

GENERIC · POWERTRAIN

P229E

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P229E

NOx Sensor Circuit (Bank 1 Sensor 2)

P229E indicates that the powertrain control module has detected an electrical fault in the circuit of the downstream nitrogen oxide (NOx) sensor on bank 1, which is the sensor positioned after the catalytic converter or selective catalytic reduction system. The computer monitors the sensor's signal voltage, heater circuit, and internal feedback, and it sets this code when the readings fall outside the expected range for the operating conditions.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Professional

AREA

Fuel and air metering (injector circuits)

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms
- Reduced engine power or limp mode in some vehicles as a protective strategy
- Poor fuel economy or increased diesel exhaust fluid consumption
- Rough running or hesitation, particularly during regeneration events
- Failed emissions inspection due to the stored fault
- In rare cases, a sulfur or ammonia smell from the exhaust

Common causes, most likely first

- 1 Faulty downstream NOx sensor itself, including internal element failure or contamination
- 2 Damaged or corroded wiring harness or connector at the sensor
- 3 Blown fuse or relay supplying power to the NOx sensor heater circuit
- 4 Exhaust leaks upstream of the sensor allowing outside air to skew readings
- 5 Failed NOx sensor control module or aftertreatment control module
- 6 Software calibration issue in the powertrain control module requiring an update
- 7 Contaminated sensor tip from excessive oil ash or coolant intrusion



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 all fuses and relays related to the NOx sensor heater circuit and replace as needed
- 3 Use a scan tool to read live data for the downstream NOx sensor and compare to expected values
- 4 Measure resistance and voltage on the sensor heater circuit and signal wires to isolate an open or short
- 5 Inspect for exhaust leaks upstream of the sensor and repair any found
- 6 Replace the downstream NOx sensor if electrical tests confirm it is faulty
- 7 Clear the code and perform a road test to verify the repair and ensure the monitor runs to completion

What technicians often overlook on P229E

- A P229E can be set by a weak battery or charging system issue that causes low voltage to the NOx sensor heater, so always check battery health first.
- Exhaust leaks between the turbocharger and the sensor are a common cause that mimics a failed sensor, and they are easy to miss without a smoke test.
- Replacing the NOx sensor without checking for a software update can lead to a repeat failure if the original calibration was the root cause.
- The downstream NOx sensor on bank 1 is sometimes called sensor 2, but on some engines it is the only NOx sensor, so confirm the location in service information before ordering parts.
- A contaminated sensor from oil ash or coolant intrusion often indicates a deeper engine issue that will destroy the new sensor if not addressed.

Can I keep driving with P229E?

You can usually drive the vehicle with this code, but avoid heavy loads and long trips until it is diagnosed, because the engine may enter limp mode or fail an emissions test. If the check engine light flashes or you notice severe power loss, stop driving and seek professional help.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Smoke machine for exhaust leak detection
- Socket set and wrench set
- Wiring diagram and service information



Reading P229E

- 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).
- 9E** The exact fault within that area.

Often seen with

P207F Reductant Quality Performance · **P2200** NOx Sensor Circuit (Bank 1 Sensor 1) · **P2201** NOx Sensor Circuit Range/Performance (Bank 1 Sensor 1) · **P229F** NOx Sensor Circuit Range/Performance Bank 1 Sensor 2 · **P22A0** NOx Sensor Circuit Low (Bank 1 Sensor 2)

See it working

Watch the animated explainer [Master the Four-Stroke Engine Cycle](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p229e/>

