

GENERIC · POWERTRAIN

P0166

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0166

O2 Sensor Circuit No Activity Detected (Bank 2 Sensor 3)

P0166 means the powertrain control module (PCM) is not seeing any meaningful voltage activity from the downstream oxygen sensor on bank 2, which is the side of the engine that does not contain cylinder number one. The sensor's signal stays flat or out of range instead of switching as the exhaust oxygen content changes, so the computer flags the circuit as inactive.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Low

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Slightly rough idle or hesitation if the sensor fault affects fuel trim on bank 2
- A drop in fuel economy that develops gradually over several drive cycles
- Failed emissions inspection because the oxygen sensor monitor will not complete
- In rare cases, a sulfur or rotten-egg smell from the exhaust if the mixture runs rich
- No drivability change at all on many vehicles because the downstream sensor mainly monitors catalyst efficiency

Common causes, most likely first

- 1 Failed downstream oxygen sensor on bank 2 that no longer produces a switching signal
- 2 Open, shorted, or chafed wiring in the sensor signal or heater circuit between the sensor and the PCM
- 3 Corroded or loose electrical connector pins at the sensor or at the PCM harness
- 4 Blown fuse or failed relay feeding the oxygen sensor heater circuit
- 5 Exhaust leak ahead of the sensor that lets outside air reach the sensing element and skews its reading
- 6 PCM driver circuit fault or internal PCM issue, which is less common but possible after other causes are ruled out
- 7 Contamination of the sensor element from coolant, oil, or silicone sealant that coats the sensing tip



How to diagnose and fix it

- 1 Scan all stored and pending codes and record freeze-frame data to confirm P0166 is active and not a ghost from a previous repair
- 2 Inspect the bank 2 sensor 3 wiring harness and connector for chafing, corrosion, or loose pins, and repair any damage found
- 3 Check the oxygen sensor heater fuse and relay, and verify battery voltage and ground at the sensor connector with the key on
- 4 Measure the sensor signal circuit with a digital voltmeter or lab scope to see whether the sensor itself is flat-lined or the PCM is not receiving the signal
- 5 Perform a propane or smoke test around the exhaust ahead of the sensor to rule out an unmetered air leak
- 6 Replace the bank 2 sensor 3 oxygen sensor only after electrical and exhaust checks pass, using the correct sensor for the application
- 7 Clear codes and run the oxygen sensor monitor to completion to confirm the repair and verify no pending codes return

Why a flat O2 signal is not always the sensor

- A downstream oxygen sensor can read flat simply because the catalytic converter ahead of it is doing its job perfectly, so technicians who replace the sensor without checking the signal circuit often waste a part.
- Exhaust leaks between the manifold and the sensor are a commonly missed cause because they pull in outside oxygen and make the sensor look lazy or inactive even when the sensor is healthy.
- On many vehicles the downstream sensor's only job is catalyst monitoring, so a P0166 may set with no driveability complaint at all and the owner may never notice anything beyond the light.
- A shorted or open heater circuit can set this code because the PCM expects the sensor to reach operating temperature before it judges signal activity, so always check heater voltage and resistance first.
- Aftermarket sensors with the wrong connector or resistance can trigger P0166 repeatedly, so matching the sensor to the vehicle's calibration matters more than the brand name.

Can I keep driving with P0166?

You can usually keep driving with P0166 because the downstream sensor mainly monitors catalyst efficiency and does not control fuel delivery directly, but avoid ignoring it for months since a missed exhaust leak or wiring fault can worsen. Have the circuit checked before an emissions test, because the monitor will not complete and the vehicle will fail.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital voltmeter or lab scope for signal and heater circuit testing
- Propane enrichment tool or smoke machine for exhaust leak testing
- Oxygen sensor socket and ratchet
- Electrical contact cleaner and dielectric grease
- Vehicle service information for wiring diagrams and sensor location

Reading P0166

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.
66	The exact fault within that area.

Often seen with

P0136 O2 Sensor Circuit Malfunction (Bank 1 Sensor 2) · **P0156** O2 Sensor Circuit Malfunction (Bank 2 Sensor 2) · **P0165** O2 Sensor Circuit Slow Response (Bank 2 Sensor 3) · **P0167** O2 Sensor Heater Circuit (Bank 2 Sensor 3) · **P0420** Catalyst System Efficiency Below Threshold (Bank 1)

See it working

Watch the animated explainer [How a Wideband Air-Fuel Sensor Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0166/>

