

B3 Cell System Install Manual



B3 Cell System (Bob Boyce® Booster) Installation Manual 2013 update

Parts List :

- B3 cell
- B3 bracket and Velcro strap
- [PWM](#) with wiring harness, relay.
- [Clear 2.5" Acrylic Bubbler Tube](#) with 2 rubber end caps
- Top bubbler cap nylon elbow fitting
- [Clear Filter Hydroxy Dryer](#) w/bracket and 8 ss self tapping screws
& 4 Nylon hose fittings, one straight, one 90 elbow (2 @ 3/8" hose to 1/4" NPT) & (2 @ 1/4" hose to 1/4" NPT)
- Hose 8' of 3/8" tubing, 4' of 1/4" tubing and 6 hose clamps

- Dashboard Digital Readout
 - [Volo FS2 Circuit](#) (optional)
 - 2...mini ANL 30 amp Fuse (30 amp for B3)
 - 5...small zip-ties, 5...large zip-ties,
 - 1...[mini ANL Fuse holder](#)(connected to power wire)
 - 1...[Piggy back Fuse](#) for the “Ignition trigger wire+” connection
 - 1...Air Box Fitting for 1/4” hose
 - 2...2 Nylon hose fittings, (3/8” hose to 1/4” NPT)
(Please note : You received a different “bubbler”
and “PWM” than the photo.)
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Your B3 cell comes electronically cleaned and conditioned by Russ Waldron in Peoria, Illinois. Cleansed meaning that most of the oxides of iron, chromium and nickel have come off the surface of the 316L stainless, to enhance the production of more % or ortho hydrogen and also ortho oxygen. 30 years of [Hydroxy Gas™](#) research. [Bob Boyce®](#)'s catalytic technology He calls it catalysis rather than electrolysis, resulting in a higher quality, static clinging, combustional [Hydroxy Gas™](#) that blinds to the hydrocarbons well and completes the burn entirely! You will burn ALL the fuel you purchased, no more un burnt fuel down your tailpipe, way cleaner emissions too!

Your cell was taken though an electronic cleanses process and following a conditioning process. Your cell was run on a bench for 4 to 5 days. Conditioning is a slow ramp up process that builds up catalytic layer on the SS surface, combined with our rough sanding of the surface metal. (one of the reasons for not being a cheap cell) All this time of building this precious catalytic layer (all from Bob Boyce®'s study and use for the last 30 years.) can be stripped off in ONE SECOND!!!

PLEASE DO NOT PERFORM LPM TESTS!! on this new cell. Run only at 5 amps to begin with. NO MORE amps, at 12/13 volts (no more than 14 volts) You do not want Bob to get upset. LOL. So please run this cell with a 10% to 20% NaOH solution to 100% water by weight. Mix in separate container and allow to cool down. PLEASE run at 12/13volts (no more than 14 volts) and 5 amps to begin. No more than 5 amps at first MPG tests. Perfect for a 2.0L engine, A V6 3.8L engine about 7 - 10 amps. V8 engine no more than 12 amps.

You only need 1/4 LPM to 1 liter of engine displacement. So a 2.0L engine will get best MPG gains with 1/2 lpm. The B3 cell will make 1 LPM at 12 amps, but PLEASE DO NOT CRANK IT UP TO 12 AMPS! Your PWM comes set for your car, please leave it alone at first. So 6 amps is all you need with a 2.0L engine. We also pulse the B3 cell with 90% of the current on the negative side. You must have an excellent Ground contact to the PWM.

YOUR ENGINE LITER SIZE TO B3 AMP OUTPUT (approx.) B3 Cell works best at 3.5 amps to 6.5 amps.

ENGINE SIZE • B3 AMP DRAW

- 1.5L 4 AMPS
- 2.0L 6 AMPS
- 2.5L 7 AMPS
- 3.0L 8 AMPS
- 3.5L 9 AMPS
- 4.0L 10 AMPS
- 4.5L 11 AMPS
- 5.0L 12 AMPS

A 5L+ V8 engine we recommend 2 - B3 cells or a double 7 cell as an Ice Block 14/7 cell. We listed the results above, for a customer got gains with 12 amps with a B3. 12 amps is maximum for the B3 cell operation, any more amps will heat the cell up and can slowly erode the cell faster. 5 amps is best for a B3 cell, at this amperage along with our PWM30 or MC-1230 it will produce the highest quality gas at 5 amps. So less is sometimes better, with Boyce's hho gas.

Terms and Conditions

*Warning- Be sure to read all directions and Terms/Conditions before further action. Terms are at the end of this manual the B3 Cell Kit is a device that splits water up into hydrogen and oxygen using electricity. There are many names for these kinds of devices that are meant for transportation applications. Here are just a few, so while reading the instructions there will be no confusion: **Electrolyzer, hydrogen booster, cell, booster, hydrogen generator.** The gas that comes out of the hydrogen generator is hydrogen and oxygen also known as: **browns gas, hydroxy, oxyhydrogen, HHO.** **Electrolyte** is the substance that gets mixed into the distilled water to make it conduct electricity. Only use **sodium hydroxide (NaOH) or potassium hydroxide (KOH)** with your hydrogen kit.

Introduction

Congratulations for purchasing your new hydrogen booster. Get ready to improve fuel economy, cut emissions and gain horse power. We greatly appreciate your willingness to participate in the transformation to clean energy. We will continue to do our best to provide the public with credible information as well as reliable products.

Install Plan

You want to mount the B3 cell under the hood in a cool spot. An easy access to the refill water cap, where you will need to add one cup of distilled or R.O water. water at every 10 gallon or more gas fill up. We have included a few install photos, in the pages following this doc. We have a new excellent way to install the [Hydroxy Dryer](#) over the B3 Cell height. Horizontal with the IN let down, to allow any water or NaOH /water to enter the engine. It drains back into the cell when all cools down. Some will not have room to put the dryer sideways above the B3 cell. Next to the cell is where the PWM will go. Close to the cell and a place close to the battery side of the hood. If your battery is in the trunk, you can find the engine power terminals under the hood and install close to the power source and also you need to be close to the air filter box.

Watch these B3 installs to get an idea of what's involved in the install.

[B3 Install on Chevy Truck Slideshow](#)

(<http://www.hydrogengarage.com/B3SlideShow>)

[B3 install in a BMW Z3](http://www.hydrogengarage.com/Z3) (<http://www.hydrogengarage.com/Z3>)

[B3 installed in a 2000 Jeep Grand Cherokee](http://www.hydrogengarage.com/jeep.html)

(<http://www.hydrogengarage.com/jeep.html>)

[Quick Look B3 Install](#) by Ryan the sketch artist • **[B3 Slide Show](#)**





Fuse PWM



Hydrogen
inlet to the
engine

Filter



Bubbler

Cell



B3 install behind the radiator. Notice the bubbler is 3 inches above the B3 cell. The hydroxy purple dryer works better and never will need draining if you over fill the B3 cell. Mounted sideways with the IN let down to drain back in the bubbler, is best, but you may not have the room, as in the install here.

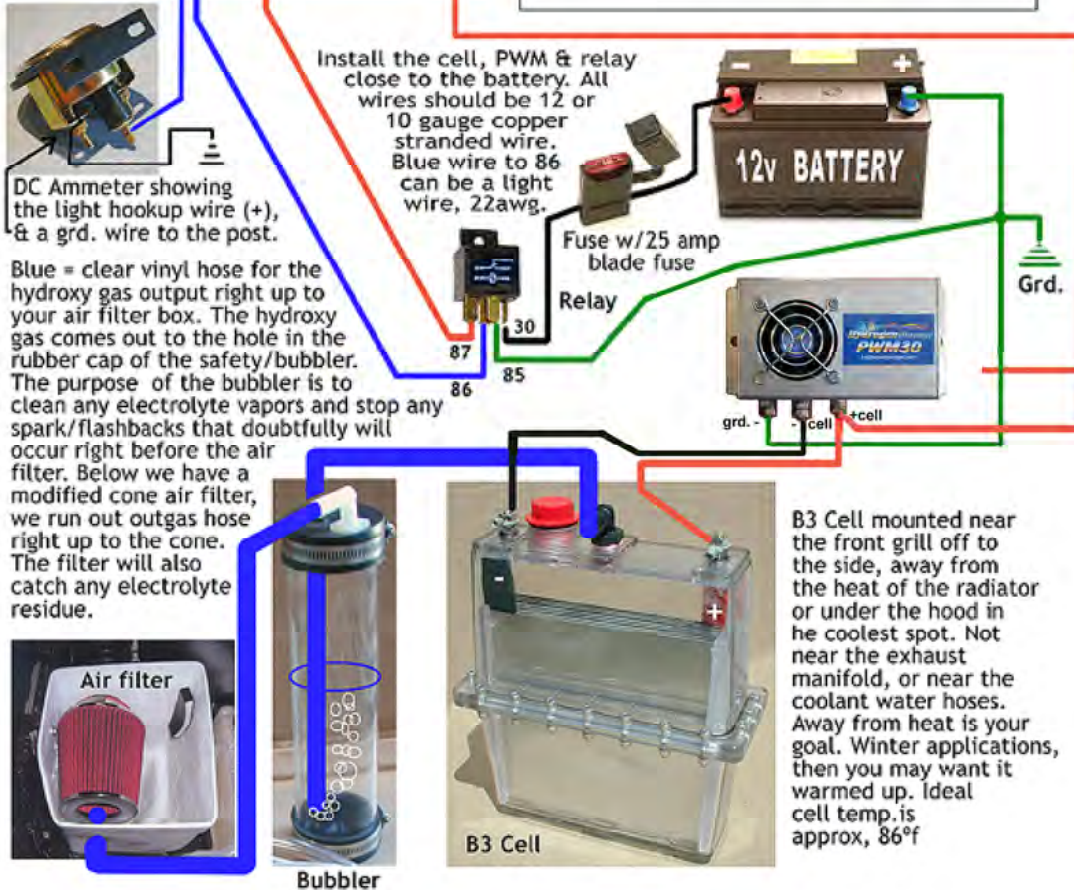
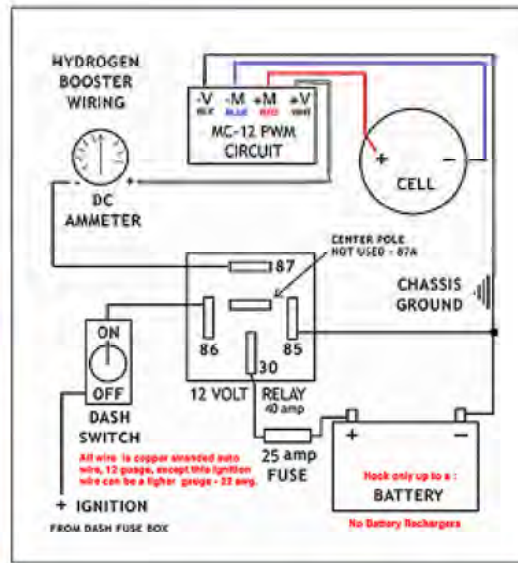
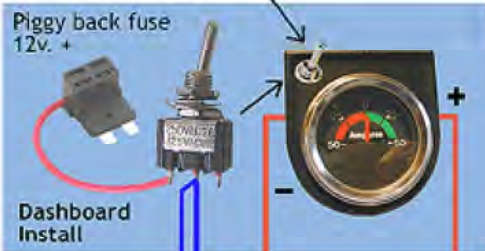




The Complete B3 Cell Kit Wiring & Hose Installation

Print out this page for a quick reference. We left out the 8 cond. controller cable in this simple diagram, the amperage can be adjusted at the PWM box under the hood. The controller cable install is on the next page.

Drill a 1/4" hole in the corner of Ammeter bezel for the toggle switch.



Above is an older B3 connection guide. It was our older version with the analog ammeter to the dash. It shows how the wiring and plumbing goes at a glance. Your kit came with a simple wiring harness, PWM and relay all ready to install, 2 wires to the battery power + and - GRD. 2 wires to the B3 cell. The cap side is always the + terminal. One cable with the CAT5 connector on one end is fished through the firewall of your car or truck. Every car has a car stereo

rubber plug, that the cable can be run through your firewall to the dash board area. We added the [Hydroxy Dryer](#) (clear 5" filter housing). We at one time had clear B3's, the plastic, in which was not durable and we changed the neutral plate height to the top of the cell. The current black propeller plastic is super heavy duty and strong, will never crack and leak. Can handle heat or freezing temps.

Step 1 Mounting your B3 Booster

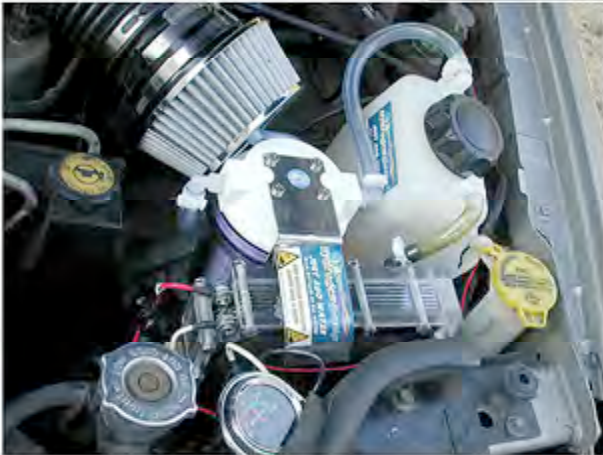
The first item that needs to be addressed is find a well ventilated, spark free area to install your booster at. Even though your booster is free from any leaks and is in perfect working condition, we want to take every safety precaution possible.

- The preferred area to mount your booster is on the side of the frame near the battery box. The reason you want to mount your booster here is so the power cables are as short as possible. You want the least amount of resistance as possible. Best way to eliminate steam vapor from your booster is to keep it in a well-ventilated and cool environment. A lot of customers mount their units in a box which is perfectly fine. If the B3 is outside the engine compartment then it will stay cooler.
- Behind your front grill is a good spot to mount the cell block, a cool spot for hot weather. If you live in a cold climate under the hood would be a better choose. The electrolyte NaOH or KOH have anti-freeze properties. You can mix UP to a 20% solution of NaOH and or 25% for a KOH solution by weight. (20% of weight of dry NaOH pellets to 100% weight of water) Even a 10% mix id anti-freeze. 20% mix = 1 cup of NaOH dry pellets/beads to 1 liter of distilled water, mixed in a large glass or plastic jug. Let cool for for 20 minutes before filling the B3 cell.

Step 2 Mounting your Bubbler tube and Hydroxy Dryer

Again, find an area that will be free from any moving parts and hot surfaces. Mount your Bubbler tube above the B3 Cell by a few inches higher than the top of the bubbler to the top of the B3 cell. If you have room, best to mount the Hydroxy Dryer horizontally, above the B2 cell and Bubbler Tube. The dryer goes after the bubbler to the air filter box with 1/4" tubing. Drill and tap a 1/4" NPT hole in your air filter box where the air comes into your engine, right before your air filter. Use no metal fitting! It will discharge your static gas. Use only poly, nylon or vinyl. We provide a 1/4" NPT/1/4" hose bib. Add a 1/4" hose to 1/4" NPT thread to fit into your air filter box as shown in the photos. Place with ample space and clearance to remove the dryer bottom so you can dump the water collected if needed. (only happens when you OVER fill the B3 cell.) The Dryer comes with a metal mounting bracket. The Hydroxy Dryer (5" filter housing) should be at least 2" higher than the top of the bubbler tube, if you have to mount the hydroxy dryer vertical, as show in the photos below.

If your kit came with the 5" dryer filter, best to mount like the photo to the right, so that the condensation drains back into the water tank. You can also mount the 5" filter/hydroxy dryer vertical, if space limits you.



The install to the left was later re-installed. The cell was mounted in front of the radiator a larger air filter was installed. The tank was lower down & the 5" Hydroxy Dryer was mounted sideways, IN down to drain into tank. We have found this is best.

Having all components at or about the same level can cause water to get past the hydroxy dryer. Not good. Access to the water tank is essential. Just add water for the life of the cell, unless you clean out tank and cell, with a new batch of NaOH & water.



Step 3 Connecting your fitting and hoses

After you have your booster and reservoir mounted, it is time to install your fitting into your air box.

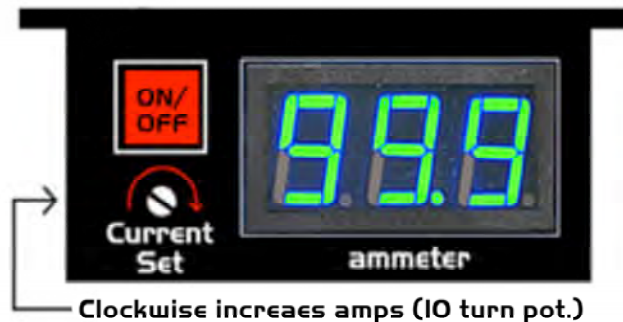
- Mount the intake fitting as close to the airfilter as possible. If possible mount the fitting so the hho gas is pulled through the air filter. This will ensure the intake air and hho gas is very well mixed. If the air is mixed well, then all cylinders will get even hho mixer ratios. WITH A BOB BOYCE SYSTEM WE MUST LET THE HYDROXY GAS MIX WITH THE IN COMING AIR (90% nitrogen and oxygen) Our hydroxy gas is a static clinging gas that will bond to the hydrogecarbon chain of molecules. Do not use any metal fitting with this hose, it MUST be non conductive poly plastic or nylon or vinyl.

Step 4 Mounting your PWM Controller Box

Mount the PWM Controller box near the cell and battery. The wires should be as short as possible, less resistance & less voltage loss, due to far lengths of wire. In DC the shorter the wires the better.

Step 5 Wiring Diagram

Your PWM wiring harness is very simple to wire up, only 5 wires to hook up. First mount the PWM near the B3 cell in a cool area under the hood. The inside electronics are sealed in the PWM box. The fan is only needed during the summer months it cools the outside of the PWM box. Run the CAT5 cable through a plug in your firewall. Every car has a car stereo rubber plug on your firewall from the engine compartment to the cab. Run the cable to the PWM box. Secure the CAT5 cable into the digital display box with a cable tie to avoid any jiggling. Run the red ignition + trigger wire. It should have the piggy back fuse hooked up to a fuse in the fuse box under the dash.



The amps are factory set at for your engine size.

To increase amps adjust the tiny screw on the display. It takes a tiny jeweler's screwdriver. The amps are factory set at for your engine size. Less Hydroxy gas can give you better mileage.

YOUR ENGINE LITER SIZE TO B3 AMP OUTPUT (approx.)

ENGINE SIZE • B3 AMP DRAW - B3 Cell works best at 3.5 amps to 6.5 amps.

- 1.5L 4 AMPS
- 2.0L 6 AMPS
- 2.5L 7 AMPS
- 3.0L 8 AMPS
- 3.5L 9 AMPS
- 4.0L 10 AMPS
- 4.5L 11 AMPS
- 5.0L 12 AMPS

Electrolyte Solution

We recommend NaOH (Sodium Hydroxide) as an electrolyte.

Mix 10% to 20% NaOH with 100% distilled water, by weight. 10% equals 1/2 cup of dry pellets to one liter of distilled water, or R.O. Water (reverse osmosis filtered water) Using distilled water will ensure that booster is free from chemicals and contaminants that may be present in everyday tap/well water. A 10% Electrolyte Solution Mixture is recommended at 1/2 cup to a quart of water. (1 liter) If your booster is in a location that freezes, you can mix a Bob Boyce recommended 20% of NaOH to 100% water. You can use KOH (potassium hydroxide) you can go as high as 25% of KOH to 100% of water. 20% is 1 cup of dry NaOH pellets or caustic soda beads to 1 quart (1 liter) of distilled water. If you live in a warm climate or don't like the idea of have really caustic solution under your hood, then you can mix the 10% solution just so it provides the amps you are looking for. You can draw 20 amps with a 10% solution of electrolyte in a B3 cell. Perfect temp. for electrolysis is 86°f. If your cell is too cold, 32°f it will not make hydroxy gas, until the water warms up to 42°f. In extreme cold climates a heater blanket is recommended, or a serpentine of tubing with engine coolant running through the tubing. Proper electrolyte mixing is done with a glass container or a clean plastic bucket, first fill with water, pour in the dry electrolyte pellets very carefully, wearing gloves and face shield, avoid splashing, have a clean plastic or wooded stir stick.

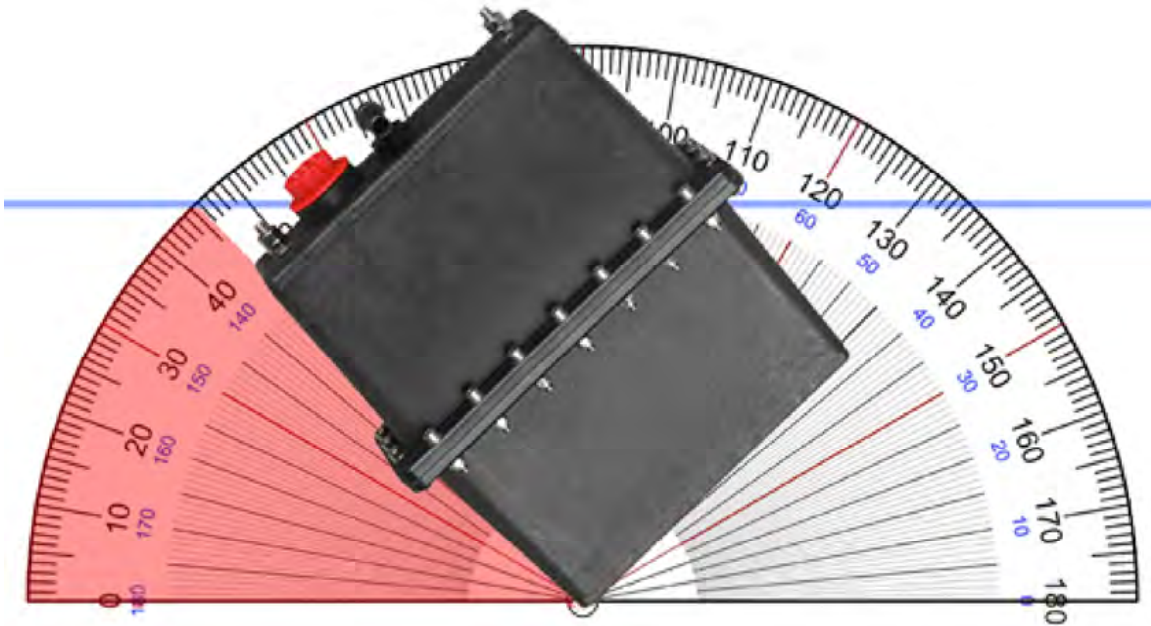
NaOH is 100% lye, lye can BLIND YOU! if you get any in your eyes. So you CAN NOT splash any in your eyes. If you do have a SAFETY bottle of 50% white vinegar/50% water in a quart spray bottle. A necessary safety precaution.

Stir as you pour. NaOH or KOH in 100% concentration can BLIND YOU! Be careful, it also burns your skin if left on your hands too long. Have a squirt bottle of 50% vinegar and 50% water nearby, it will instantly neutralize the burn on your skin. NaOH It is caustic soda, gnarly stuff. Mix outside, do not breathe the fumes. The water will heat up when you pour in the NaOH dry pellets in a large glass beer pitcher, or one gallon poly plastic jug. Mix and stir immediately after pouring in the pellets

Filling your Booster

To fill your unit, first remove the fill cap. Insert a funnel into the unit (any kind of funnel should work.) Fill solution to 1" below the top cap. Allow room for sloshing. See the diagram below to fill the B3 cell perfectly level.

Do I need to add solution (lye & water mixture) every time my booster gets low? No! Refill the cell with only distilled or R.O. water, no more NaOH is needed. Take along a quart squirt bottle with you in the car to fill one cup of water at every 10 - 15 gallon gas fill up.



The B3 has 6 separate cells inside (space between the plates). If you tilt the cell at a 45 degree angle, it will level all 6 cells inside evenly. Take off the strap and tilt the B3 Cell at this angle, if space will allow, The negative cell black wire will need extra room to perform the fill.

If you do not have room with your cell install, you can fill the B3 cell cap hole with a quart squirt water bottle and squirt water into the cap from side to side. The current B3 cell has the 5 neutral plates all the way to the top of the cell. The power plates + and - are down 3/4" inch below the top of the plates that you see inside the cap. Fill to 1" below the top of the plates that you can view. Will only take about a cup of water for a 10 gallon gas fill up. We are not making water vapor or steam so the water goes a long way. One liter of water makes 1500 liters of HHO gas!

Check levels when your at the gas station. A quart squirt bottle works well to squirt water into each 6 cell spaces evenly. The B3 can easily be over filled. Most customers over fill the cell. It will push out the water into your bubbler. So fill 1" below the top of the plates. Refill cap needs to be in an easy access area.

During our testing at Hydrogen Junkie and Hydrogen Garage, we have achieved a very efficient .5 LPM of Hydroxy® Gas at 6 amps.

2L engines - 3.5 to 5 amps. 3L to 4L engines - 5 to 7 amps, 5L V8 engines - Use 2 - B3 cells. DO NOT EVER crank up the cell to test it's efficiency. YOU WILL blow off the built up catalytic layer that helps produce the higher quality gas. Please start the cell at 5 amps. The conditioning of a new cell needs to finish the conditioning process by running the cell for 5 amps for a few weeks. Later on you can raise the amps up if even needed? The B3 cell makes the highest quality gas at 5 amps. It will make double the gas output at 10 amps, but the quality of the gas will not be as high as the 5 amp gas would be.

Every car or truck has an amperage sweet spot, some want more some do better with less!! Bob Boyce says more is not necessarily better, but a higher quality gas is what your after, a more higher quality gas with less amperage, a more efficient system.

Volo FS2-HHO Edition Installation

Follow the instruction booklet that came with the Volo circuit.

Go to <http://hydrogengarage.com/ds2install.html> for full online instructions, including videos, troubleshooting. MPG results with the Volo FS2 and HHO.

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