

GENERIC · POWERTRAIN

P220B

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P220B

NOx Sensor Supply Voltage Circuit (Bank 1 Sensor 2)

P220B indicates that the powertrain control module has detected an abnormal voltage condition on the supply circuit feeding the downstream nitrogen oxide (NOx) sensor on bank 1. The computer monitors the voltage delivered to the sensor's heater and signal electronics, and it sets this code when that supply voltage falls outside the expected range for the operating conditions.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Generic (all makes)	Medium	Intermediate	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
- A slight decrease in fuel economy if the system defaults to a less efficient operating strategy
- Possible rough running or hesitation if the fault affects sensor feedback used for emissions control
- An emissions-related warning message on vehicles equipped with a dedicated display
- No drivability complaints at all in many cases, with the code found only during a scan

Common causes, most likely first

- 1 A damaged or corroded wire in the NOx sensor supply circuit, particularly at connectors or where the harness passes near hot exhaust components
- 2 A failed NOx sensor with an internal short or open in its supply circuit
- 3 A blown fuse or faulty relay that feeds the NOx sensor supply voltage
- 4 High resistance at a ground connection shared by the sensor or control module
- 5 A poor connection at the sensor pigtail or the inline connector, often due to water intrusion or vibration
- 6 A fault in the powertrain control module's voltage supply output, though this is less common
- 7 Aftermarket or incorrect sensor replacement that does not meet the original voltage requirements



How to diagnose and fix it

- 1 Scan all modules and record freeze-frame data to confirm the code is current and not a history code from a previous repair
- 2 Visually inspect the NOx sensor wiring and connectors for chafing, corrosion, or loose pins, especially near the exhaust and any heat shields
- 3 Check the fuse and relay that supply power to the NOx sensor circuit, replacing any blown fuse only after identifying the cause of the overload
- 4 Measure the supply voltage at the sensor connector with the key on and compare it to the manufacturer's specification; repair any open or high-resistance circuit
- 5 Perform a voltage drop test on the ground circuit to rule out a bad ground that would skew the supply voltage reading
- 6 If the wiring and power supply check out, substitute a known-good NOx sensor and clear the code to see if it returns
- 7 After repairs, clear all codes and complete a drive cycle that includes the conditions needed to run the NOx sensor monitor, then verify the code does not reset

What the supply voltage code really tells you

- A P220B is not a direct indicator of a failed NOx sensor; the sensor may be perfectly functional while the voltage feeding it is low due to a corroded connector or a failing relay.
- Technicians often overlook the ground side of the circuit, but a poor ground can cause the supply voltage to read low at the sensor even when the positive wire is intact.
- On many vehicles, the NOx sensor supply voltage is shared with other emissions components, so a fault in a related circuit can trigger this code as a secondary effect.
- Replacing the sensor without checking the supply voltage first is a common misdiagnosis that leads to repeat failures and unnecessary expense.
- The code can set intermittently due to vibration or heat cycling, so a wiggle test of the harness while monitoring live data is a valuable step before condemning any part.

Can I keep driving with P220B?

You can generally continue driving with this code, but avoid heavy loads and long trips until it is diagnosed, because the vehicle may enter a reduced-power mode and emissions compliance is affected. Have the circuit checked soon to prevent potential damage to the sensor or control module.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter with voltage and resistance functions
- Wiring diagram for the specific vehicle
- Back probe pins or breakout leads
- Fuse puller and test light

Reading P220B

- 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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- 0B** 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) · **P2202** NOx Sensor Circuit Low Input (Bank 1 Sensor 1) · **P2203** NOx Sensor Circuit High Input (Bank 1 Sensor 1) · **P2204** NOx Sensor Circuit Intermittent Input (Bank 1 Sensor 1)

See it working

Watch the animated explainer [How a Turbocharger Works, Step by Step](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p220b/>

