

P0031: OXYGEN (A/F) SENSOR HEATER CONTROL CIRCUIT LOW (BANK 1 SENSOR 1)

OVERVIEW

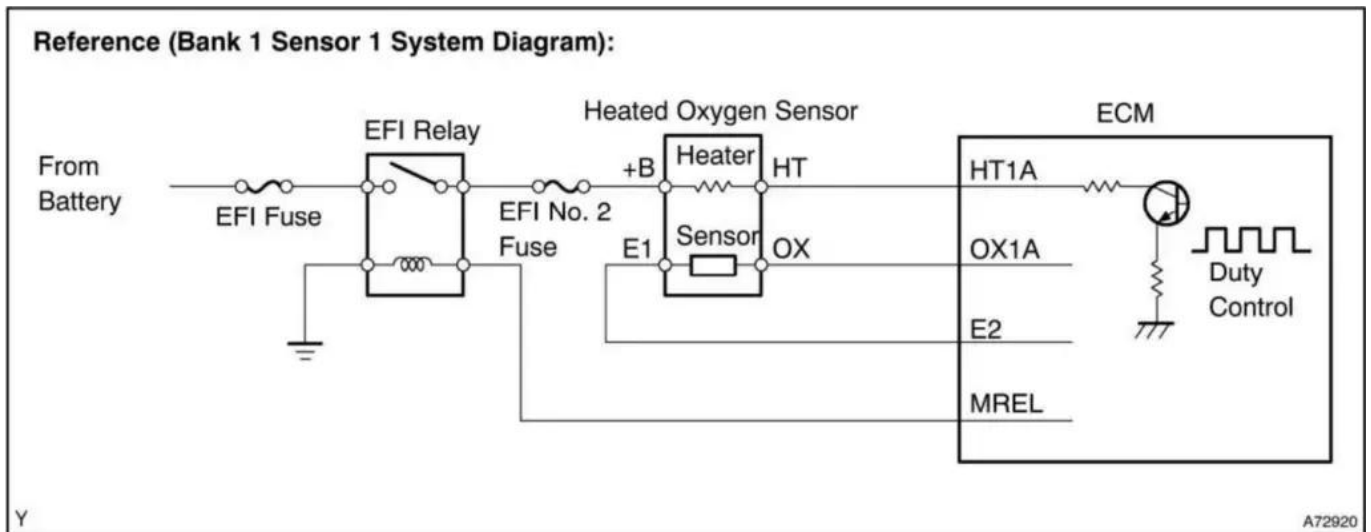
Severity	:	<div><div>Medium</div></div>
DIY Difficulty Level	:	<div><div>Advanced</div></div>
Repair Cost	:	\$200-\$1000
Can I Still Drive?	:	Yes (Short-term only)

What Does The P0031 Code Mean?

A P0031 DTC (diagnostic trouble code) refers to the O2 sensor (oxygen sensor) located on Bank 1 in front of the catalytic converter. There is also an oxygen sensor behind the converter which is Sensor #2.

This O2 sensor #1 may also be referred to as an air/fuel ratio sensor since on some vehicles it is. It detects the amount of oxygen in the exhaust gas compared to the outside air and then vehicle's computer adjusts the air/fuel ratio going into the engine.

The sensor is less effective when the exhaust gas temperature is low, so it includes a heater which is activated to help get better readings from the A/F O2 sensor. Essentially this P0031 code means that the resistance of the heater circuit is lower than normal. In most cases, that resistance level must fall below 0.8 A to trigger the DTC code.



P0031 wiring diagram

Note, this code is very similar in nature to [P0032](#), [P0051](#), and [P0052](#)

What Are The Symptoms Of The P0031 Code?

Most likely you'll not notice any symptoms other than the MIL (malfunction indicator lamp, a.k.a. the check engine light) will illuminate.

What Are The Potential Causes Of The P0031 Code?

A P0031 DTC trouble code may be caused by one or more of the following:

- A short or open in the heater circuit in the sensor
- A failed O2 sensor heater
- Wiring/connectors broken/frayed leading to sensor and/or relay
- Failed PCM/ECM

How Can You Fix The P0031 Code?

To fix a P0031 DTC code, you'll need to do a proper diagnosis. To do that, you'll want to inspect the wiring and connectors leading to the sensor. Also if equipped with a heater relay and fuse, you'll want to check those as well. Use a digital volt ohm meter to:

- Check for 12 volts at the heater circuit feed (hint: unplug the sensor and check at the wiring connector to do this measurement)
- Check the ground circuit for continuity
- Measure the resistance of the heater circuit (done on the sensor itself)
- Measure the resistance and voltage of the wiring

Refer to a service manual for the correct specifications (volts, ohms) for your vehicle. On some Toyota vehicles this code is triggered when the resistance of the heater circuit is below 0.8 A.

With that said, a common fix for this DTC is to replace the air/fuel (O2 oxygen) sensor #1 on bank 1.

Please keep in mind that OEM (original equipment) replacement sensors are recommended (from the dealer). Aftermarket sensors can be less reliable and of poorer quality (not always, but more often). There's also a chance that replacement parts for the P0031 code may also fall under a federal emissions warranty (check with your dealer to see if it's covered).

Reference Sources

[Diagnostic Trouble Code \(DTC\) Guide for P0031](#) - Ominitek Advanced Technologies, pages 21-22.