

## *Installation Guide*



### **1. Powering your booster.**

Use wire and electrical hardware capable of handling 20 amps DC, no less. Overkill is OK in this situation, so I recommend using components that can handle 30 amps. Run your power through your ignition circuit, so that it only runs when the vehicle is on. A 30 amp relay should be used to prevent damaging the ignition circuit which may not be designed for an extra 20 amp draw. Make sure to use a properly rated fuse, 30 amps is ideal. You can use a toggle switch if you like for further control. As an added safety feature, some like to run an oil pressure switch to the relay as well, so the unit operates only when the engine is actually running. It is very important that all electrical connections be solid and secure. Soldering is better than crimping. **Any loose connections will cause heat and possibly a fire, so it is up to you to make sure those connections are of high quality. They must be clean and tight, and should be checked from time to time as you operate the unit just to be sure the system is secure.**

Check out these pics that show 10g wire with soldered and shring wrapped terminals. This is the way you need to do it to prevent terminal heating and voltage drops.



## **2. Adjusting your electrolyte.**

**Fill your booster with distilled water and NaOH or KOH ONLY. No tap water, salt water or rainwater! No table salt or baking soda!** These materials will permanently damage the booster! First, fill the booster with distilled water about 2" from the top. Add a teaspoon of KOH or NaOH to the water and then slide the top into place. Do not tighten for now, leave the top loose and resting in place. Connect your 12V power supply to the leads and monitor the current draw to the unit. You want 14 amps cold. As the water heats up over time, the current draw will increase by around 4 - 6 amps until it reaches around 20 amps, so this is why with a cold system you are aiming for only 14 amps. If the current is too high, dump out some electrolyte and add just distilled water. If the current is too low, add a pinch or two at a time of your catalyst until the 14 amps is reached.

Overfilling your booster will cause some of the electrolyte to be forced up the output tube, so a liquid level tube was added to monitor electrolyte level. It generally needs to be topped off once a week, depending on how long it is in operation. Add distilled water, then check your current draw again. You may observe a drop in current over the course of a few refills, and this is normal. Some of the catalyst escapes the cell suspended in water vapor droplets, so from time to time you may need to add a pinch or two. The water in the bubbler acts to scrub this contaminant out of the gas as well. I highly suggest installing an ammeter to monitor current draw as you operate your booster.

For short commutes of less than 2 hours, I recommend the same protocol be followed as before. Set cold current draw to 14amps. For longer periods, either use a PWM to limit current as the cell heats up, or set your cell cold to draw 4 - 5 amps. This will allow the unit to stabilize at an acceptable level of around 20 amps for durations of greater than 1.5 hours. This may vary from one unit to the next, so trial and error will be necessary at first

## **3. Mounting your booster.**

Choose a well ventilated area in the engine compartment to mount your booster. Since every vehicle design is different, I leave it up to you to figure out the best method to mount it. It must be mounted with the top orientated upwards. Large 5" diameter hose clamps work well, but do not over tighten or the PVC may deform. I recommend mounting behind the front bumper in the area usually present between it and the radiator. Support the weight of the unit from the bottom with a bracket of your design, then use a hose clamp to secure it in place. Never install the unit in the passenger compartment for safety reasons.

You can fabricate you own bracket and fashion it after my own as shown here:



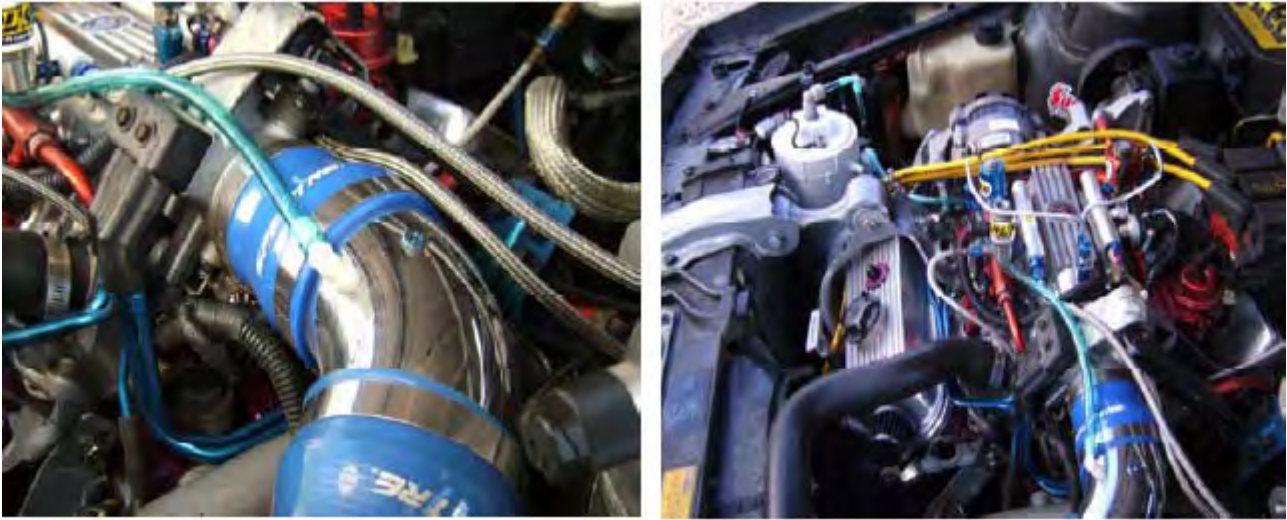
#### **4. Output hose and bubbler.**

The bubbler on the side of the unit should be filled about 1/3 to 1/2 full of water - tap water is fine. The check valve before the bubbler is there to prevent the bubbler water from being sucked back into the generator when it cools and the gasses inside contract. **Make sure the bubbler level is maintained at all times. Failure to do so could result in an unwanted backfire explosion.** That water inside the bubbler is your physical shield between the stored hydroxy volume in the generator and the intake of your engine. Install the output hose as close to the carburetor/throttle body as close as possible by making a connection into the intake tube/air cleaner. Try to make the hose as short as possible to reduce the amount of gas volume it contains. I recommend using the same type of 1/4" poly hose that is used on the unit.

As in all installs, I have revised my installation advice due to information provided by other experts in the field. I have learned that for any concentration below 4%, the hydroxy is dilute enough in the air stream to not pose a significant hazard. The Smack unit does not produce enough gas to exceed the 4% ratio in large engine applications, so introducing the hydroxy output tube just before the air cleaner in these applications is acceptable. The air filter acts as a diffuser to more evenly distribute the gas throughout the air charge. This means that inducted applications are much simpler than I had previously thought. There is no need to pressurize the unit to above boost pressure. The only region susceptible to damage is the run between the unit and the end of the output hose where the concentration is very high. This is why one must always use a bubbler between the cell and the introduction point.

This should get you started and on your way. As I said, contact me for any specific questions you may have and I will try to assist you in the best manner possible.

See here a good example of where to attach your hydroxy output tube:



Good luck, and happy testing!