

GENERIC · POWERTRAIN

P2206

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2206

NOx Sensor Heater Control Circuit Low (Bank 1 Sensor 1)

P2206 means the engine computer has detected that the heater circuit inside the nitrogen oxide (NOx) sensor at bank 1 sensor 1 is drawing too little current or has an abnormally low voltage on its control wire. The sensor's heater is responsible for bringing the sensing element up to operating temperature quickly, so a low circuit condition prevents the sensor from reporting accurate NOx levels and can affect emissions and engine management.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms
- Reduced fuel economy or slightly rough running if the engine computer limits certain strategies
- A pending or stored emissions-related fault that may prevent passing an inspection
- In some vehicles, a message in the driver information center about an emissions system fault
- Intermittent warning light if the low circuit condition is caused by a loose or corroded connection
- Possible limp-home or reduced power mode on vehicles that closely monitor NOx sensor performance

Common causes, most likely first

- 1 Open or high-resistance heater element inside the NOx sensor itself
- 2 Damaged, chafed, or corroded wiring between the NOx sensor heater circuit and the engine control module
- 3 Loose or contaminated electrical connector at the NOx sensor or at the control module
- 4 Blown fuse or faulty relay that supplies power to the NOx sensor heater circuit
- 5 Engine control module driver circuit fault for the NOx sensor heater
- 6 Poor ground connection shared by the NOx sensor heater circuit
- 7 Aftermarket or incorrect NOx sensor with a heater element that does not meet the original resistance specification



How to diagnose and fix it

- 1 Check for any related technical service bulletins or known wiring concerns for the vehicle before beginning diagnosis
- 2 Inspect the NOx sensor connector and the control module connector for corrosion, loose pins, or pushed-out terminals
- 3 Measure the resistance of the NOx sensor heater element at the sensor connector and compare it to the manufacturer's specification
- 4 Check the heater circuit fuse and relay, and verify that battery voltage is present at the heater supply wire with the key on
- 5 Perform a voltage drop test on the heater ground circuit and on the control wire from the sensor to the engine control module
- 6 If the wiring and supply are good, command the heater on with a scan tool and measure current draw to confirm whether the sensor or the control module is at fault
- 7 Replace the NOx sensor only after confirming the heater element is open or out of specification, then clear codes and verify the repair with a road test

What a low NOx heater circuit really means

- A low circuit code does not automatically mean the NOx sensor is bad; a corroded connector or a chafed wire often causes the same low-current reading and costs far less to fix.
- The heater element inside a NOx sensor can fail open while the sensor still reports plausible-looking data at times, so resistance testing at the connector is more reliable than trusting live data alone.
- Some vehicles set P2206 when the heater supply fuse is shared with other emissions components, so a blown fuse may also disable the secondary air pump or other circuits and produce additional codes.
- Technicians sometimes replace the NOx sensor only to have the code return because the engine control module heater driver was damaged by a shorted sensor heater, so the control wire should be checked for continuity to ground before installing a new sensor.
- On vehicles with two NOx sensors, bank 1 sensor 1 is usually the upstream sensor, and swapping sensors to see if the code moves is a valid diagnostic step only when the connectors and thread types are identical.

Can I keep driving with P2206?

The vehicle is generally safe to drive with P2206 because the fault affects emissions control rather than immediate engine operation, but avoid long periods of heavy load or towing until it is repaired. Have the circuit inspected soon, since continued driving with a failed NOx sensor heater can lead to increased emissions and may cause the vehicle to fail an emissions inspection.



Tools that help

- OBD-II scan tool with live data and bidirectional control capability
- Digital multimeter with resistance and voltage drop functions
- Wiring diagram for the NOx sensor heater circuit
- Fuse puller and test light
- Socket set and trim removal tools for sensor access

Reading P2206

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

Often seen with

P2205 NOx Sensor Heater Control Circuit/Open (Bank 1 Sensor 1) · **P2207** NOx Sensor Heater Control Circuit High (Bank 1 Sensor 1) · **P2208** NOx Sensor Heater Sense Circuit (Bank 1 Sensor 1) · **P2209** NOx Sensor Heater Sense Circuit Range/Performance (Bank 1 Se · **P2210** NOx Sensor Heater Sense Circuit Low Input

See it working

Watch the animated explainer [How a Boxer Engine Works: Flat Engine Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2206/>

