

GENERIC · POWERTRAIN

P0220

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0220

Throttle Position Sensor B Circuit Malfunction

P0220 indicates that the powertrain control module has detected an abnormal signal on the throttle position sensor B circuit, which is often the second track of a redundant throttle position sensor or a sub-sensor within the electronic throttle body. The computer compares this signal against the primary throttle position sensor and other correlated inputs, and it sets the code when the B circuit voltage falls outside the expected range or does not agree with the primary sensor.

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 engine power or a limp-home mode with limited throttle response
- Hesitation, stumble, or surging during acceleration
- Unstable or fluctuating idle speed
- Poor fuel economy or increased emissions
- In some vehicles, the engine may stall or refuse to rev beyond a limited RPM

Common causes, most likely first

- 1 Faulty throttle position sensor B, either the sensor element itself or the second track inside the electronic throttle body
- 2 Damaged, chafed, or corroded wiring in the sensor B circuit, including the signal, ground, or reference voltage wires
- 3 Loose or contaminated electrical connector at the throttle position sensor or throttle body
- 4 Failed or sticking electronic throttle body assembly affecting sensor B output
- 5 Poor electrical ground for the throttle position sensor circuit
- 6 Rarely, a fault in the powertrain control module itself



How to diagnose and fix it

- 1 Perform a visual inspection of the throttle body, sensor connector, and wiring for damage, corrosion, or looseness
- 2 Use a scan tool to read live data for throttle position sensor B and compare it to sensor A while slowly opening the throttle
- 3 Check reference voltage and ground at the sensor B connector with a multimeter, looking for approximately 5 volts and a good ground
- 4 Back-probe the sensor B signal wire and verify the voltage changes smoothly through the throttle range without dropouts or spikes
- 5 If wiring and connectors are good, test the sensor B resistance or voltage output according to the manufacturer's specification
- 6 Replace the throttle position sensor or electronic throttle body if testing confirms an internal fault
- 7 Clear the codes and perform a throttle body relearn or idle relearn procedure as required by the vehicle manufacturer

Before you replace the throttle body

- A common misdiagnosis is replacing the entire electronic throttle body when the real problem is a chafed wire near the connector or a corroded ground that only acts up when the engine moves under load.
- P0220 can be set by a weak or failing battery or charging system, because low voltage can cause the throttle position sensor B signal to fall out of range during cranking or heavy electrical load.
- On many vehicles, the throttle position sensor B circuit is the second track of a redundant sensor, so a failure may not produce any drivability symptoms until the primary sensor also degrades, making the code easy to ignore.
- After any repair involving the throttle body or sensor, a relearn procedure is often required; skipping it can cause a repeat code or poor idle quality even though the hardware is fixed.
- A sticking or carbon-fouled throttle plate can cause the sensor B voltage to change erratically at closed throttle, mimicking a sensor failure and leading to unnecessary parts replacement.

Can I keep driving with P0220?

You can usually drive the vehicle to a repair shop, but expect reduced engine power or limp-home mode and avoid heavy acceleration or highway merging until the fault is repaired. If the engine stalls, idles erratically, or refuses to rev, stop driving and have the vehicle towed to prevent a dangerous loss of power.



Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Back-probe kit or fine test leads
- Wiring diagram for the throttle position sensor circuit
- Basic hand tools for connector and sensor removal

Reading P0220

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

Often seen with

P0120 Throttle Position Sensor A Circuit Malfunction · **P0121** Throttle Position Sensor A Circuit Range/Performance · **P0122** Throttle Position Sensor A Circuit Low Input · **P0123** Throttle Position Sensor A Circuit High Input · **P2135** Throttle/Pedal Position Sensor A/B Voltage Correlation

See it working

Watch the animated explainer [How a Car Clutch Works: Diaphragm Clutch Cutaway](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0220/>

