

## Check Engine Light Is On.

Now what should I do?

When the "Check Engine Light" comes on in your car's dash, It means you have a problem with the motor or its related systems. If the light is on steady, you need to have the problem checked ASAP. If the light is flashing, TURN OFF the motor RIGHT AWAY. A Serious problem has just occurred and could ruin the motor. I recently got an e-mail from club member Brian telling me his check engine light came on. He said he borrowed a code reader, and found his engine was showing Error Code "P0037". Since these error codes start with a "P", they are commonly called "P-Codes"

Brian did a search on the Internet, and found the following link to Mazda Engine Error Codes: [http://engine-codes.com/p0037\\_mazda.html](http://engine-codes.com/p0037_mazda.html). Below is what he found on the web page.

### \*\* Possible causes

- Faulty Heated Oxygen Sensor (H2OS) Bank 1 Sensor 2
- Heated Oxygen Sensor (H2OS) Bank 1 Sensor 2 fuse
- Heated Oxygen Sensor (H2OS) Bank 1 Sensor 2 harness is open or shorted
- Heated Oxygen Sensor (H2OS) Bank 1 Sensor 2 circuit poor electrical connection
- Faulty Engine Control Module (ECM/Computer)

### \*\* P0037 Mazda Description:

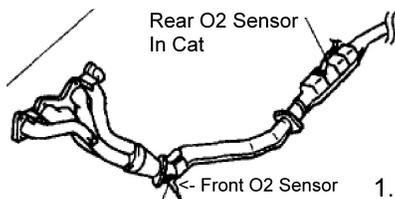
Oxygen Sensors (O2S) or Heated Oxygen Sensors (HO2S) need to reach a minimum operating temperature of 750 degrees F to produce an accurate voltage signal. The faster the heated oxygen sensor reaches that temperature the faster the sensor will start sending an accurate signal to the Engine Control Module ([ECM](#)).

In order to achieve the require temperature, a heater element is included inside the heated oxygen sensor. The [ECM](#) controls the heated oxygen sensor heater element based on signals from the engine coolant temperature and engine load. The [ECM](#) controls the heater element circuit by allowing current flow to ground.

The [ECM](#) monitors the voltage signal received through the heater element circuit and determines the state of the circuit by comparing the voltage detected with the factory specs.

----- (End from Mazda web page) -----

There are 2 Oxygen Sensors in the Miata's and most other car's exhaust system. This sensor determines how much unused oxygen is left in the exhaust flow. See Picture 1 of the 2001-2005 Miata exhaust locations. Here is how they work together in all cars. The first one (Sensor 1) is in front of the catalytic converter close to the motor. This one works to regulate the Fuel to Air mixture in the engine. The second one reports to the Miata's computer to let it know if the Catalytic Converter is working properly. Both of these O2 sensors have a heater in them to quickly bring them up to operating temp when the car is started. This helps cut down on cold start emissions by allowing the O2 sensor to start working quicker. Evidently the heater failed in the rear O2 sensor setting off this error code and Check Engine Light. After Brian and I discussed this, he decided to install a new rear O2 sensor (Sensor 2). This resolved his problem with the check engine light.



Then we discussed the front sensor. This front sensor takes the most abuse, as it is closest to the hot exhaust gases coming right from the motor. If the Rear Sensor (#2) fails, there is no major consequence to the motor itself. But failure of the front O2 sensor (#1) can cause some serious problems. The simplest is that the motor will just shut down. Normally this will be at a very inconvenient time! But if it fails a little at a time, the motor can start to run Very Rich with fuel. This can clog and destroy the Catalytic Converter which is VERY expensive to replace. Brian's Miata had around 60,000 miles on it, so while Brian was working on the car, he also replaced the front one. I thought this was a smart move to help prevent a major problem later. His motor may now run better and might even get better gas mileage.

The old sensors can be difficult to remove, but this project is not outside the realm of the home mechanic. There are several special sockets made which just fit the sensors, as the sensors can be in places that are hard to get to. One trick to help make them easier to remove is to preheat the exhaust pipe first so that the "bung" on the pipe warms up and loosens some of its cold grip on the sensor. If the motor can be run, let the motor idle until the pipe is just too hot to touch. If the motor is not running, use a propane torch carefully to heat just the pipe and bung.

The purpose of this article was not so much to be a "How To", but to create awareness. I wanted to present to you some information which I hope you will find helpful should your car's Check Engine Light ever come on. If the light comes on and stays on steady, have the code & problem checked as soon as you can. If the Check Engine light comes on and Flashes Rapidly, turn off the motor RIGHT AWAY.

So Brian is now Zooming again, and all is well!  
Zoom-Zoom, Bill Latsha