

KIA · POWERTRAIN

P1170

OBD-II DIAGNOSTIC TROUBLE CODE (DTC)

P1170 · Kia

HO2S11 Circuit Voltage Stuck At Mid-Range

P1170 on a Kia means the engine computer has detected that the upstream oxygen sensor on bank 1 (HO2S11) is reporting a voltage that stays stuck near the middle of its normal range, around 0.45 volts, instead of switching rapidly between rich and lean. The computer expects this sensor to oscillate constantly once the engine is in closed loop, so a flat mid-range signal tells it the sensor circuit or the sensor itself is not responding to changing exhaust oxygen content.

SYSTEM	CODE TYPE	SEVERITY	FIX DIFFICULTY	AREA
Powertrain	Kia specific	Medium	Intermediate	Fuel and air metering

Symptoms you may notice

- Often no symptoms besides the warning light, especially if the sensor is only slow to respond rather than dead.
- A noticeable drop in fuel economy because the computer defaults to a rich fuel strategy when it cannot trust the upstream oxygen sensor.
- Rough idle or uneven running, particularly when the engine is cold or under light load.
- Hesitation or a slight stumble during acceleration as the fuel mixture swings rich.
- Failed emissions testing due to elevated hydrocarbons or carbon monoxide from the rich default mixture.
- In some cases a sulfur or rotten-egg smell from the exhaust because the rich mixture overheats the catalytic converter.

Common causes, most likely first

- A failed or contaminated upstream oxygen sensor that no longer switches and holds a mid-range voltage.
- A short to voltage or a short to ground in the HO2S11 signal wire, which can clamp the reading near 0.45 volts.
- Corroded, loose, or water-intruded connector pins at the sensor or at the engine computer, adding resistance that skews the signal.
- An exhaust leak upstream of the sensor, such as a cracked manifold or failed gasket, letting outside air pulse past the sensor tip.
- A stuck-open or leaking fuel injector on bank 1 that floods the exhaust and keeps the sensor reading artificially rich or flat.
- Low fuel pressure or a weak fuel pump that prevents the mixture from cycling rich and lean as the computer commands.
- A faulty engine computer driver circuit for the oxygen sensor heater or signal, though this is the least common cause.



How to diagnose and fix it

- 1 Scan all stored and pending codes and record freeze-frame data to confirm P1170 is the primary fault and not a side effect of another code.
- 2 Inspect the HO2S11 sensor connector and wiring for corrosion, chafing, or water intrusion, and repair any damaged pins or insulation before replacing parts.
- 3 Use a scan tool in live data to watch the HO2S11 voltage; a healthy sensor should switch rapidly between roughly 0.1 and 0.9 volts, while a stuck sensor will hover near 0.45 volts.
- 4 Perform a propane or smoke test around the exhaust manifold and downpipe to rule out an upstream exhaust leak that can mimic a stuck sensor.
- 5 Check fuel pressure and inspect for leaking injectors on bank 1 if the sensor voltage stays rich rather than truly flat.
- 6 Replace the upstream oxygen sensor only after wiring and exhaust integrity are verified, and clear the codes to confirm the fix.
- 7 Road-test the vehicle through several drive cycles and recheck live data to ensure the new sensor switches normally and P1170 does not return.

Why a mid-range voltage fools many Kia owners

- A sensor stuck at exactly 0.45 volts is often a wiring short rather than a dead sensor, so replacing the sensor without checking the signal wire frequently leads to a repeat failure.
- Kia engines are sensitive to exhaust leaks at the manifold-to-downpipe gasket, and a small leak can hold the oxygen sensor reading flat enough to set P1170 without any audible exhaust noise.
- A contaminated sensor from coolant or oil entering the exhaust, such as from a failing head gasket, will read mid-range and set this code even though the sensor itself is not the root problem.
- Some Kia models will set P1170 when the oxygen sensor heater circuit is weak because the sensor never reaches operating temperature and cannot switch, so the heater feed and ground deserve a voltage-drop test.
- The code does not always mean the sensor is bad; a stuck-open thermostat that keeps the engine cold can prevent closed-loop operation and leave the sensor voltage parked near mid-range.

Can I keep driving with P1170?

You can usually drive a Kia with P1170 for a short time, but the computer is running a rich default mixture that wastes fuel and can overheat the catalytic converter over weeks. Avoid long highway trips and heavy loads, and have the fault diagnosed soon to prevent converter damage.



Tools that help

- OBD-II scan tool with live data and freeze-frame capability
- Digital multimeter with back-probing pins
- Propane enrichment tool or smoke machine for exhaust leak testing
- Fuel pressure gauge
- Oxygen sensor socket and ratchet
- Wiring diagram for the HO2S11 circuit

Reading P1170

P	Powertrain: engine, transmission and emissions.
1	Manufacturer-specific code (Kia): its meaning depends on the make.
1	Fuel and air metering.
70	The exact fault within that area.

Often seen with

P0130 O2 Sensor Circuit Malfunction (Bank 1 Sensor 1) · **P0131** O2 Sensor Circuit Low Voltage (Bank 1 Sensor 1) · **P0132** O2 Sensor Circuit High Voltage (Bank 1 Sensor 1) · **P0133** O2 Sensor Circuit Slow Response (Bank 1 Sensor 1) · **P0171** System Too Lean (Bank 1)

See it working

Watch the animated explainer [How a Six-Speed Manual Gearbox Works](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/kia-p1170/>

