

GENERIC · POWERTRAIN

P2208

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P2208

NOx Sensor Heater Sense Circuit (Bank 1 Sensor 1)

P2208 indicates that the engine control module has detected an abnormal condition in the heater circuit for the upstream nitrogen oxide (NOx) sensor on bank 1, which is the sensor located before the catalytic converter on that bank. The heater element is responsible for bringing the sensor up to operating temperature quickly, and the computer monitors the electrical current through the heater circuit to verify it is within the expected range. When the sensed current or voltage falls outside that range, the module stores this code and illuminates the check engine light.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Slightly reduced fuel economy if the sensor heater fault affects closed-loop fueling
- Possible hesitation or rough running during cold starts while the sensor is not at operating temperature
- In some vehicles, a message in the driver information center indicating an emissions system fault
- Failure to complete an emissions inspection readiness monitor for the NOx sensor or catalyst

Common causes, most likely first

- 1 Failed heater element inside the NOx sensor itself, which is the most common cause
- 2 Open or shorted wiring in the heater circuit between the sensor and the control module
- 3 Corroded or loose electrical connector at the NOx sensor or at the module
- 4 Blown fuse that supplies power to the NOx sensor heater circuit
- 5 Internal fault in the engine control module or NOx control module affecting heater output
- 6 Exhaust system leaks or excessive soot buildup that cause the heater to work harder and eventually fail



How to diagnose and fix it

- 1 Verify the code with a scan tool and check for any related NOx sensor or heater circuit codes before proceeding
- 2 Inspect the NOx sensor connector and harness for corrosion, chafing, or loose pins, and repair as needed
- 3 Check the fuse that protects the NOx sensor heater circuit and replace it if blown
- 4 Measure the resistance of the NOx sensor heater element with a multimeter and compare to the manufacturer's specification
- 5 With the key on and engine off, check for supply voltage and ground at the sensor connector to confirm the circuit integrity
- 6 If the heater element is out of specification or the circuit tests good but the code persists, replace the NOx sensor with a quality part
- 7 Clear the codes and perform a drive cycle to verify the repair and confirm the readiness monitors set

What the NOx sensor heater code hides

- A P2208 can be set by a poor connection at the sensor connector even when the heater element itself tests good, so always wiggle-test the harness while watching live data.
- Some vehicles use a separate NOx control module that powers the heater, and a fault there can mimic a failed sensor, so check for communication codes with that module before replacing parts.
- The heater circuit is often powered through a fuse shared with other emissions components, so a blown fuse may cause multiple codes and should be checked first.
- Replacing a NOx sensor without checking for exhaust leaks or excessive oil consumption can lead to a repeat failure because contamination shortens heater life.
- A P2208 does not always mean the sensor is dead; intermittent heater circuit faults can be caused by vibration or thermal cycling that only appears under specific conditions.

Can I keep driving with P2208?

You can generally continue driving with this code because the engine will still run, but the vehicle may fail an emissions test and fuel economy could suffer slightly. Avoid long periods of idling or heavy load until the fault is repaired, and address it promptly to prevent damage to the catalytic converter or other emissions components.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wire piercing probes or back-probe kit
- Fuse puller or test light
- Socket set and wrench set for sensor removal



Reading P2208

- 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).
- 08** The exact fault within that area.

Often seen with

P2200 NOx Sensor Circuit (Bank 1 Sensor 1) · **P2201** NOx Sensor Circuit Range/Performance (Bank 1 Sensor 1) · **P2209** NOx Sensor Heater Sense Circuit Range/Performance (Bank 1 Se · **P2210** NOx Sensor Heater Sense Circuit Low Input · **P2211** NOx Sensor Heater Sense Circuit High Input

See it working

Watch the animated explainer [Four-Stroke Engine Cutaway: Intake to Exhaust](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p2208/>

