

## P0050: HO2S HEATER CONTROL CIRCUIT (BANK 2 SENSOR 1)

### OVERVIEW

|                      |   |                                    |
|----------------------|---|------------------------------------|
| Severity             | : | <div><div>Medium</div></div>       |
| DIY Difficulty Level | : | <div><div>Intermediate</div></div> |
| Repair Cost          | : | <b>\$100-\$200</b>                 |
| Can I Still Drive?   | : | <b>Yes</b> (Short-term only)       |

### What Does The P0050 Code Mean?

For an engine to run properly, there needs to be a very specific air:fuel ratio of 14.7:1. To accomplish this the ECM (Engine control module) relies on the the Heated Oxygen sensors (HO2S). The HO2S detect oxygen content in the exhaust.

This information is then relayed to the ECM. The ECM uses this information to adjust the fuel delivered to the engine. A Heated Oxygen sensor contains a circuit dedicated to operating a heater that warms up the Oxygen sensor faster than the exhaust gasses could. This shortens the time the engine needs to achieve closed loop, which decreases emissions.

On some vehicles the O2 sensor heater is fed a 12V fused supply voltage and a computer controlled ground. The 12V supply voltage is supplied to the heater anytime the key is in the on position. The computer activates the heater under certain circumstances by completing the ground to the oxygen sensor heater. On other vehicles the O2 sensor heater may be supplied a computer controlled 12 volts feed and continuous ground. If the ECM detects a fault on the Bank 2, sensor 1 heater circuit a P0050 may set. This code refers to Bank 2, which is the side (bank of cylinders) that doesn't contain cylinder #1. This DTC is basically identical to P0030 but on a different bank.

### What Are The Symptoms Of The P0050 Code?

Symptoms of a P0050 DTC may include:

- Lengthened time needed to achieve closed loop
- MIL (Malfunction indicator lamp) illumination
- Possibly decreased fuel mileage depending on fault

## What Are The Potential Causes Of The P0050 Code?

Potential causes of a P0050 trouble code may include:

- Failed or damaged heater circuit element inside the HO2S
- Open on the O2 sensor heater's ground circuit
- Open or short on O2 sensor heater's B+ battery feed (on some vehicles this may be the control circuit)
- Possible ECM failure (less likely)

## How Can You Fix The P0050 Code?

Many times a HO2 sensors heater element may go bad due to age or impact. Keep this in mind when making your inspection. Make a visual inspection of the Bank 2, Sensor 1 O2 sensor. Repair any damaged wiring from contact with exhaust.

If HO2 Sensor itself appears to have been damaged, replace it. If a visual inspection reveals no obvious problems, viewing the faulty heater circuit on a scan tool may reveal if the fault is currently occurring. If the scan tool data stream shows that the Bank 2, Sensor 1 heater element is pulling 0 amps then suspect an open in the circuit. Check for blown fuses and then disconnect the O2 sensor connector.

With key on engine off use a voltmeter to check for 12 volts fused battery feed to the heater element. If there is no voltage present, repair open or short in the B+ feed circuit remembering to replace any fuse blown from the short. If the B+ battery feed is intact, remove the ground (control) circuit from the ECM wiring connector and check for resistance on the circuit. If there is infinite resistance, repair open in the circuit. If the control circuit checks out, suspect a bad O2 sensor. Replace and re-check.

## Reference Sources

[Technical Service Bulletin P0050](#) - GM