

GENERIC · POWERTRAIN

P0143

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0143

O2 Sensor Circuit Low Voltage (Bank 1 Sensor 3)

P0143 indicates that the powertrain control module (PCM) has detected a low voltage condition on the signal circuit of the downstream oxygen sensor located after the catalytic converter on bank 1, which is the side containing cylinder number one. The sensor is generating a voltage below the expected threshold for the current operating conditions, which the PCM interprets as a lean exhaust reading or a circuit fault.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Low

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 may enrich the mixture based on the faulty signal
- Occasional rough idle or hesitation during acceleration if the low voltage is severe
- Failed emissions inspection due to the stored trouble code
- In rare cases, a sulfur or rotten egg smell from the exhaust if the mixture becomes excessively rich

Common causes, most likely first

- 1 A failed downstream oxygen sensor that is stuck at a low voltage output
- 2 A short to ground or chafed wire in the sensor signal circuit between the sensor and the PCM
- 3 Corroded or loose electrical connector at the sensor or PCM
- 4 An exhaust leak upstream of the sensor allowing outside air to skew the reading
- 5 A contaminated sensor from engine oil or coolant entering the exhaust stream
- 6 A faulty PCM driver for the oxygen sensor circuit, though this is uncommon



How to diagnose and fix it

- 1 Perform a visual inspection of the sensor wiring and connector for damage, corrosion, or loose pins
- 2 Check for exhaust leaks between the engine and the sensor using a smoke machine or by listening for ticking sounds
- 3 Use a scan tool to view live data for the downstream oxygen sensor voltage and compare it to the expected range
- 4 Measure the sensor signal voltage with a digital multimeter back-probing the connector to confirm the low reading
- 5 Test the signal circuit for a short to ground by disconnecting the sensor and checking resistance to chassis ground
- 6 Replace the downstream oxygen sensor if the circuit tests good but the voltage remains low
- 7 Clear the code and verify the repair by completing a drive cycle and confirming the sensor voltage switches normally

Downstream sensor codes often misdiagnosed

- A low voltage code on a downstream oxygen sensor is frequently caused by an exhaust leak before the sensor rather than a failed sensor, so always inspect the exhaust system first.
- The downstream sensor's only job is to monitor catalytic converter efficiency, so a low voltage reading does not necessarily mean the converter is bad, but a failed converter can sometimes cause this code.
- Oil or coolant contamination from internal engine leaks can coat the sensor and cause a low voltage output that may not be fixed by simply replacing the sensor if the root cause is not addressed.
- Some vehicles use a titania oxygen sensor that operates differently from the more common zirconia type, and testing procedures must match the sensor technology to avoid false conclusions.
- A shorted signal wire can be intermittent and only act up when the engine is hot or vibrating, so wiggle-testing the harness while watching live data is a valuable step.

Can I keep driving with P0143?

You can generally continue driving with this code because the engine management system will default to a safe fueling strategy, but avoid heavy acceleration or towing until it is repaired. Prolonged driving with a rich condition may damage the catalytic converter, so schedule diagnosis soon.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Back-probe kit
- Smoke machine for exhaust leak detection
- Socket set and oxygen sensor wrench



Reading P0143

- 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.
- 43** The exact fault within that area.

Often seen with

P0137 O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2) · **P0138** O2 Sensor Circuit High Voltage (Bank 1 Sensor 2) · **P0140** O2 Sensor Circuit No Activity (Bank 1 Sensor 2) · **P0141** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 2) · **P0420** Catalyst System Efficiency Below Threshold (Bank 1)

See it working

Watch the animated explainer [How Airbags Work: A 50 km/h Crash in Slow Motion](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0143/>

