

## **INTRODUCTION**

Welcome to this combination of fuel economizing technologies. Our idea is to try to give our customers some relief in the form of better fuel economy while they wait on their Pre-Ignition Catalytic Converter quote. We believe the PICC technology will revolutionize the internal combustion vehicle industry. In the meantime, we have combined some of the leading proven fuel saving ideas together into a super system that can provide some overall savings.

It is not new to add Acetone and Xylene to help "crack" the gas and assist in vaporizing it more fully. Race car drivers have been doing that for years. The idea of using magnets to ionize the fuel prior to combustion is also one that has been giving customers increased fuel economy for years. To pre-heat fuel through a heat exchanger is also not new and has been done by many others. It especially makes sense in concert with a process to vaporize the fuel with Acetone and Xylene. The idea of adding HHO (water gas) is relatively new, but several companies are doing it in spite of the fact that we were first in that field and hold the original patent rights to do so. We have also applied for patent rights on the HAFC system. We also are doing these things in a very unique manner, but, consider the fact that each of these devices has already successfully supported a small industry modifying cars to give people better mileage. It only stands to reason that collectively, as a total system; the combination of gas saving devices can do better than they could individually.

## **THIRTY DAY WARRANTY**

This kit is still somewhat experimental. Each of the separate concepts have been individually proven by many entities, but the effect they will have in concert is difficult to predict until we have experienced all models, styles, and ages of vehicles by installing the kit on each one. We have had limited experience with our HAFC kit to the date of this writing. We experienced that the mileage increases ranged from an increase of about 50% to a mileage increase of 100%

(and, in some instances, a little better than 100% increase.) The majority of our experiences revealed that the four cylinder cars tested were at the top of that range while the 8 cylinder cars ran closer to the 50-65% increase range. The one 6 cylinder we tested was right in the middle. *But, we would like to repeat here that we have NOT tested all makes and models of cars.* Each purchaser therefore, can be considered an extension of the continued research into the effectiveness of the kit. We would love to hear from you about your experience with the HAFC kit. We welcome the experimenter/purchaser to follow our instructions for a proper test of the effect the kit has on his/her vehicle (*See Proper Test Procedure for the kit*) and to assure themselves of getting a satisfactory fuel mileage increase prior to being fully committed to the purchase.

The buyer has thirty (30) days in which to first test the vehicle mileage in the approved fashion, and then install the kit, and retest the vehicle for any noted improvement. If the buyer does so, and does not believe it increased the efficiency more than a 50% increase in mileage, then the buyer can remove the kit immediately, and clean all the oil, grease, or anything messy from each device and put them back into the packaging they came in (please put them back into the plastic bags to protect the packaging as well) and return them to the dealer he or she bought it from for a FULL refund. If they are returned in a beaten up condition, we may charge a restoration fee to accept them back. **PLEASE DO NOT EXPECT A REFUND IF THE RETURN IS NOT POSTAGE DATED WITHIN THAT THIRTY DAY PERIOD.** If the buyer keeps the kit past the 30 day performance warrantee test period, the buyer shall still have the right to upgrade it for the PICC when that device is ready. Of course there is also the opportunity to trade this HAFC Kit up for a Pre-Ignition Catalytic Converter when that research is completed and a quote is submitted. At the time of developing the kit, we modified several cars that we tested in the manner we suggest to the buyer. We are confident that if you install this kit and test it properly it will give you years of energy savings. When you upgrade it to a PICC, we will NOT be as concerned about the condition it is returned in. There is also a great possibility that it will become part of the PICC modification!

## **HOW TO PROPERLY TEST THE MILEAGE**

There are all sorts of variables in short term testing for mileage increase. Is it winter or summer? Was it windy the day the test ran; were there favorable or unfavorable weather conditions? Did you go up hills or down hills, and have to start and stop more? Many things must be considered, including your driving habits, traffic patterns, weather conditions, geography of the land, and many other variables. In order to properly test the mileage of a vehicle, it is important to limit all variables except the vehicle itself. That way the vehicle can tell you what has happened to its efficiency by comparing an orange to an orange. You **must** test your mileage BEFORE you install the HAFC Kit, and then again AFTER. Here's how to conduct your mileage test...

- Ø Find a freeway with at least three or four lanes going in your direction, with an entrance and exit on both the north and south side of the freeway. It should be the straightest and most level strip of freeway available to you. There must also be a gas station on one side or the other at the exit.
- Ø Stop and fully gas up your car until it is absolutely full to the top. If you want to be absolutely sure, use a funnel to top it off.
- Ø Travel at least twenty miles or more, in one direction or the other to a u-turn that goes over the freeway and heads back in the direction you came from. USE CRUISE CONTROL TO MAINTAIN A CONSTANT 55mph SPEED!
- Ø Go back to the exit you got on and get off. Go back across the freeway to the gas station you gassed up at and top it off once more.
- Ø The amount you used to travel the forty or fifty miles (whatever the mileage was for the total trip) will determine your mileage on the highway. Go at least forty miles in total.
- Ø Divide the miles by the amount of gas used to get miles per gallon of gas.

**IT IS VERY IMPORTANT THAT YOU DO THIS BEFORE YOU MODIFY YOUR CAR.** You may think you know your car's mileage, but you more than likely have never checked it in this manner. It is also VERY important that you use cruise control on this trip to get consistent gas feed into the engine. GO 55 MILES PER HOUR IN THE

MIDDLE LANE IF NECESSARY FOR THE ENTIRE TRIP. It may be a new experience for you to travel at that speed. It may seem like other drivers are going to run over you, but they will go around you if they need to. Make sure you do not get behind someone who goes slower than 55 mph. With the cruise control on, take your foot off the gas and just steer. In this way you can measure the car's mileage without the driver's habits interfering. This is the way your highway mileage is calculated by the auto manufacturer.

**THEN MODIFY YOUR CAR AS PER INSTRUCTIONS IN THIS KIT, AND REPEAT THE EXACT SAME TEST YOU DID BEFORE IT WAS MODIFIED, USING THE SAME FREEWAY AND THE SAME GAS STATION.** If the heater (or air conditioner) was on before, have it on for this test as well. It is best to do the test with everything off in both cases, but make sure that both tests are done under the same conditions. Do not do one test on a windy day with severe wind or one on snow or ice and the other one on dry road. A dry road and little wind, with as little traffic as possible, are preferable for both tests. Make sure that at the end of the test the gas station is still going to be open. Divide the miles by the amount of gas used to get miles per gallon of gas. If you went 50 miles on 2.5 gallons of gas in the first test, then your mileage result *before* modification was 20 miles per gallon of gas (50 divided by 2.5.) If you went the same 50 miles *after* modification on 1.5 gallons, then your mileage is 33.3 miles per gallon. The difference, or increase in fuel economy, is calculated by dividing the before (20mpg) by the after (33.3mpg) and, in this case, it would be an increase of 60%. If you do this any other way, then you are NOT accurately testing the mileage of the CAR! ***It is important to know that, because it is the car that we have modified... not the driver.***

**THE PROCEDURE FOR OBTAINING A FULL REFUND  
WITHIN THIRTY DAYS IF NOT SATISFIED**

In order to qualify for a refund, you must send us the original pump receipt you got on the day you road tested your car PRIOR to the modification that indicates the amount of fuel you used, and the

original pump receipt you got when you retested it at the same gas station AFTER the modification. Please also let us know how many miles long the total course was from that gas station back to that same station. Remove every apparatus including all the hoses and fittings that were in the box. Drain all the fluids from these devices and clean them with a dry rag. Make sure **ALL** fluids are out of the hoses and containers. Wrap the devices back up with the wrapping that they came in (or get more bubble wrap at Staples.) Make sure all the parts are put back into the box, including the funnel, measuring flask, and all wiring and electronic and electrical components. Close the box by pushing the top down fully with the side flaps inside the box. Make sure there are no lumps under the box cover and then fold in the front flaps on both sides. Put the inner box inside the cardboard outer box. Please understand that this kit will be reconstituted. Although you may not have experienced at least a 50% increase in fuel economy, the great likelihood is that the next customer will. This kit will still have a great value to the next customer. If you did experience an increase of 50% economy or greater, then take it back out of the box and re-install it, because that was all we warranted it would do. If this kit is returned with missing parts, there will be a charge back for them against the price you paid for the kit. The kit must be sent back in reasonably close condition to the way it was received. We do not wish for there to be any loss to either you or our dealer. We realize that you will have used some of the conditioner to test the vehicle and most of the caustic to charge the Fuel Cell. It is also important that you temporarily installed the system without welding brackets to the Fuel Cell or anything permanent. We will welcome the timely return as long as it is done in this manner. We wish you better mileage with less pollution for a happier you and everyone!

### **HAFC KIT PARTS**

## HAFC KITS CHECKLIST

### 1. FUEL CELL BOX

- 1 Fuel Cell
- 1 Toggle Switch
- 1 Relay
- 1 Relay Plug
- 1 90\* Nylon Hose Fitting
- 1 Fuse Holder
- 1 Fuse
- 10' Red Wire
- 5' Black Wire
- 10 Assorted Crimp on Connectors

### 2. VAPORIZER BOX (MAGNETIC HEAT EXCHANGER)

- 1 Vaporizer (Mag. Heat Exch)
- 1 5/16" 90\* Fitting
- 1 3/8" Straight Fitting
- 1 3/8" 90\* Fitting
- 1 5/16" Straight Fitting
- 6 5/16" Hose Clamps
- 4 3/8" Hose Clamps
- 2 3/8" Steel QD to 3/8" Nylon Tube
- 2 5/16" Steel QD to 5/16" Nylon Tube
- 2 Steel Fitting 5/16" hose to 5/16" Nylon Tube

#### IMPORTANT NOTE ON THE O2PTIMIZER

*Instructions for the o2ptimizer will now be located in your o2ptimizer box.*



# INSTALLATION INSTRUCTIONS

## I. THE FUEL CELL

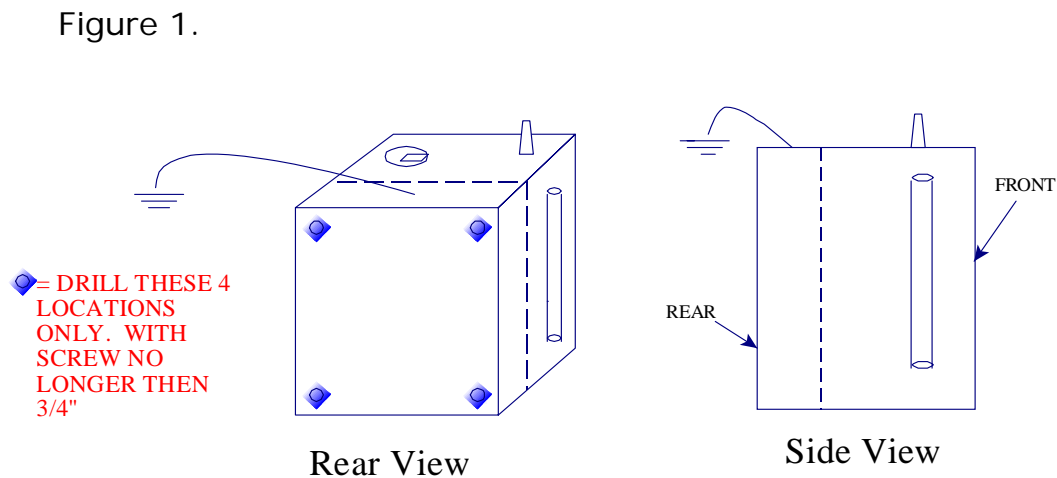
The Fuel Cell is 5½" x 3½ " x 7" tall. It is stainless steel and weighs about four pounds. It will hold a small amount of caustic that is used to electrolyze the water.

1. Before any installation occurs. Take the fuel cell and flush it with water thoroughly.
2. You must locate an appropriate place to install it in the engine compartment (if possible.) It must be solid and stable and also level. You should, ultimately, consider building a bracket or platform for it. If you can not find area within the engine bay and need to mount the fuel cell with-in the trunk; be sure to have a drip pan underneath as precaution if leaks were to ever occur it may cause damage to your interior. Also be sure it will be safely secure in an up-right position. You may wish to mount it temporarily without brackets welded to it in the event you decide that you wish to return it after the performance test within the first thirty days. After the test you can mount it in a more permanent manner by welding brackets to it.

*We need it back in the same condition we sold it if you are going to return it. If you do send it back, be sure to pour all the content out into a sink being careful to avoid contact with your skin. Let it drain thoroughly before putting it back into the packaging if you do return it.*

3. Be sure that wherever you put it in your engine compartment, the little rubber stopper on top is exposed and it is easy to pour water in to fill it as necessary. The level indicator should also be easy to see.

4. If you are going to weld a bracket into the Fuel Cell and mount it permanently, first plan where and how the weld(s) shall go. It is good to have it close to the engine somewhere so in the winter it will be easier for the engine heat to assist in defrosting it when you start out with it frozen.
5. If you are unable to weld a bracket you are able to drill into the fuel cell, WITH CAUTION. While viewing the fuel side from the side, the side with the fill is the front of the fuel cell. See Figure 1.



- Ø DO NOT put it right next to the exhaust, or anyplace where there are hoses that it might rub against.
- Ø DO NOT install it over aluminum fittings or over hoses, because the unit has caustic inside to cause the electrolysis and, in the unlikely event that it leaked, it **could cause damage to those fittings or hoses**. Caustic can etch or eat into metal which may take off a little paint or do minor etching to the frame. The Fuel Cells have all been tested for leaks before they are shipped, but use caution to make sure that in the unlikely event they spring a leak that there is minimal damage.

- Ø Only place in front of the radiator as your **LAST** possible location, because that will help the water in it to freeze in the winter.

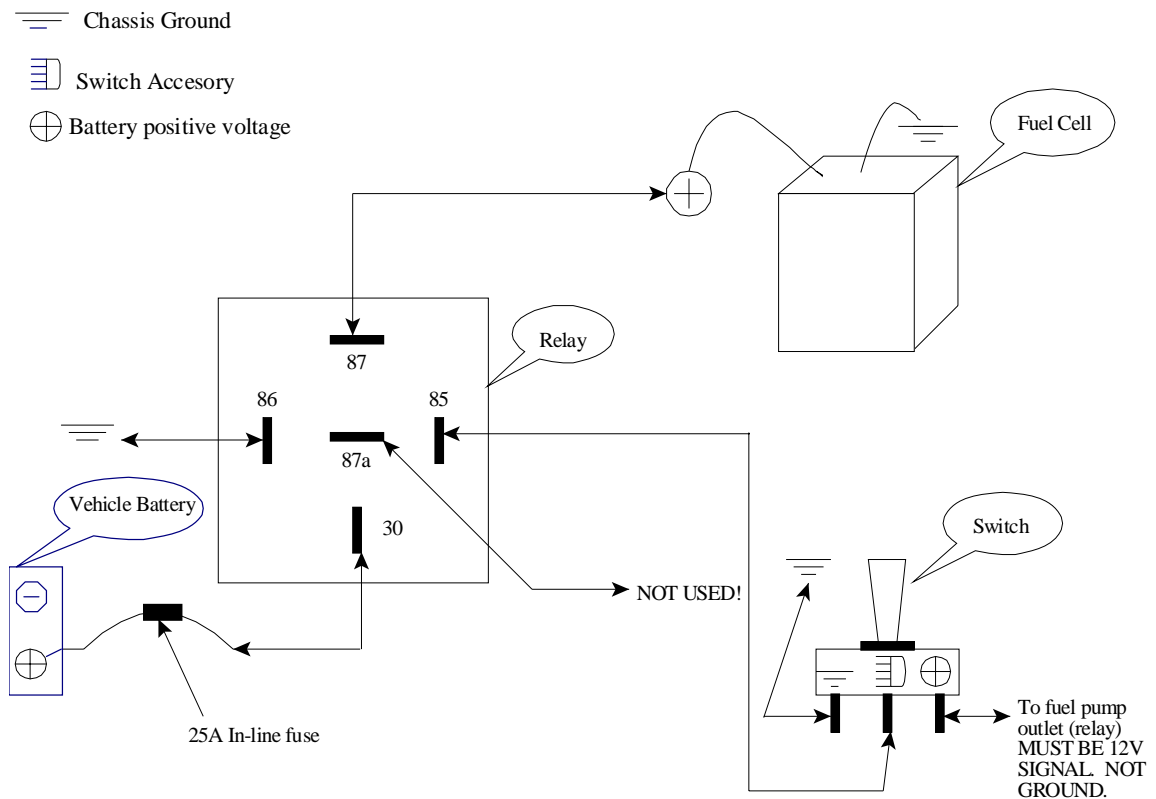
The fuel cells have all been tested for leaks before they are shipped, but use caution to make sure that in the unlikely event they do leak that there is minimal damage.

## II. ELECTRICAL FOR FUEL CELL

1. At this point you need to need to locate your relay, relay plug, and the toggle switch.
2. Flip the relay over and locate the terminal numbers that are listed below. Do not go by the wiring colors for installation.
3. Plug relay into relay plug.
4. Find location to securely mount relay so that it doesn't get banged around.
5. The kit comes with an illuminated toggle switch so you can manually shut it off. It can be mounted anywhere by drilling a 1/2" hole into your dash or with use of the supplied mounting hardware. If not mounting to your dashboard, mount the switch at an easy location for you to have access, so you could turn off the Fuel Cell if you have the ignition switch on but do not have the engine running (to play the radio for example.)
6. Connect wiring as described below. Remembering to follow terminal numbers not wiring colors on the relay plug. See figure 2.

- Ø Run the Fuel Cell's **BLACK** wire to chassis ground.
- Ø Terminal 86 goes to chassis ground.
- Ø Terminal 85 goes to the accessory terminal of the toggle switch.
- Ø Terminal 30 goes to one end of the supplied fuse holder. (Do not install fuse at this time).
- Ø Then from the other end of the fuse holder to battery positive.
- Ø Terminal 87 goes to the **RED** wire of the cell. (+ side of fuel cell)
- Ø Terminal 87a is **NOT** used.
- Ø Connect ground side of switch to chassis ground.
- Ø Connect positive side of switch to fuel pump relay output.

Figure 2



### III. Fuel Cell Dryer and Hose Connections

- Ø Connect the clear ¼" reinforced hose to the straight fitting on top of the Fuel Cell. Try to make a loop of hose over the top of the fuel cell if possible. It will cause the gas to drop any water that may travel out of the fuel cell with the gas through the effects of gravity. You want the gas to escape, but not water. The dryer will also catch excess water that gets out of the fuel cell, but this loop will limit the amount of loss. A regular clamp can be used and the line must be properly measured to the place where you plan to install the in line Fuel Cell Dryer. This is the 6 inch long plastic tube with two plastic fittings on the side. It also has a site level indicator on the side of it. It needs to sit upright with the rubber stopper at the top. It is best to install the drier as close to the air intake as possible. **THIS DRIER MUST BE INSTALLED BETWEEN THE FUEL CELL AND THE AIR INTAKE! DO NOT PUT ANYTHING INTO THE DRIER... IT NEEDS TO BE COMPLETELY EMPTY AS A RECEPTICLE TO CATCH ANY MOISTURE IN THE GAS.**
- Ø The site level indicator on the side of the dryer will tell you if it is filling with moisture or not. Check it once in a while to see if it is filling. **It should not be.** In the unlikely event it ever gets over the half full mark, use the syringe from the supplied kit to remove the water. Of course put the water in the drier back into the fuel cell at a time when if it is low enough to take the excess. You will notice that this water will feel oily on your skin, and that is because the caustic in it is removing the oils from your skin. Be sure to wash your hands after draining the drier with soapy water.

**IMPORTANT NOTE: IF YOU ARE INSTALLING THE FUEL CELL IN THE TRUNK,** put the Fuel Cell Dryer in the trunk as well. Install it the same way making sure it is secure in an upright position. Run the clear plastic line (you have to also supply) under the car from the Fuel Cell Dryer to the air intake of the engine. If possible, run the line through the frame rail. If

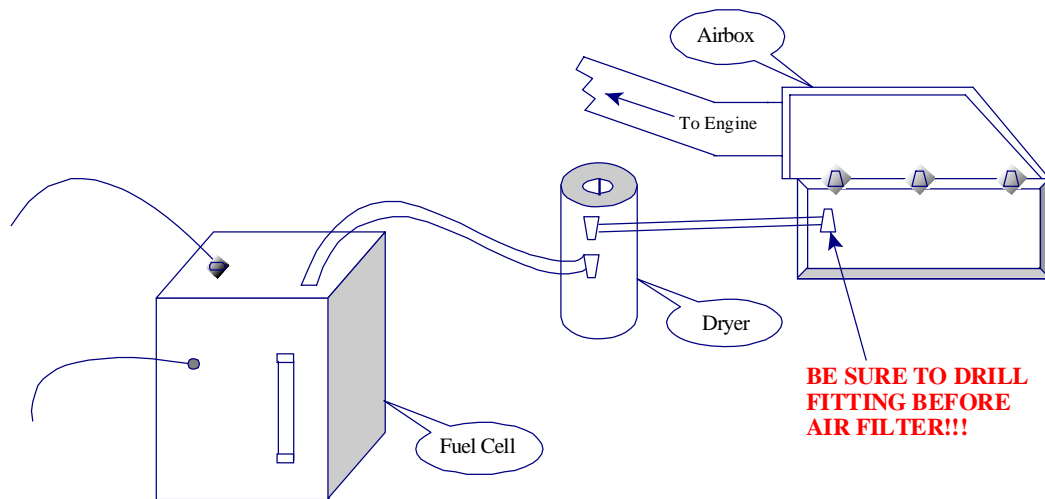
outside the frame rail be sure it is secure and safe from outside elements. If so desired; when mounting the fuel cell in the trunk, you may consider installing an additional dryer in-line in the trunk near the fuel cell. This dryer can be purchased separately and is not a necessity.

If you are putting the fuel cell into the trunk, you can pick up PVC hose (¼ "ID) from available hardware, auto-parts, or home center stores. You will need about twenty feet of hose. Do not forget to try to put a loop in the hose out of the fuel cell. Run it from the trunk under the car alongside the gas lines (you can strap it to the gas lines.) When you get to the engine compartment, switch back to our supplied hose to the lower air box. Make sure the hose stays away from the hot exhaust or the exhaust manifold.

- Ø Drill a .339 hole into the air intake hose close to the air cleaner. Use a 1/8<sup>NPT</sup> "PIPE TAP" to cut a thread into the air intake box before air filter. Screw a 90° white nylon fitting into this hole.
- Ø Clamp the end of the clear braided hose from the fuel cell to the lower fitting of the dryer. Run the clear line from the top fitting of the dryer then to the 90° fitting to the lower air box before the filter. See Figure 3.

**MAKE SURE YOU ALWAYS MEASURE THE HOSE CORRECTLY, BECAUSE WHAT WE SEND IS ALL YOU HAVE. ALL THE HOSE WE SEND IS UNIQUE. YOU CAN ORDER MORE, BUT THAT WILL DELAY YOUR INSTALL. THE CLEAR BRAIDED HOSE IS WHAT YOU NEED IN THE ENGINE COMPARTMENT.**

Figure 3.



#### IV. INSTALLING THE VAPORIZER (UNIQUE MAGNETIC HEAT EXCHANGER )

Our Vaporizer is very unique in that, even though it is aluminum, **it is magnetic**. That is because when fuel passes by magnets the gas is ionized and it lines up the molecules and makes them easier to combust, vaporize, or "crack". Of course heat is used for vaporization, but gasoline vaporizes at a far higher temperature than your radiator hose can provide. But, the 200 degree F radiator does add something to the equation... heat! We are pre-heating and ionizing the fuel to help break it down with the **Covalizer** and add a rich mixture of HHO (water gas) to be more readily and more fully burned fuel. **It is easy to attach the Vaporizer to the radiator hose.**

1. Make sure that as much of the two surfaces (hose and vaporizer) touch and make as much contact as possible.
2. Mount securely to a location where it will have a safe distance from the drive belts or other moving parts.

3. Take aluminum foil and bend it in half and wrap it around the vaporizer AND the radiator hose about five full wraps. Keep it as tight as possible; then use the header wrap, (the cloth strapping that is provided) and wrap it around the radiator hose and vaporizer, overlapping and pulling it tight as you go until you have used all the header wrap provided. Use zip ties (or possibly even baling wire) to secure it after wrapping it. You want to hold in as much heat as possible to transfer that heat to the vaporizer and into your fuel.
  
4. Keep in mind the fact that there are two different ends of the vaporizer: On one end is a 90° fitting and on the other end is a straight fitting. These ends can be used interchangeably and are there to facilitate the ease of your installation. You are going to want to run the main fuel line to one end of the vaporizer and then run the end of the vaporizer back to the fuel rail.
  
5. One CRUCIAL aspect of the installation of this process of vaporizer is to USE THE BLACK GAS HOSE PROVIDED!! When you are heating the fuel in this line, it causes the hose to be more malleable, softer, and more difficult to clamp. If these hoses leak, there goes your fuel economy. Other hoses and other clamping systems may give you issues. That is why it is so important not to waste this black hose, and to use the special double clamping system we have provided. There is also a special tool that is used for this clamping system that we have also provided. It is also important for you to take the black corrugated shielding material to cover and protect the gas lines. PLEASE BE CAREFUL TO MEASURE THESE LINES PROPERLY BECAUSE THIS IS ALL THE LINE YOU SHOULD NEED, BUT IF YOU CUT IT WRONG YOU WILL HAVE TO ORDER MORE FROM US AND THAT CAN DELAY YOUR INSTALLATION. From our experience, you cannot just go to local auto parts store and buy more of this line. If you use any other line or clamps, you will most likely regret it.

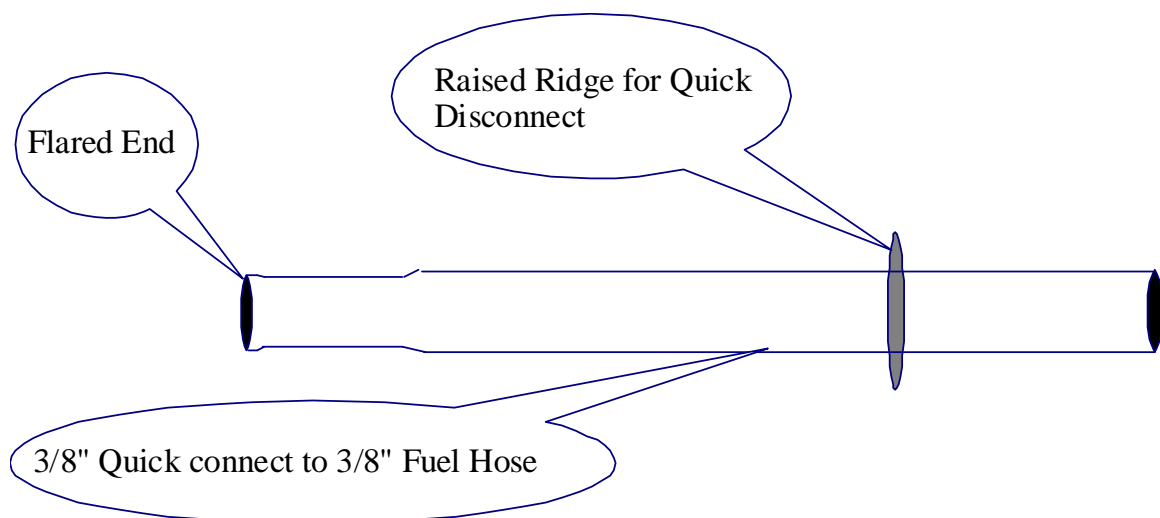
**TO CUT THE FUEL LINES, WE RECOMMEND USING THE RED GAS LINE CUTTER PROVIDED. IT WILL PREVENT JAGGED EDGES AND CRIMPING OF THE LINES.**

At this time we are providing you with the most common fuel line connectors on late model vehicles. We have not had a chance to find every possible different style of fuel line connectors. Before cutting the fuel lines, verify if the supplied connectors are applicable to your vehicle. You may have to contact with a local auto parts supplier for your application. If we were to provide you with every possible connector the cost would be too much.

The following section will be giving you a description of what the included steel tubes look like.

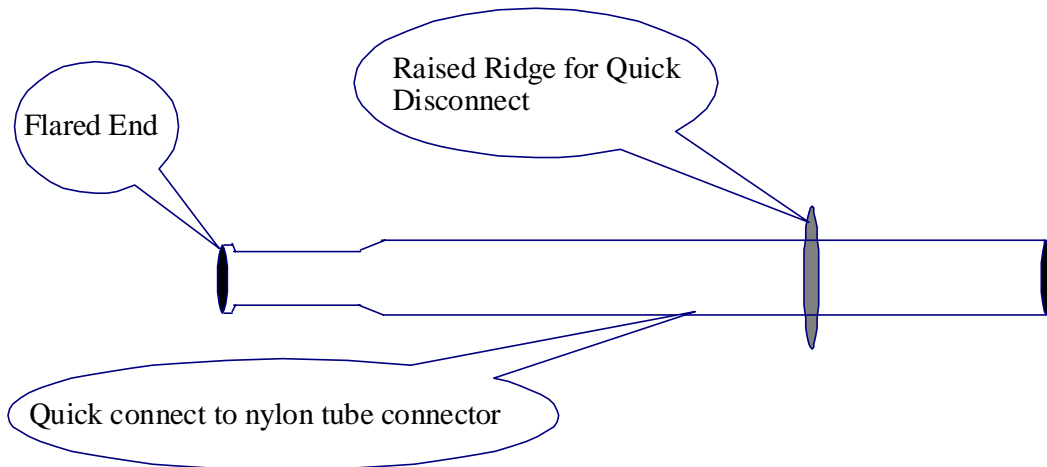
- Ø There is a 3/8" quick connect to 3/8" fuel hose. They are made of steel and are about 4 inches long all have two different ends. One end is flared for clamping it to the black nylon tube. The other end has a raised ridge to snap into the 3/8" quick disconnect. See figure 4.

Figure 4



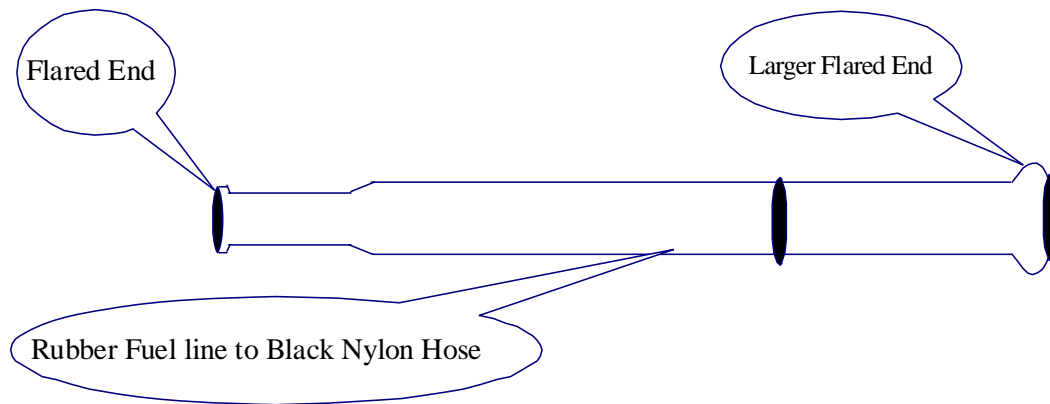
- Ø Likewise a 5/16" quick connect to nylon tube connector one end clamps to the black tube and the other to a quick disconnect fitting. See figure 5.

Figure 5



- Ø One other option, which is a steel tube that has one end for nylon tube and one end for a rubber fuel line hose which does not use any type of quick disconnects at all. This has one large flared end and one small flared end. See figure 6.

Figure 6



- Ø WHEN USING THE BLACK NYLON TUBE YOU MUST USE THE CLAMPS PROVIDED. To install the clamps put the clamp over the tube, put the tube onto the fitting you are using, making sure the clamp is between the flare and the raised section of the fitting. Using the black clamping pliers squeeze the raised up part of the clamp as tight as you can this will crimp the clamp tight. Then the clamp will act as a spring to keep a constant pressure on the tube whatever the temperature.

While all of these fittings are in your kit, you are not expected to use all of them (only the appropriate ones.) DO NOT LOSE THESE FITTINGS, AS THEY ARE IMPORTANT TO YOUR SUCCESS. Before starting this phase of the install look at the fuel system and see what you are dealing with. Do you have quick disconnects or a compression fitting type system on the line? For some styles you will have to cut the line and they have to be clamped with our clamps and for others you may be able to disconnect the quick connects and clamp them back together with the quick connects we provide. We will describe four out of many possible ways.

### **If You Have A 3/8" Line With No Quick Disconnects:**

1. You only need the two 4 inch long steel tubes 3/8" to 5/16" nylon connectors. These have flares on each end. See figure 5. If you stick them into the quick disconnects they will not stay!

2. Please be prepared to catch any fuel that you have in the lines as you cut or disconnect the lines as they are under pressure and have fuel in them. You should be ready to catch at least a cup of fuel on a little bowl or cup. You have to cut your fuel line preferably four inches from the fuel rail (BE PREPARED TO CATCH THE FUEL)
3. On each end of the hose that you cut, you are going to insert the large flared end of the steel tube; then install supplied clamps. **Clamp them tight!** The 4" metal connectors will now become the ends of both hoses. The ends will be 5/16" tube fittings. The black hose will fit directly on each.
4. Connect the 5/16" black nylon fuel hose from one of the steel tubes to the magnetic vaporizer using the smaller clamps and black handled pliers supplied in the kit. BE SURE TO MEASURE THE PROPER LENGTH OF THAT HOSE BEFORE YOU CUT IT. **THERE IS A SPECIAL RED HOSE CUTTING TOOL INCLUDED IN THE KIT. USE IT! IT WILL CUT THE LINES WITH NO JAGGED ENDS AND WITHOUT CRIMPING THEM.** .
5. Then take the other end of the vaporizer and measure a portion of the black nylon fuel hose that will go to the steel tube that is left. Connect the measured black nylon hose from the vaporizer to the end of the steel tube making sure to use the special clamping system provided.

#### **If You Have A 3/8" Line With Quick Disconnects:**

1. You need both the 3/8<sup>th</sup> quick disconnect fittings and one of the supplied 3/8" 4 inch long steel tube, quick disconnect to fuel hose connectors. See figure 4.

2. Disconnect the quick connected at the fuel rail. MAKE SURE YOU USE A BOWL OR CUP TO CATCH THE FUEL. With it disconnected cut quick disconnect off vehicles original fuel line and insert the flared end of the steel tube into the original fuel hose and clamp.
  
3. Measure a length of black nylon fuel tube from the steel tube inserted at the original fuel hose. Clamp the supplied 3/8<sup>th</sup> quick connect to the black nylon hose. Connect the quick connect to the steel tube. Then connect the other end of the black nylon tube to the vaporizer with the supplied clamps. BE CAREFUL TO GET THE HOSE LENGTH RIGHT BECAUSE YOU CANNOT AFFORD TO MESS UP ON THE AMOUNT OF HOSE.
  
4. On the opposite end of the vaporizer measure an addition nylon black hose to the fuel rail. Take the second 3/8<sup>th</sup> quick connect and clamp it to the black nylon hose; connect to the fuel rail. On the other end of the black nylon hose, clamp it to the vaporizer. You now have the gas flowing from the main fuel line into the vaporizer and back to the fuel rail.

**If You Have A 5/16" Line With Quick Disconnects:**

1. You need both 5/16" quick disconnect fittings and one of the supplied 5/16" 4 inch long steel tube, quick disconnect to nylon connector.
  
2. Disconnect the quick disconnect from the fuel rail. Insert the 5/16<sup>th</sup> steel tube into the original quick connector on the vehicle. Measure the black nylon fuel hose from the steel tube to either end of the vaporizer and clamp on each side. BE CAREFUL TO GET THE HOSE LENGTH RIGHT BECAUSE YOU CANNOT AFFORD TO MESS UP ON THE AMOUNT OF HOSE.

3. Measure the black nylon fuel hose from the other end of the vaporizer to the fuel rail. Clamp black nylon hose to the 5/16" quick connect then attach quick connect to the fuel rail. Clamp black nylon hose to vaporizer

**If You Have A 5/16" Line And NO Quick Disconnects:**

1. You need two four inch long 5/16" metal nylon connector to hose connectors (these look a little different than any of the other 4" long metal tubes) and NO quick disconnects at all!
2. Cut the hose about five inches away from the fuel rail.
3. Install the 5/16" flared end of the 4" long metal tube to the existing cut fuel line near the fuel rail. Measure the nylon black fuel hose from the vaporizer to the 4" metal tube near the fuel rail then cut and clamp into place.
4. Then make sure you have enough nylon black fuel hose to go from the other end of the heat exchanger to the end of the original fuel line coming from the fuel tank. Hook the two hoses together and clamp.

**V. INSTALLING THE O<sub>2</sub>PTIMIZER (O<sub>2</sub> SENSOR)**

Our very special O<sub>2</sub>optimizer adapts the existing O<sub>2</sub> sensors in your car to work with our modification. The instructions to install the O<sub>2</sub>optimizer come in the box that stores the device. In order to properly install the device you need to either get information from

Alldata or the Chilton Book available to mechanics to get the proper set up for various makes and models of cars. You need access to the wiring diagram for that car. Look for the wiring diagram for the oxygen sensor, air intake temperature sensor, and all coolant temperature sensors. If you need this information and you do not have access to Alldata or Chilton, then E-mail us at [dutchmantechsupport@gmail.com](mailto:dutchmantechsupport@gmail.com) and we will try and assist you. You can ask us to look up the wiring diagram but we will need your vehicle information including: Make, Model, Engine and VIN number. We will then e-mail them back to you.

## **VI. MAKING AND EXPLAINING THE SPECIAL COVALIZER FLUID**

In order to make a batch of **COVALIZER** you need to have three ingredients. Two of them can be purchased at Home Depot, Lowe's or Wal-Mart in any city in America (that has one, of course): They are Acetone and Xylene.

(Note: It would cost you far more if we tried to supply these two ingredients that are readily available at these large chains. We cannot compete with them and all we would do by trying to is penalizing you. They have the supply channels for these special chemicals.)

Ø Acetone can also be purchased at pharmacies, beauty supply places and some hardware stores.

Ø Xylene can also be purchased at some hardware stores. (We hear that in Canada, Xylene cannot be purchased by ordinary people, so just use twice as much Acetone in that event. It will not be quite as good, but should still be pretty good.)

The Acetone and Xylene will clean out your engine. You should see black particulates coming out of the tail pipe, and on the ground around it, for the first few tanks of gasoline (it may even smoke as the carbon is burned out of it).

The third ingredient in the special fluid is the **Conditioner** that our dealers sell. It is a formulation of additives that are designed to protect your engine and stimulate a reaction between the HHO gas and your gasoline. The UCSA dealers sell the Conditioner in gallon containers. A one quart can of FREE Conditioner comes with the kit.

These three ingredients are to be mixed in exact thirds:  $1/3^{\text{rd}}$  Acetone;  $1/3^{\text{rd}}$  Xylene; and  $1/3^{\text{rd}}$  Conditioner. So, for example, if you mix one quart of Acetone, one quart of Xylene, and the one quart can of Conditioner that comes with the kit, you can start out with three quarts of fully mixed Covalizer. **Do not use the can in the kit that is labeled "Conditioner" by itself. You need to mix equal parts of Acetone, and Xylene (if possible) as well.** WE HAVE PROVIDED A SPECIAL 32 OUNCE MEASURING BOTTLE TO MIX THE COVALIZER IN, AND TO MEASURE THE AMOUNT YOU WILL PUT IN YOUR TANK. Make sure you do not run out of Covalizer fluid. You can re-order the Conditioner from your dealer.

## VII. USING THE COVALIZER FLUID

Use the Covalizer fluid directly in your car's gas tank. The Covalizer fluid will mix very well in your car's gas tank and is necessary to cause the chemical reaction between the HHO and your gasoline. We have included a funnel and a special pour bottle that can be used to measure one ounce of the Covalizer at a shot. You can pre-mix the Covalizer in a larger container that you store in your garage or basement, and just fill the high density plastic container we provide to carry Covalizer in your car. Loosen the cap above the small compartment on this special two cap bottle, and squeeze the bottom of the bottle and watch the one ounce compartment fill to the one ounce level indicated. Take the cap off and pour that ounce into the funnel that you first put into your gas fill port. If you put ten gallons of fuel in, then do this three times. A twenty gallon tank filled will require 6 ounces. Just pour 3 ounces of the mixed Covalizer fluid into the tank with every ten gallons of fuel you add (1.5 ounces per 5 gallons) to increase the overall performance of the system. Try NOT

to use more or less than we are suggesting. More is NOT better! The Covalizer will break down the covalent bonds of the fuel and condition the fuel for the HHO gas to do its job.

**SPECIAL NOTE: WHEN YOU ADD COVALIZER FLUID TO YOUR FUEL YOU MUST BE PREPARED TO CHANGE THE FUEL FILTER ON THE VEHICLE IF NECESSARY.** In fact, if you plan to do this, we would recommend buying a new fuel filter for your car and keeping it handy. Unless your car is new, all sorts of gunk and sludge could have built up in the fuel tank. The conditioner will act like a solvent, cleaning house in your fuel tank, breaking the gunk loose, and breaking it down. Once it is broken loose, guess where it will go? If you guessed into your fuel filter, you are correct. When you put the **Covalizer fluid** into your tank it will not only clean out your engine, but it will also clean out your tank. The nice thing is that once you get it all clean, you will have a much more efficient system. You may not have to change the filter at all, but we want you to be prepared to do so. You will know that the filter needs to be changed if your vehicle becomes sluggish and does not have as much power. ***Do not change the filter until it clogs, because you may have to change it twice. We just want you to be prepared for this possibility.***

## VIII. CHARGE THE FUEL CELL WITH CAUSTIC

### Important Notes: Read First:

- Ø Caustic, otherwise known as Potassium Hydroxide, is used to electrolyze the water in the Fuel Cell. Caustic is corrosive, so handle it carefully. It can burn your skin. If you get it on your skin, rinse thoroughly and repeatedly with cold water. Keep some apple cider vinegar on hand to help neutralize it, if necessary.
  
- Ø DO NOT BREATHE DUST OR FUMES WHEN MIXING!!!

- Ø Caustic can be purchased locally.
- Ø ALWAYS STORE CAUSTIC IN A DRY PLACE, AND LABEL IT.
  
- Ø ONLY charge your Fuel Cell AFTER you have installed it.
  
- Ø It is best to use distilled water to fill the Fuel Cell, but regular water can be used. If distilled is always used the fuel cell will last much longer without having to be removed, flushed out, and needing to replace the caustic.
  
- Ø Start with three tablespoons full of the Caustic (Potassium Hydroxide) crystals. Add the caustic into two and a half cups of distilled water and stir it with a throw away stick. **Store it in a dry place, preferably in a sealed container. Be sure to label it caustic...poison** (it is basically lye.)
  
- Ø Mix caustic in a glass container that will only be used for mixing the caustic. Mix to the point of no visible crystals.
  
- Ø AFTER mounting the Fuel Cell on the car (whether in the engine compartment or trunk) carefully pour the mixture into the Fuel Cell through the top hole where the water goes in. USE A FUNNEL! It is best to let this mixture cool for a while before pouring it in. Then go ahead and fill the fuel cell with distilled water up to the top of the site gauge level indicator if it is not yet full. **DO NOT OVERFILL THIS! You need room at the top for the Fuel Cell to make water gas.** THIS IS CAUSTIC SOLUTION. IT MUST NOT GET ON YOUR HANDS. IF IT DOES, WASH IT OFF RIGHT AWAY WITH SOAPY WATER. ALSO VINEGAR NEUTRALIZES IT. ONCE AGAIN, USE A FUNNEL TO POUR THE CAUSTIC SOLUTION INTO THE FUEL CELL.

Ø If, after the initial test, you decide to permanently bracket the Fuel Cell into place, then remove the Fuel Cell and CAREFULLY POUR THE CONTENTS BACK INTO A JAR OR BOWL. Then remount it more permanently in place BEFORE pouring the contents back into the Fuel Cell. ALWAYS USE A FUNNEL AND BE CAREFUL! (Do NOT use the funnel we provided for the Covalizer for this. The long necked funnel we provided should only be used with the Covalizer. To fill the fuel cell, a short necked funnel will do.)

1. You will need a clamp on amp meter.
2. Clamp the amp meter to the red wire off the fuel cell.
3. Install the provided fuse into the fuse holder.
4. Start the vehicle and turn the toggle switch to the on position.

Monitor the amps; with the vehicle started, let vehicle achieve normal operating temperature, if possible take the vehicle on a quick road trip. You need approximately 15 amps with no foam visible inside the clear tube out of the fuel cell.

If no foam is visible and the amp meter reads below 15 amps; see procedure A.

If foam is visible and the amp meter reads above 15 amps; see procedure B.

## ***PROCEDURE A***

Turn off the vehicle, remove rubber stopper from fuel cell. With the syringe provided remove two syringes full of water and caustic. Add the removed solution into a glass jar or container. Add one tablespoon of caustic into the removed solution in the glass jar and stir. With the syringe or pour, add the newly mixed solution back into the fuel cell. Start the vehicle and let it idle as you watch the amps. Repeat as necessary until you have close to 15 amps without foaming.

## ***PROCEDURE B***

Turn the vehicle off and remove the rubber stopper from the fuel cell. With the syringe provided remove one full syringe of the caustic solution. Put the solution in a glass jar and install one syringe full of distilled water into the fuel cell. Start the vehicle and let it idle as you watch the amps.

If the amp meter indicates no power while the engine is running, there are only three reasons for that:

- (1) The Fuel Cell has no water in it. (In fact, if the power starts getting below 15 amps, you probably need water in the Fuel Cell.)
- (2) The water in the fuel cell is frozen. (In fact, you will know when it has thawed)

out, because the amps will run back up to 15 amps.)  
(3) The fuse has blown. (In that case, you will also see that the amp gauge light is

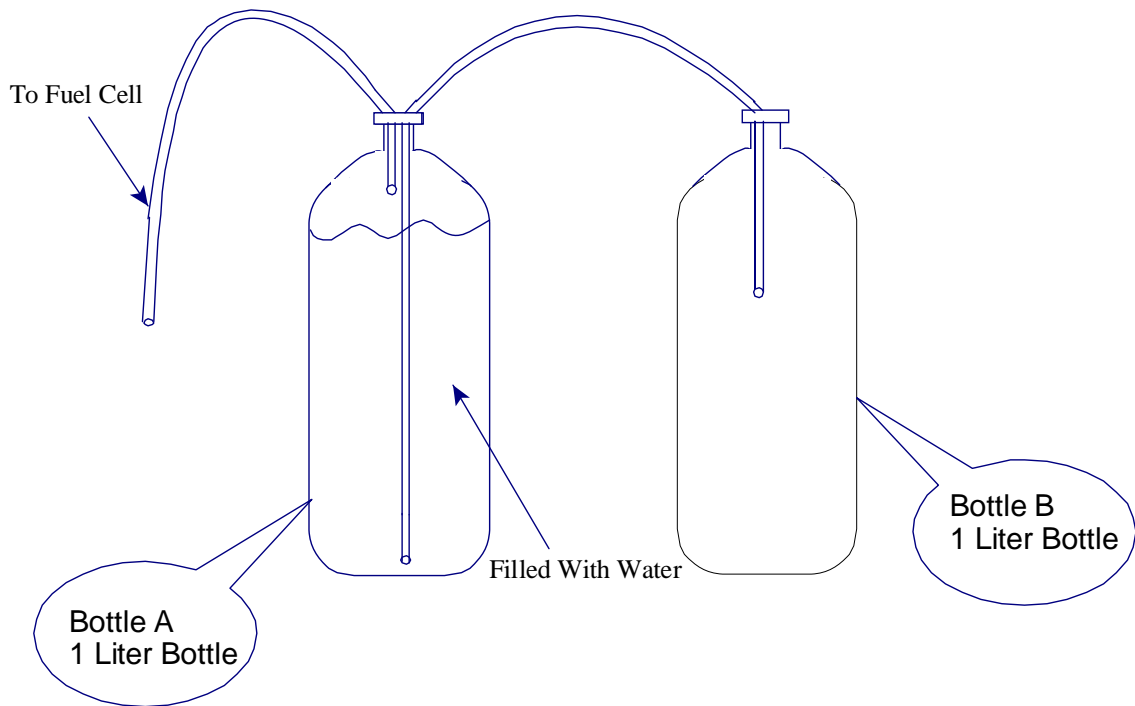
out.) You can get a replacement fuse at any auto supply.

***OUR GOAL IS TO ACHIEVE 50-60 LITRES OF H-H-O  
GAS PER HOUR FROM THE FUEL CELL WITH NO FOAM  
AND UNDER 15 AMPS.***

## **XI. HOW MUCH H-H-O GAS THE FUEL CELL IS PRODUCING**

Here is a solid way to know if you're making enough H-H-O gas. You will need a timer & to construct this simple water bottle set-up shown below in figure 7.

Figure 7.



- Ø Fill Bottle A with 1 liter of water.
- Ø Start the vehicle.
- Ø Make sure fuel cell switch is on.
- Ø Remove clear hose from the top of the fuel cell fitting.

- Ø Connect the hose from bottle A to the fuel cell and press start on your timer at the same time.
  
- Ø The water should move from bottle A to bottle B
  
- Ø If the entire contents of bottle A moves to bottle B in 60 seconds, the fuel cell is making 60 liters of the recommended H-H-O gas an hour.

***CONGRATULATIONS, YOU ARE FINISHED!***