

GM · POWERTRAIN

P1141

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1141 · GM

O2 Sensor Heater Control Circuit (Bank 1 Sensor 2)

P1141 on GM vehicles indicates that the powertrain control module has detected a fault in the heater control circuit for the downstream oxygen sensor on bank 1, which is the sensor after the catalytic converter. The computer monitors the heater circuit for expected current flow and voltage changes, and when the readings fall outside the programmed range, it sets this code and turns on the check engine light.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	GM specific	Low	Intermediate	Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other symptoms noticed by the driver
- Slightly higher fuel consumption because the downstream sensor stays cold longer and the system runs richer during warm-up
- Occasional rough idle or hesitation when the engine is cold, especially in low ambient temperatures
- A pending or stored P1141 code that returns quickly after clearing if the circuit fault is hard
- In rare cases, a noticeable decrease in fuel economy or a faint sulfur smell from the exhaust if the sensor never reaches operating temperature

Common causes, most likely first

- 1 Failed oxygen sensor heater element inside the bank 1 sensor 2 assembly, which is the most common cause on higher-mileage GM vehicles
- 2 Damaged or corroded wiring and connector pins between the sensor and the powertrain control module, often from heat exposure or road debris
- 3 Blown fuse or faulty relay that supplies power to the oxygen sensor heater circuit
- 4 Open or shorted heater control wire in the harness, sometimes caused by chafing against the exhaust or transmission
- 5 Poor ground connection for the heater circuit at the engine block or chassis
- 6 Faulty powertrain control module driver for the heater circuit, which is rare but possible after other causes are ruled out



How to diagnose and fix it

- 1 Inspect the oxygen sensor connector and wiring for heat damage, corrosion, or loose pins, and repair any obvious faults before replacing parts
- 2 Check the fuse and relay that feed the oxygen sensor heater circuit, replacing them only if they are blown or faulty
- 3 Measure the resistance of the heater element at the sensor connector with a multimeter and compare it to the manufacturer's specification for your GM engine
- 4 Backprobe the heater control circuit at the powertrain control module to verify that the driver is commanding the heater on and that the circuit can carry current
- 5 Check for voltage drop on both the power and ground sides of the heater circuit under load to rule out high-resistance connections
- 6 Replace the bank 1 sensor 2 oxygen sensor if the heater element is open or out of specification and the wiring checks out
- 7 Clear the code and perform a road test with a scan tool to confirm the heater circuit monitor completes and the code does not return

Why the downstream heater fails first

- The downstream sensor heater often fails before the upstream one because it is exposed to more road splash and debris, and its heater element runs more frequently during cold starts to bring the sensor online quickly.
- A P1141 can be set by a heater circuit that is electrically intact but slow to warm up, so a sensor that tests good on resistance may still be the culprit if the warm-up time exceeds the monitor threshold.
- Technicians sometimes replace the oxygen sensor only to find the code returns because the real fault is a chafed wire near the catalytic converter heat shield, so always inspect the harness before condemning the sensor.
- On some GM engines, the heater circuit shares a ground with other sensors, and a poor ground can set P1141 along with other oxygen sensor heater codes, so check for multiple codes before diagnosing.
- A failed heater does not always cause a noticeable driveability problem, so the code may be the only clue, and ignoring it can lead to a plugged catalytic converter over time due to prolonged rich operation during warm-up.

Can I keep driving with P1141?

You can usually continue driving with P1141 because the engine will still run and the main risk is slightly higher emissions and fuel consumption during warm-up. Avoid long periods of idling from cold and have the circuit checked soon, especially if the check engine light flashes or other codes appear.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter with resistance and voltage measurement
- Backprobe pins or breakout leads for testing connectors without damage
- Wiring diagram for the specific GM vehicle and engine
- Basic hand tools for removing and installing the oxygen sensor

Reading P1141

- P** Powertrain: engine, transmission and emissions.
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- 1** Manufacturer-specific code (GM): its meaning depends on the make.
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- 1** Fuel and air metering.
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- 41** The exact fault within that area.

Often seen with

P1151 Bank 1 Long Term Fuel Trim Range 1 Lower Lean Limit Exceeded · **P1151** Rear Oxygen Sensor Heater Circuit High Input · **P1151** HO2S Bank 2 Sensor 1 Signal Below 0.45v AF Ratio Too Lean · **P1151** Lack of Upstream Heated Oxygen Sensor Switch Sensor Indicate · **P1151** O2 Sensor Heater Circuit Signal Intermittent Bank 2 Sensor 1 · **P0135** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1) · **P0137** O2 Sensor Circuit Low Voltage (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 a Six-Speed Manual Gearbox Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/gm-p1141/>

