



P1117 · Kia

HO2S12 Heater Circuit Low Voltage

P1117 on a Kia means the powertrain control module has detected a low-voltage condition on the heater circuit of the downstream oxygen sensor on bank 1, known as HO2S12. The sensor's heater element is not drawing the current the computer expects, so the PCM flags the circuit as having too little voltage, which can prevent the sensor from reaching operating temperature quickly.

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

Symptoms you may notice

- Illuminated check engine light, often with no other symptoms besides the warning light
- Slightly higher fuel consumption because the downstream sensor stays cold longer and the PCM may stay in a richer warm-up strategy
- Occasional rough idle or hesitation during cold starts while the engine is warming up
- A pending or stored P1117 that returns immediately after clearing if the heater circuit is truly open
- In rare cases, a slight sulfur or rotten-egg smell from the exhaust if the engine runs rich during warm-up

Common causes, most likely first

- 1 Failed heater element inside the bank 1 downstream oxygen sensor (HO2S12), which is the most common cause on higher-mileage Kia engines
- 2 Open or damaged wire in the heater circuit between the PCM and the sensor, often from chafing or corrosion at the connector
- 3 Corroded, loose, or water-intruded electrical connector at the HO2S12 sensor
- 4 Blown fuse or faulty relay that supplies power to the oxygen sensor heater circuit
- 5 High resistance in the heater ground circuit, including a poor chassis ground connection
- 6 PCM driver fault on the heater control circuit, which is rare but possible after a short circuit or voltage spike



How to diagnose and fix it

- 1 Check the oxygen sensor heater fuse and relay first, since a blown fuse is the cheapest and quickest thing to rule out
- 2 Inspect the HO2S12 connector and wiring for corrosion, chafing, or a loose pin, and repair any damaged terminals
- 3 Measure the resistance of the heater element across the sensor's heater pins and compare it to the Kia specification for your engine
- 4 With the key on and the sensor disconnected, check for battery voltage on the heater power feed and verify the ground side has low resistance
- 5 If the circuit checks out, replace the bank 1 downstream oxygen sensor with a quality direct-fit unit and clear the code
- 6 After repair, run the engine through a complete warm-up cycle and verify the heater circuit monitor passes with a scan tool
- 7 If the code returns with a known-good sensor and intact wiring, test the PCM heater driver circuit for an internal open or short

Why the heater code is not always the sensor

- A P1117 can be set by a heater circuit that is open only when cold, so the sensor may test fine at room temperature but fail the first start of the morning.
- Technicians often replace the downstream sensor only to find a corroded connector pin or a chafed wire behind the engine block that was the real cause of the low voltage.
- The downstream sensor heater is powered through a fuse that is sometimes shared with other emissions components, so a blown fuse may also set companion codes that point away from the sensor.
- A weak battery or charging system that drops voltage during cranking can cause a low-voltage heater code to set intermittently without any real sensor fault.
- On some Kia models the heater ground is shared with the sensor signal ground, so a bad ground can skew both the heater monitor and the oxygen signal reading.

Can I keep driving with P1117?

You can usually keep driving with P1117 because the engine will still run, but the downstream sensor may not heat up properly, which can affect emissions and fuel economy. Avoid long periods of idling and get the circuit checked soon, especially if the check engine light is flashing or other codes appear.



Tools that help

- OBD-II scan tool with live data and oxygen sensor heater monitor capability
- Digital multimeter for resistance and voltage checks
- Wiring diagram for the specific Kia model and engine
- Socket set and oxygen sensor wrench
- Contact cleaner and dielectric grease for connector repair

Reading P1117

P Powertrain: engine, transmission and emissions.

1 Manufacturer-specific code (Kia): its meaning depends on the make.

1 Fuel and air metering.

17 The exact fault within that area.

Often seen with

P1118 Oxygen Sensor Heater Circuit Open Bank 1 Sensor 2 · **P1118** Engine Coolant Temperature Above Maximum Voltage · **P1118** Manifold Absolute Temperature Circuit Low Input · **P1118** Engine Coolant Temp Signal Out-Of Range High · **P1118** Mass Or Volume Air Flow Circuit High Input Bank 2 · **P0135** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 1) · **P0136** O2 Sensor Circuit Malfunction (Bank 1 Sensor 2) · **P0137** O2 Sensor Circuit Low Voltage (Bank 1 Sensor 2) · **P0141** O2 Sensor Heater Circuit Malfunction (Bank 1 Sensor 2)

See it working

Watch the animated explainer [How an Elevator Works: Traction Lift in X-Ray](#) on Auto Veteran to see the parts involved moving.

Full guide, related articles and animations: <https://www.autoveteran.tech/dtc-codes/kia-p1117/>

