

Achieve Maximum Fuel efficiency by converting your car into a  
Wallet & Environment Friendly  
WATER-HYBRID



**Thank You for your decision to convert your vehicle into a hybrid. You are joining over 1million drivers worldwide who are already utilizing this great technology to save gas, money and environment.**

**Thank You**

**[www.XHybrids.com](http://www.XHybrids.com)**

Professionally Manufactured and Engineered Hydrogen On Demand Systems by XHybrids for virtually any vehicle

**Note:** The information contained in these instructions is for educational purposes only and cannot substitute for the advice of professional mechanic or authorized dealer. Don't attempt to repair your car if you don't have proper knowledge and tools, you can be injured and your vehicle could be damaged. Take your car to a dealer or a repair shop for proper installation.

*Hydrogen on Demand Systems from Xhybrids are available for virtually any vehicle*

**UNDER 3 LITER**



**UNDER 5 LITER**



**OVER 5 LITER**



**INDUSTRIAL -SEMI**



**MAP ENHANCER MANUAL**

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**Installation Instructions !**



*This Instructions guide contains following sections:*

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## Safety Advice

Incorrectly installing or incorrectly using Water fuel technology may result in serious damage or body injury. Read and follow the instructions and safety precautions given here and in relevant places throughout to avoid these hazards. If you do not understand these instructions or do not like working on vehicles, have your mechanic do the installation.

It should take 20 to 30 minutes to install. **Work outside, no smoking; make sure the engine is not hot. Wear goggles and gloves and only use professional tools; use common sense and general safety procedures used for automotive installations and maintenance. If you're not sure, ASK!**

Yes, HHO is combustible – AFTER IT ENTERS THE ENGINE – that's the whole point. Yet your Water fuel system does NOT store hydrogen when installed properly, so there is no fire hazard due to hydrogen storage. So again, don't let people who don't understand the system intimidate you or tell you about non-existent hazards. Water fuel technology cools down the engine and adds safety to any car.

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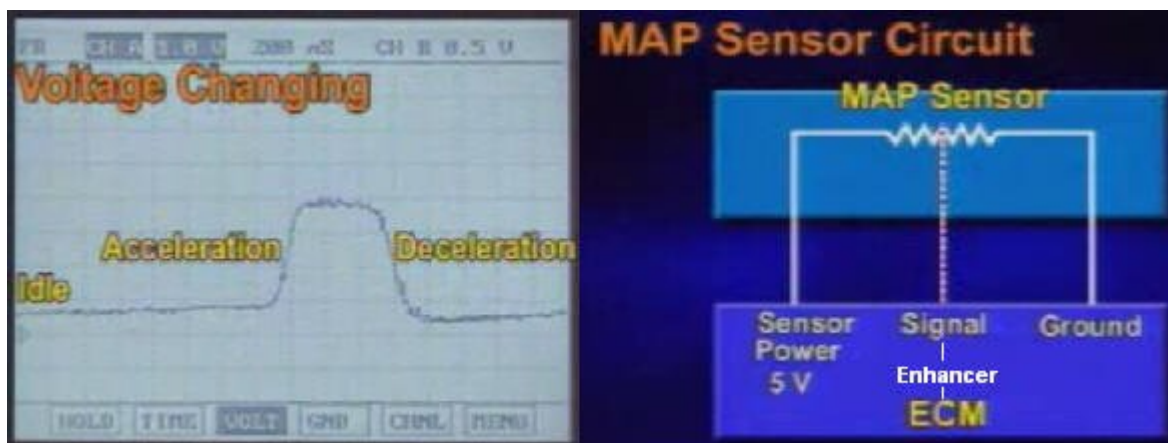
**What is MAP/MAF ?**

If your vehicle has a MAP / MAF sensor, you need an Enhancer. Vehicles newer than 1996 (even some older )have this sensor. However, diesel engines do not have one.

## HOW DOES THE MAP SENSOR WORK?

The Manifold Absolute Pressure (MAP) sensor signal is electrically used in a similar way to the use of Mass Air Flow (MAF) sensor signal (although internally it is built differently). It takes a 5 volt signal from the ECM or ECU (Environmental Control Unit or Module) computer, and returns a lower direct current signal in accordance with the vacuum in the engine. A higher output voltage means lower engine vacuum, which is then calculated as “more fuel is needed”. Lower output signal indicates higher engine vacuum, which requires less fuel.

It's not just fuel control. The MAP sensor signal gives the computer a dynamic indication of engine load. The computer then uses this data to control not only fuel injection, but also gear shift and cylinder ignition timing.



As acceleration increases, the voltage output for the MAP Sensor increases and then decreases when decelerating.

The Enhancer is connected between the MAP Sensor output signal and the ECM.

The Enhancer reduces the output voltage and therefore reduces the amount of fuel sent to the engine.

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## Checking The Manifold Absolute Pressure (MAP) Sensor

### Purpose:

The Manifold Absolute Pressure (MAP) sensor is used to monitor intake manifold pressure

(engine load). It sends voltage signals to the Powertrain Control Module (PCM) that represent the engines varying load conditions.

**Theory/Operation:**

ECM (Electronic Control Module) supplies 5 volt sensor reference voltage. The sensor, connected to manifold vacuum at throttle body, converts intake manifold pressure into voltage.

A silicon crystal in the MAP sensor senses changes in manifold absolute pressure. This crystal changes the resistance of the sensor depending upon the manifold absolute pressure acting upon it, and the change in resistance affects the amount of voltage that the sensor allows to flow back to the ECM.

Manifold absolute pressure and voltage to ECM are directly proportional (manifold absolute pressure increases, low vacuum, voltage to ECM increases and vice versa).

Sensor resistance and manifold absolute pressure are inversely proportional (as manifold absolute pressure increases, (low vacuum), sensor resistance decreases and vice versa).

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**Typical Readings:**

Sensor output voltage range is 0.5 to 4.5 volts.

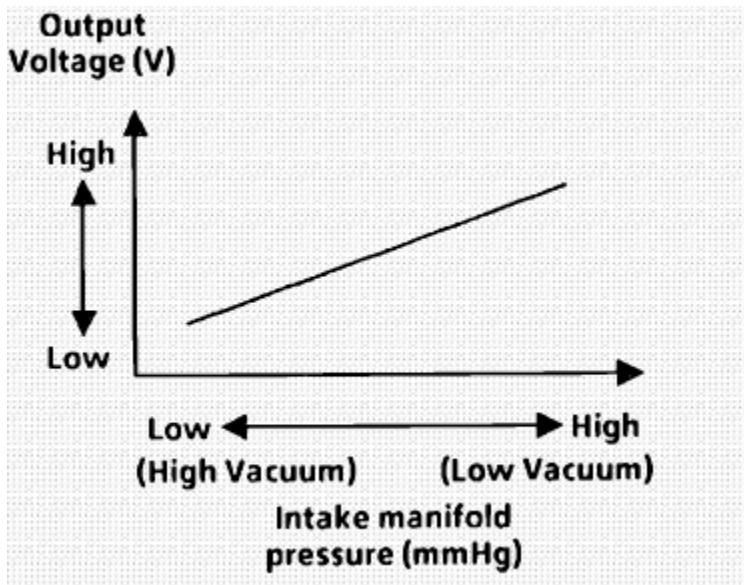
Output voltages between 0.5 and 1.5 volts indicate a high vacuum (low pressure) situation,

such as idle or deceleration.

Output voltages between 1.5 and 3.0 volts indicate a medium level of vacuum (pressure) such as a cruise or slight acceleration condition.

Output voltages between 3.0 and 4.5 volts indicate a low vacuum (high pressure) situation such as hard acceleration or a mechanical failure.

Any reading of 0 volts or over 4.5 volts indicates a problem.



**NOTE:** The following procedure tests the MAP sensor only.

1. Inspect the rubber nipple (fitting) from the MAP sensor to the throttle body. Repair as necessary. CAUTION: When testing the MAP sensor, be sure that the harness wires are not damaged by the test meter probes.
2. Test the MAP sensor output voltage at the MAP sensor connector terminal B. With the ignition switch ON, and the engine OFF. Output voltage should be 4 to 5 volts.
3. Test the MAP sensor output voltage at the MAP sensor connector terminal B at a hot, neutral idle speed condition. The voltage should drop to 1.5 to 2.1 volts.
4. Test MAP sensor supply voltage at sensor connector terminal C with the ignition ON. The voltage should be approximately 5 volts ( $\pm 0.5$  V).

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## THE MAP ENHANCER



Design might vary

The invention we're talking about here is a utilizing resistors. A resistor is a little piece of carbon that reduces current. Higher value means it resists more. The potentiometer ("pot" for short) is a variable resistor, which varies its value by turning the knob. There is another resistor, a fixed value resistor, in series to the pot to increase the dial range.

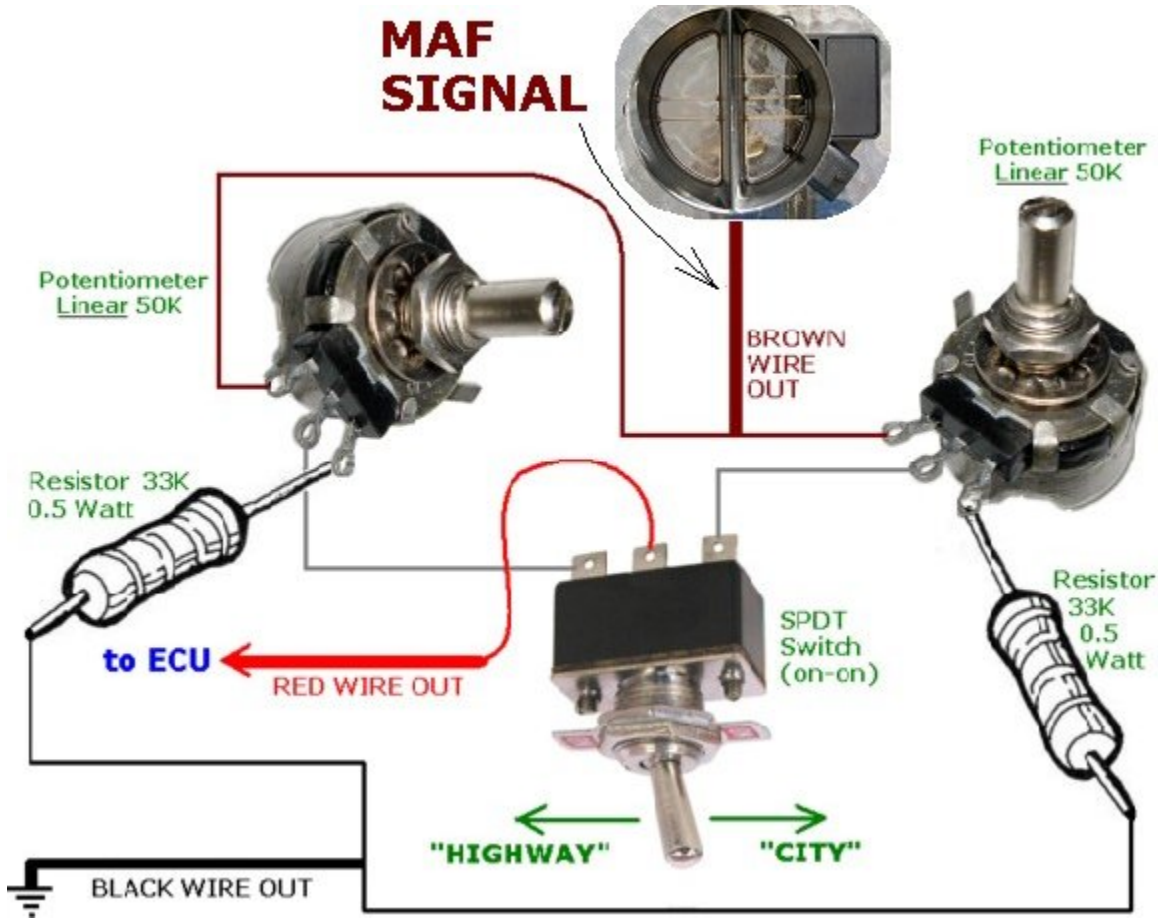
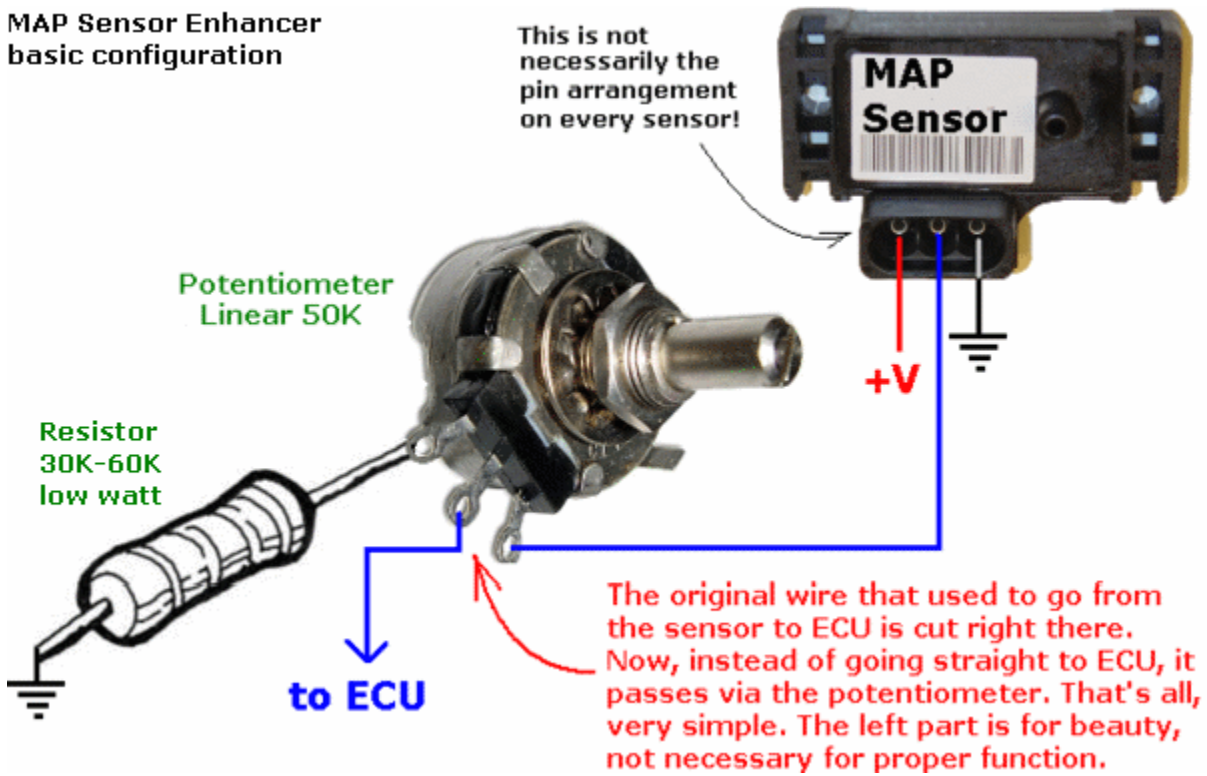
The MAP or Manifold Absolute Pressure Sensor is a little though expensive device installed in your intake manifold, or installed on the firewall and connected to the manifold with a thin hose. It has 5 Volts or 12 Volts coming in, and it simply senses the vacuum in the manifold and attenuates (reduces, weakens) this incoming voltage by a certain factor. In other words it reduces the supply voltage to a direct-current voltage in the range of 15% to 60% of the supply voltage (depending on the car's design these numbers will vary), and this varying (but non-pulsing) signal is then sent back to the computer.

On carbureted cars, you could re-jet the main jets  $\frac{1}{2}$  size smaller to get a leaner mixture, simply running hydrogen down the carburetor throat will not cause the carburetor to put less gas in same as in fuel injected vehicles.

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**MAP ENHANCER INSTALATION**

**MAP Sensor Enhancer  
basic configuration**



**STANDARD DUAL MAP ENHANCER -**

RED TO ECU, BLACK TO GROUND, GREEN (OR BROWN) TO MAP SENSOR

This information shows a typical installation of a MAP Sensor Enhancer. It will be exactly the same if there are two potentiometers – you would (1) identify the line coming out of your Map Sensor (the sensor is usually on the firewall or on the intake manifold), cut the signal wire and then (2) the device would simply be connected BETWEEN THE SENSOR AND THE ECU (computer).

The device also connects to ground, any ground available or the sensor's ground. If you follow the color code we've been using, then ground wire is BLACK, the line from the sensor is BROWN and the line going out to the ECU is RED, except for the GL3P.

If you have a hard time locating the wires DO NOT DO ANYTHING! Stop right there and leave this job to a mechanic. Guesswork won't serve you right this time. One wrong connection may burn the computer and you'll be wasting hundreds of dollars on repairs. This is a very simple connection but must be done with confidence.

MAP-GL3 – This unit is the same as our MAP sensor enhancer, however, it has three green LED lights to monitor any number of HHO generators. Wires are the same as noted above but the green wire goes to your first HHO generator(s), after the fuse. The white wire goes to your second HHO generator(s), and the blue wire goes to your third HHO generator(s).

GL3P - This is the MAP, O2 and three HHO water generator green light unit.

Black wire (with silver next to it) is the ground lead.

Solid white wire - O2 power in. Make sure the 600 Ohm resistor is in place before placing 12 volts to this line. You can also remove the resistor and put the positive side of a 1.5 volt (AA) battery or even two of them for 3 volts.

NOTE: unlike the MAP wire, you DO NOT cut this wire. You simply tap into it to supplement the voltage.

Solid red wire - O2 output, variable with the dial. This line has a diode to prevent power from backing into the unit.

White/Black wire - To MAP sensor

Red/Black wire - To ECU

This is what we have done with one of our cars: we found the wire, using push pins and volt meter, from the MAP (that puts out a voltage of 2 – 5 volts. We than cut this wire and the white/black wire went to the MAP (it goes to the ECU) side and the red/black wire went to the ECU side. This takes care of both wires with simply cutting one wire.

Green, Blue and Orange wires - These wires go to the post side, near your water generator, of your positive lead, after the fuse. You can use them with any number of HHO generators (one with each up to three, one with two HHO generators and one fuse per pair equaling six HHO generators, etc. The green light wire also powers the other lights. Each wire has a 600 Ohm resistor to bring the incoming 12 volts down to 2 volts for the LED lights.

NOTE: It is very important to monitor your HHO generators. If one should blow a fuse you will need to dial back the controls to more gas, otherwise you could run too lean and harm your engine.

PLEASE DO NOT pull hard on any of the wires as you may short the unit out.

NOTE: MOST ALL VEHICLES ARE DIFFERENT. BEFORE ADDING THIS UNIT OR ANY ELECTRICAL PARTS, GAIN NECESSARY KNOWLEDGE TO INSTALL IT CORRECTLY.

BEFORE INSTALLING THIS UNIT, PLEASE CHECK WITH YOUR MASTER MECHANIC FOR DETAILS.

## MAP or MAF Sensor Enhancer Installation Instructions

Installing your Duel Edge Enhancer is quiet simple. If this is your first time, then [PLEASE](#) take your time. The instructions for this device work the same for MAP or MAF sensors.

Choose a spot on your firewall to drill a hole for your wires to pass through from inside of car to engine compartment.

Note It is best if you use a grommet or some type of insulation in this hole to protect your wires from being cut from the metal and possibly shorting out. Locate your MAP sensor on your vehicle (if you have a MAP and a MAF sensor, connect to the MAP)

Check the voltage (with a volt meter) coming out of the wires on the MAP sensor harness and find the low voltage wire that fluctuates at idle, every car is different. Most have three wires but some have more.

This wire is what sends information in voltage to your ECU (computer) make your connection here by cutting off this wire and connecting the [RED](#) wire from your enhancer going to the MAP.

The [Black](#) wire from your enhancer will connect to the other end of the wire (that you just cut) that is still connected to the ECU.

The [Green](#) wire is for ground. Note: You only cut one wire under your hood. Mount your enhancer on the dash, or console with the Velcro and you are installed. Your car is now wired and ready to go.

The [Purple](#) wire is used as a manual shut-off for your generator; this wire is used as a ground when you connect it to a relay that is wired to the ground side of your hydro-generator. When you switch from Hybrid to Factory your MAP or MAF will return to factory settings and your Generator will shut off.

If you don't feel comfortable connecting your system have a mechanic do your install.

### Using Your MAP Sensor Enhancer

First adjust your knobs all the way counter clockwise. Full RICH

Always start your vehicle with the Enhancer on Factory.

After 5 minutes switch to hybrid and slowly adjust the city knob clockwise (lean), keep turning the city knob until you can feel the vehicle start to chug a little then turn it back a tiny bit. Drive vehicle and after another 5 minutes or more adjust your knob towards to lean and you should get a little leaner setting. Keep re-adjusting every 5 minuets or so until car is good and

warm. This may require 3-5 adjustments.

When your engine is fully warmed then you can flip your toggle to HWY and adjust the right side knob to the optimal gas saving setting. If you find your self-needing more horsepower, like towing or climbing a steep grade, you can adjust your dial for more rich.

Counter Clockwise Is Rich Clockwise Is Lean

Every time you restart your car when it has cooled down you will need to start in factory mode and wait 5 minutes and then adjust as above. Leaving knobs advanced and starting your vehicle when cold can turn your check engine light on and you might trigger the computer into limp mode.

Note if you advance the knobs to the point that you shut your car off you have gone too far.

### [Trouble Shooting](#)

Enhancer is installed correctly but you are not seeing any savings. Your vehicle is probably in limp mode and you will have to reset the codes. You can go to your local auto parts store to have them reset the computer for free or disconnect the battery and that should reset it.