Installation Instructions

S-7 & D-7 Hydrogen Generator Kit

Contents:

- Hydrogen Generator
- Pulse Width Monitor (PWM) Display (LCD).
- Reservoir Tank
- Dryer with Bracket
- Reinforced HHO Gas Hose
- Wire for connections between PWM, Battery and Cell
- Misc Parts for Installation.

Additional Items Needed For Install:

- Electrolyte – 90% Pure Sodium Hydroxide (NaOH) - Order 2lb. Bottle (or more).
- Voltmeter or Multi-Meter
- 7/16 Drill Bit and 1/4" NPT Pipe Thread Tap (for HHO gas-in)
- Basic tools: wire stripper, screwdriver, pliers, etc.
- Silicone Sealant (Rectorseal T plus 2 – works great!)
- 1 Gallon **distilled** water
- 5 Gallon Clean Bucket

Important

HHO gas is highly combustible, volatile, and explosive. It is no more dangerous than any other fuel, but only when it is used properly.

Make sure that HHO gas is only being created when the engine is running. You don't want HHO gas being produced when you are in your car with the accessory switch on, listening to music. ***So the key is to find a circuit that is only on when the engine is actually*** **running*.***

Other safety points to consider:

- NO spark/flame should be allowed near HHO gas.
- Do not operate the Generator indoors.
- Use eye and skin protection when mixing or handling electrolyte.
- In the event of eye or skin contact with the electrolyte, flush with plain water. **Keep a spray bottle with Distilled Vinegar & Water nearby.** If it gets on your skin it will neutralize it.
- Mix and store in heavy-duty plastic container - keep away from children.

Additional Items Needed For Install:

- Electrolyte – 90% Pure Sodium Hydroxide - Order 2lb. Bottle (or more).
- Voltmeter or Multi-Meter
- 7/16 Drill Bit and 1/4” NPT Pipe Thread Tap (for HHO gas-in)
- Basic tools: wire stripper, screwdriver, pliers, etc.
- Silicone Sealant
- 1 Gallon **distilled** water
- Clean Bucket

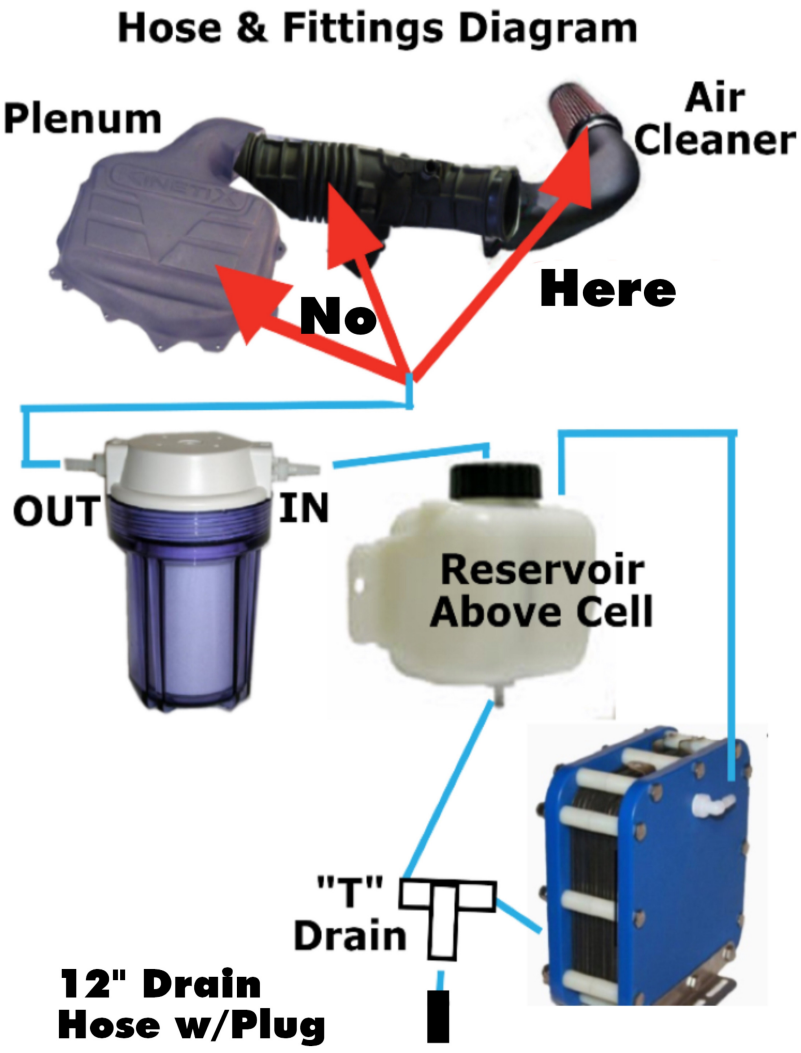
Find or Create Space For Main Components:

- Generator
- Reservoir Note: Install higher than the Generator to aid the flow of electrolyte.
- Dryer
- PWM

1. Mount Your Main Components

Make sure the reservoir is higher than the generator, as water must feed to the cell by gravity. If room is an issue you may want to install your Generator in between the radiator and grill.

2. Make Hose Connections



Complete the hose connections to all the devices as shown in the diagram.

EXCEPT THE HOSE CONNECTION TO THE BARBBED FITTING AT INTAKE - THIS WILL BE THE LAST STEP.

We use 3/8” hose, except 1/4” hose - that is for the Dryer to HHO Gas In.

Make your hose to fitting joints permanent. We do this with cable ties, they work better than hose clamps, they can be applied behind the barb.

Push the fitting on as far as it will go. If needed, use a heat gun (or hair dryer) to warm and soften the hose. Wetting the hose with water can also help it slip on.

Tighten a cable tie between the barb and the end of the tubing. Don’t put the cable tie directly over the fitting's barb. After cinching it up by hand, use a pair of needle nosed pliers to tighten the cable tie around the hose. Do this by gripping the cable tie close to the joint and twisting with the pliers to get the cable tie tighter. Snip off excess.

1. Connect the **lower** fitting on the **Generator** to the **lower** fitting on the **Reservoir.**

Note: The Drain “T” should be routed to a place where you can reach it easily. It is used when you drain the system. **You should tighten the nylon nut with a wrench**.

2. Connect **upper** fitting on **Generator** to the **upper** fitting on the **Reservoir.**

Note: This allows the HHO gas to flow to the reservoir. Any solution that is pushed up this tube will drop into the reservoir.

3. Connect the remaining fitting on **CAP** of **Reservoir** to **Dryer IN.**

Note: There is an O-Ring in the cap of the Dryer, put Vaseline on this O-Ring to help seal tight.

4. HHO Gas In; Drill a hole for the **¼” NPT** threaded fitting – Add HHO hose before the air filter or after with a cone filter (before MAF Sensor).

Note: We provide a threaded elbow that screws into this hole. Use silicone sealant to ensure that this connection is air tight. Never use metal fittings only nylon or PVC.

3. Mix Electrolyte Solution & Fill Reservoir Tank

Only Use Distilled Water

Sodium Hydroxide Calculations;

Mix **1.5 Cup** of Sodium Hydroxide to **1 Gallon**.

OR

Mix **1/2 Cup** of Sodium Hydroxide to **1 Liter** Distilled Water.

1. Pour Distilled water in a clean 5 gallon bucket
2. Stir water with a plastic paint paddle on a drill motor to keep the fluid moving in a cyclonic motion.
3. **Slowly** pour the catalyst into the moving water. You should wear gloves and goggles.
4. Wait 15 minutes for electrolyte temperature to cool down.
5. Fill Reservoir.

NOTE: When filling the Reservoir, keep the electrolyte at least 2” from the top. If you drive on bumpy roads you may want to hold the electrolyte level even lower, so electrolyte will not get into the HHO gas output hose to your engine. Further, if you drive on bumpy roads, raise the hose as high as you can above the outlet fitting, so that any electrolyte will fall back into the reservoir.

Refill the electrolyte when the level gets to within 1” from the bottom.

To replenish the electrolyte, add distilled water only.

Please see our Instructions Page on Website for more information.

4. Install the PWM

Refer to PWM instructions.

5. Install Your Enhancement

Install your enhancement according to instructions; VP15 or VP16 chip.

OBDI vehicles install your EFIE and or MAP/MAF Sensor Enhancer.

Carburetor engines do not need computer enhancement.

6. Start Your HHO System

Now you can start the system and begin making HHO gas. Dip the end of the hose that gets connected to the intake or air cleaner into a cup of water and see if you are getting bubbles, if not check for leaks. It’s a good idea to check all hose connections for leaks by applying soapy water using a spray bottle. If there is a leak, bubbles will be immediately evident. Repair any leaks.

NOTE: Failure to screw down the lid to the reservoir or dryer properly can allow your HHO gas to escape. Make it a point to always screw down the lids firmly. Also check for electrolyte leaks by visual inspection during system operation. **Attach Hose to barbed fitting on intake.**

Start your engine and begin creating HHO gas. Place the end of your HHO gas fuel hose (that will connect to the air cleaner or intake) into a glass of water. If you see bubbles you are creating HHO gas. If you do not see bubbles, you probably have leak(s).

Checking For Leaks

HHO gas is lighter than air. Fill a spray bottle with water and a little dish soap, spray all of your connections. You will easily see bubbles where there are leaks. **This is an important step and should be done whether you see bubbles or not in reservoir.**

The LCD Display

You will see the amperage climb to the desired amperage. Once the amperage comes up to it's set point, it will not increase. However, the duty cycle % starts to go down. This is the PWM controlling the output amperage to maintain its set point. If the duty cycle drops too far, like below 50% or so when the system is cool, then you'll want to dilute your electrolyte. If the amperage never reaches the set point, you’ll want to add more KOH.

Before adding NaOH, be sure that the electrolyte solution has reached the generator. If

so, you will see a steady flow of electrolyte and HHO gas coming out of the HHO gas hose into the reservoir.

Lack of any flow is almost always caused by vapor lock in the tubing, where an air bubble is preventing the electrolyte from getting into the cell. In this case you must bleed the air out of the tubing to get the electrolyte flow started.

There are only 2 reasons for no flow:

1. No voltage being supplied to the generator.

2. No electrolyte (NaOH) in the water.

Adjusting Electrolyte

Now that your HHO system is running, you may want to adjust your electrolyte concentration. Ideally the electrolyte solution should be strong enough reach your desired amperage when the engine is cold, but not so strong that the PWM has to start reducing the duty cycle.

Preferably just below the desired amperage. This way as the system warms up, the amperage will climb to my desired point, and the duty cycle will remain fairly high.

If the duty cycle is too low, such as running below 25% - then you are not going to be getting the best efficiency out of your HHO system. Dilute the electrolyte by adding more distilled water.

MPG GAINS

We expect you to achieve at least a 20% MPG gains, if your results are less you need to debug your HHO system. Some customers get over 50% or better MPG, but 30% is a reasonable expectation.

If you're not seeing the MPG gains then your installation was not done correctly somewhere, when you discover and correct the issue, you will achieve the MPG gains.

Please See our Instructions Page

on the Website for Additional Information on

Maintenance, Electrolyte & Debugging.

hydrogen-generators-usa.com

Email: hho@hydrogen-generators-usa.com

Phone: 541-846-8007