant intrusion, oil burning, or silicone sealant use
- 4 Exhaust leak before the sensor allowing outside air to skew the reading
- 5 Wiring harness damage from heat, chafing, or rodent activity
- 6 PCM driver circuit fault (rare but possible after all other causes are ruled out)



How to diagnose and fix it

- 1 Scan all stored and pending codes, then record freeze-frame data to see the conditions when P0151 set
- 2 Inspect the bank 2 upstream oxygen sensor wiring and connector for damage, corrosion, or loose pins
- 3 Check for exhaust leaks between the cylinder head and the sensor using a smoke test or listening for ticking
- 4 Measure sensor heater resistance and signal voltage with a digital multimeter, comparing to manufacturer specifications
- 5 Verify the sensor switches rapidly between roughly 0.1 and 0.9 volts when the engine is warm and held at 2,500 rpm
- 6 Replace the bank 2 upstream oxygen sensor if it is slow, stuck low, or contaminated
- 7 Clear codes and perform a road test to confirm the repair and that no pending codes return

What a low O2 signal really tells you

- A low voltage signal does not automatically mean the sensor is dead; a short to ground in the signal wire or a bad sensor ground can pull the reading down and mimic a failed sensor.
Exhaust leaks upstream of the sensor are a frequent missed cause because they let fresh air reach the sensor, which the PCM interprets as a lean condition and sets a low-voltage code.
 - Coolant or oil contamination from an internal engine leak can coat the sensor element and cause a permanently low signal without any visible external damage.
 - Bank 2 sensor 1 is the upstream sensor on the side of the engine that does not contain cylinder one, so confirm bank orientation before ordering parts on V-configured engines.
- A lazy or skewed oxygen sensor can set P0151 without turning on the check engine light immediately, so pending codes and freeze-frame data are worth checking even when the light is off.

Can I keep driving with P0151?

You can usually drive the vehicle short distances to a repair shop, but avoid heavy acceleration, towing, or long highway trips because the PCM may run bank 2 rich and overheat the catalytic converter. If the check engine light starts flashing, stop driving and have the vehicle towed.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probing pins
- Smoke machine for exhaust leak testing
- Oxygen sensor socket and ratchet
- Wiring diagram for the bank 2 upstream sensor circuit



Reading P0151

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

Often seen with

P0150 O2 Sensor Circuit Malfunction (Bank 2 Sensor 1) · **P0152** O2 Sensor Circuit High Voltage (Bank 2 Sensor 1) · **P0153** O2 Sensor Circuit Slow Response (Bank 2 Sensor 1) · **P0171** System Too Lean (Bank 1) · **P0174** System Too Lean (Bank 2)

See it working

Watch the animated explainer [Helicopter Simulator: Take Off, Hover and Land](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0151/>

