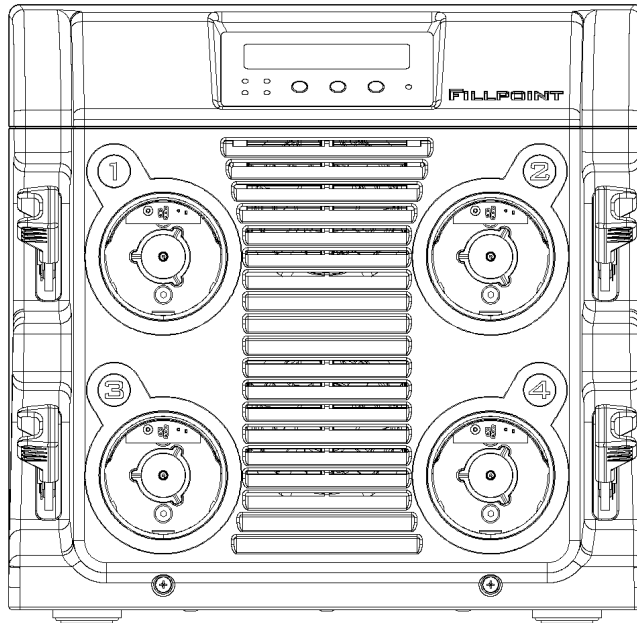




# FillPoint™

## Users' Guide



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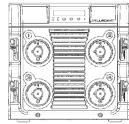
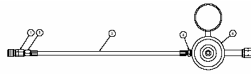
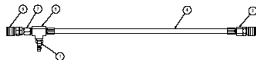
## SYSTEM DESCRIPTION

The FillPoint is a fully-automated system used to refill N-Stor canisters once they have been fully or partially depleted of hydrogen. It is a four (4) port random-access unit where N-Stors can be inserted or removed at any time, regardless of refill status. The microprocessor-based controller tracks the refill progress of each canister individually and automatically reports progress to the user.

### ***Features:***

- LCD display indicating fill time remaining and current state-of-fill
- Fully automated refilling
- High performance refilling

## FILLPOINT SYSTEM PARTS LIST

ITEM	PART NUMBER	DESCRIPTION
	920001	FillPoint Refill Station
	990008	Regulator Assembly <i>Included with FillPoint</i>
	990001	Y-Adapter and Hose Kit <i>Sold Separately</i>

## SAFETY

Jadoo products are designed and manufactured to safely cease operation at the earliest detection of any safety fault.

### **WARNING: Fire Hazard!**

**Contains flammable gas under pressure. Do not tamper with device. Read and understand Users' Guide.**

**WARNING: This is not a toy – keep away from children.**

### IMPORTANT SAFETY WARNINGS AND INSTRUCTIONS

#### TO REDUCE RISK OF INJURY:

Before using this appliance, be sure everyone using reads and understands all safety instructions and other information contained in this user guide.

Save these instructions and review frequently.

**CAUTION:** When using the appliance, basic safety precautions should always be followed to reduce risk of fire, electric shock or personal injury.

#### READ ALL INSTRUCTIONS

**PROVIDE ADEQUATE VENTILATION** and refrain from placing items on or around the appliance during operation. Refrain from placing the appliance in enclosures or causing the appliance to not vent freely.

**KEEP THE APPLIANCE DRY** at all times.

**DO NOT** use an attachment not recommended, as it may result in a risk of electric shock or fire.

**DO NOT** disassemble or tamper with the appliance.

This appliance is not tested for use with medical devices.

**AVOID DANGEROUS ENVIRONMENTAL CONDITIONS** – Do not use the appliance in damp or wet locations. Do not use this appliance in the rain.

## FCC NOTICE

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## PATENT INFORMATION

This product may be covered by one or more patents. The sale of this product, and the information contained and conveyed thereby, should not be construed as either explicitly or implicitly granting any license (of any kind or type); and no liability for patent infringement arising out of the use of the information is assumed.

## SETUP AND INSTALLATION

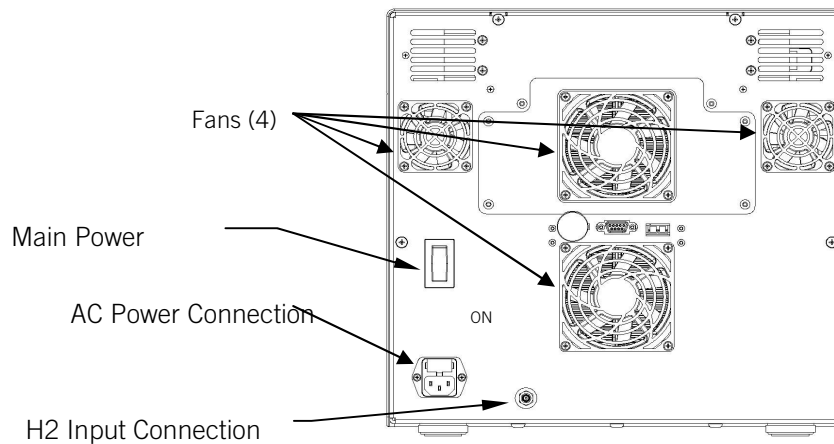
### *Filling Area*

The ideal location for the canister filling operation will have the characteristics noted below. Shipping / receiving, technical centers or maintenance areas are ideal, and should have the following:

- *Good Ventilation* – A ventilation fan is recommended. Air is ventilated from a fan located on the rear of the system. When placed on a flat surface a minimum of three (3) inches of clearance should be maintained from the rear of the system to prevent the obstruction of cool air ventilation.
- *Adequate Work Area* – the FillPoint should be placed on a flat, level surface with a clear area in front to allow access for canister insertion and removal. The location should allow easy access to the compressed hydrogen cylinder.
- *Available Power*—The FillPoint uses 110-120 VAC, 60 Hz power from a standard three-prong North American power plug. Locate the refill station near an appropriate AC source where the power cord can adequately reach from the AC power outlet to the rear of the system as seen in Figure 1.
- *Hydrogen Detection* – A basic hydrogen detection system is recommended to detect leaks outside the refill station. Small, wall-mounted systems are available that are 110VAC powered, such as the RKI Instruments Model PS-2.

**WARNING: Do not use near an open flame. Appliances with pilot lights or equipment that gives off sparks or flames should not be present in the filling area.**

Figure 1: Rear View—FillPoint



### *Hydrogen Gas*

The FillPoint requires a hydrogen gas supply in order to fill N-Stor canisters. Hydrogen is supplied via compressed gas cylinders commonly used for industrial applications and available from a compressed gas supplier or your local welding supply provider. For information on pricing, safety and installation of compressed hydrogen contact Jadoo at 916-608-9044 for information on our preferred supplier, Airgas.

Safety guidelines for hydrogen installation include but are not limited to the National Fire Protection Association (NFPA), the International Fire Code (IFC) and Occupational Health & Safety Administration (OSHA) regulations.

*Note: Hydrogen Gas Requirement: Industrial Grade 99.85% or better*

**WARNING: Use of any other hydrogen supply source may damage the system and/or cause personal injury. Use only the regulator supplied with the FillPoint. Use of other regulators will damage the FillPoint and void the product warranty.**

The compressed hydrogen supply is automatically reduced to the proper pressure by the preset regulator supplied with the FillPoint.

### *Setup*

The FillPoint should be carefully removed from its shipping container. Remove all outer packaging materials. All packaging materials and the shipping container should be stored for any possible future use.

**CAUTION: ALL gas connections, including quick-disconnects, must be connected and disconnected with the main supply valve OFF.**

- Secure the compressed hydrogen cylinder per the regulations provided by your compressed gas supplier.
- Make sure the main power switch, located on the rear of the FillPoint, is in the OFF position. Install the hose assembly from the regulator output to the rear of the FillPoint.
- Connect the regulator assembly to the hydrogen cylinder valve by inserting the nipple and tightening the nut. This nut uses a **LEFT HAND THREAD** (counter-clockwise to tighten). Orient the hydrogen cylinder, pre-set regulator and FillPoint so that the hose connection to the FillPoint is not strained.
- OPEN the compressed hydrogen cylinder supply valve. Check for leaks at the valve and all connections with a soap solution or leak detection solution. If leaks are found, CLOSE the supply valve and reinstall the regulator. If this does not stop the leak, call your compressed hydrogen supplier for service.
- Connect the 110-120 VAC plug to an AC outlet.
- Turn ON the FillPoint by using the rocker switch on the rear of the unit. The FillPoint will proceed with system checks.
- The message “PURGE HYDROGEN SUPPLY? NO / YES” is

then displayed. This option requires operator input before operation of the refill station can begin. It is provided to permit purging of the hydrogen supply hose and manifold. This function is useful after prolonged periods of system shutdown, for example over the weekend, or after the hydrogen supply cylinder has been changed. This process purges any air from the supply line and manifold of the FillPoint to eliminate the possibility of air being injected into the N-Stor. This phenomenon can adversely affect the performance and operation of the N-Stor. Press either the NO or YES to proceed. If NO is selected the system will proceed to normal operation.

The message “αααα FILLPOINT 2005 αααα, NO CANISTERS TO REFILL” is then displayed indicating the FILLPOINT has successfully completed its power-up sequence and is ready to refill N-Stors .

### *Filling Procedure*

- Insert from one (1) to four (4) N-Stors into any of the refill positions by pushing down the handle, inserting the canister, rotating it clockwise (until it engages and locks) and releasing the handle. When the N-Stor is inserted correctly, an audible “beep” sound will be heard and the LED located on the display will temporarily turn steady amber. A tactile detent and an audible “click” sound will also accompany a proper N-Stor insertion indicating the canister is properly locked into position and ready to be filled.

**CAUTION: Do not insert a HOT canister into the appliance to be refilled. Hot canisters, although safe to handle, will not fill correctly. Allow canister to cool to ROOM TEMPERATURE before filling.**

- After a short delay during which the FillPoint controller interrogates the N-Stor(s) the message “**CANISTER AT X XX% XX:XX:XX REMAINING**” is then displayed and the

LED above the canister will blink amber to indicate the refill process has begun. The first X indicates which refill position is being reported, XX% indicates the percentage the canister has been filled and XX:XX:XX” is the time remaining to complete the refill process.

- If multiple N-Stors have been inserted, one message will appear for each refill position. This information will be alternately displayed for all positions during the refilling process until all N-Stors are filled.
- Once the fill process has completed, the Fill Status LED will show green to indicate the canister is full and the message “**FILL COMPLETED**” is displayed.
- To remove an N-Stor lower the handle and turn the N-Stor counter-clockwise to remove it from the FillPoint. The N-Stor is now ready for use. When the raised button on the N-Stor’s display is depressed, state-of-fill is indicated. If the N-Stor is removed before completing the fill cycle, the fill percent that was achieved will be displayed.

**CAUTION: When the appliance is not in use for extended periods, more than a few days, the system power should be turned OFF and the hydrogen supply shut OFF at the source.**

### ***Maintenance***

The FillPoint requires no periodic maintenance under normal operating conditions.

## **TROUBLESHOOTING**

The FillPoint will inform the user of system faults if they are encountered during operation. System messages and user actions are shown in Table 2.

**Table 2: System Fault Messages**

Condition	Display	User Action
Low Supply Pressure	LOW PRESSURE ALARM XXX PSIG	<ul style="list-style-type: none"> <li>•Check supply pressure at regulator (&gt;400 psi, change tank if less)</li> <li>•Check valves at regulator</li> </ul>
Canister Present at Startup	REMOVE N-STOR	<ul style="list-style-type: none"> <li>•Remove N-Stor, wait for INSERT N-Stor message</li> </ul>
Hydrogen Detect (low)	FUEL ALARM {XXXXX} PPM	<ul style="list-style-type: none"> <li>•Remove N-Stor and restart FillPoint by cycling power on &amp; off</li> <li>•Check gas supply, connections and valves</li> <li>•Call Jadoo if condition persists</li> </ul>
Hydrogen Detect (high)	H2 A/B SHUTDOWN ERROR CODE [XX]	<ul style="list-style-type: none"> <li>•Remove N-Stor and restart FillPoint by cycling power on &amp; off</li> <li>•Check gas supply, connections and valves</li> <li>•Call Jadoo if condition persists</li> </ul>

## TRANSPORTATION

No special precautions are required to transport the FillPoint other than normal commercial transport packaging typical for equipment of this size and weight. It is recommended that the FillPoint be shipped in its original packaging to protect it from shipping damage. Do not ship the FillPoint with N-Stors engaged, **N-STORS MUST BE SHIPPED ACCORDING TO DOT-SP 13598 AND IN ACCORCANCE WITH JADOO POWER TRANSPORTATION, PACKAGING AND SHIPPING GUIDE (P/N 117449).**

## FILLPOINT SPECIFICATIONS

<b>Canister Capacity</b>	4 N-Stors
<b>Operation</b>	Fully Automatic Upon Canister Insertion
<b>Refill Pressure</b>	400 psi
<b>H<sub>2</sub> Source</b>	Industrial Grade Compressed: 99.85% Pure or better
<b>H<sub>2</sub> Connection</b>	Quick Connect (from supplied regulator)
<b>Power Required</b>	110VAC 60Hz
<b>Weight</b>	45 lbs

**Specifications subject to change without notice.**

## LIMITED WARRANTY

The limited warranties provided by Jadoo Power Systems, Inc. (“JADOO”) apply only to JADOO-branded products (“JADOO Products”) that you (“Customer”) purchase in the 50 United States, including the District of Columbia for Customer’s own use, and not for resale or for export outside of the United States.

The JADOO Standard Protection Plan provides the Customer with the following: JADOO warrants that the JADOO Products will be free from defects in workmanship and materials, under normal use, for one (1) year from the original purchase date.

The warranties set forth in this Standard do not apply to: any third party products or services included with or used with the JADOO Product.

Damage that results from accident, abuse, misuse, neglect or any use of the JADOO Product other than for its intended use.

Damage that results from any unauthorized attempts to open, maintain, repair or modify the JADOO Product. Damage that results from the JADOO Product being subjected to abnormal physical, thermal or electrical stress, including power fluctuations or other hazards.

### Warranty Remedies and Procedures

As Customer’s sole and exclusive remedy and JADOO’s entire liability under this warranty, JADOO will, at its option, repair the JADOO Product or replace it with a comparable JADOO Product. Replacement JADOO Products and parts used to repair the JADOO Products may be new, refurbished or reconditioned. Repaired or replaced JADOO Products are warranted for the unexpired portion of the original warranty period or 90 days from the date of shipment whichever, is longer. All JADOO Products and parts that are replaced become the property of JADOO.

Customer must contact JADOO Technical Support within the warranty period and furnish a dated proof of original purchase prior to the return of any JADOO Product for warranty service. To obtain contact information, refer to JADOO’s website at [www.jadoopower.com](http://www.jadoopower.com). Upon validation of Customer’s warranty entitlement, JADOO will issue a Return Material Authorization (RMA) number along with return instructions. Customer must ship the JADOO Product to the designated location, postage pre-paid, in original or equivalent packaging within five (5) days after JADOO’s issuance of an RMA number. JADOO will not be responsible for any JADOO Product damaged or lost in transit. JADOO will return the repaired or replacement JADOO Product to Customer, postage pre-paid, in the United States.

## NOTES

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