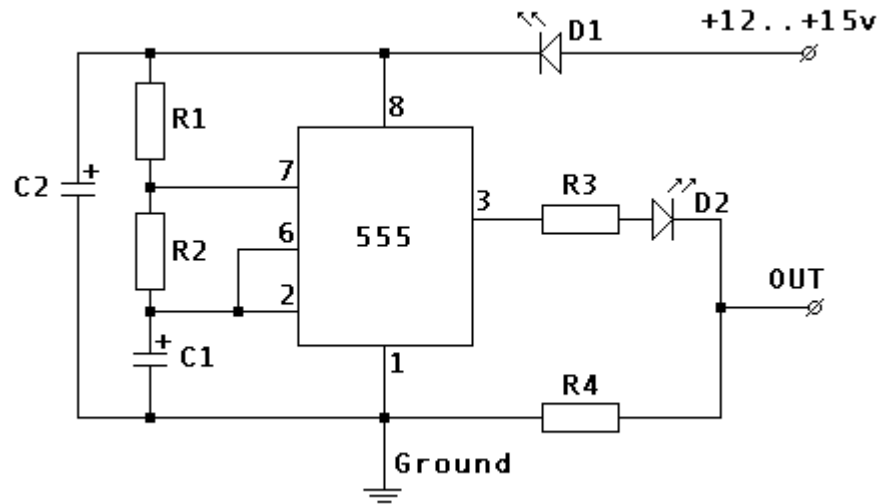


## ODB1 & 2, How to Simulate your Primary O2 Sensors

Many people ask about the O2 sensor and how to avoid the O2 sensor from causing the engine from running rich when using HHO to supplement the fuel. The additional oxygen causes a richer mixture to be fed from the ECU thus defeating the HHO or limiting its ability to save fuel.

We cannot sell you this item because its against the law for us to sell a device that alters your exhaust and air/fuel mixture. But there isn't anything illegal about showing you how its done.

Listed below is a very simple schematic and list of materials you can purchase at any Radio Shack for about \$20.



### Components:

<b>R1</b>	100 K Ohm
<b>R2</b>	1 M Ohm
<b>R3</b>	100 K Ohm
<b>R4</b>	10 K Ohm
<b>C1</b>	4.7 uF
<b>C2</b>	22 uF
<b>D1</b>	1.7v@20mA LED
<b>D2</b>	1.7v@20mA LED

### Hookup:

<b>Power source</b>	HHO Power switch, or to the <a href="#">ECU PIN #1</a>
<b>Ground</b>	HHO Power switch ground point or <a href="#">ECU PIN #80</a>
<b>OUT</b>	<a href="#">ECU PIN #47</a> or (disconnect the O2 sensor wire)

**Catalog part numbers from RadioShack stores:**  
(NOT from their online store)

<b>276-309</b>	5mm wide angle red led 1.7v, 20mA
<b>276-1723</b>	The 555 programmable timer
<b>276-1995A</b>	The 8 pin socket for timer chip. It makes soldering safer and replacement easier
<b>276-150A</b>	Generic PC board
<b>64-3052A</b>	Pack of blue tap-in connectors
<b>278-1225</b>	Stranded wires (black, red and green)
<b>270-1801</b>	Small black plastic project box 3 x 2 x 1
<b>272-1024</b>	Capacitor, 4.7uF
<b>272-1026</b>	Capacitor, 22uF

Simply cut the wire connection to the variable voltage wire on your O2 sensor leaving the sensor in the vehicles exhaust to allow the heater circuit and Open/Closed Loop to function.

You can look up the wiring colors for your particular vehicle O2 sensor by doing a Google search. The [2] uncut O2 sensor heater circuit wires are usually black and white and the variable signal wire that goes to the ECU may be grey or blue in color. Cut that wire appx ½ way between the O2 sensor and the harness plug that the O2 sensor connects to.

Then simply connect the Out wire from the circuit diagram shown above to the end of the cut signal wire that leads to the O2 sensor plug in harness.

### **How to Test your Simulator**

With the engine not running but with the power applied to the O2 simulator it will oscillate between .02 - .07 volts DC. With the engine running and power applied to the O2 simulator it will oscillate between .02 - .09 volts DC every 3.3 seconds. The current should stay below 10mA. This little simulator device will mimic the exact variable voltage that the o2 sensor sends to the ECU, giving it a good 14:7:1 fuel ratio mix and this will permit the

HHO to be used in your vehicle without causing the fuel ratio mix to go rich and defeat the HHO's purpose.

Most vehicles have a fuel ratio mix calibrated between 12:7:1 and 18:7:1 into the ECU. The 12:7:1 being lean and the 18:7:1 being rich. You will now be able to run the engine at an ideal 14:7:1 fuel air ratio allowing you to utilize your additional HHO supplementation without any problems.

We can't sell this electronic item to you, but nothing says you can't build it yourself or get a friend who has some basic circuit building skills to make it for you.

Of course we won't accept any responsibility if you mess it up...