

GENERIC · POWERTRAIN

P013D

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P013D

O2 Sensor Slow Response - Lean to Rich Bank 2 Sensor 2

P013D means the powertrain control module (PCM) has detected that the downstream oxygen sensor on bank 2 (the side of the engine that does not contain cylinder 1) is responding too slowly when the air-fuel mixture transitions from lean to rich. The PCM monitors the sensor's voltage switching rate and sets this code when the signal lags beyond a calibrated threshold during a lean-to-rich transition.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Low

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering

Symptoms you may notice

- Illumination of the check engine light, often with no other noticeable symptoms.
- A slight decrease in fuel economy as the PCM may default to a richer mixture.
- Occasional hesitation or stumble during acceleration if the slow response affects fuel trim.
- In some cases, a faint sulfur or rotten egg smell from the exhaust due to a rich condition.
- Rough idle or uneven running if the sensor's slow response disrupts closed-loop fuel control.
- No drivability issues at all in many instances, especially if the sensor is only marginally slow.

Common causes, most likely first

- 1 A degraded or aged oxygen sensor that has lost its responsiveness over time.
- 2 Contamination of the sensor tip from oil, coolant, or silicone (from improper sealants).
- 3 Exhaust leaks upstream of the sensor, allowing outside air to skew the reading.
- 4 Wiring damage such as frayed, corroded, or shorted wires in the sensor circuit.
- 5 A failing catalytic converter that alters the exhaust gas composition and confuses the sensor.
- 6 Engine misfires or rich-running conditions that overload the sensor with unburned fuel.
- 7 Use of leaded fuel or improper fuel additives that poison the sensor.



How to diagnose and fix it

- 1 Use an OBD-II scanner to verify P013D is the only code and check for pending or stored related codes.
- 2 Inspect the bank 2 sensor 2 wiring and connector for damage, corrosion, or loose pins.
- 3 Perform a visual inspection of the exhaust system for leaks upstream of the sensor.
- 4 Use a scan tool to view live data for the bank 2 sensor 2 voltage and compare its switching rate to the bank 1 sensor 2.
- 5 Check fuel trims and misfire counters to rule out engine conditions that could damage the sensor.
- 6 Test the sensor's heater circuit resistance and compare to manufacturer specifications.
- 7 Replace the bank 2 sensor 2 with a quality direct-fit sensor if diagnostics confirm it is slow or contaminated.

Downstream Sensor Slow Response Traps

- A slow downstream oxygen sensor often does not set a heater circuit code, so technicians who only check for heater faults may overlook it.
- Exhaust leaks between the catalytic converter and the sensor can cause a false slow-response reading by diluting the exhaust sample.
- The PCM may set P013D only during specific driving conditions, such as steady cruise or after a cold start, so a test drive with live data is essential.
- Replacing the sensor without addressing an underlying rich condition or misfire will lead to repeat failure and the same code returning.
- Bank 2 sensor 2 is often the least accessible sensor, and a faulty connector or chafed harness is a common root cause that is missed.

Can I keep driving with P013D?

You can generally continue driving with P013D, but avoid ignoring it for long because a slow sensor can gradually degrade fuel economy and increase emissions. Have the vehicle diagnosed soon to prevent potential catalytic converter damage from prolonged rich operation.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Socket set and oxygen sensor socket
- Exhaust leak detection tool (smoke machine or stethoscope)
- Vehicle service information for wiring diagrams and torque specs



Reading P013D

- P** Powertrain: engine, transmission and emissions.
- 0** Generic (SAE) code: it means the same thing on every OBD-II vehicle.
- 1** Fuel and air metering.
- 3D** The exact fault within that area.

Often seen with

P0133 O2 Sensor Circuit Slow Response (Bank 1 Sensor 1) · **P013A** O2 Sensor Slow Response - Rich to Lean Bank 1 Sensor 2 · **P013B** O2 Sensor Slow Response - Lean to Rich Bank 1 Sensor 2 · **P013C** O2 Sensor Slow Response - Rich to Lean Bank 2 Sensor 2 · **P013E** O2 Sensor Delayed Response - Rich to Lean Bank 1 Sensor 2

See it working

Watch the animated explainer [How Hydraulic Brakes Work: Pedal to Caliper](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p013d/>

