

NATIONAL VAPOR INDUSTRIES

1811 Park Street, Livermore, Ca 94551 USA
925-373-9692

Phone: 925-980-7341 Fax:

INSTALLATION PROCEDURES For NVI HYDROGEN CELL

This system should be installed by an authorized installer or by a person totally versed in automotive circuitry, otherwise, damage to the components and/or vehicle can occur.

The Hydrogen Cell circuit should be connected to a 12 volt 30 amp circuit at the Ignition Switch or a suitable source that is activated and deactivated when the engine is turned on and off. This prevents the Hydrogen Cell from operating while the engine is turned off as a safety precaution. For safety reasons, all unsupplied wiring should have a 30 amp automotive rating.

UNIT PLACEMENT and MOUNTING

1. The most common place for mounting the H₂ Generator Canister Assembly is under the hood, however, alternate locations are acceptable. Unit must be mounted in an upright position with the Hydrogen outlet below the intake of the air filter connection source with appropriate bottom support or proper strapping.
2. (See Figure 1) One end of the hydrogen supply hose is to be attached to the WHITE ½" barbed "Straight" fitting on the top of the H₂ Generator unit and the other end of the hydrogen supply hose should be attached to the air intake system, after the **MAF** (Mass Air Flow) Sensor and before the Throttle Plate using supplied ½" barbed "L" fitting.

NOTE: IT IS RECOMMENDED THAT AUTOMOTIVE RATED FUEL LINE HOSE BE USED. IT CAN BE PURCHASED AT MOST AUTO PARTS DEALERS. ONE RECOMMENDED TYPE IS:

GOODYEAR EP SAE 30R9

CARB APPROVED (C-U-06-011)

(OTHER EQUIVELANTS ARE ACCEPTABLE)

WARNING: DO NOT TAP HOSE FITTING HOLES IN AIR INTAKE PARTS WHILE STILL ATTACHED TO ENGINE. THE AIR INTAKE ENGINE AIR SUPPLY SYSTEM

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MUST BE REMOVED TO PREVENT SHAVINGS AND OTHER PARTICLES FROM ENTERING THE ENGINE -- POSSIBLE ENGINE DAMAGE COULD OCCUR

3. The Air Resources Board **E. O. No. Label** supplied with the system must be placed on or near the H₂ Generator. This is a requirement for passing Smog Check inspection.

SYSTEM WIRING

(Refer to drawing 101035-System Wiring Diagram-with Relay)

1. **For safety reasons, be sure ignition switch is "OFF" and battery is disconnected.**
2. Wire the Ammeter Panel "HOT" wire (Inline 25 amp fuse) to supplied 30 amp relay, terminal #30.
3. The Ammeter Panel "GROUND" wire should be attached to a suitable ground source under the dashboard or other suitable location.
4. Connect the Ammeter Panel (**RED**) "GENERATOR" wire to the (**RED**) "GENERATOR" wire from the H₂ Generator canister.
5. Connect the Ammeter Panel "SENSOR" wire to the "SENSOR" on the H₂ Generator
6. Wire 30 amp relay terminal #87 to Positive battery terminal.
7. Wire 30 amp relay terminal # 86 to ground.
8. Wire 30 amp relay terminal #85 to "switched" 12 volt source (i.e., fuel pump). "Switched" 12 volt source refers to power that is "ON" when engine is running and "OFF" when engine is turned off.

INSTALLATION NOTES

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1. There should be three wires leaving the vehicle cab from the Ammeter Panel through a 1/4" rubber grommited hole at the bulkhead. (SENSOR, GENERATOR and HOT wires)
2. This hole must drilled away from any exhaust manifold location to prevent possibly overheating wires. If required, a variety of commercially available heatsink materials can be used.

SYSTEM CHARGING AND STARTUP

After installation of all wiring, supplied air filter, H₂ Generator canister and supply hoses, the system must be charged.

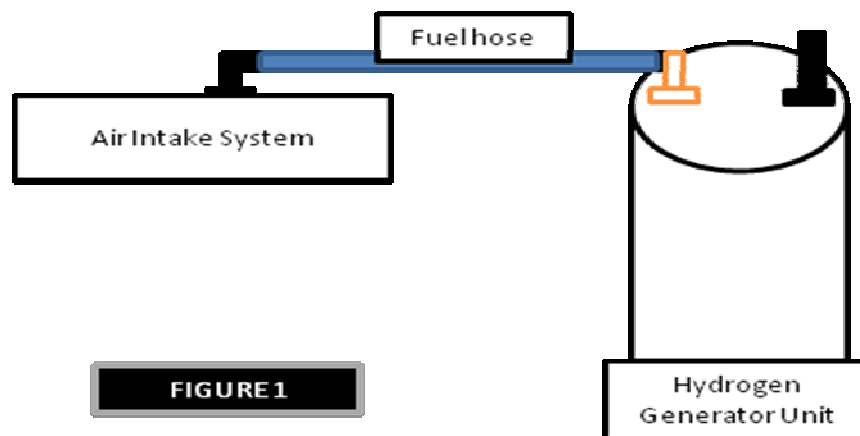
1. At the H₂ Generator unit, remove FILLER CAP on top of unit. Fill canister with approximately "**3 oz**" of "**S. PELLEGRINO SPARKLING NATURAL MINERAL WATER**" AND approximately 5 cups of "**AQUAFINA PURIFIED DRINKING WATER**".
2. Reconnect the vehicle battery and turn ignition "ON" and turn power switch at Ammeter Panel "ON".
3. With someone to assist, slowly fill the canister with AQUAFINA water until the "GREEN" LED on the Ammeter Panel starts to glow. At this point, the canister needs only an additional 1 cup of AQUAFINA to complete the filling process. "**DO NOT OVER FILL THE CANISTER**"
4. Turn the Ammeter Panel switch to "OFF" and start the engine. Turn the Ammeter Panel switch to "ON" and the ammeter should read between 3 – 7 amps.
5. As a safety measure, "Never Operate the H₂ Generator without the Engine Running".
6. After the initial filling with AQUAFINA water the canister should be topped off periodically with AQUAFINA water. Ideal operating range is 4 to 10 amps.

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7. **Caution:** if you add too much water, the system might need drained off (using drain cap at bottom-side of canister unit) until the level is just visible approximately 1 ½ inch below the “Filler” fitting on top of unit.
8. **BE SURE to tighten filler cap and drain cap securely.** If the caps are not tightened securely, the intake vacuum system may be adversely effected possibly causing the engine to operate inefficiently.
9. After a few minutes of operation with the engine running, the amperage reading will settle to an ideal operating range of 2 – 10 amps. Note: THE AMPERAGE WILL INCREASE OVER TIME. ALLOW SEVERAL HUNDRED MILES TO OBTAIN IDEAL OPERATING AMPS.
10. The GREEN LED water level indicator on the Ammeter Panel will begin to dim and eventually go off when the system needs more water. This will generally occur once between or at fuel tank fill-ups, depending on gas tank size, engine displacement, ambient temperatures, etc...



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WHEN DELIVERED BUT NOT THEREAFTER. The purchaser must examine such products immediately upon receipt thereof and determine whether the same conform to the description thereof as set forth in the product literature. If any such product does not conform to any of the literature descriptive criteria, or if any such product appears to be defective in any respect, such product shall be immediately returned to SELLER for replacement and/or repairs as appropriate to the product. Such inspection and return of any allegedly defective product shall be made within five (5) days from the date of delivery thereof to the original purchaser and, if not so returned, this WARRANTY shall be void and of no effect whatsoever. Any allegedly defective product returned for repair or replacement within said five day period will be repaired or replaced and reshipped to the original purchaser within fifteen (15) days after return of the defective product to SELLER. (Applies to USA only).

The restrictive and limited nature of SELLER'S warranty obligations as herein set forth is required by reason of the character of the products and the circumstances and conditions under which the same are likely to be used.

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International Chemical Safety Cards

HYDROGEN

ICSC: 0001

I M P O R T A N T D A T A	PHYSICAL STATE; APPEARANCE: ODOURLESS COLOURLESS COMPRESSED GAS	ROUTES OF EXPOSURE: The substance can be absorbed into the body by inhalation.
	PHYSICAL DANGERS: The gas mixes well with air, explosive mixtures are easily formed. The gas is lighter than air.	INHALATION RISK: On loss of containment, a harmful concentration of this gas in the air will be reached very quickly.
PHYSICAL PROPERTIES	CHEMICAL DANGERS: Heating may cause violent combustion or explosion. Reacts violently with oxygen halogens strong oxidants causing fire and explosion hazard. Metal catalysts, such as platinum and nickel, greatly enhance these reactions.	EFFECTS OF SHORT-TERM EXPOSURE: Simple asphyxiant. See Notes.
	OCCUPATIONAL EXPOSURE LIMITS: TLV: Simple asphyxiant (ACGIH 2002).	EFFECTS OF LONG-TERM OR REPEATED EXPOSURE:
ENVIRONMENTAL DATA	Boiling point: -253°C Relative vapour density (air = 1): 0.07 Flash point: flammable gas	Auto-ignition temperature: 500-571°C Explosive limits, vol% in air: 4-76

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NOTES

High concentrations in the air cause a deficiency of oxygen with the risk of unconsciousness or death. Check oxygen content before entering area. No odour warning if toxic concentrations are present. Measure hydrogen concentrations with suitable gas detector (a normal flammable gas detector is not suited for the purpose).

Transport Emergency Card: TEC (R)-20S1049
NFPA Code: H0; F4; R0;

ADDITIONAL INFORMATION

ICSC: 0001

HYDROGEN

(C) IPCS, CEC, 1994

IMPORTANT LEGAL NOTICE:

Neither NIOSH, the CEC or the IPCS nor any person acting on behalf of NIOSH, the CEC or the IPCS is responsible for the use which might be made of this information. This card contains the collective views of the IPCS Peer Review Committee and may not reflect in all cases all the detailed requirements included in national legislation on the subject. The user should verify compliance of the cards with the relevant legislation in the country of use. The only modifications made to produce the U.S. version is inclusion of the OSHA PELs, NIOSH RELs and NIOSH IDLH values.

