

P0147: O2 SENSOR HEATER CIRCUIT MALFUNCTION (BANK 1 SENSOR 3)

OVERVIEW

Severity	:	<div><div>Medium</div></div>
DIY Difficulty Level	:	<div><div>Intermediate</div></div>
Repair Cost	:	\$100-\$300
Can I Still Drive?	:	Yes (Short-term only)

What Does The P0147 Code Mean?

O2 (Oxygen) sensors contain a heating element that allows the sensor to reach operating temperature quickly. This lowers emissions since it allows the engine to reach closed loop faster and also allows the engine to stay in closed loop at idle.

The heater circuit is supplied a 12 V battery feed from the PCM or ignition circuit (depending on model) and a ground. The PCM (powertrain control module) monitors how long it takes for the sensors to become active after engine start-up. If it takes too long for the O2 sensors to reach operating temperature, this P0147 can set.

What Are The Symptoms Of The P0147 Code?

For this particular O2 sensor, there may be no noticeable symptoms other than:

- MIL (Malfunction Indicator Lamp) illumination
- Poor/ rough idle

What Are The Potential Causes Of The P0147 Code?

Potential causes of an P0147 code include:

- Bad O2 sensor heater circuit

- Bad O2 sensor
- Wiring harness problems

How Can You Fix The P0147 Code?

Unplug the Bank 1, 3 sensor. With KOEO (key on engine off) use a voltmeter to check for battery voltage present at the O2 sensor connector (PCM side). (You can also do this with a test light. Connect to ground and touch lead to heater circuit supply. Light should illuminate with KOEO). You should have battery voltage present.

a. If voltage is present, check the ground side of the heater element also making sure a good ground is present. If it is, check for any faulty connections & then replace the o2 sensor. If you don't have a good ground, then there is an open in the ground circuit somewhere that will need to be repaired. Look for wiring harness contact with exhaust components or broken/missing connectors, etc.

b. If battery voltage isn't present with KOEO, check for a blown fuse supplying the heater elements. You may need to get a wiring diagram for this. If the fuse is blown, you'll need to check for a short to ground on the battery supply circuit before replacing the fuse. If you find none, and replacing the fuse re-establishes battery voltage at the O2 sensor connector, then the O2 sensor may have shorted internally, blowing the fuse. Replace it & recheck. (**NOTE:** it's possible for an O2 sensor's heater circuit to be open/shorted and the o2 sensor to still function).

c. If you have no battery voltage present with KOEO and there are no blown fuses supplying the heater circuit, then check for an open on the supply circuit. You can do this by ohming the circuit with the O2 sensor unplugged and the PCM unplugged. Repair and recheck.

Reference Sources

[P0147: O2 Sensor Heater Circuit Malfunction](#), OBD-Codes.