

GENERIC · POWERTRAIN

P2246

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2246

O2 Sensor Reference Voltage Circuit High (Bank 1 Sensor 1)

P2246 means the engine computer detected an abnormally high voltage on the reference circuit that feeds the upstream oxygen sensor on bank 1, sensor 1. The computer supplies a precise reference voltage to the sensor's internal heater or signal circuit, and a reading above the expected range tells it the circuit is shorted to voltage or the sensor's internal electronics have failed.

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

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- A slight decrease in fuel economy as the computer defaults to a richer, less precise fuel mixture
- Occasional rough idle or hesitation during acceleration when the sensor signal is unreliable
- A failed oxygen sensor monitor in emissions testing, causing an inspection failure
- In rare cases, a noticeable sulfur or rotten egg smell from the exhaust due to overly rich operation

Common causes, most likely first

- 1 A failed upstream oxygen sensor with an internal short in its reference or heater circuit
- 2 A short to voltage in the wiring harness between the sensor and the engine computer, often from chafing against a hot or sharp component
- 3 Corrosion or water intrusion in the oxygen sensor connector causing a high-resistance or shorted path
- 4 A faulty engine computer driver circuit for the oxygen sensor reference voltage, though this is uncommon
- 5 A poor ground connection for the oxygen sensor heater circuit, which can skew the reference voltage reading
- 6 Aftermarket or incorrect oxygen sensor installed that does not match the vehicle's reference voltage specification



How to diagnose and fix it

- 1 Scan all modules for stored and pending codes, and record freeze-frame data to see the conditions when P2246 set
- 2 Visually inspect the bank 1 sensor 1 oxygen sensor wiring and connector for chafing, corrosion, or contamination
- 3 Measure the reference voltage at the sensor connector with the key on and engine off, comparing it to the manufacturer's specification
- 4 Check for a short to voltage by back-probing the reference circuit while wiggling the harness and disconnecting the sensor
- 5 Test the oxygen sensor heater resistance and compare it to the factory specification to rule out an internal sensor fault
- 6 If the circuit tests good, substitute a known-good oxygen sensor and clear the code to see if it returns
- 7 As a last resort, inspect the engine computer connector and internal driver circuit for damage or corrosion

What most technicians miss on P2246

- A shorted oxygen sensor heater can back-feed voltage onto the reference circuit and set P2246 even though the sensor signal itself still looks normal on a scan tool.
- The reference voltage circuit is shared with other sensors on some platforms, so a fault in a different sensor's wiring can pull the reference voltage high and trigger this code.
- Aftermarket oxygen sensors with incorrect internal resistance are a common cause of repeat P2246 codes, so always verify the sensor part number against the original.
- A poor engine ground can cause the reference voltage to float high, and technicians often replace the sensor before checking ground straps and battery terminals.
- P2246 can set intermittently from water intrusion into the connector after a car wash or heavy rain, so a dry-out and dielectric grease application may resolve it without parts.

Can I keep driving with P2246?

You can usually drive the vehicle with P2246, but avoid heavy acceleration and long trips until it is diagnosed because the engine may run rich and damage the catalytic converter over time. If the check engine light starts flashing or you notice rough running, stop driving and have it inspected promptly.

Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probing pins
- Wiring diagram for the oxygen sensor reference circuit
- Socket set and oxygen sensor wrench
- Contact cleaner and dielectric grease



Reading P2246

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

Often seen with

P0130 O2 Sensor Circuit Malfunction (Bank 1 Sensor 1) · **P0132** O2 Sensor Circuit High Voltage (Bank 1 Sensor 1) · **P0135** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1) · **P2245** O2 Sensor Reference Voltage Circuit Low (Bank 1 Sensor 1) · **P2247** O2 Sensor Reference Voltage Circuit/Open (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/p2246/>

