water4gas

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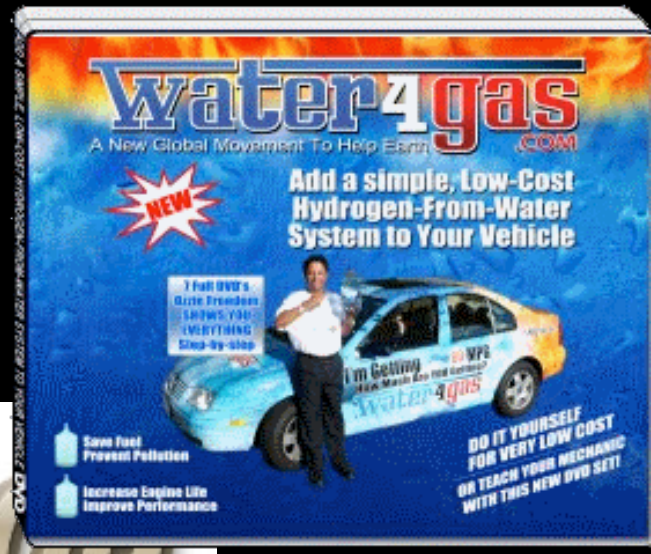
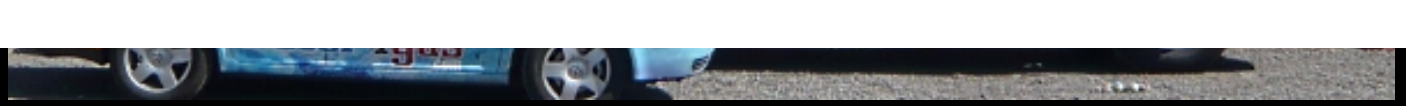


BOOKMARK • PRINTING GUIDE

The Diesel Book

By Ozzie Freedom, Founder of Water4Gas



Sparks, Nevada: Two Diesels Using Water4Gas

Table of Contents

NOTES:

1. The Diesel Book does not replace the information given in our new DVD set, it only interprets the information for diesels and gives real-life examples of two diesels. For the basic techniques on how to build a Water4Gas generators and the multi-cell (like the popular "6-pack" shown in this book) refer to the DVD set.
2. This book is given to you as a free gift from its author, Ozzie Freedom, and no technical support is provided with it. If you cannot figure it out from the information given here, a solution will be given to you in CHAPTER 7 of this book.
3. This technology is experimental, see Terms. However, with your help we can turn this information and this technology into the upcoming TRUCKING REVOLUTION - WORLDWIDE.

CHAPTER 1

SYSTEM OVERVIEW

Back to Top

Introduction: What Can This System Do For You?

(Introduction written by Jerry Young, edited by Ozzie Freedom to fit this book)

Thanks for your interest in our Hydrogen-On-Demand System for diesel trucks. This is the beginning of a journey that can make you happier about driving your rig. With this system installed, you will notice your truck will run cleaner, cooler, have more torque horsepower, and, of course, you will have an increase in fuel mileage! Plus, you will be making a positive impact on our environment.

Your engine will be running much cleaner with less emissions. I know that this sounds impossible in today's world… but not only is it true, but very doable. You will recoup your initial costs within a few weeks to realize hard dollars savings in fuel alone. That is money back in your pocket NOT spent on fuel. Best of all, with volatile fuel prices, the money saved is not dependent on the current fuel price. It is a ratio that stays constant.

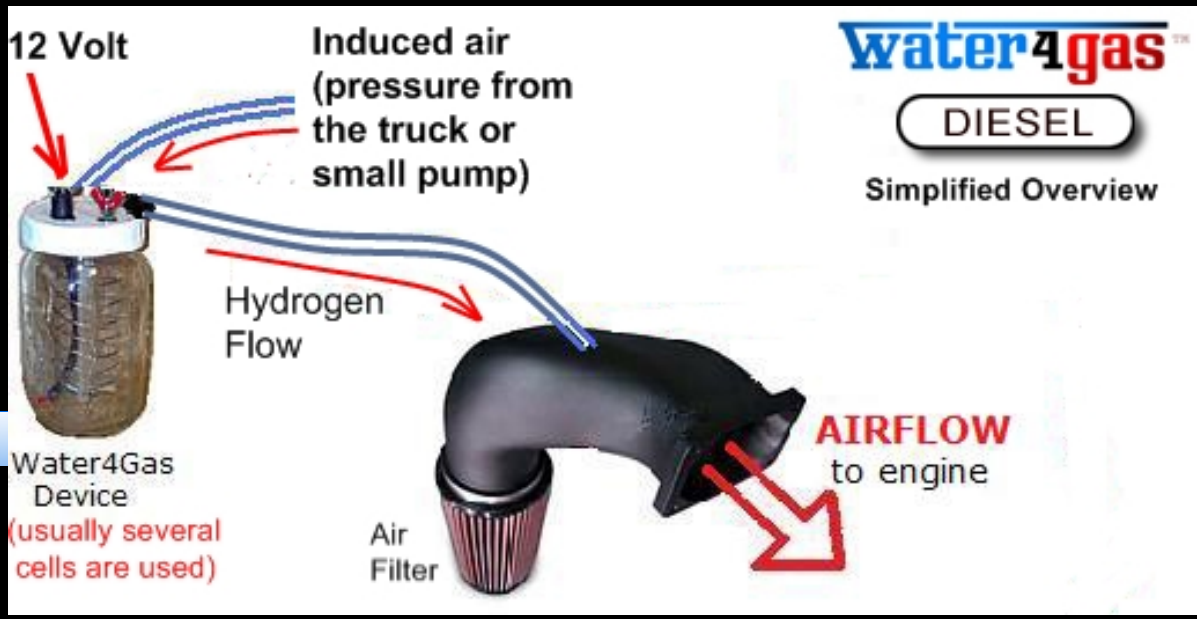
Please remember that this technology is what we call a "Work in Progress." What this means is that this hydrogen technology is constantly evolving. We are working on practical solutions, and always striving to improve and come up with ways to make it better and more efficient. The end result is to get the best FUEL MILEAGE from this hydrogen system in your truck, save some money, and make it better for our environment.

The Basics

The basic configuration you're going to learn here is shown below. The concept is simpler than what we would need for a gasoline (petrol) car because here we have no vacuum to connect to, and normally we would not make any other changes (sensors, computer, etc.)

The system is made of a hydrogen-generating device or multi-cell as described in the Water4Gas DVD's, and that hydrogen is fed into the air stream going into the engine. How to install exactly, and what to do with turbos and all of that? Hold on, you'll see all that in a few minutes. Let's first have an overview and then we'll go into the specific components and installation.

The illustration below is a SIMPLIFIED OVERVIEW of the diesel system:



Interview with Jerry Young

I filmed this interview with Mr. Young on April 26, 2009, just after he re-installed a Water4Gas 6-pack system on his Freightliner big rig truck. In the interview he gives an overview of his system, why it is good for the truck and for the environment, and explains what adaptations he had to do to make this system work with his diesel truck.

Click to play >>

CHAPTER 2

Back to Top

EXPECTED RESULTS

Mr. Jerry Young of Young's Trucking (Sparks, Nevada) developed an adaptation of the popular "6-Pack" system described in my new DVD set. His installation method, based on induced air into an air-tight system, is described here in full details.

Young's results - steady on the 18-wheeler with a simple Water4Gas system

From 5.2-5.5 MPG the truck went to 6.6 MPG steady on mountain roads (in the cabin of the truck I got a photo that the computer itself reported 6.7 average mileage). **That's at least 20% STEADY improvement,** that I estimate has saved him many $1000's during the passing year, in fuel alone.

Mr. Young also reports a 30% increase in power. Without the system he could go 35 MPH maximum uphill with a full 80,000 pound load, now for the same load and the same hill he can climb it at 45 MPH so that's an increase of 30% according to his calculation. It may not be a very scientific calculation of engine power, but from the driver's viewpoint that's all that matters. That much increase in low-end speed saves significant time on the road.

I think it is much more than 30% power boost because the road is very different than an engine bench test and the difference is wind resistance! According to my aerodynamics calculations (I come from aviation) increasing the speed by 30% requires going not just against the hill (gravity) but also against 69% more wind resistance. Young demonstrates in his own way: instead of

having to shift down 3 or 4, sometimes 5 gears uphill, he now has to shift down only 1 or 2 gears.

Photo showing the truck's computer reporting 6.7 MPG, after

the system has stabilized (prior to Water4Gas it was 5.5 MPG)

Mr. Young also reports lower maintenance and engine temperature cooler by 10 degrees. Periodically when he changes oil filter (he never has to change the oil itself), he sends an oil sample to the lab and the results proved that the oil is in good shape. Not just clean, but the oil also reserves its viscosity and density. Such periodical lab test is something that the normal family driver doesn't do. I know I don't. But Young's lab results explain the low maintenance costs.

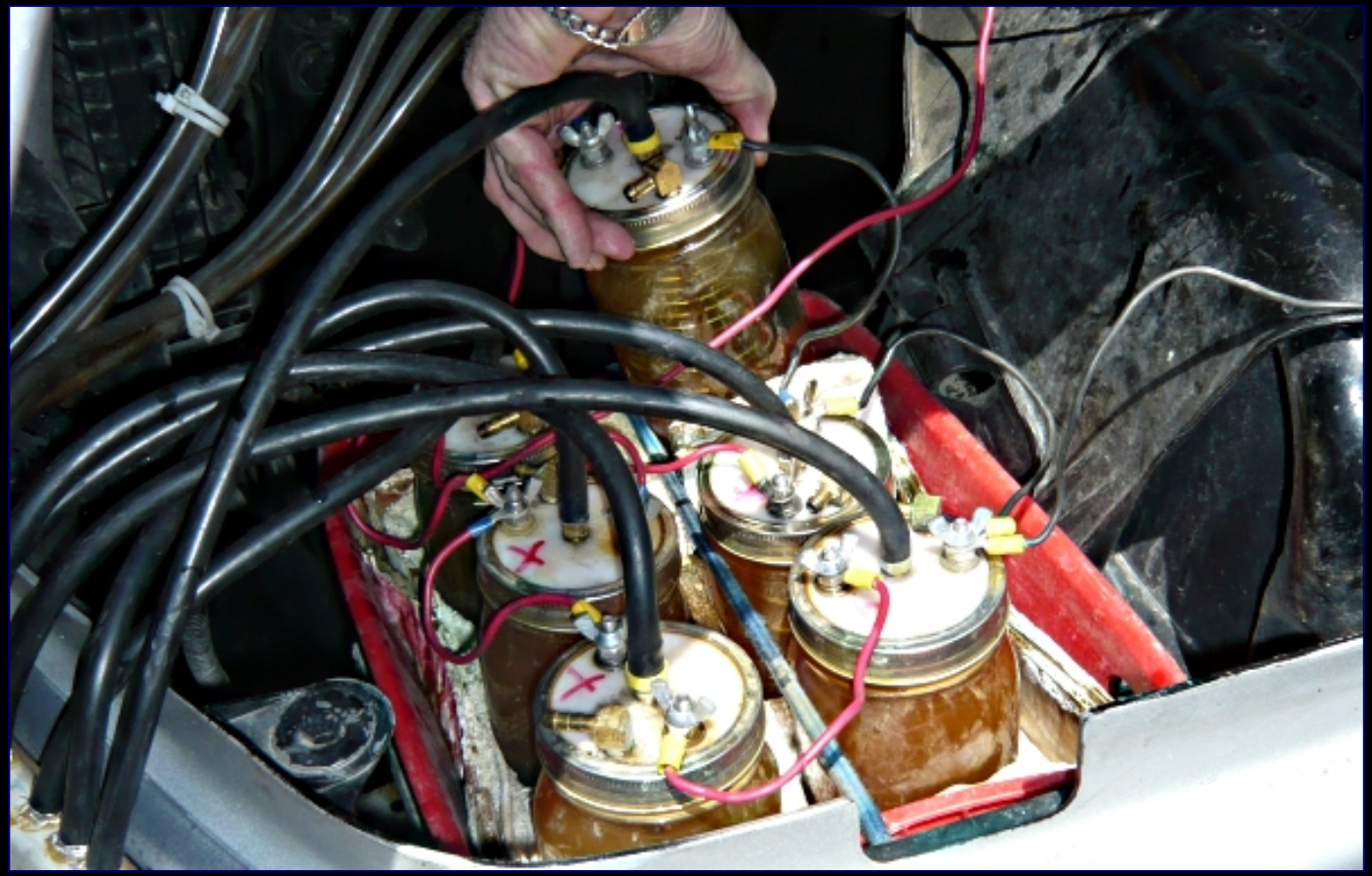
Another factor he could SHOW us was the spanking clean exhaust stacks on his truck (see photo) that in a normal truck get dirty with black soot. That black soot, explains Young, is NOT OIL but unburned diesel fuel. The photo was taken several weeks (of driving with Water4Gas) after Jerry had cleaned the stacks.

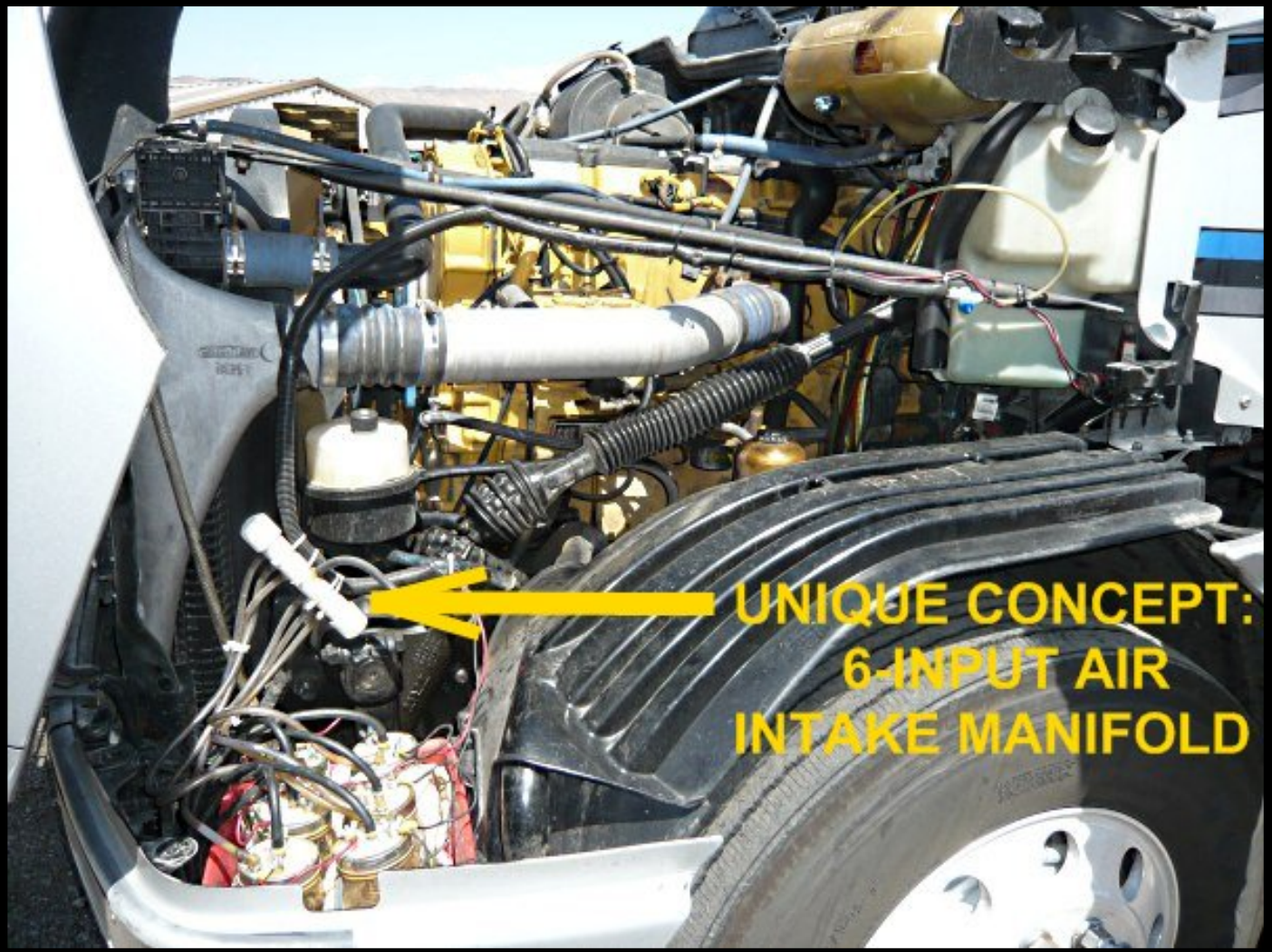
Young waters the system every 500 miles with... regular drinking bottles that he gets for free (rejected bottles/labels) from one of his clients.

According to Young, it usually takes 3-5 tankfuls to realize the full MPG gains, but no computer changes or any other changes are needed other than properly installing the system. As long as there are no no leaks and loose connections, the system works like a charm. It has to be done right but otherwise very simple once you get to see exactly how he does it.

In the last chapter you will see who manufacturers of the new system. But anybody with basic technical skills can make such a system with this book and my new DVD set.

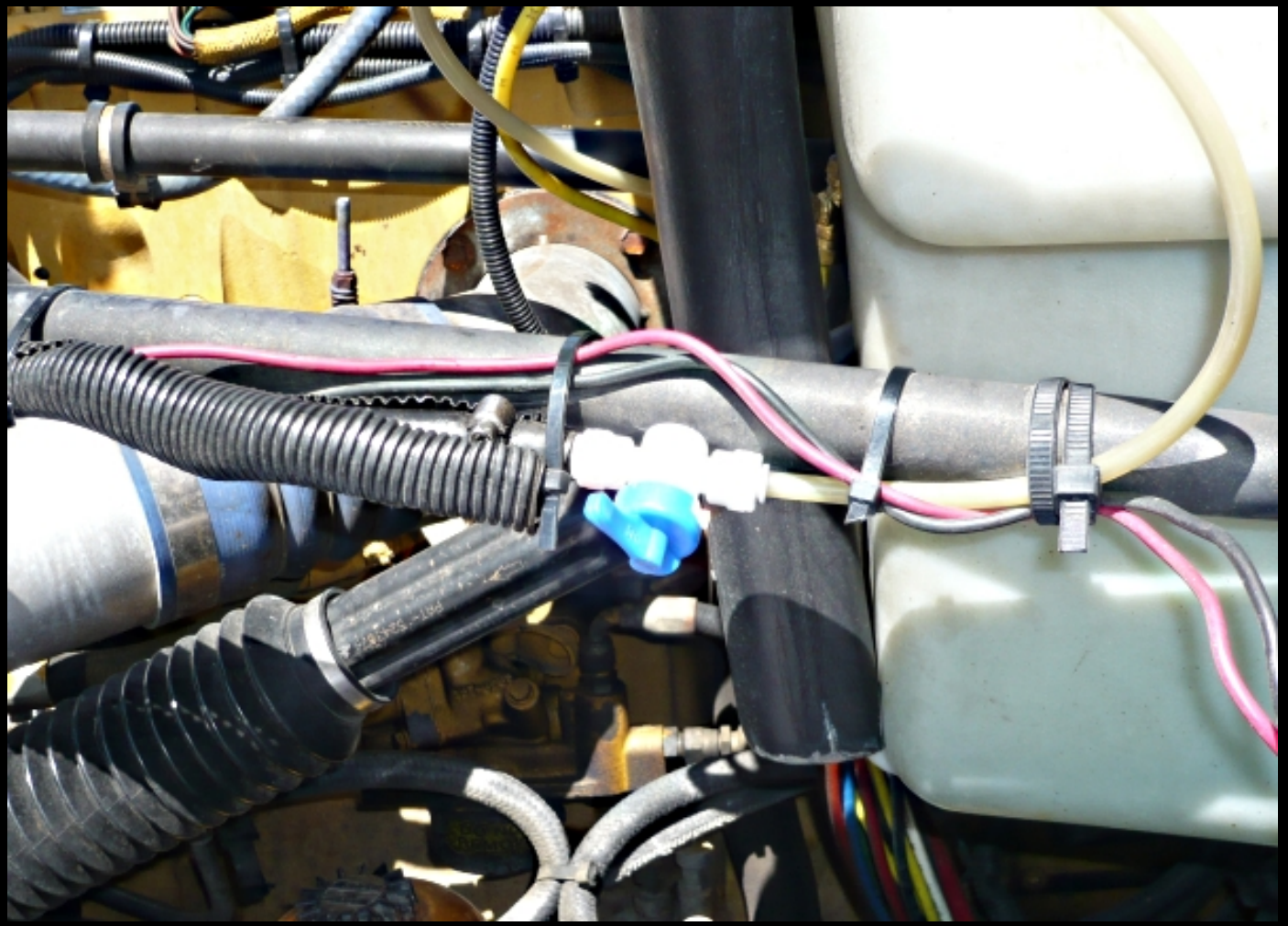
The photos below are not the entire installation, but only a preview so you can see the system. The first photo below shows Jerry Young's system before he installed the new 6-pack. He has been using this Water4Gas system for a year on this truck.





The intake manifold is supplied with CONTROLLED AIR PRESSURE

of about 1.5 PSI, via the valve shown below. This is done in order to PUSH the hydrogen out of the hydrogen cells. That's Young's solution for the very low vacuum provided by the turbo, and it seems to work very well for multiple trucks:



The next photo shows the NEW 6-PACK SYSTEM INSTALLED, and Jerry filling it up using free drinking water. The system below

shown is very similar and you will see its entire installation procedure in Chapter 4.

CHAPTER 3
SYSTEM COMPONENTS

Back to Top

Materials Needed

DRYER/FILTER UNIT

Either one of the dryer/filter units shown below are good. They cost a few dollars and the function is simply to remover water from the stream of hydrogen going to the engine.

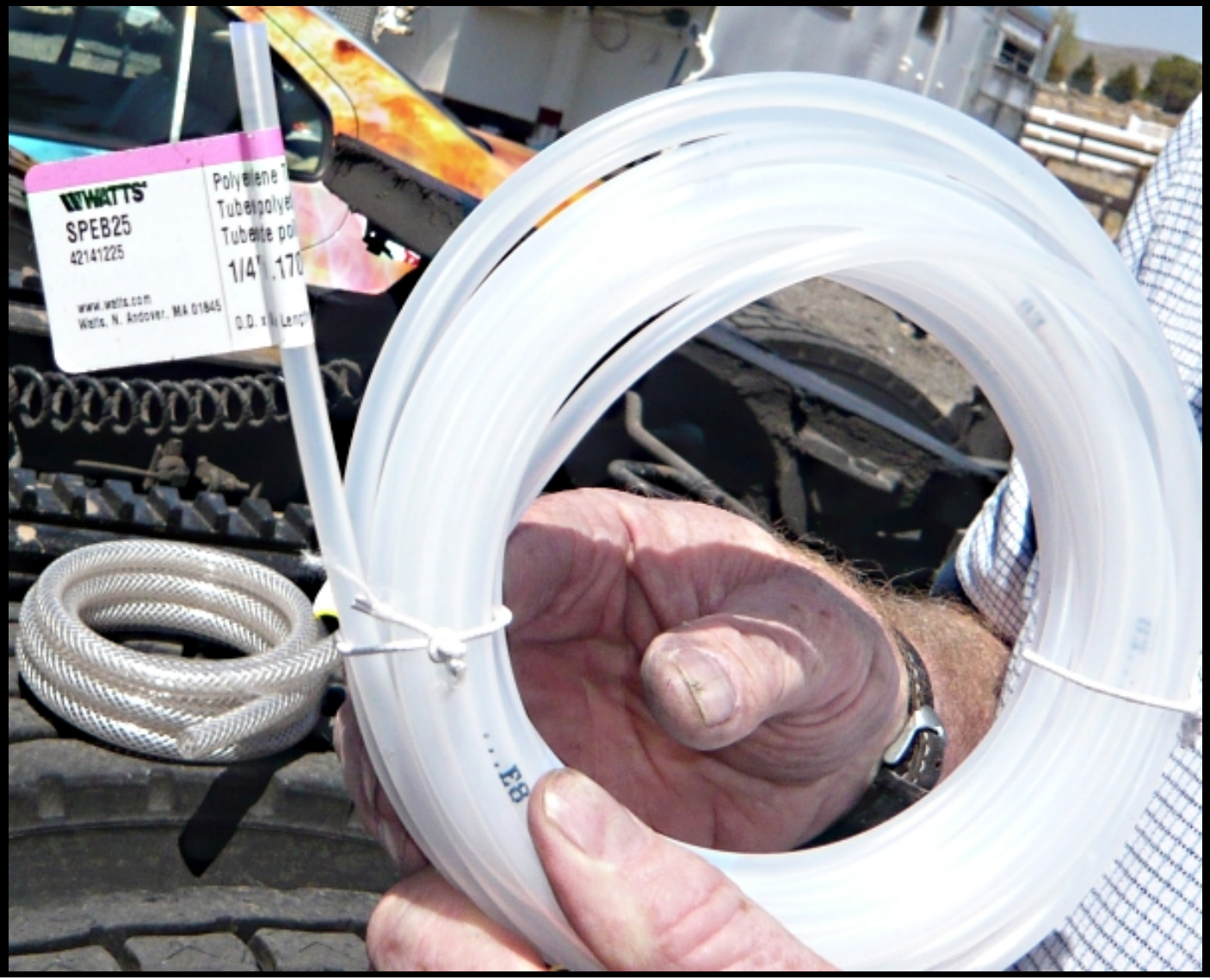
ADAPTERS

The adapters shown are brass barbed adapters to fit 3/8 inch tubing, but you may change those to fit the hoses you're going to use (if different).

HOSES

These are the hoses used in the installation shown here, but you may chose different ones as long as they are of good quality. These have worked well in Jerry's trucks for over a year now. The hose shown below is a 3/8 inch (inner diameter) braided hose by Watts, find at Home Depot or your local hardware store:

This is a 1/4 inch Polyethylene (nylon) tubing from Watts (find at Home Depot as well as ACE Hardware and other hardware stores). That's the type that is normally used for ice makers and other plumbing.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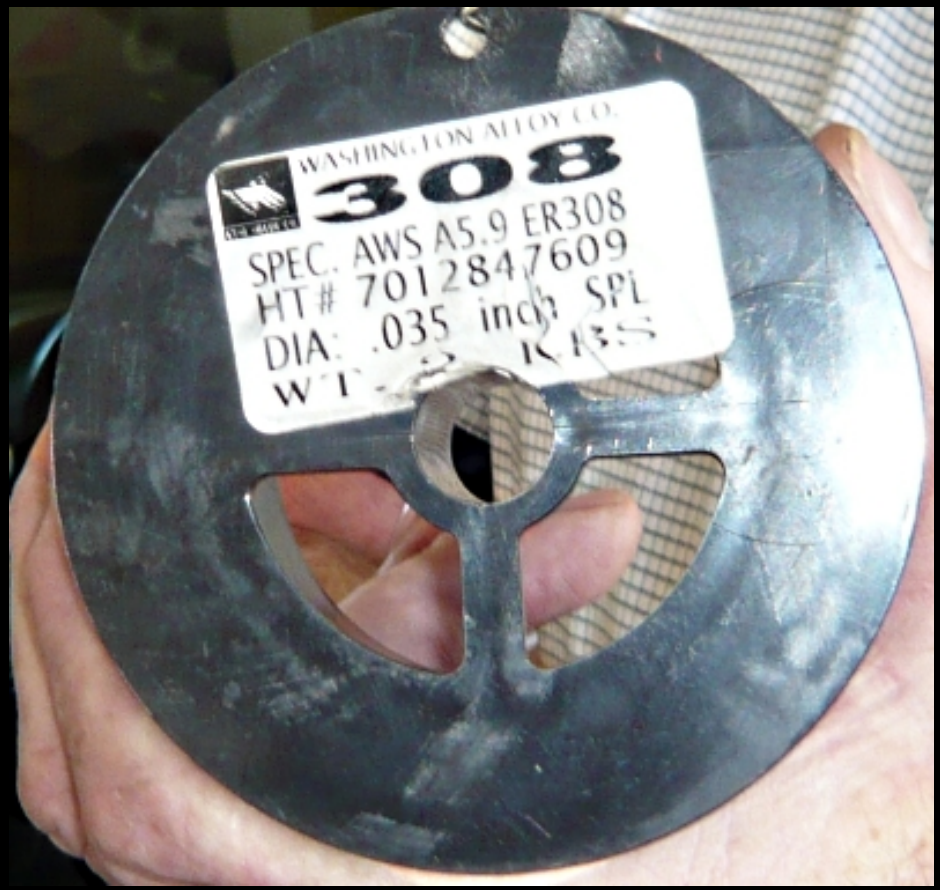
PRESSURE REGULATOR

This is a quick-connect inline valve that you can get at Home Depot and other hardware stores. Nothing special, just a simple plastic valve, and its function would be to reduce the amount of air pressure supplied to the system - no hydrogen and no liquid will be flowing through this valve. The type of connectors used on this valve is called "push-in fittings" (quick connect) and is designed to fit the 1/4 inch Polyethylene Tubing.

STAINLESS STEEL WIRE

In my DVD set I recommend using stainless steel of grade 316L (the L is important and in my experience it is important that it would be 316L, not 316L-something-something) but Young has been using the wire shown below with success. Even though he uses drinking water, this 308 stainless steel, welding type I believe, holds on for over 6 months in his installations.

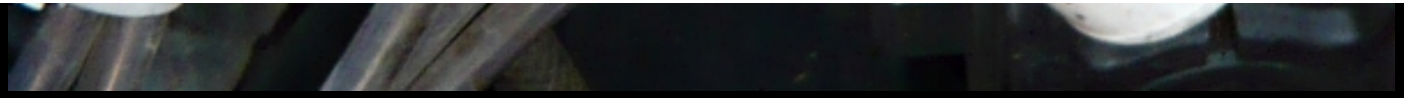


MANIFOLDS

Below is a brief look at the manifolds used. I'm not going to go into great detail because you can figure it out and it can be made

differently too. The important factors are to ensure free and equal flow to all inputs and outputs.

The one in the next photo is Young's "input manifold" (Input Air Manifold) and you'll see in the installation chapter where it goes. It's made of a PVC pipe with two caps and 7 adaptors to match whatever hoses are being used. In the photo below, the adaptor was too thin so a small piece of tubing was added to fit the inner diameter of the black hose.



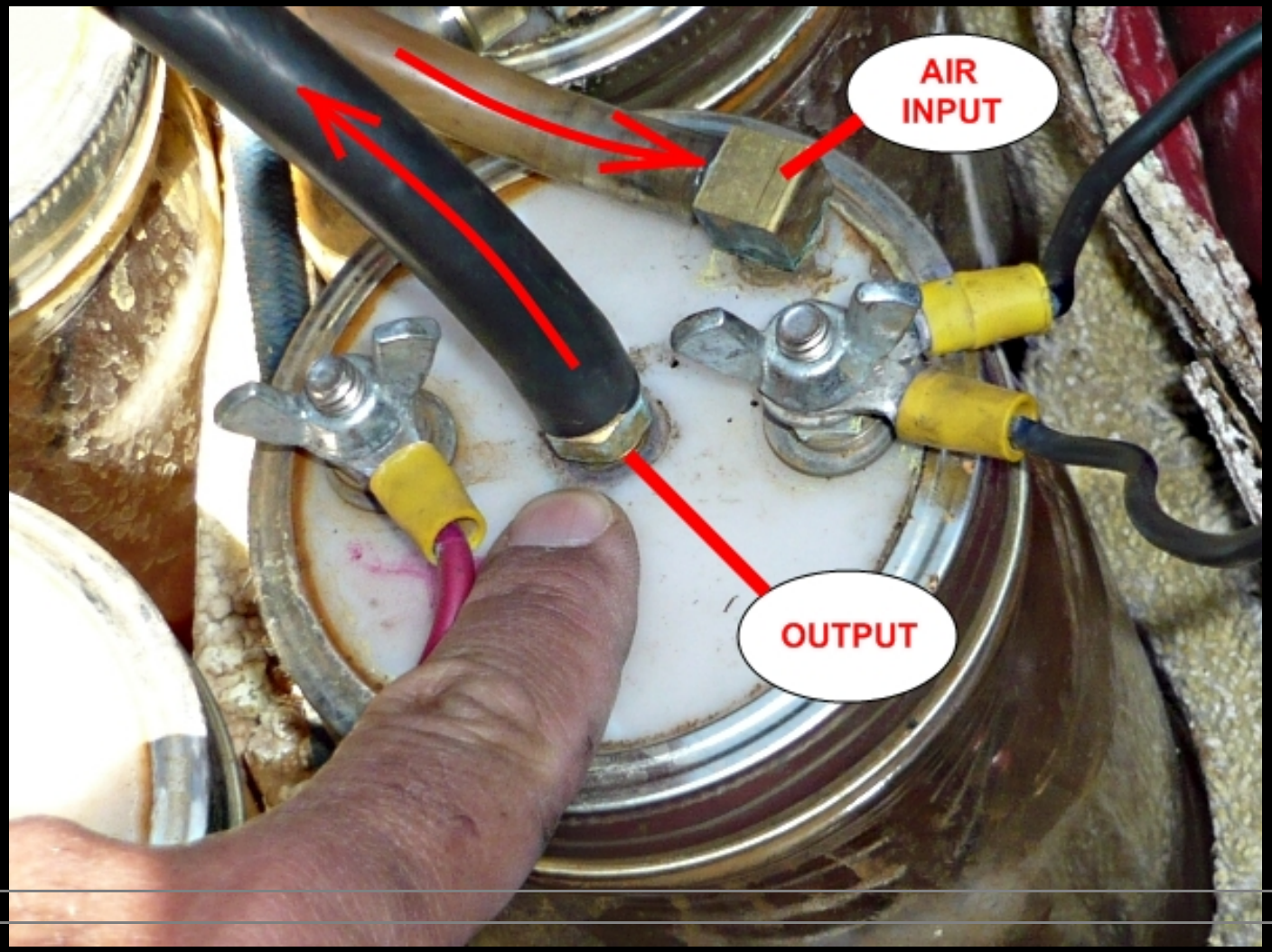
This one is the "output manifold" (Output HHO Manifold) that Jerry Young made and is similar to the manifold shown above. The single output adapter (pointed out in the photo below) has to match the output hose and is preferably a 3/8" brass barbed adapter.

In the photo below you see a newly designed manifold, that does the same job. We're going to install two of these. They both have six 3/8" barbed adapters at the bottom and another one on top. They are made of acrylic material. The shape is not critical as long as it allows free flow and is completely leak-free.

6-Cell System - As in the DVD

Polypropylene plates on top of each cell, instead of the thin metal top normally provided with the jars. Jerry used 5/16" thick

Polypropylene, and threaded all the hose fittings. That way, they stay strong and completely sealed without glue. (But you can add super glue for extra strength). Young said that the fittings do NOT have to be made out of metal, and you can use plastic ones with no problems.



Another difference in Young's version is that he did not immerse the input (see photo) into the water. Both input and output are

only touching the air above the water. I think the advantage is that it does not create violent bubbling in case of too much air being pushed into the input.

CHAPTER 4
INSTALLATION IN BIG RIG

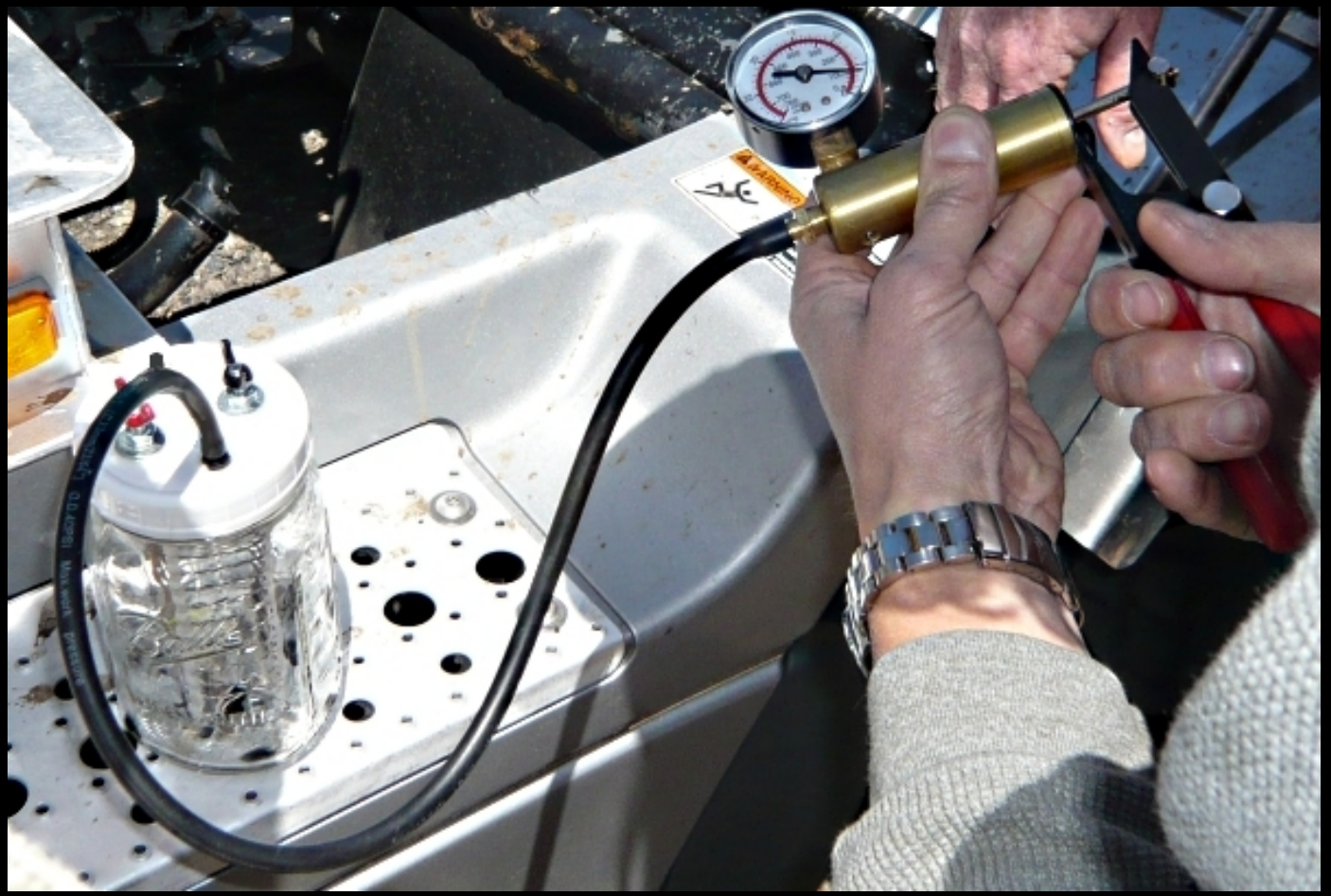
Back to Top

The installation shown below is typical to a 2001 Freightliner. For other types of trucks such as Peterbilt, Kenworth, Volvo, etc., you may have to adapt some of the options as needed.

CHECK FOR LEAKS

Check your cells and manifolds for possible leaks. Visual check is something you can start with, but it definitely wouldn't suffice. The best way to check for leaks is to use the tool shown below; it's actually a handheld vacuum pump called "brake bleeder" that cost under $20 at Harbor Freight Tools.

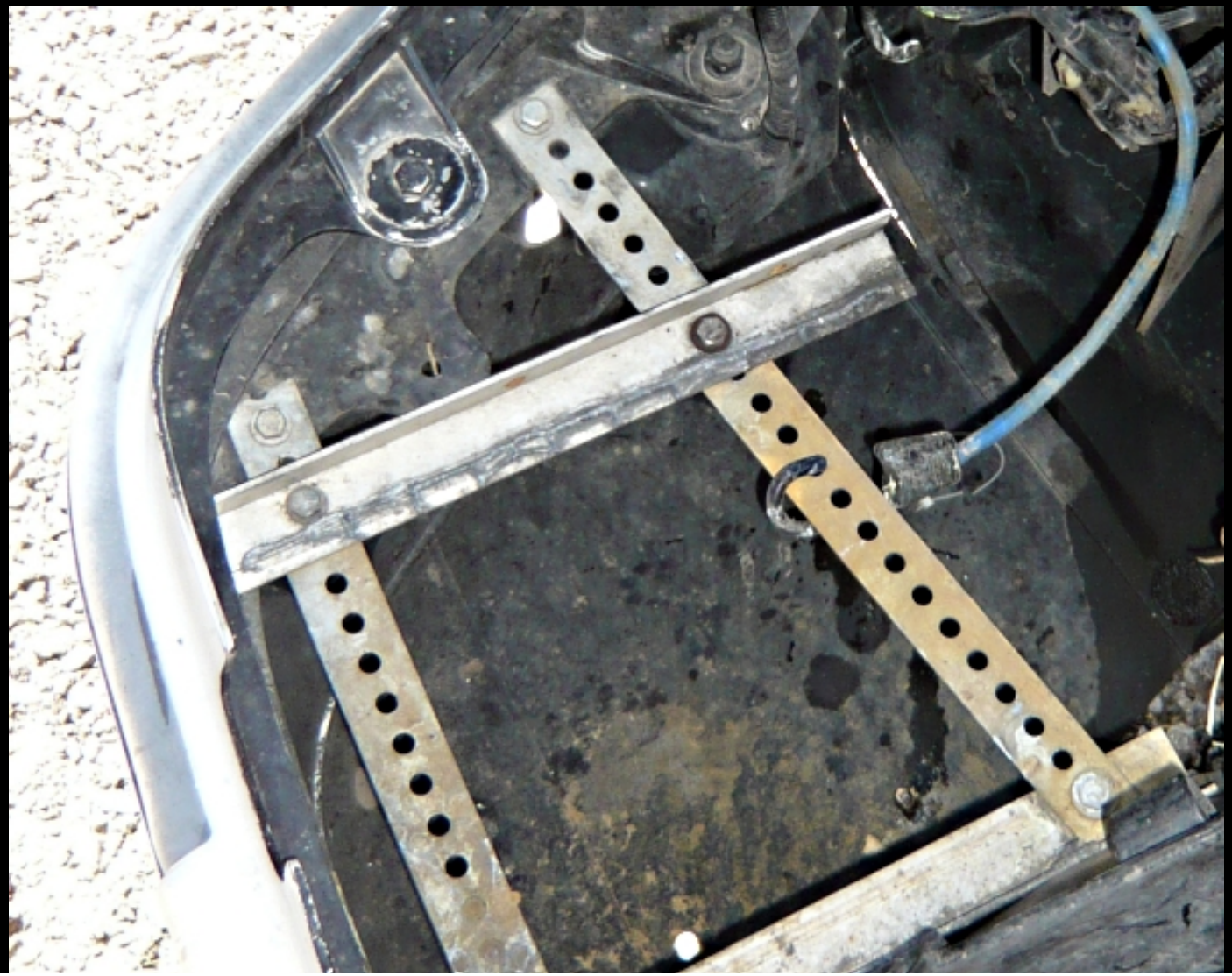
Note that one of the major problems with cells may be a leaking cap. It may be closed too tight, or too loose. Or it may need a gasket. See Interactive Troubleshooter so we don't have to repeat it all.



MOUNTING PLATFORM

In the Freightliner Young used the space behind the front bumper on the driver's side. There is lots of room there. On a Peterbilt you might be locating this assembly on the passenger side. Use materials found in the hardware store to build a supporting platform for the 6-pack cell assembly. The one you see below is made with aluminum angle purchased from Home Depot, and two pieces of pre-drilled steel strip.

Bolt the platform to your truck. In the Freightliner, it is bolted to the inner fender and the lip on the inside of the bumper.

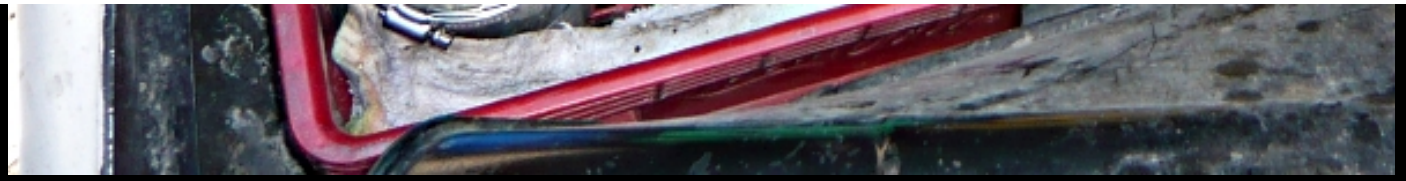


MOUNT THE JARS

Carefully open the lids on the 6 cells. Fill each cell with distilled water or purified water to a level of about 1" from the top of the cell. Add 1 LEVEL teaspoon of baking soda to each cell and mix until it dissolves completely.

Place the 6 cells in a soft drink flat (crate). Position the 6-pack cell assembly on the supporting platform and secure it with a strong bungee cord. Cushion the cells with Styrofoam plates so they don't rattle and bang into each other. (The cells are very durable since they are made of tampered glass, but we should avoid violent vibration as much as possible.)

NOTE: The 6-pack shown below is shown for demonstration purpose. In your installation you should pre-wire the cells on a work bench, for your convenience - make sure the connections are good and strong. Connect the cells in a parallel-series configuration as shown in the DVD set.



SYSTEM ELECTRICAL CONNECTION

Young used 12 Gauge automotive wire, black and red, plus an Inline fuse holder located at an easy to reach place. He uses a 10-amp fuse for the entire system, which means that he's using very little electrical energy to power it. The procedure:

1. Remove your key switch and locate the lug that is on only when the ignition is on. (We don't want a connection that is on when the key is off or the Accessory position is on.)
2. Attach the 12 gage Red wire using spade connector and reassemble the key switch.
3. Run this Red wire thru the firewall.
4. Locate a good ground and attach the 12 gage Black wire.
5. Run the Red and Black wire to the 6-pack cell location. In the Freightliner this runs down the radiator support to the radiator and straight down to the location of the 6-pack.
6. Cut the wire and the vacuum hose to length. Leave some extra length. Put on the eye connectors.
7. About half way down the red wire, cut it and install the fuse holder. **DO NOT INSTALL** the fuse at this time.

PRESSURE SUPPLY FROM THE TRUCK

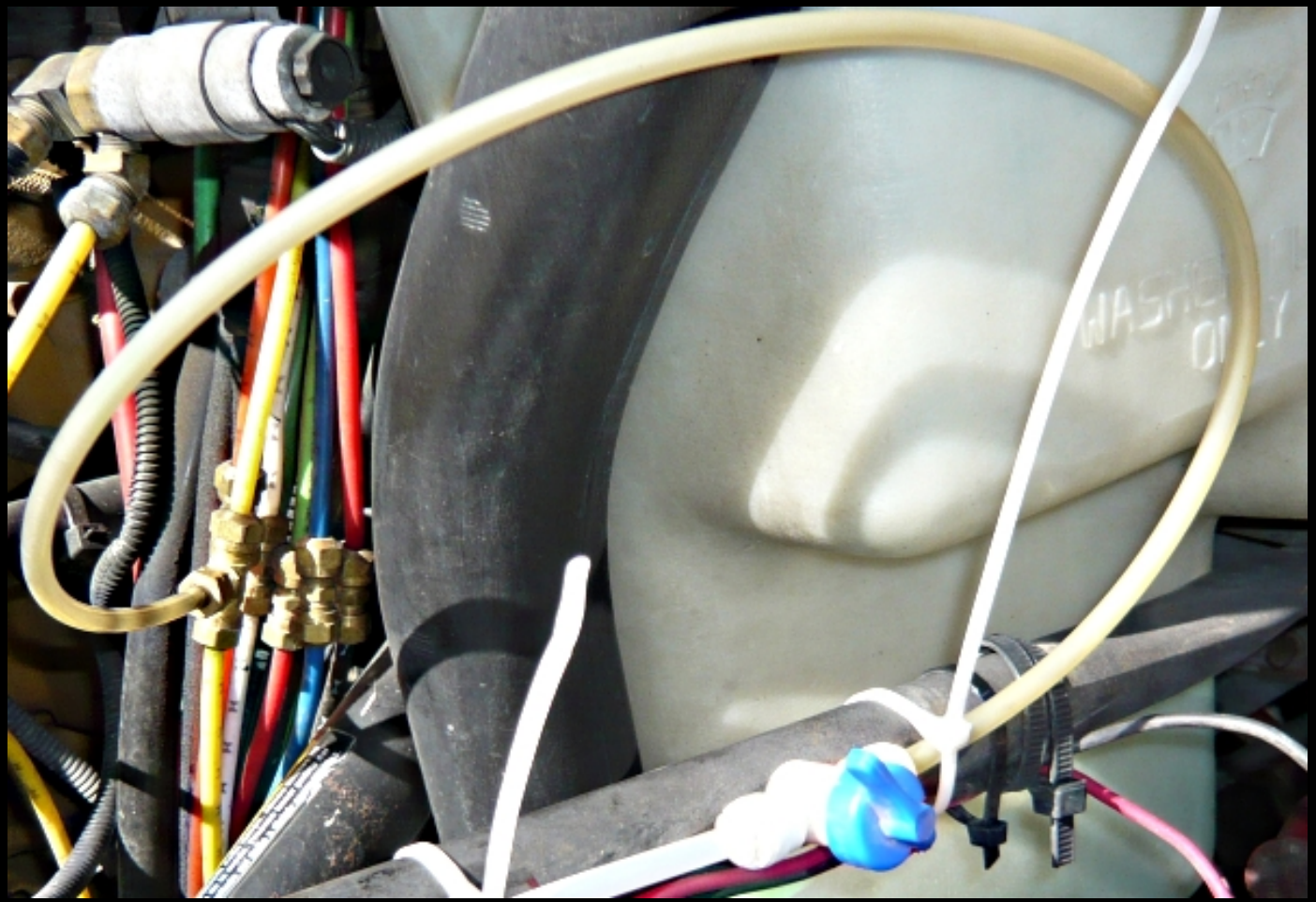
Locate the hard air lines that go up the firewall on the driver's side. There is a yellow one that we are going to use for the input air. Cut the line that you have chosen and install the 1/4" T.

These lines would be used simply because they are nearer. On the Peterbilt you will be using the air line to the passenger seat

(the pressure lines to the passenger's booster seat (under the seat itself).

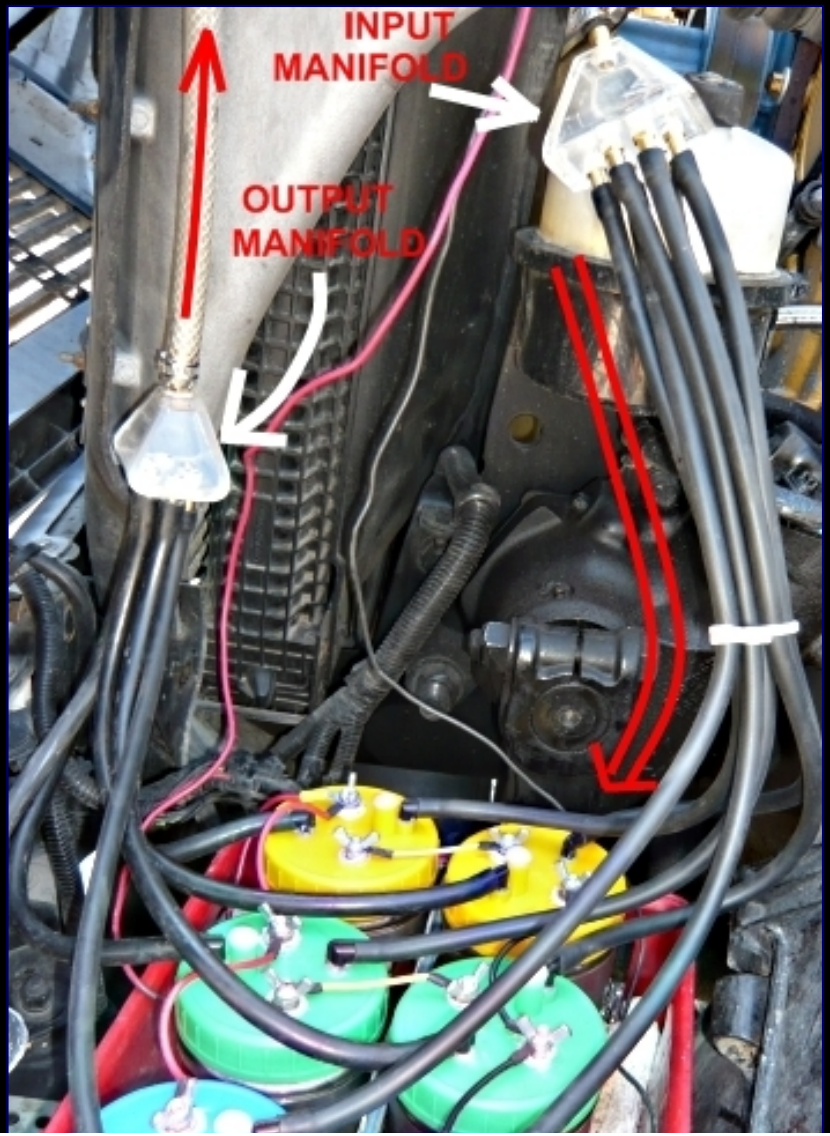
The yellow line shown below is for one of the less critical systems (not brakes etc.) and you simply tap into it using a 1/4" quick-connect T as shown.

Install the pressure regulator (plastic valve) nearby, and use the Polyethylene tubing to connect it to the T on the pressure line. Leave enough slack of tubing, to accommodate for vibrations. A total length of 12 inches is normally enough

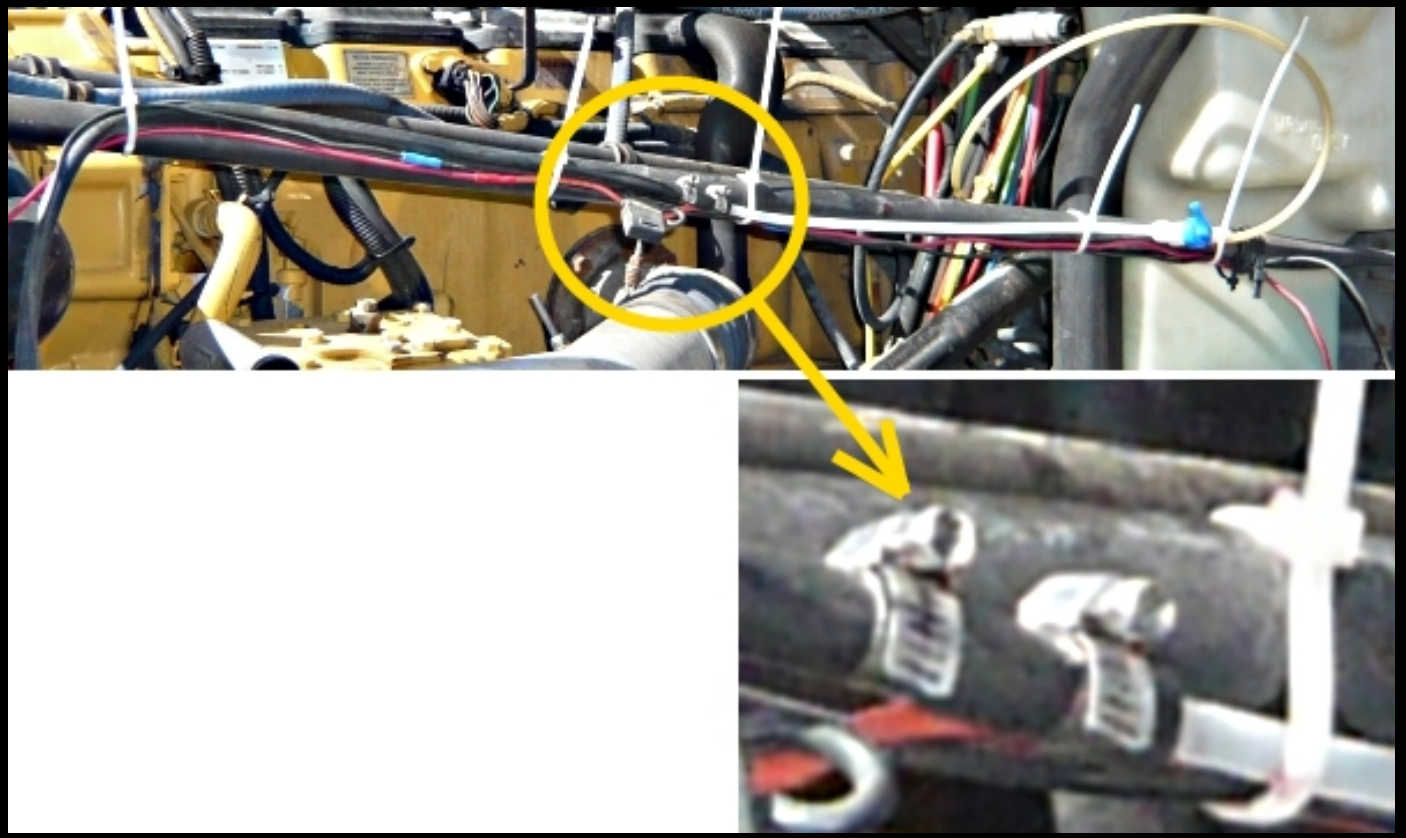


INPUT MANIFOLD

The intake manifold now takes the pressure and distributes it evenly to all jars. Connect 6 pieces of standard vacuum hoses, about 2 feet each, to one of the manifolds. Install it near the jars and connect each of its outputs to a jar. Connect its input to the open side of the pressure regulator (plastic valve) and secure the lines to the truck as shown in the photos below:



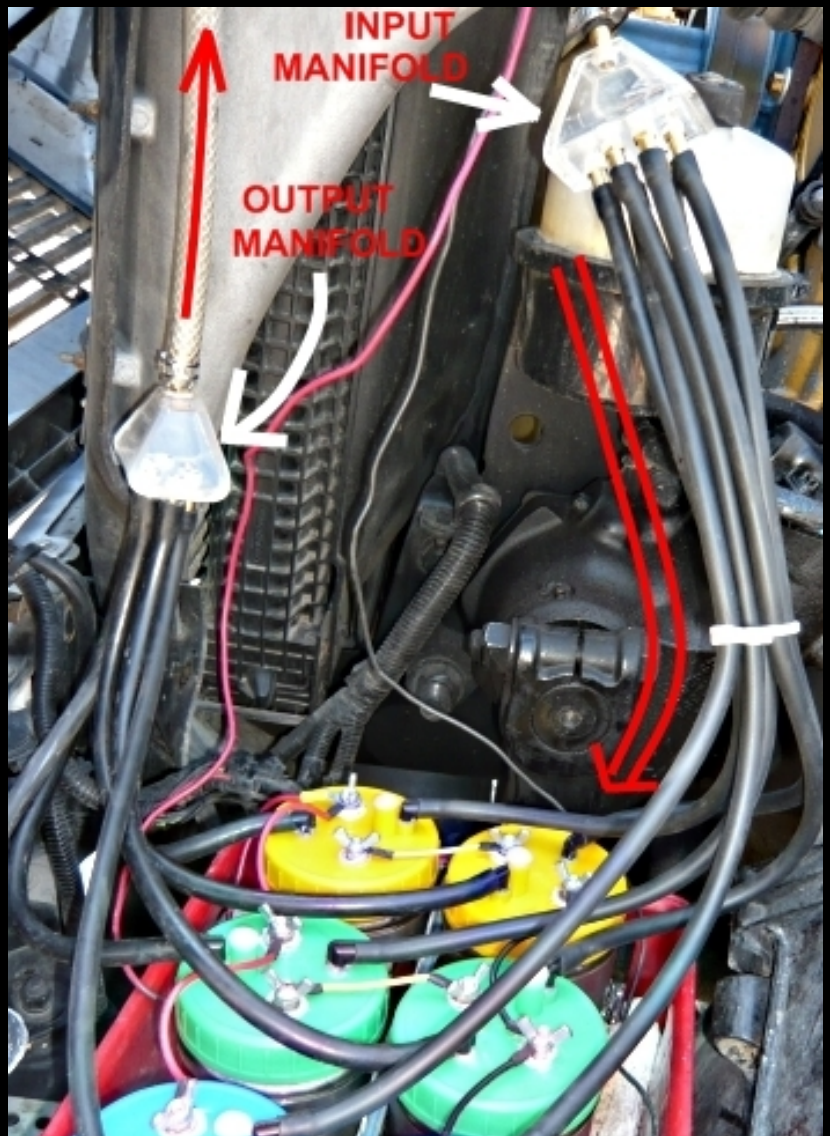
Adapt the Polyethylene tubing from the pressure regulator valve to the vacuum line, and use two metal clamps to prevent pressure leaks:



ROUTING THE HYDROGEN TO THE ENGINE

The output manifold collects the hydrogen from all jars and has one output that needs to now be fed to the engine. Connect 6 pieces of standard vacuum hoses, about 2 feet each, to the the remaining manifold. Install it near the jars and connect each of its inputs to a jar.

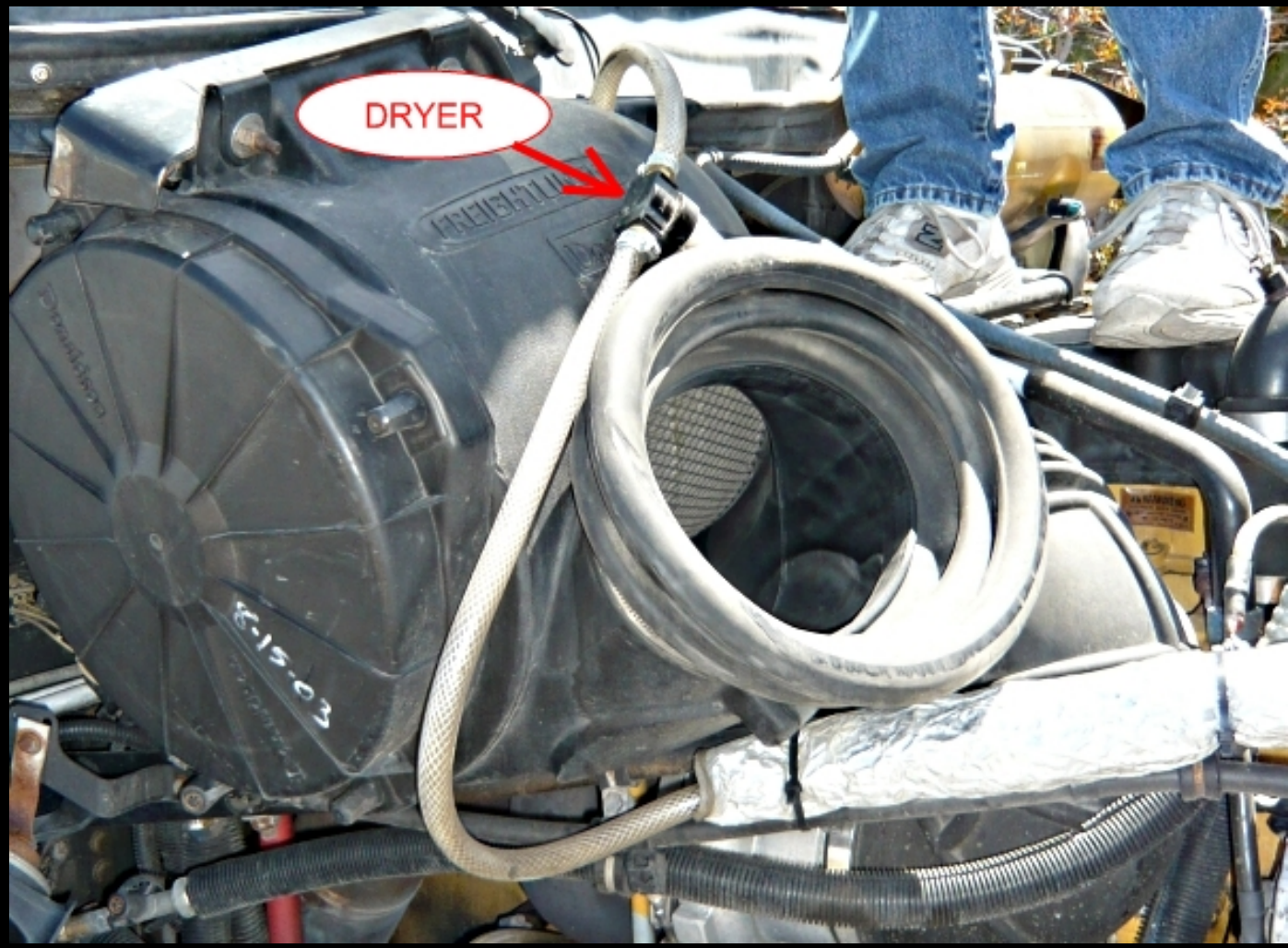
Connect its output to the braided 3/8" hose and secure with a clamp. Start routing it upwards next to the intercooler.



Run the hose on top of the intercooler as shown:

Now run the hose back toward the air filter assembly. The portion of the hose shown below is heat-protected by a rubber-foil sheet, due to the proximity to the turbo charger and alternator located just under this section.

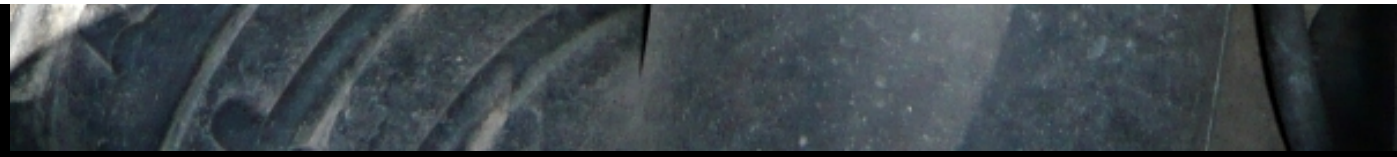
Connect the hose to the inlet of the dryer/filter, and place it (loose) at an easy-to-reach location as shown.



Continue the hose from the dryer/filter's to the 6" intake hose before the turbo (shown at the bottom of the next photo).

Install a 3/8" barbed fitting to connect the hose to. You can make the hole in the output rim of the air filter box - make sure no shavings fall into the turbo!

It is better to take off the 6" hose off the engine and drill into that. Drill a hole in the flat section of this hose. Install the 3/8" barbed fitting using epoxy. Let it harden and reinstall the hose.



REGULATING THE AIR PRESSURE

1. When the installation is done, **first** perform a visual check to see that all components are in place and properly installed.
2. Install the fuse into the fuse holder.
3. Close the Pressure Regulator (valve) to OFF position.
4. Now turn on the ignition key to IGINITION ON position.
5. Inspect each of the cells. You should see a milky substance and bubbles for the elements in all of the cells. This means they are generating hydrogen and oxygen.
6. Start the engine, and wait at least 90 seconds for pressure to build up.
7. Now adjust the air pressure: turn the inline regulator valve about ¼ of the way open. This should produce a mild bubbling in each cell. If it produces big bubbles then you have too much air. In Jerry's experience only a little bit of air is required (it's about 1.5-2 PSI but you don't have to measure it with a gauge).

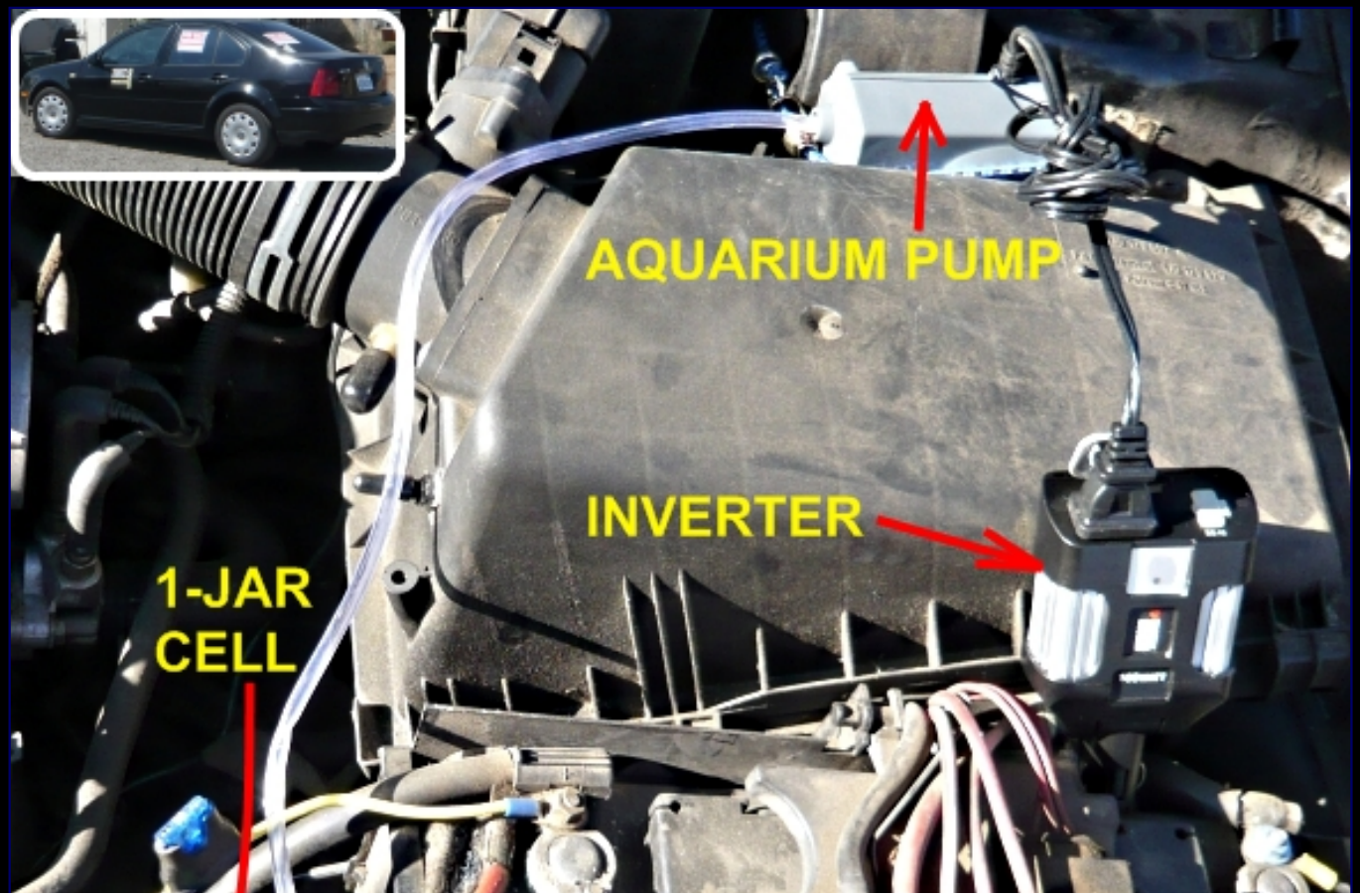
That's it, the installation is done. If you run into problem or suspect that anything is malfunctioning, please refer to the Interactive

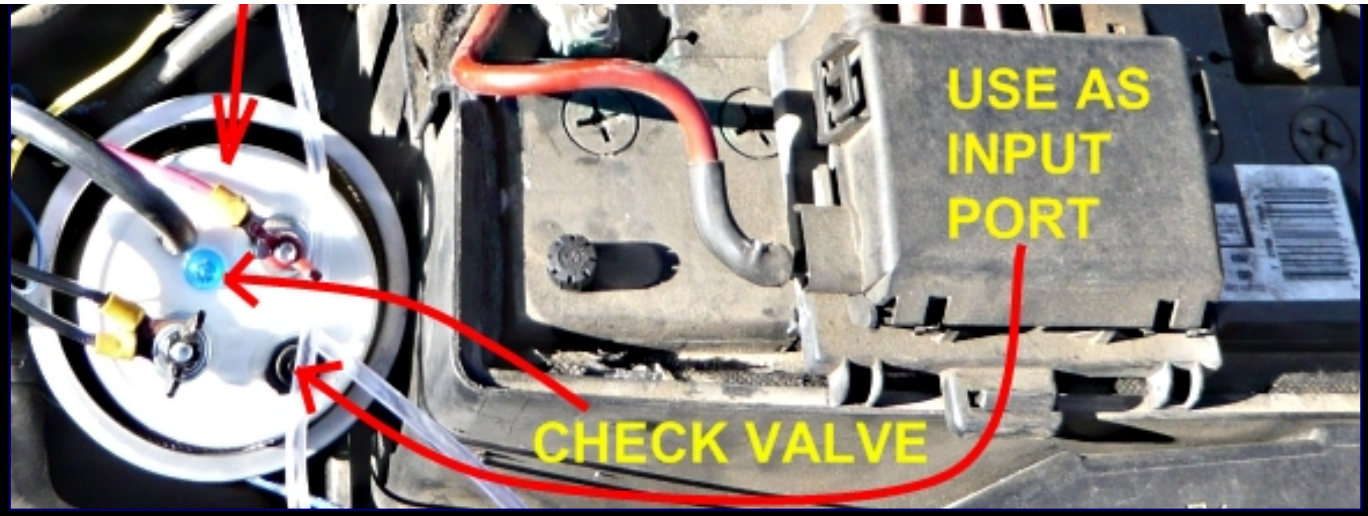
Troubleshooter.

CHAPTER 5
INSTALLATION IN DIESEL CAR

Back to Top

The system shown below is installed in a Volkswagen Jetta, turbo-diesel 1.9 liter, just like mine.





PUMP

Some people have been asking me about the pump. Well, it's nothing but an aquarium pump from the pet store or department store. The smallest and cheapest you can find is probably more than enough in strength, and is easy to replace if it ever stops working (you'll know by touching it and feeling its vibration).

The pump should cost between $5-$7 and is supplied with 110 volts (220 volts if your pump needs 220) from a SMALL inverter. The inverter of the type shown cost only $15 and can supply 70 Watts (or 100 Watts in some cases), both of which are more than enough power for the pump, which I think only needs 5 watts.

The output of the pump is connected using a 1/4" vinyl to the "input" of the jar. In this case, an input port was created by removing the cap of the adjustable bubbler and inserting the hose into there. (Secure with super glue if it's not stable.)

VALVE

IMPORTANT NOTE: The blue check valve shown in the photo (Pressure Release Valve) may be provided with some hydrogen generators that you may have purchased. **It must be capped (blocked)** and the reason is that it is designed for gasoline cars, where the vacuum from the gasoline engine would keep this valve always closed (only allowing gas to escape in case of loss of vacuum due to hose blockage.) In the die4sel, and especially when inducing air by force into the jar, this may create an easy escape for the hydrogen and needs therefore to be blocked. If you're building from scratch, don't include it.

DRYER/FILTER UNIT

The owner of this car added an air dryer/filter on the hydrogen OUTPUT HOSE (not shown but is similar to the unit shown above, obtained from Harbor Freight Tools).

RESULTS

We installed the system shown with Jerry Young's help, and the car owner reports good mileage with this installation. The owner is Jeroen from HHOxygen and his results are: on the highway at California speed limit, his letta used to get 36 MPG. Now with a single Water4Gas device, his mileage for the same driving conditions went up to 55 MPG. **That's 52.8% increase in fuel economy.**

For your information: recently he tested again and reported similar results without the pump.

CHAPTER 6
POST-INSTALLATION

Back to Top

Maintenance

The following maintenance instructions have been written by Jerry Young according to his experience with the Freightliner and other big rig trucks:

This system works on a solution of 1 to 2 teaspoons of baking soda and either distilled water or purified/filtered water. I use distilled water. The best place that I've found is Albertson's ($.99 a gallon). I've found that the price varies between $.97 and $1.50 a gallon.

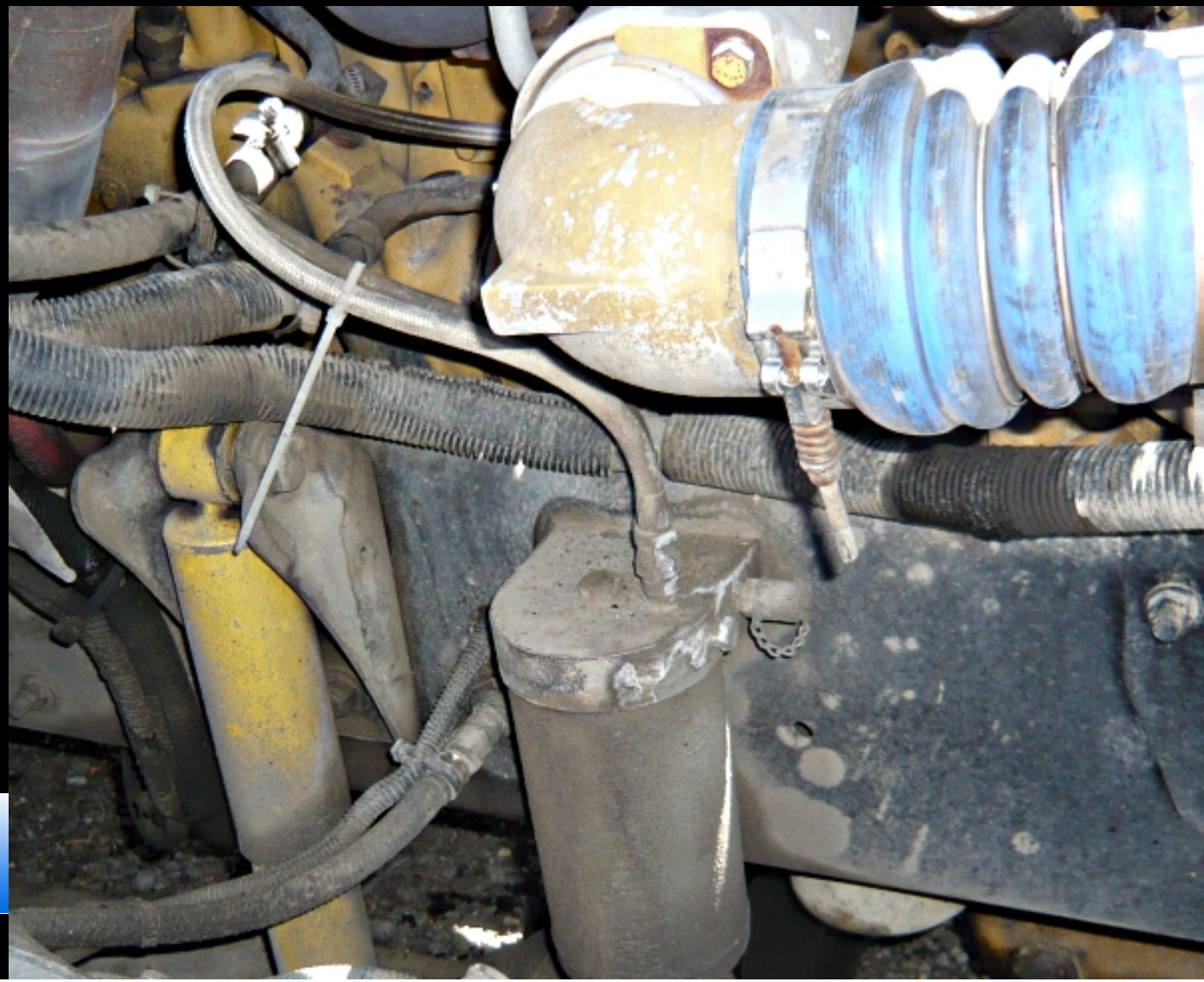
It is important that you check the water level about every 4 hours of operation **(engine running)** and refill to the **black line** [about 1" from the very top of the cell]. **IMPORTANT--DO NOT LET THE WATER LEVEL GET BELOW HALF OF THE BOTTLE.** The system will only make heat and you will take the chance of breaking the + wire and then you will have to rewind it or neutralizing the baking soda. This will not allow Hydrogen to be made and you will have to recharge the bottles. Checking and refilling only takes about 15 minutes and you should be doing a walk around anyway about every 4

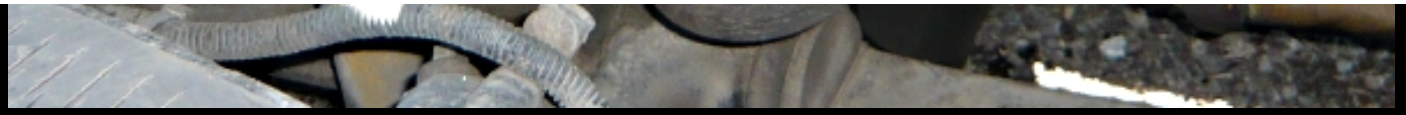
hours. Good exercise!

Also you need to do some maintenance to the system about every 3 weeks. The water will turn brown. This is okay, it is supposed to. But about every 3 weeks you need to take the cells apart, inspect the wires, and clean the jars and the wires. I use a soft bottle brush and a tooth brush on the wires. Then rinse the jar and the electrode wires, put a level teaspoon of baking soda in each cell and refill with distilled water to the red line. Put it back together and your are ready to go again.

Oil Treatment

The cylinder shown at the bottom center of the photo below is Jerry Young's by-pass filter. He reports excellent results. By results I mean that the oil is being kept very clean, as proven by the frequent lab tests he's performing. Not only he doesn't need to change oil (only add a little fresh oil to it) but also the constantly high cleanliness and viscosity of the oil keeps his engine from breaking down too often.





Using Your System On The Road

Mr. Young takes the same approach as I when it comes to driving habits - you got to slow down and drive gently if you want to see significant gains. The gains ARE coming from the hydrogen, but we got to help it out by driving moderately and gently. Doing so, you will save effort, as well as cash. By stopping less for gas and less for breakdowns, you'll be saving TIME, too.

Remember, it takes time for the computer to adapt to the new conditions, so let it learn your driving habits too.

From Jerry Young:

> We make no promises as to the performance for this system or what it will do for your truck as there are many variables and factors that govern your results. Speed, terrain, weather, wind, and the weight of your loads. All of these will affect performance, but the number one factor is a human one: **YOUR FOOT!!** To maximize your results; performance and maintenance, you will have to consider how you drive.
>
> In order to maximize your fuel economy you can't drive 75 miles an hour. You will have to play with your speed and find the **"SWEET SPOT."** I have found with my rig that on the freeway 58 to 60 mph in California foothill and mountains and 62 mph everywhere

else are the speeds that I travel to get between 1 and 1.5 mpg better mileage with a loaded truck.

So remember that for the environment and fuel savings, **"SLOW DOWN!!"**--You'll still get there on time. It will put hard dollars back in your pocket with the money that you aren't spending on extra fuel and maintenance.

After installation you will find right away that you have more torque horsepower. I estimated about +/-30%. Your motor will run cooler and cleaner; no more black stack from wasted fuel. It will also be noticeably quieter. It will take about 3 to 5 tanks of fuel before you start to realize a real change in you fuel mileage. This is because the Hydrogen/Oxygen you are injecting is going to clean out your engine's deposits. It will clean out the carbon build-up in your exhaust system too. So give it a little time to do this and you will be surprised. All of a sudden there will be a change, a good change. And as the system ages and you modify how you drive **(speed)** the MPG will get better. All of this with water. Amazing....

CHAPTER 7
WHERE TO GET READY-MADE SYSTEMS

Back to Top

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Phone: (818) 625-3456

Also check out systems, kits and parts from many independent vendors at

www.Water4Gas.com

Click to order DVD's from Water4GasDVD.com

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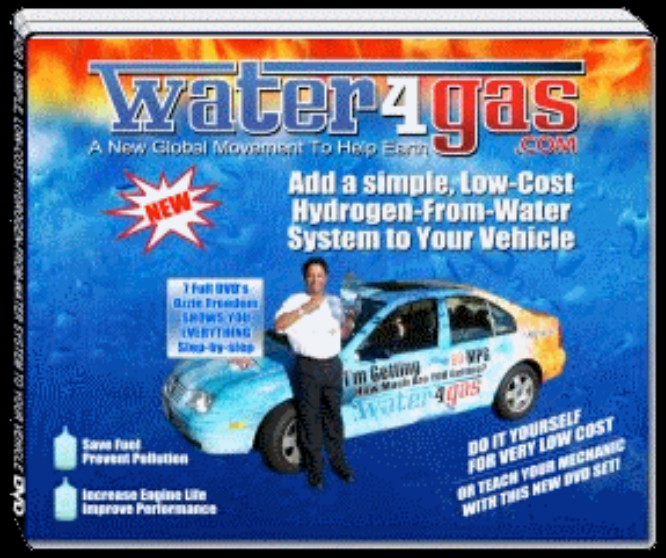

Back to Top