

GENERIC · POWERTRAIN

P225F

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P225F

NOx Sensor Performance - Signal Biased/Stuck Low (Bank 1 Sensor 2)

P225F indicates that the powertrain control module has detected a biased or stuck-low signal from the downstream nitrogen oxide sensor on bank 1, meaning the sensor's output voltage remains lower than expected during monitoring conditions. The computer compares the sensor's signal to modeled exhaust values and flags the code when the reading stays below the calibrated threshold for too long.

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.
- Reduced fuel economy as the engine management system adjusts based on faulty sensor data.
- Possible rough idle or hesitation during acceleration if the biased signal affects air-fuel ratio control.
- Increased nitrogen oxide emissions, which may be detected during an emissions inspection.
- In some vehicles, a message or warning related to the emissions system or diesel exhaust fluid.
- Intermittent driveability issues such as surging or lack of power under load.

Common causes, most likely first

- 1 Failed or degraded nitrogen oxide sensor (bank 1 sensor 2) due to contamination or age.
- 2 Wiring damage such as chafed, corroded, or open circuits between the sensor and the control module.
- 3 Poor electrical connection at the sensor harness or control module connector.
- 4 Exhaust leaks upstream of the sensor allowing outside air to affect readings.
- 5 Contamination from excessive oil consumption, coolant intrusion, or fuel additives.
- 6 Faulty control module software or internal driver circuit issues (less common).
- 7 Incorrect sensor installation or use of an aftermarket sensor not compatible with the vehicle.



How to diagnose and fix it

- 1 Perform a visual inspection of the sensor, wiring, and connectors for damage, corrosion, or loose pins.
- 2 Check for exhaust leaks before the sensor using a smoke machine or by listening for ticking sounds.
- 3 Use a scan tool to view live nitrogen oxide sensor data and compare it to expected values under various operating conditions.
- 4 Test the sensor's heater circuit and signal circuit with a multimeter to verify proper voltage and resistance.
- 5 Inspect the sensor tip for contamination or damage, and clean or replace if necessary.
- 6 If wiring and sensor are good, check for technical service bulletins or software updates for the control module.
- 7 Replace the nitrogen oxide sensor with an OEM-quality part and clear the code, then verify repair with a test drive.

Key checks before replacing the NOx sensor

- A biased-low NOx sensor signal is often caused by exhaust leaks or wiring issues rather than a failed sensor, so always rule out these cheaper fixes first.
Contamination from engine oil or coolant burning can coat the sensor element and cause a low bias, so investigate root causes like worn piston rings or head gaskets.
- Some vehicles require a relearn or adaptation reset after sensor replacement, and skipping this step can cause the code to return.
- The code may set intermittently due to temperature-related resistance changes in the sensor heater circuit, so testing when cold and hot is essential.
Aftermarket sensors are known to have calibration differences that can trigger this code even when new, so OEM parts are recommended.

Can I keep driving with P225F?

You can generally continue driving with this code, but avoid long trips or heavy loads until it is repaired, as the engine may run less efficiently and emissions will be higher. If the check engine light starts flashing or you notice significant power loss, stop driving and seek service immediately.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Smoke machine for exhaust leak detection
- Socket set and wrench set
- Sensor socket (if applicable)



Reading P225F

- 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).
- 5F** The exact fault within that area.

Often seen with

P2201 NOx Sensor Circuit Range/Performance (Bank 1 Sensor 1) · **P225D** NOx Sensor Performance - Signal Biased/Stuck Low (Bank 1 Sen · **P225E** NOx Sensor Performance - Signal Biased/Stuck High (Bank 1 Se · **P229F** NOx Sensor Circuit Range/Performance Bank 1 Sensor 2 · **P2A00** O2 Sensor Circuit Range/Performance (Bank 1 Sensor 1)

See it working

Watch the animated explainer [How a Supercharger Works: Roots Blower in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p225f/>

