



NEO HYDRO

Generator Systems

Installation Manual



Parts List

Hydrogen Generator Dry Cell
Transfer Unit (Hydrogen Tank)
Transfer Unit (Oxygen Tank)
Electrical Cables and Connections
Electrical Relay 12V - 30 A
High Pressure Vacuum Tank
Clear PVC Transfer Hose
Air Intake Connection
KOH
Antifoam liquid
Installation Manual

SAFETY PRECAUTIONS

IMPORTANT INFORMATION

Read and follow these safety precautions to avoid hazards. Incorrectly installing or using the Neo Hydro Generator System may result in serious damage to you and/or your vehicle. It should take approximately 2-5 hours to install this unit so ensure you have enough time to complete the installation. Be sure to work outside, no smoking at any time during the installation; make sure the engine is off and very importantly, NOT HOT.

SAFETY EQUIPMENT

Be sure to wear goggles and rubber gloves and only use professional tools; use common sense and general safety procedures used for any work carried out on automotive installations and maintenance.

IF YOU'RE NOT SURE, ASK!

Your Neo Hydro Generator System does not store hydrogen, subsequently there is no fire hazard when installed properly. However water electrolysis generates Hydrogen - flammable gas - , which means... NEVER light a match or smoke near or in front of the Generators output - the generator could take fire! Be careful with the generator working when the car is not moving. A small amount of hydrogen can accumulate in the air intake of the motor and could explode if you smoke or use an open flame near it.

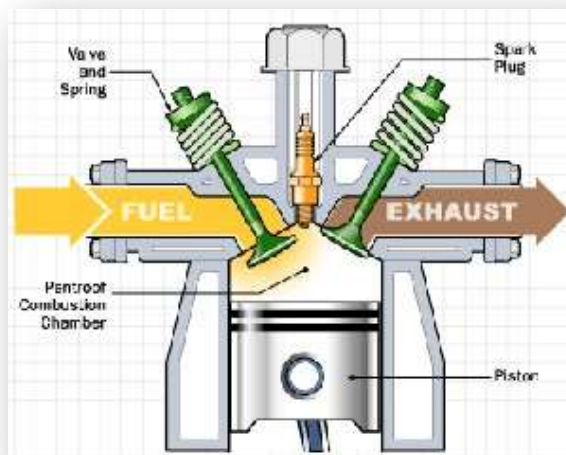
ENJOY YOUR NEW SYSTEM

Be safe and enjoy your new Neo Hydro Generator System, read and understand these instructions before and during the installation and you will benefit from your new system for years to come.

CARS WITH ELECTRONIC FUEL INJECTION

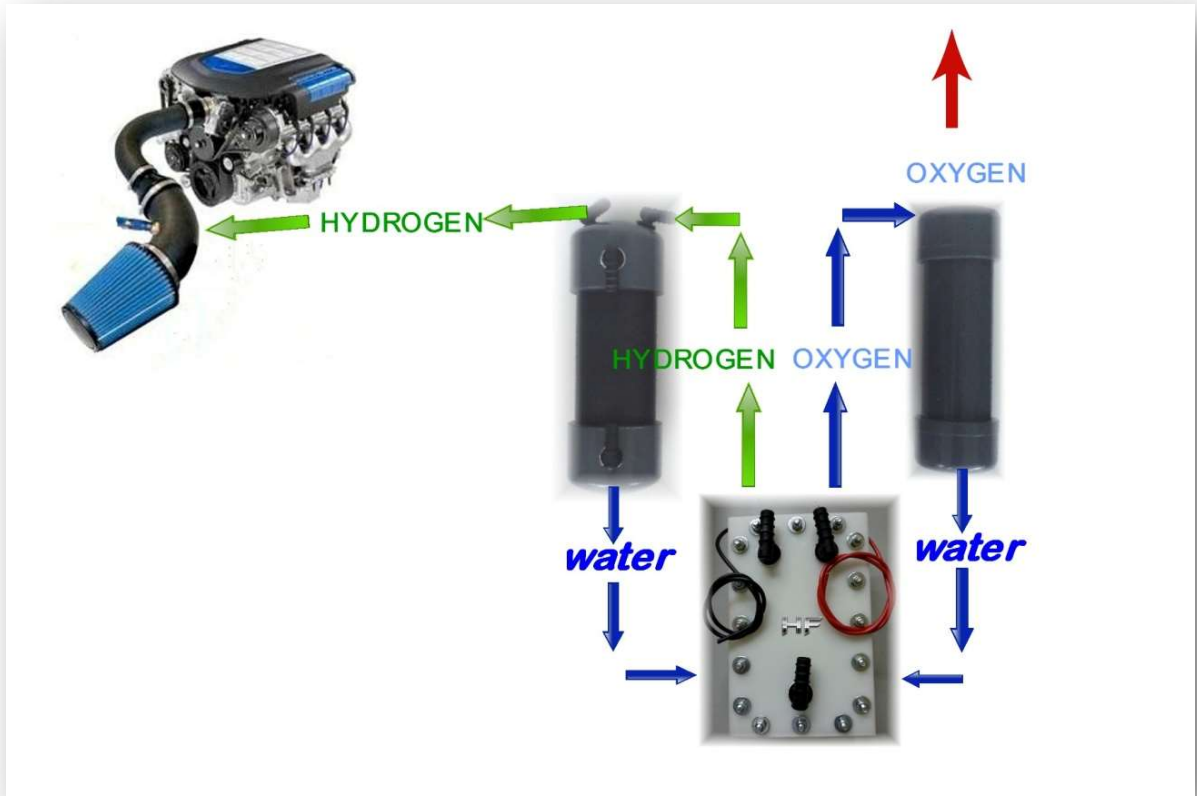
ELECTRONIC CONTROL UNIT (ECU)

An Electronic Control Unit (ECU) controls the internal combustion operation of the engine. The simplest ECUs only controls the quantity of fuel injected into each cylinder per engine cycle. The more advanced ECUs also control the



ignition timing, variable valve timing (VVT), the level of boost maintained by the turbocharger, and other engine peripherals. ECUs determine the quantity of fuel, ignition timing, and other parameters by monitoring the engine through sensors. These include normally oxygen sensors (or lambda sensors). Before ECUs, most engine parameters were fixed. A carburetor or injector pump determined the quantity of fuel per cylinder per engine cycle. For an engine with fuel injection, an ECU will determine the quantity of fuel to inject based on a number of parameters. For example: If the accelerator pedal is pressed further down, this will open the throttle body and allow more air to be pulled into the engine. The ECU will inject more fuel according to how much air is passing into the engine. When adding a HH gas to the engine, you will see immediate improvements in fuel consumption.

LET'S GET FAMILIAR WITH YOUR NEO HYDRO GENERATOR



The HH Neo Hydro Generator System consists of three parts, the Transfer Units, which is where you replenish the water for the system. From there it transfers the water to the Hydrogen Generator Dry Cell. The Dry Cell is the heart of the system and is where all the water is split into hydrogen and oxygen (HH-O). These separate gases are sent back to the Transfer Units (hydrogen and oxygen tanks) and, from there, hydrogen sent on to the engine's combustion chamber and the oxygen released to the atmosphere.

INSTALLATION OF THE DIFFERENT COMPONENTS

POSITIONING THE GENERATOR

You will need to find a place in the engine compartment to mount your Neo Hydro Generator System. It **MUST BE MOUNTED UPRIGHT AND LEVEL** to the ground with the tube fittings facing directly upwards or it will not work properly and you may have an unstable amp draw that could cause the fuse to overload. It should be mounted and secured in such a manner as to ensure it does not move or bounce around while the vehicle is in motion, even over rough terrain. Securing it with the cable ties should be sufficient to secure it to the engine chassis and be safe. This will allow for ease of repositioning if required, you may wish to have a permanent bracket made at a later stage if you so desire.

POSITIONING THE TRANSFER UNITS

Be sure to install your Neo Hydro Generator System so that it can easily be accessed and can be conveniently cleaned, serviced or inspected from time to time. Make sure that The Transfer Units are installed with the same care as described for the generator above. The Transfer Units needs to be higher than your Hydrogen Generator to accomplish the gravity head needed for the water to flow into the generator.

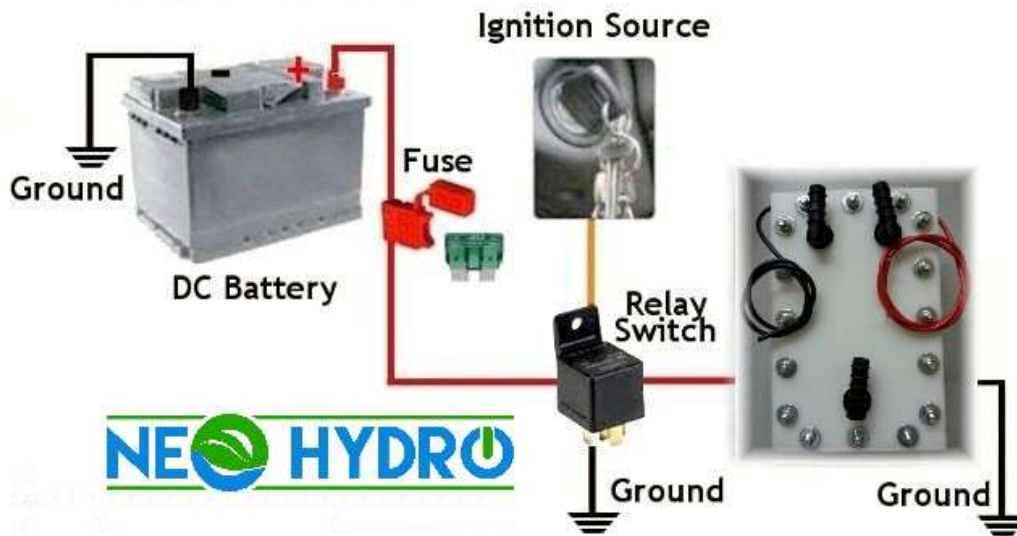
OTHER POSITIONING CONSIDERATIONS

Install your Neo Hydro Generator System as far away from the heat of your engine as it is possible. Locate the coolest available place in the engine area, the most common place for the system is in the space between the front grill and the radiator as it is closest to the air entering the engine compartment and often the largest space available. There are a combination of heating factors at work and can cause a situation called Thermal Runaway, where an increase in ambient temperature combined with excess electrolyte mix leads to a overheating in the generator. For this reason, you may want to install a current regulator (PWM) to keep a stable current draw in Hydrogen Generator. Contact us for more information.

HOW TO CONNECT TO THE POWER SOURCE

For your Neo Hydro Generator System to be installed you will need to connect the system to the vehicles onboard 12/24 volt power supply (battery). Please refer to the illustration below for typical wiring configuration for powering the Hydro Fuel Generator System.

System Electrics

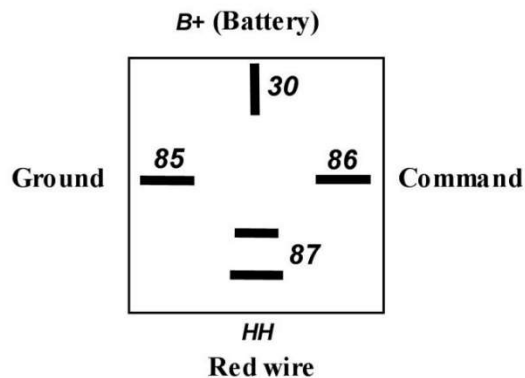


IDENTIFYING THE IGNITION SOURCE

Identify a point in your vehicle's electrical system which has 12/24 Volts (positive) present **ONLY WHEN THE ENGINE IS IN THE RUNNING** - Circuit controlled by the ignition key (position 2). Connect to the Relay Switch position 85. This circuit will control the HH production.

IDENTIFYING THE GENERATOR CONNECTIONS

They should be connected to the Relay Switch position 87 marked on the Relay. Connect the black terminal of the Generator to a good ground source near to it.



HOW TO CONNECT TO THE AIR INTAKE

Now it's time to connect the HH gas output line to your vehicle (See the diagram below).

Firstly, the system is operated by vacuum suction from your vehicle's air intake which takes the HH directly to the combustion chamber mixing it with the air/fuel. Now that you have secured the units and connected the electrics you can now connect the hose to the air intake manifold hose. You will need to remove the air duct, to ensure you do not leave any residue from the drilling you are about to do. Drill a hole closest to the intake manifold itself, if you have a turbo system, drill the hole just before the turbo to ensure maximum suction. Clean out any drill shavings, insert the high pressure fitting using Goop Glue and tighten. Replace the air duct, connect the high pressure hose, now on to filling the units.



FINAL SETUP

ELECTROLYTE CONCENTRATION

The standard Transfer Units is a 2.0 Liter unit which will provide you with approximately about 2000 kilometers of driving. Be sure to make your mix with that in mind. Our Generator is made to run cooler; therefore, you might need more or less electrolyte to bring your cell up to the operating standard. Use a concentration (weight/weight) of 3 to 5% of electrolyte approximately (2 teaspoons) for the mixture of distilled water and electrolyte. The best electrolyte is KOH (Potassium hydroxide). Be sure to use an amp meter to view the amp draw of the Generator. Depending on the quality of the electrolyte and the power supply (12 or 24 volts) you may have to increase or reduce the concentration. Once you have your mixture ready, pour it into the

top of the Transfer Unit, up to the water level line. Try to only fill your unit about 75% full, this is not imperative but will allow the HH produced to enter the gap left in the Transfer Unit. While you are filling the unit, you should be able to see the water running down to your Generator. If you don't see any water going down the tube, this could mean you don't have the Transfer Unit high enough above your Generator.

Always try to install your Generator at the lowest level on your vehicle at least 10 centimeters or lower. The Hydrogen System should be bled of all air before operating or unstable amp draw will occur and may cause main power fuse to blow. Do not use your mouth to remove the air out of the lines.

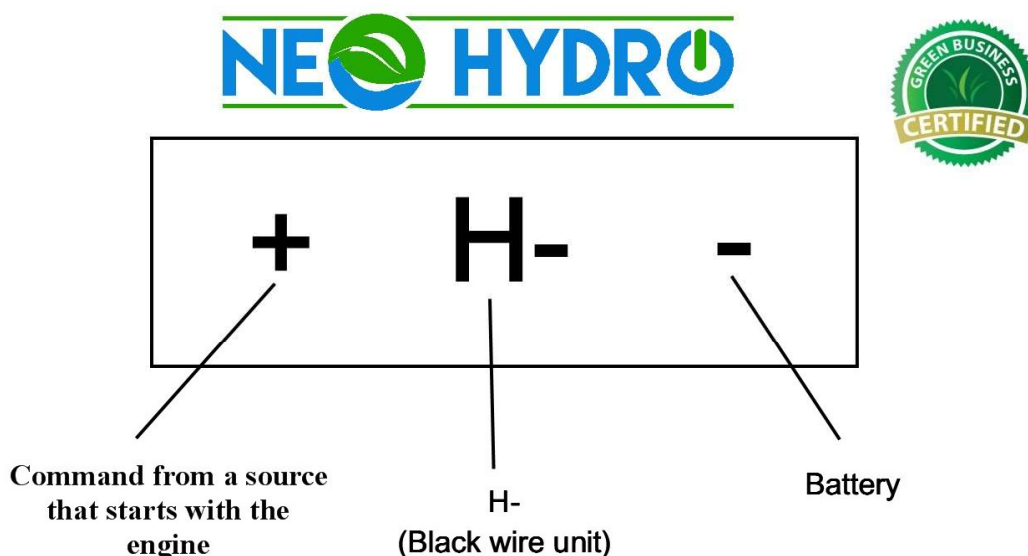
THERMAL RUNAWAY - PULSE-WIDTH MODULATOR (PWM)

There are a combination of heating factors at work and can cause a situation called Thermal Runaway, where an increase in ambient temperature combined with excess electrolyte mix leads to a overheating in the generator. For this reason, you may want to install a current regulator (PWM) to keep a stable current draw in the hydrogen generator. Contact us for more information. When applying a direct current to the HH generator, a high resistance will be present in the water (electrolyte mixture). High resistance generates heat causing the water to heat up. As the temperature rises, the resistance in the water goes down, allowing more current/amps to pass through the fuel cell. By the end of the day, the current can easily be three times the amount than what you started with at the beginning of the day, possibly over heating the fuel cell. The solution is to find the correct electrolyte concentration for an entire day of driving. If you start out weak, then production is very slow and you lose the benefits until much later in the day. If you start out strong enough to see benefits right away, by the end of the day, you are blowing fuses or greatly stressing your alternator.

We can easily fix this problem using pulse modulation (pwm) to reduce the current load demanded by an overheated fuel cell. For example: Cycling the HH Cell - ON and OFF. Controlling the ratio of ON: OFF would greatly enhance the ability of limiting current demanded by the cell.



Pulse-Width Modulation (PWM) is a method of relaying information on a series of pulses. The data that is being transmitted is timing duration related to the width of the pulses to control the power duration (ON) being sent to a load. In other words, PWM is a modulation technique of switching the power supplied to the fuel cell ON and OFF very rapidly. DC source voltage is converted to a square-wave signal, alternating between fully ON and fully OFF, giving the fuel cell a series of power "kicks", effectively maintaining potential while limiting current to prevent overheating.



TEST RUN AND CHECKING YOUR WORK

Start by checking all your connections. Make sure your amp meter and inline fuse have been installed. Now start your vehicle. While it's running, watch for bubbling action inside the PVC crystal tubing coming from the Generator and back to the Transfer Units. Now it's time to check how many amps your Generator is pulling. This Generator was made to run up to 20 amps without overheating. Make sure that is steady, which will only take a couple of minutes. If you have done everything right and you have a diesel car, within a short time, you will notice that the engine starts to sound different. It will sound smoother and quieter. Your RPM's may be unstable for a couple of seconds. This is normal, the HH is starting to change the combustion cycle and the engine is now adjusting to the addition of the mixture. Your RPM's should now normalize after a couple of minutes.

FINAL CONSIDERATIONS AND MAINTENANCE

Congratulations! Your Neo Hydro Generator System is now producing Hydrogen Gas!

Every month or every 1000 km you should check the protection fuse (you should check it frequently in the first week after installation!), check the water level inside the transfer unit and generator. Fill it up with the correct proportion of electrolyte.

Enjoy your “new” car,

Neo Hydro

