



ICE-BLOCK 14-7

COMPLETE HYDROGEN KIT

Perfect for V8 engines
4.5 L to 8 Liter.

10' of air hose,
hose clamps.

Water only refill
Tank • 1.5 quart

Two 7-plate cells
(7"x7"plates)

5" Dryer filter
& bracket

Volo F52

PWM cell
controller

Digital
Ammeter

80 amp
Relay

10' of CAT5 cable

80 amp
Fuse

Only 5 wires
to hook up and
one cable to the cab.



Recommended ICE BLOCK 77 & 14/7 • 2015 Installation & Maintenance Instructions

- **Introduction & Parts List :**
- IceBlock 77 or 14/7 cell block
- PWM with wiring harness with gold plug-ins, with digital display. 10' CAT5 connector cable, that goes thru the firewall. (Car stereo rubber plug)
- 2 quart Reservoir tank with fittings. (1.5 qt. Tank comes with the 77 cell)
- Hydroxy® Gas Dryer w/bracket
- 4ft. of 3/8 ID vinyl hose and 6ft. of 1/4" ID hose (dryer to air filter box)
- Digital Dashboard Ammeter and ON/OFF switch
- Volo FS2-HHO-Edition circuit (1996 - 2015) or EFIE (1987-1995)
- Trigger ignition+ red wire to Piggy Back Fuse Jumper.
- **Parts Bag**
 - 1...mini ANL Fuse holder (connected to power wire)
 - 2...mini ANL 30 amp Fuses
 - 1...40 amp Relay (part of the wiring harness)
 - 1...Ignition trigger+ wire piggy back fuse, mini or standard size.
 - 1...Air Box Fitting, 2...1/4" tube to ¼ NPT Dryer fitting
 - 2...power wire (connected to PWM), 2...Ring Terminals (connected to power wire), 8...Hose clamps (10 for Ice 14/7)
 -
 - What you will need to get : 2lbs of NaOH (sodium hydroxide, 98%+ pure) 20 Black nylon cable ties for hose securing, cable tying, securing wires, cables, chokes, etc.

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 Ice Block 77 & 14/7 is a licensed, 30 yr, researched Bob Boyce® 1981 sealed series H2O cell design PATENT, that splits water up into 80%+ ORTHO hydrogen and oxygen using 12/13.8 volts from your car's battery. Bob Boyce takes it a bit further and add longitudinal energy to the cells magnetic field to help produce more % of ORTHO HHO. 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® gas, 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. We recommend NaOH only, we cleanse and condition all cells with NaOH

* Your cell has been professionally cleansed and conditioned to get all oxides off the SS and a Catalytic layer has been slowly built up onto the surface of the plates. Your cell is NOT a used cell. You will notice the catalytic bronze and gray stains on the plate, they will develop and grow and the gas quality will grow better and better as time goes by. Be patient it takes a few days for the water to take a charge and produce the much desired 98%+ ORTHO H and O, the form of HHO gas that has a static cling properties that bonds to the hydrogen carbon chain and blows them all apart!

The Install

The TIER Layout of an Ice Block 77 cell kit, (see photo below) showing the position of the correct install. Cell behind the front bumper, or resting on the frame of the car or truck. Maybe on one side of the radiator, behind the front grill. The water refill tank under the hood, or behind the front grill, with access to the black refill cap, with about 6" of space for the preferred horizontal mount of the 5" filter housing.

We do not provide a cell bracket to hold the cell in place, as every install is different. Lesson on a [bad install](#). Where the cell and tank and dryer are all level. The tier layout is a must, the gas goes up and the water/condensation goes down back to the tank. Introducing the ¼" hose out the top of the hydroxy dryer to the air intake snorkel about 3 to 5" inside this tube. The earlier the introduction of the HHO gas to the incoming air the better the hho gas will mix with the incoming air! The better it has a chance to mix with the incoming air the better!!



Installing Components

First we will install all of the physical components of your kit; Booster, Bubbler, Dryer, Relay, Hoses and Fittings. Then we will focus on the diagram to install the wiring components of your kit.

Step 1 Mounting your Booster

The first item that needs to be addressed is the temperature of the environment you will be driving in? A hot climate or a cold and freezing climate? The NaOH is an great anti-freeze to the water in the cell and tank, at 10% mixture it works fine, can go high as 20% for Alaska and N. Canada. Find a well-ventilated

area for hot climates; with the wind blowing on the cell is good. In a cold climate install, under the hood resting down of the frame is best.

The preferred area to mount your booster is on the side of the frame near the battery box and nearest the air intake. The reason you want to mount your booster here is so the power cables are as short as possible. Also you want the water and gas hoses as short as possible, to insure freshly made HHO gas the better. Avoid laying hose all around the engine. Hide the clear hose with black wire loom for the sleuth install.

A lot of customers mount their units in an ammo box which is perfectly fine. If the Ice-Block is outside the engine compartment then it will stay cooler. The Boyce cell is the coolest running cell on the market today, it runs each cell at 2 volts, at 2 volts no heat is made, or very little. If you follow the recommended amp draw for each car or truck. See below amp draw for liter engine size chart.

- Mount your booster to a sturdy bracket, preferably to the frame of your vehicle. Be sure that your unit is free from contact with any moving parts and that it is free from any hot surfaces. Stay away from exhaust manifold, exhaust pipes, radiator and radiator hose and hot transmission radiator hoses. Every install is different, if you are unsure, please take a photo of your engine under the hood, grill area and under the bumper shot and send us your photos to info@hydrogengarage.com and we will help you. Also if your install is questionable, send us photos of your install and we can help you troubleshoot any issues.
- Be sure that your unit is in the upright position with the output fitting facing upward. Gas out is up on top and water IN is down at bottom of cell out one side, usually the side of the yellow connector plug.
- 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 choice. The electrolyte NaOH or KOH have anti-freeze properties. You can mix 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) As of 2010 Bob Boyce recommends only NaOH, it gases off at lower temps, approx. at 42f it will make gas. You can use KOH, if that is all you have. NO OTHER ELECTROLYTE is recommended, exception of mono-atomic gold and 1 to 2% NaOH, if you got it.

Step 2 Mounting your Reservoir / Dryer

Again, find an area that will be free from any moving parts and hot surfaces. Mount your Bubbler/Refill reservoir in so that the bottom of the reservoir is no less than the same height as the top of the generator and no more than 24 inches above. If the reservoir placement is too low or too high, the unit WILL NOT self circulate. Once the reservoir is mounted, the next step is mounting the dryer. The dryer goes horizontal on top of the the reservoir water refill tank and the air intake fitting. Find a place with ample space and clearance to remove the dryer bottom so you can dump the water collected if

needed. (if you mount the dryer sideways with a slight down hill slant with the IN down to the water tank, it will NEVER need to rain the collected water or codensation. The Dryer comes with a metal mounting bracket. The Dryer should be above the Reservoir Tank, as shown in the TIER install photo.

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. Also mount the hydroxy gas fitting before your air filter to protect your engine from any possible contaminants that may be present in the hydroxy gas.

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 & voltage.

Wiring your Ice Block Cell & PWM Wiring Harness

Step 5 Wiring Diagram

Your PWM wiring harness is very simple to wire up, only 3 wires to hook up.

First mount the Digital Display on the dash board. Run the CAT5 cable through the large rubber car stereo rubber 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.

Yellow Cell Connector Plug - Your cell has a yellow gold connector, easy disconnect. To power the cell from the PWM. Mount the RF chokes away from each other, do not stack them on top of each other. The longitudinal energy field comes into the center of the toroids and creates a mini toroid field, when turned on, they sometimes hum from the freq. switching. The positive one is a RF choke, in which stops the pulsing from entering your car's electrical system. The negative choke is actually an Inductor and brings in the negative ether power. Sorry if you are an EE, you might get upset over the longitudinal energy, found by Tesla, who invented most things today. He invented the AC power we use today, his radiant energy patents explains this non-hertzian power.

PWM brown or black GROUND WIRE Connect the black/brown Ground wire - from the PWM to the Battery - post or ground engine strap. Do NOT ground to the frame, as this is NOT always a good ground. We MUST have an excellent GROUND connection, as we are pulsing 90% of the current on the negative side. Your cell PWM produces up to 20 volt negative spikes!! So GROUND connection is EVERYTHING!!

Red Wire POWER + the red wire has the fuse hooked up. It also the power wire that provides power to the cell. It first travels from the battery to a fuse, from the fuse to the relay#30 terminal. When the relay is switched on the power continues from the relay to the positive side of the hydrogen cell.

Red Trigger Wire #20awg- Red wire coming out of the digital display box. (labeled IGNITION +) We call the +trigger wire, it triggers the relay. We want to get power from a source that will be on only when your engine is running. For example, a fuel pump fuse would be a great choice to use because the only time it is signaled to be on is when your engine is running. What we don't want is for your unit to be on while your engine is off. For example, a radio fuse would not be a good choice. This is because if the vehicles ignition switch is in the on position, the booster will begin to produce hydroxy gas, while your listening to music, while your girl friend is shopping, even though your engine is off. This is not good for 2 reasons. One, you will be producing unnecessary hydroxy gas, and two you will be draining your battery. As soon as you start your vehicle the hho gas can explode, though we have never experienced this as we instruct you to put the outgas hose to the air filter box, where the extra gas comes out the air flow into the airfilter box, no pressure is ever built up. Safety first, this mistake can be dangerous! Please pay attention.



To increase amps adjust the tiny screw on the display. It takes a tiny jeweler's screwdriver to do the trick. The amps are factory set at 10 amps. For the 77 cell, and 20 amps for the 14/7 cell.

Step 6 Finishing your Wiring

- Be sure that all wires that have been installed correctly and are securely fastened.
- Use the provided cable ties to secure the wires. Do a nice professional car stereo clean install.
- Also be sure that they are clear from any moving parts and or hot surfaces. (Radiator hoses or exhaust manifold area!)

Your PWM comes preset and tuned to your engine size, from the test bench. The freq. Is set, the duty cycle is set about 90%. We recommend only changing the “Current Limit” pot on the digital dashboard display. The tiny screw below the digital ammeter reading on the dash. If you’re the type that likes to tinker and not listen to us, the [PWM adjusts are here](#).

YOUR ENGINE LITER SIZE TO AMP OUTPUT (approx.) B3/Ice Block 77 Cell works best at 3.5 amps to 6.5 amps. (Most % of ORTHO HHO will be produced) at 10 amps you start making 50% ORTHO and 50% PARA HHO. Para HHO is what most HHO cells produce, we focus on more % of ORTHO HHO, this is made by the cell design, 2 votes, the square pulse and professionally cleaned and conditioned HHO cell, where all the oxides are eliminated off he SS plates. It will condition better as time goes by. Be patient and he MPG gains will come. The [Volo FS2-HHO-Edition circuit](#) must work to see gains. Volo Performance will always stick to their guarantee and replace a volo. They do last and last and a one a year reset is all you need o do. Sometimes the volo does not work for your car or truck and gains will be less or not at all. We have alternative circuits, such as the Edge Performance chip (\$600) We recommend buying the Volo FS2 circuit first and see if it will work for you. Once installed you should feel the extra HP when you floor it onto a freeway. It takes time to see MOG savings, sometimes right of the bat other times 200 miles for it to over ride your ECM. Some cars need a reset or 2 to kick in. Once it works it will always work. For years of gas savings to come. You must drive conservable if you want MOG savings. Others just love the HP and floor it all the time.

Below is the amp draw chart, start with the lowest settling and slowly work up, during each “check and fill” gallons of gas or diesel testing. DO NOT go by your dash computer on MPG, they are all off. All SUV’s will say something to 22 MPG and they best you ever seen was 17 MPG, when you do a “heck and fill” accurate test. The simplest GAS mileage habit for the rest of your life on earth driving gasoline cars is the 10 gallon or 5 gallon test. Wait till your gas low engine light comes on, then go get gas at a station, put in 5 or 10 gallons, push the trip mileage button to 0. Drive around till the low fuel light comes back on, then view your trip mileage, with 10 gallons gone, 300 miles will be 30 MPG, 200 miles driven will be 20 MPG, etc. a real easy way to test. I do this at every gas purchase. Of course if you live in a rural area, you can not do this, as you may not have a close by station. [Scangauges](#) help get you a ballpark figure as

your driving. Each 10 gallon MPG test, boost up the amps. There will be a sweet spot to the best mileage, no too much HHO gas, not too less. The US cars get about 25% better mileage, as less refined fuel countries like S.America, Africa the less refined countries get about 50% better mileage! They have more carbon in their fuel, the more carbon the more bonding the ortho hho does, even cuts down the Nox due to the ortho oxygen present. Most HHO cells make the Nox emission go up! So 5 amps may be better than 10 amps. Our common sense tells us, well more HHO gas the better the mileage I will get, NO it works out the greatest % of the higher quality the better the mileage. Trust us it works. I had a BMW Z3 for 7 years running on HHO, it was a 2.6L engine and did the best at 5 amps, I tried 10 to 18 amps, 5 did the best mileage and had the same HP and cleaned the injectors, never again had to buy the injector high octane cleaner gas additive and it ran much better on the cheaper fuel? What? Yes the more carbon to bond to the better!! All from Boyce 30 year research and helping other HHO companies make cells and sell them.

AMPERAGE CHART (way less than the competitors, why is this, we make 80%+ ORTHO HHO spins state, of this static, clinging form of HHO that bonds to carbon and blows apart the hydrogen carbon chain of molecules and only a small amount is needed! Less than 1 to 2% of the air intake) This makes the Boyce HHO cell units completely legal according to EPA and CARB, we do not need their EO certificate, as we are not violating their laws with less than 2% of the air intake is all we produce to clean emissions and boost the HP and ENHANCE the combustion rather than fight the combustion and pre detonate the engine as most 90% PARA HHO cells make!

ENGINE SIZE • IB77 & B3 CELL AMP DRAW CHART

- 1.5L 3.5 to 5 AMPS
- 2.0L 3.5 to 7 AMPS
- 2.5L 5 to 7 AMPS
- 3.0L 5 to 8 AMPS
- 3.5L 5 to 9 AMPS
- 4.0L 5 to 10 AMPS

ENGINE SIZE • IB 14/7 CELL AMP DRAW

- 4.5L 7 to 15 AMPS
- 5.0L 7 to 16 AMPS
- 5.7L 7 to 18 AMPS
- 6.0L 7 to 20 AMPS

Electrolyte Solution (NaOH and distilled water)

Use protective gloves and face shield when handling and mixing NaOH or KOH and water, NaOH is 100% LYE, it can blind you, if splashed into your eyes. Be

very careful and have total respect for this caustic soda. Mix a spray bottle of full of 50% clear vinegar 50/% water, Have on hand during the install, so if you ever get any on your skin, you can spray with the vinegar and it will immediately dilute the caustic soda.

When mixing your electrolyte solution we recommend that you always use 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 of dry pellets/beads to a quart of distilled or R.O. (reverse osmium filtered) 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. KOH 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 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. Say you need to produce just 20 amps, and then mix the solution just enough so the water pulls 30 amps when the cell is cold. Perfect temp. for electrolysis is 86°f. If your cell is too cold, 32°f it may not make hydroxy gas, until the water warms up. In extreme cold climates a heater blanket is recommended.
- . 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 stir stick, either plastic or wooded. 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 dilute the burning of the skin. It neutralizes the lye immediately. A necessary safety precaution.

Filling your Cell

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.

- Do I need to add solution (lye & water mixture) every time my booster gets low? No! The only time solution needs to be added is when the unit is empty and needs to be filled, or if your booster is not pulling a sufficient amount of current. You can add small amounts of strong solution to your unit until it is pulling the proper amount of amps.
- You will only have to add water to the reservoir, place a water bottle of distilled or RO water in your car. Check levels when your at the gas station.

What amperage should my booster operate at?

During our testing at Hydrogen Garage we have achieved a very efficient 1 LPM of hydroxy gas at 12 amps, once the unit has had sufficient time to be conditioned.

Every car or truck has an amperage sweet spot, some want more some do better with less!!

Bob Boyce says more is not necessary better, but a higher quality gas is what your after, a more higher quality gas with less amperage, a more efficient system.

[Volo Installation](#)

Go to [VOLO INSTALL](#), for full online instructions, including videos.

More Installation downloads for you to read :

[Hydroxy® Dryer Install Instructions](#)

[HHO Install Troubleshooting](#)

[HG Instructions & Assemblies](#)

[Bob Boyce Recommended HHO Studies](#)

A [7.6mm ammo box](#) works well for a [cell holder](#) with EPDM foam pad sheets that we can get you.

If you have any more questions, please call 805-995-4809 or e-mail us at info@hydrogengarage.com. We want you to install it correctly and get good MPG results. Use no metal fittings on the hydroxy gas lines, or exchanged ss water tanks, that discharge the static high powered ortho hydrogen back to a lower para spin state of the gas. Also do not install the hydroxy® gas hose into the fuel rail or manifold port someplace. We have to have our static gas mix with the other air borne molecules coming into the air filter box from the front grill. Mixing through the turbo is even better! It sticks with everything comes in contact with. The hose needs to go before the air filter, into the air filter box. Ortho hydrogen will bond to the hydro carbon chain of molecules. It marries and bonds, right before exploding! Blowing that hydro carbon chain all apart.

Have a good day.

If you have any more questions, please call 805-995-4809 or e-mail us at info@hydrogengarage.com.

[Hydrogen Garage & Trucker Newsletter FALL 2015](#)

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