

GENERIC · POWERTRAIN

P0040

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P0040

O2 Sensor Signals Swapped Bank 1 Sensor 1/ Bank 2 Sensor 1

P0040 indicates that the powertrain control module has detected the upstream oxygen sensor signals from bank 1 and bank 2 are swapped, meaning the voltage or current activity from sensor 1 on one bank is appearing on the other bank's sensor circuit. The computer compares the two sensor signals during specific operating conditions and flags the code when their expected identities are reversed.

SYSTEM

Powertrain

CODE TYPE

Generic (all makes)

SEVERITY

Medium

FIX DIFFICULTY

Intermediate

AREA

Fuel and air metering and auxiliary emission controls

Symptoms you may notice

- Illuminated check engine light, often with no other noticeable symptoms.
- Rough idle or unstable engine operation if the swapped signals cause incorrect fuel trim.
- Poor fuel economy or rich/lean running conditions.
- Failed emissions test due to incorrect air-fuel ratio control.
- Intermittent hesitation or stumble during acceleration.
- Possible misfire codes if fuel delivery is affected.

Common causes, most likely first

- 1 Oxygen sensor connectors for bank 1 sensor 1 and bank 2 sensor 1 physically swapped or crossed.
- 2 Wiring harness damage causing the two sensor signal circuits to short or cross.
- 3 Aftermarket or replacement sensors installed with incorrect pinout or wiring.
- 4 Faulty oxygen sensor producing a signal that mimics the other bank.
- 5 PCM software or calibration issue misinterpreting sensor signals.
- 6 Corroded or damaged connector pins at the sensor or PCM.
- 7 Exhaust leaks before the sensors altering signal timing and causing cross-talk.



How to diagnose and fix it

- 1 Inspect the oxygen sensor connectors and wiring for bank 1 sensor 1 and bank 2 sensor 1 to confirm they are not physically swapped.
- 2 Check for any aftermarket wiring repairs or sensor replacements that may have crossed the signal circuits.
- 3 Use a scan tool to monitor both upstream oxygen sensor voltages and compare their activity during idle and acceleration.
- 4 Perform a visual inspection of the harness for chafing, pinched wires, or corrosion near the exhaust and PCM.
- 5 Test the oxygen sensor signal circuits for continuity and short-to-ground or short-to-power conditions.
- 6 If wiring is correct, swap the two upstream sensors temporarily to see if the code changes or follows a sensor.
- 7 Repair or replace damaged wiring, connectors, or sensors as needed, then clear the code and verify the repair with a test drive.

When the sensors are not actually swapped

- A common mistake is replacing both oxygen sensors when the real fault is a crossed connector or chafed harness, so always verify wiring before condemning parts.
- Some aftermarket sensors come with universal wiring that can be pinned incorrectly, causing a swapped signal even though the sensor itself is good.
- Exhaust leaks upstream of the sensors can cause the two signals to appear swapped because pressure pulses affect sensor readings differently.
- The code can set intermittently due to a loose connector that only crosses signals under vibration, so wiggle-test the harness while monitoring live data.
- On some vehicles, a faulty PCM or a software calibration issue can misreport the sensor signals as swapped, requiring a reflash or replacement.

Can I keep driving with P0040?

You can usually drive the vehicle with this code, but avoid aggressive acceleration or heavy loads because incorrect fuel control may damage the catalytic converter over time. Have the fault diagnosed soon to prevent long-term emissions system damage.

Tools that help

- OBD-II scan tool with live data capability
- Digital multimeter
- Wiring diagram for the specific vehicle
- Basic hand tools for connector and sensor access
- Oscilloscope (optional for advanced signal analysis)



Reading P0040

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

Often seen with

P0130 O2 Sensor Circuit Malfunction (Bank 1 Sensor 1) · **P0135** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1) · **P0150** O2 Sensor Circuit Malfunction (Bank 2 Sensor 1) · **P0155** O2 Sensor Heater Circuit Malfunction (Bank 2 Sensor 1) · **P0171** System Too Lean (Bank 1)

See it working

Watch the animated explainer [V6 Engine Explained: 60° Bank and Firing Order](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/p0040/>

