

INSTALLATION DATA SHEET r3.1

Start by mounting the **HHO Generator** in the engine compartment. It should be mounted flat and level, and secured in such a manner as to assure that it cannot bounce around when the vehicle hits bumps etc. Position the device so that it can easily be accessed and can be conveniently removed and filled with water, or cleaned, serviced or inspected.

IMPORTANT: Install the device away from hot AREAS as much as possible. Basically look for a space with good airflow around it and not too close to the exhaust pipes and manifold.

Some Safety Tips:

1. Use **ONLY DISTILLED WATER**. Filtered water is **NOT** distilled water.
2. Start with no more than 1 teaspoon of baking soda, and add gradually only when you're sure no excess heat is being generated. After the units is running well, increasing it to 2 teaspoons is recommended.
3. Install away from heat. If this is not possible, block the engine heat as much as possible by placing a heat shield (bubble wrap covered by aluminum foil) between the unit and the engine.
4. Leave at least 1-2" air space around the unit.

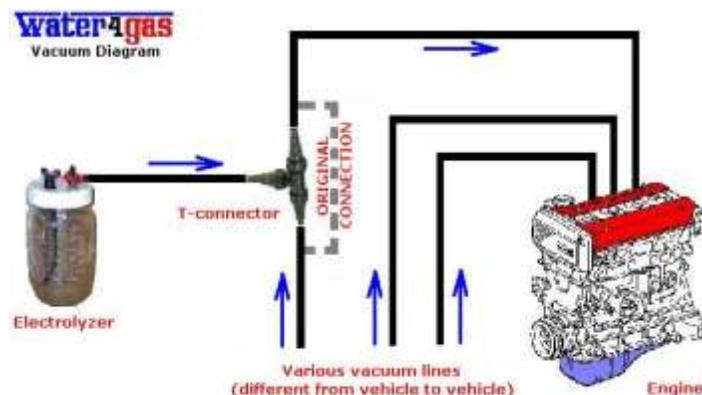
Rarely there may be vehicles that do not have enough space in the engine compartment to mount the device. A possible solution is to use the area in front of the radiator. Fasten the device to the car's frame or **anything away from the radiator, belts or moving parts**, and make sure that it does not touch the radiator.

That's it for the mechanical installation and location. Now let's move to the vacuum connections and supply lines. The **HHO Generator** is operated by vacuum pressure from your vehicle's engine, plus the 12 volt supply of power from the electrical system.

STEP 1 – Vacuum Connection

As shown in the vacuum diagram below, vacuum lines are supplied from the engine to various car systems, and you should best use the line that pulls the highest vacuum pressure. The idea is to suck the HHO into a place such as the carburetor or the intake manifold, where it can be automatically mixed with the existing fuel/air mixture.

If you can connect in one place near the throttle body valve (the butterfly valve that connects to the gas pedal) then this is best. One connection point very close to the Throttle Body Valve is the Best vacuum connection plan.



Some earlier developments suggested dual vacuum connections. The reason for the dual supply (dual HHO output) is when the engine is idling, there is a high vacuum pressure in the intake manifold. This pressure drops when you accelerate or rev up the engine to higher RPM. At that moment, more vacuum is available in the air intake for drawing more HHO gas into the engine.

THROUGH EXPERIENCE, IT IS BEST TO FIND ONE, SINGLE VACUUM CONNECTION POINT THAT IS NEAR THE THROTTLE BODY, AND PULLS THE BEST OVERALL VACUUM PRESSURE DURING ALL OPERATING CONDITIONS, INCLUDING UNDER LOAD WITH THE GAS PEDAL WORKING.

CHOOSING YOUR LINE

With the engine briefly on, you should be able to detect substantial vacuum pressure coming from the line you are connecting to. If you want to know exactly, and especially if you're going to install more than one device, good vacuum gauges are available at your local hardware and automotive stores.

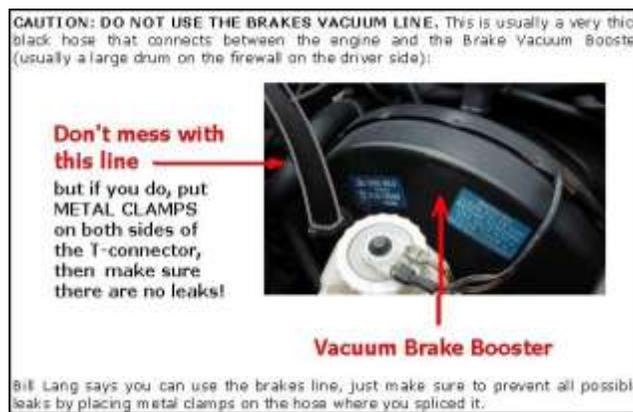
Connect the vacuum line from the device, to a vacuum line that runs to the engine. You may find it easier to drill a hole into the air intake tubing close to the throttle body. Make the connection as close as possible to the engine.

If the vehicle has a carburetor, make the connection at or below the base of the carburetor. Frequently in older vehicles, there are spare ports available for this purpose. The PCV valve line can sometimes make a good connection. Vehicles with EFI (Electronic Fuel Injection) should also be connected at or near the intake manifold. **But remember to test your connection point for vacuum when the engine is accelerating as well as at Idle.**

WARNING: DO NOT SHORTEN THE VACUUM LINE between the engine intake and the jar. Keep the line (hose) at least 3.5 ft long. This length enhances safety and prevents damage to the device.

Vacuum line tee connectors are provided as well as a length of vacuum hose to make the connection. A wide range of vacuum fittings are readily available at any auto parts store (plastic fittings will do for this use).

CAUTION: DO NOT USE THE BRAKE VACUUM LINE. This is usually a very thick black hose that connects between the engine and the Brake Vacuum Booster (usually a large drum on the firewall on the driver side).



STEP 2 – Electrical Supply

The device is designed to operate on 12 Volts. Refer to the wiring diagram below. If you're not sure, consult your auto mechanic, or contact us for help.

1. Connect the black terminal of the device to the **negative** terminal of the vehicle's battery, using the wire **WITHOUT** the fuse (black wire). If the battery is too far away, connect the wire to the **firewall** or another metal grounding point.
2. Identify a point in your vehicle's electrical system which has 12 Volts (positive) present **ONLY WHEN THE ENGINE IS ON** (Position 2 of the Ignition Switch), such as the starter solenoid, window wiper motor, or similar circuit.
3. Turn the switch off and take out the key. Connect positive (12 Volts) to the red terminal of the device, using the **FUSED** wire supplied (red), and splice into the point of power you've identified above.
4. Use a couple of zip ties to secure your wiring neatly in place. Or, to protect the wiring from long term damage, you can put the newly installed wires into what's called "split loom tubing".

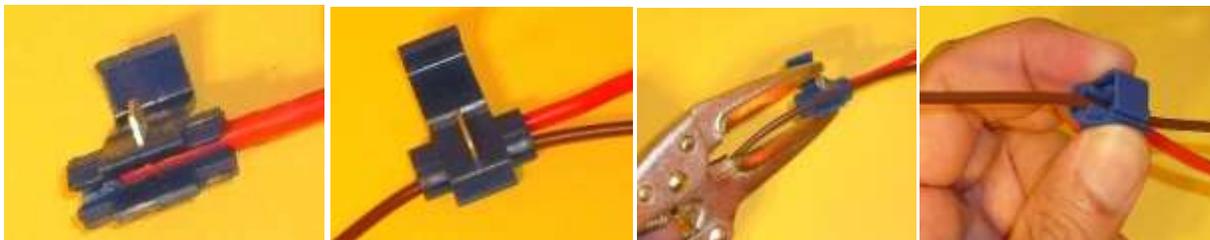


USEFUL TIPS

In most newer vehicles, the fuses are located in a box in the engine compartment. Just stick the end of the wire into the fuse holder socket and reinsert the fuse to secure the wire in the slot. Usually it is a 10 Amp or 15 Amp ignition circuit that you can use. In some older cars where there was no fuse box to connect to, the wiper motor was found most useful as a supply point. In these cases, just splice into the SWITCHED 12 Volt wire and it works well.

In some cars the electrical system may be in reverse (RED wire to the body of the car, or to the battery itself). If it gets confusing, consult an auto electrician who is familiar with your specific model.

HOW TO USE THE QUICK SPLICE CONNECTORS



STEP 3 – Mixing the Electrolyte



Fill the jar with DISTILLED WATER, leaving 1" of free space at the top. Add 1 teaspoon of Electrolyte (pure Baking Soda) and screw the jar onto the lid of the generator.

We have found that units using 4 amps is useful for a moderate production of HHO. After your unit is running well, we will increase the baking soda to 2 teaspoons to increase the amperage and therefore the HHO production.

For higher HHO production, you can experiment with many factors. The fuse supplied is usually 10Amps and will support more current than a single jar can produce. (See Multi Cell Quick Start Data Sheet.)

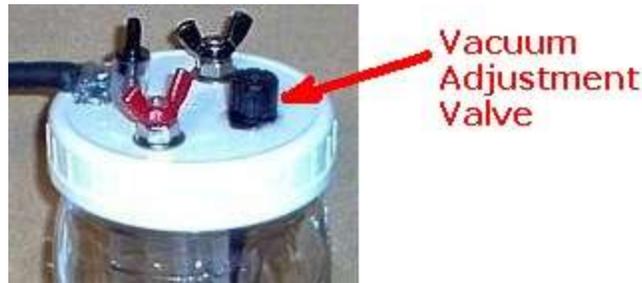
THE JAR MAY GET HOT. THE JAR WON'T CRACK - BUT LET IT COOL OFF BEFORE ADDING COLD WATER OR ATTEMPTING ANY MAINTENANCE ACTION.

Inspect the installation visually. Make sure all electrical connections are tight (HAND FORCE ONLY) and the lid is screwed tight on the jar.

REFILL NOTE: When the water level drops, refill the unit(s) with distilled water only and NOT more baking soda. The original baking soda is still present in the solution. Adding more will upset the catalytic balance of the unit.

STEP 4 - Adjustment

1. Start with NO electricity, by taking out the fuse or leaving one of the terminals disconnected (make sure it doesn't touch metal parts of the car to prevent fuse blowout).
2. Turn the Vacuum Adjustment Valve (sometimes called "Bubbler Cap" or just "Bubbler") fully CLOCKWISE. Then turn it half-turn COUNTER-CLOCKWISE.



3. Turn on the engine and watch the bubbling action coming out of the lower end of the thin tubing inside the device (here by the way is the great advantage of having a strong glass jar instead of metal or non clear plastic – total transparency and visibility!) Gradually turn the Vacuum Adjustment Valve and watch the bubbling action in the jar. Adjust the valve until there is a small amount of bubbling action.
4. Turn off the engine.
5. Connect the electricity by putting the fuse in and making sure all connections are tight (hand force only).
6. Start the engine again and watch the electrolyzing action between the spiral electrodes. Milky looking bubbles (HHO) will start forming and flow toward the top of the jar.
7. Within a short time (roughly 30 seconds), you will notice that the engine starts to sound different. It will sound smoother and quieter. Its RPM may be unstable for a couple minutes. This is normal – the HHO is starting to change the combustion cycle and cancels the pinging – and the engine is now adjusting to the changes.

Congratulations! Your HHO Water4Gas system is now ready to go! Enjoy it.

This manual is based on the experiences of many clients and friends. Yet it is never complete as we keep learning all the time. Please send us as many feedbacks, experiences and solutions as you have found for the benefit of others. Thank you!

ADD-ONS and EXTRAS

For some cars, the hydrogen generator is all that's needed for optimum gas economy. For others, some enhancements are necessary (generally on 1995 vehicles and newer). We can help make your system run well and be a pleasure to own. The most typical addition is an EFIE which stands for Electronic Fuel Injection Enhancer.

Sensors in newer cars can read the leaner (cleaner) emissions coming from the engine, and decide to add more fuel to the mixture to compensate. This works against the gas savings of the hydrogen generator. However, you will still experience more power, smoother running, and cooler combustion temperatures.