

Hydrogen Generator
H2PEM-100 / H2PEM-165 / H2PEM-260 / H2PEM-510



User Guide

Original Language (EN)

Retain this user guide for future reference.

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1 Safety Information

Important: Do not operate this equipment until the safety information and instructions in this user guide have been read and understood by all personnel concerned. Use of the equipment in a manner not specified within this user guide may impair the protection provided by the generator and could result in an unplanned release of pressure, which may cause serious personal injury or damage.

Only competent personnel trained, qualified, and approved by Parker Hannifin should perform commissioning, service and repair procedures.

When handling, installing or operating this equipment, personnel must employ safe engineering practices and observe all related local regulations, health & safety procedures, and legal requirements for safety.

This product is designed and built in compliance with the ATEX Directive. It is not suitable for use in any Hazardous, Flammable, or Explosive environments.

Hydrogen is a highly flammable gas. Keep the generator away from excessive heat and naked flames.

The accumulation of hydrogen can displace oxygen, thereby creating an asphyxiation hazard. Always ensure that the generator is operated in a well ventilated area and all of the vent ports on the rear of the generator are kept clear and free from blockages.

Ensure that the equipment is depressurized and electrically isolated, prior to carrying out any of the scheduled maintenance instructions specified within this user guide.

Most accidents that occur during the operation and maintenance of machinery are the result of failure to observe basic safety rules and procedures. Accidents can be avoided by recognizing that any machinery is potentially hazardous.

Parker Hannifin can not anticipate every possible circumstance which may represent a potential hazard. The warnings in this manual cover the most known potential hazards, but by definition can not be all-inclusive. If the user employs an operating procedure, item of equipment or a method of working which is not specifically recommended by **Parker Hannifin** the user must ensure that the equipment will not be damaged or become hazardous to persons or property.











Note: Any interference with the calibration warning labels will invalidate the gas generator's warranty and may incur costs for the re-calibration of the gas generator.



Should you require an extended warranty, tailored service contracts or training on this equipment, or any other equipment within the **Parker Hannifin** range, please contact your local **Parker Hannifin** office. Details of your nearest **Parker Hannifin** sales office can be found at www.Parker.com

This equipment is for indoor use only. Do not operate outdoors.

1.1 Markings and symbols

The following markings and international symbols are used on the equipment and within this user guide:

	Caution, Read the User Guide.		When disposing of old parts always follow local waste disposal regulations.
	Risk of electric shock.		Naked Flame
 Warning	Highlights actions or procedures which, if not performed correctly, may lead to personal injury or death.		When disposing of electrical parts always follow local waste disposal regulations.
 Caution	Highlights actions or procedures which, if not performed correctly, may lead to damage to this product.		Conformité Européenne
 Warning	Highlights actions or procedures which, if not performed correctly, could lead to electric shock.		Underwriters Laboratories

	DO NOT OBSTRUCT VENT PORTS LEAVE OPEN TO ATMOSPHERE OR PIPE TO VENTILATED AREA WARNING
	GENERATOR MUST BE SHUTDOWN AND DEPRESSURIZED BEFORE PERFORMING ANY MAINTENANCE (REFER TO MANUAL)

2 Description

The gas generator will produce a constant stream of hydrogen at a pre-determined pressure and flow rate when connected to a suitable power supply and fed with a suitable quality of deionized water. These units are suitable for use in laboratories and light industrial environments and are non-hazardous for transportation purposes.

It should be noted that the Hydrogen generator must be installed and running within three months of dispatch from Parker Hannifin, to ensure the optimum efficiency of the PEM cell. Failure to do this can invalidate the warranty.

2.1 Technical Specification

This specification is valid when the equipment is located, installed, operated, and maintained as specified within this user guide.

	Units	H2PEM-100	H2PEM-165	H2PEM-260	H2PEM-510
Water					
Water Quality		Deionized, ASTM II, >1 MOhm - cm			
*Consumption (Approximate)	L/Week	0.75	1.25	2	4
* Supply Pressure (Max)	psig (barg)	14.5 (1)			
* Supply Flow Rate (Max)	cc/min	1000			
High Purity Hydrogen (H₂)					
Outlet flow	cc/min	100	165	260	510
Outlet pressure	psig (barg)	5 – 100 ± 0.5 (0.3 – 6.89 ± 0.034)			
Purity	%	>99.999%			
Notes: * Based on full flow with 24 hour 7 day operation at 22°C (71.6 °F) Ambient *Applies only to generators fitted with the water fill option					

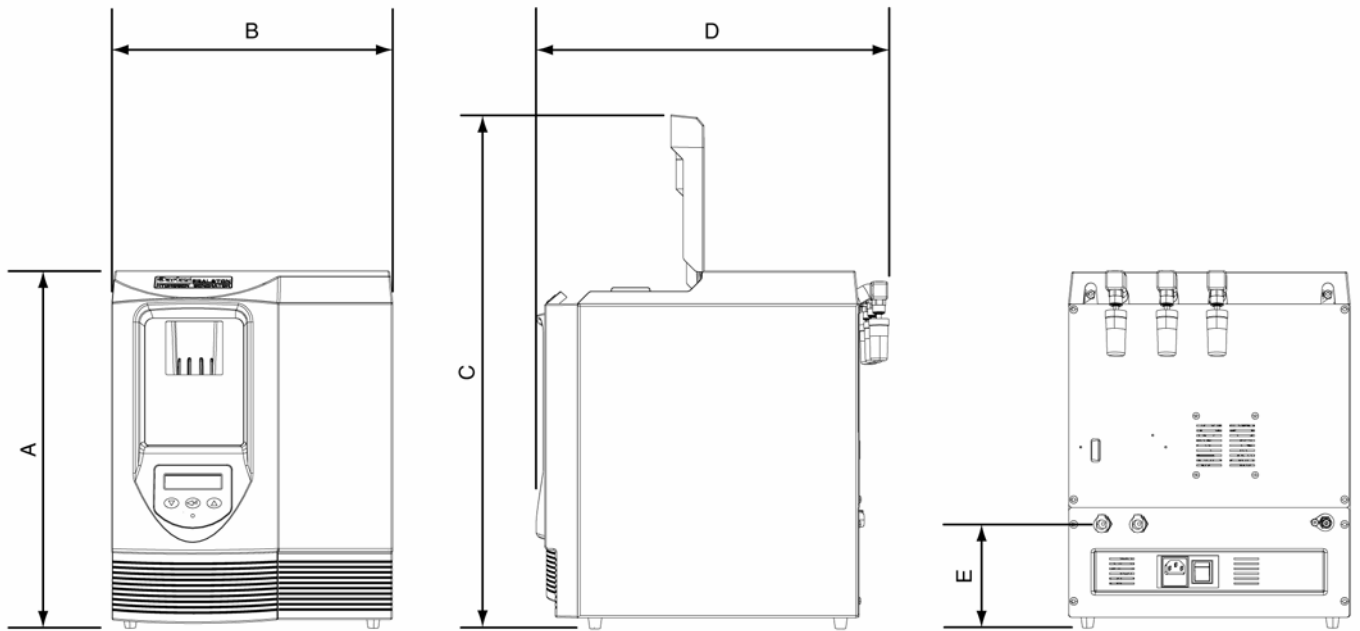
Mechanical connections		
Hydrogen Outlet		1/8" Compression Fitting
Water Drain		Quick Release Push in Fitting
Water Fill (Factory fitted option)		Quick Release Push in Fitting

Electrical data					
Connection Type		IEC320			
Supply Voltage Range	Vac	100-230v 50-60Hz			
Power Consumption	W	90	125	185	235
Fuse	A T (Anti Surge, 250v, 5 x 20mm)	5	5	5	5

Environmental data					
Temperature	°F (°C)	41 – 104 (5 – 40)			
Humidity (non condensing)		50% @ 104°F (80% MAX • 87.8°F)			
IP Rating		IP20 / NEMA 1			
Pollution Degree		2			
Installation Category		II			
Altitude	ft (m)	< 6562 (2000)			
Noise	dB(A)	<60			



2.1.1 Dimensions

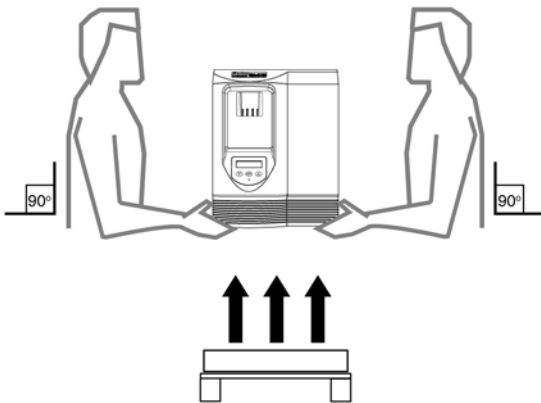


Dimension	Units	H2PEM-100	H2PEM-165	H2PEM-260	H2PEM-510
A	In (mm)	17.12 (435)			
B		13.46 (342)			
C		25.4 (645)			
D		17.95 (457)			
E		4.25 (108)			
Weight					
Empty	lbs (Kg)	52.92 (24)			
Full of Water		61.74 (28)			

2.2 Unpacking the equipment



This generator is heavy and should be carried by a minimum of two persons.



Remove the equipment from its packaging as shown and check that it has not been damaged in transit.

The following items have been included with your equipment:

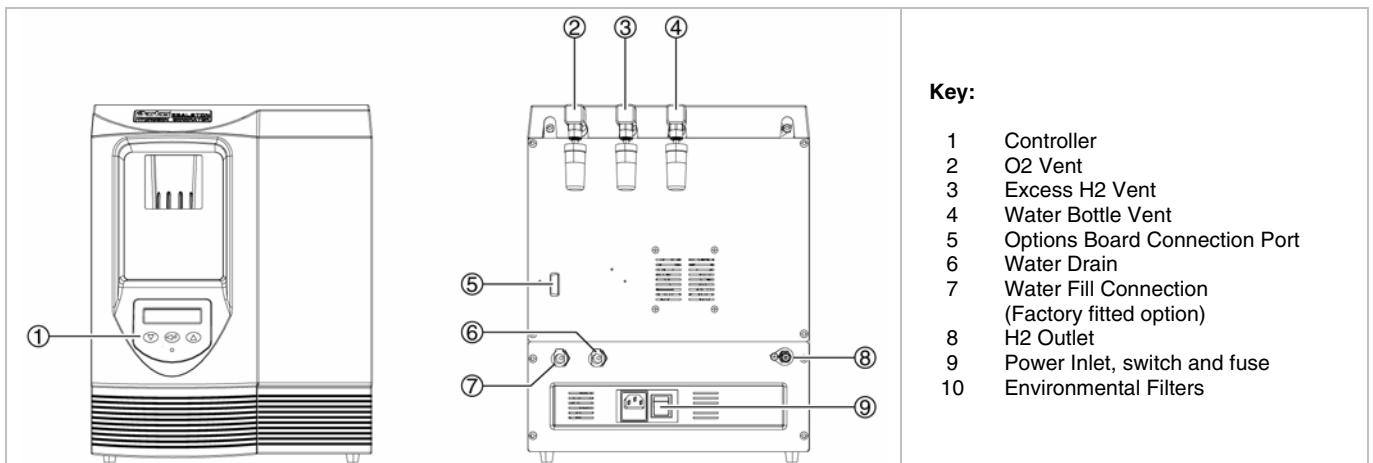
Description	Qty
Water Drain Tube	1
Water Fill Tube*	1
De-ionizer Cartridge	1
Environmental filters	3
Mains supply cable	3

* Supplied only with generators fitted with the water fill option.

If any items are missing or damaged please contact your local Parker Hannifin office



2.3 Overview of the equipment

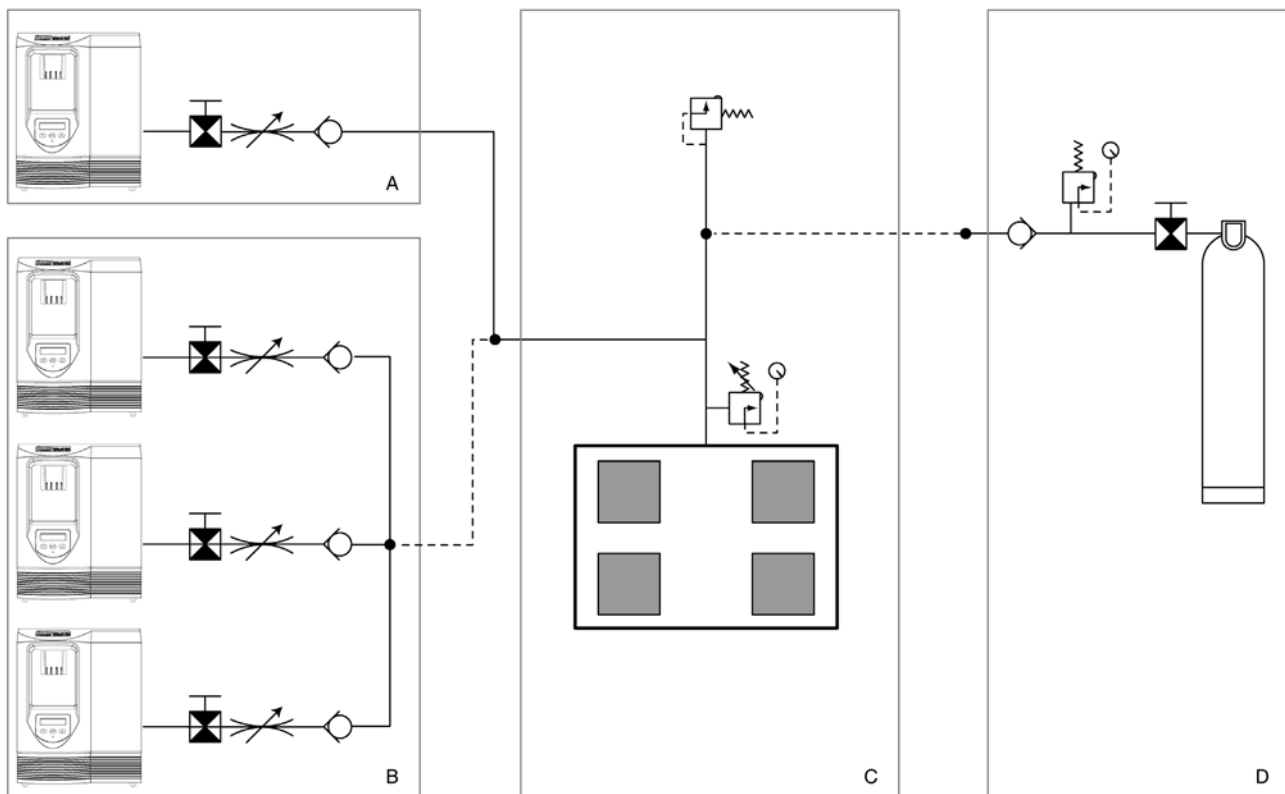


3 Installation & Commissioning



Only competent personnel trained, qualified, and approved by Parker Hannifin should perform commissioning and service procedures.

3.1 Recommended system layout



Key:

- | | | | |
|---|---------------------|--|-----------------------|
| A | Single Generator | | Non Return Valve |
| B | Multiple Generators | | Pressure Relief Valve |
| C | Application | | Pressure Regulator |
| D | Back up Supply | | Isolation Valve |
| | | | Flow Controller |

All components used within the system must be rated to at least the maximum operating pressure of the equipment. It is recommended that the system be protected with suitably rated pressure relief valves.

All piping materials must be suitable for the application, clean and debris free. The outlet piping must be solid and non-porous; it is recommended that high quality 1/8" stainless steel pipe be used.

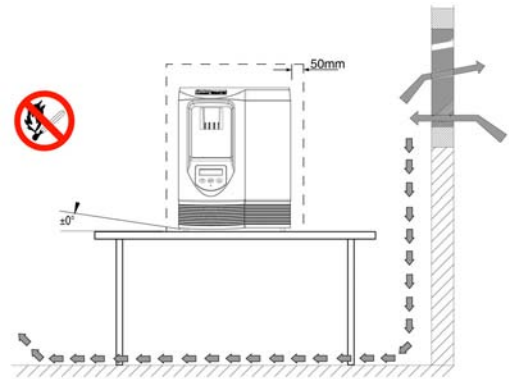
The diameter of the pipes should be sufficient to allow unrestricted outlet gas to the application. When routing the pipes ensure that they are adequately supported to prevent damage and leaks in the system.

3.2 Mechanical Installation

The generator should be located indoors on a flat surface and protected from direct sunlight, moisture, and dust (Refer to section 2.1 of this user guide for the generator's environmental specification).

Position the generator as close to the application as possible while leaving sufficient free space for ventilation and access purposes as shown.

DO NOT position the generator so that it is difficult to operate or disconnect.



Warning

This equipment is designed and built in compliance with the ATEX Directive. It is not suitable for use in any hazardous, flammable, or explosive environments.



Caution

The use of any water other than deionized water (Deionized, ASTM II, >1 Mohm – cm) within this generator will cause damage to the hydrogen cell and reduce its life time.



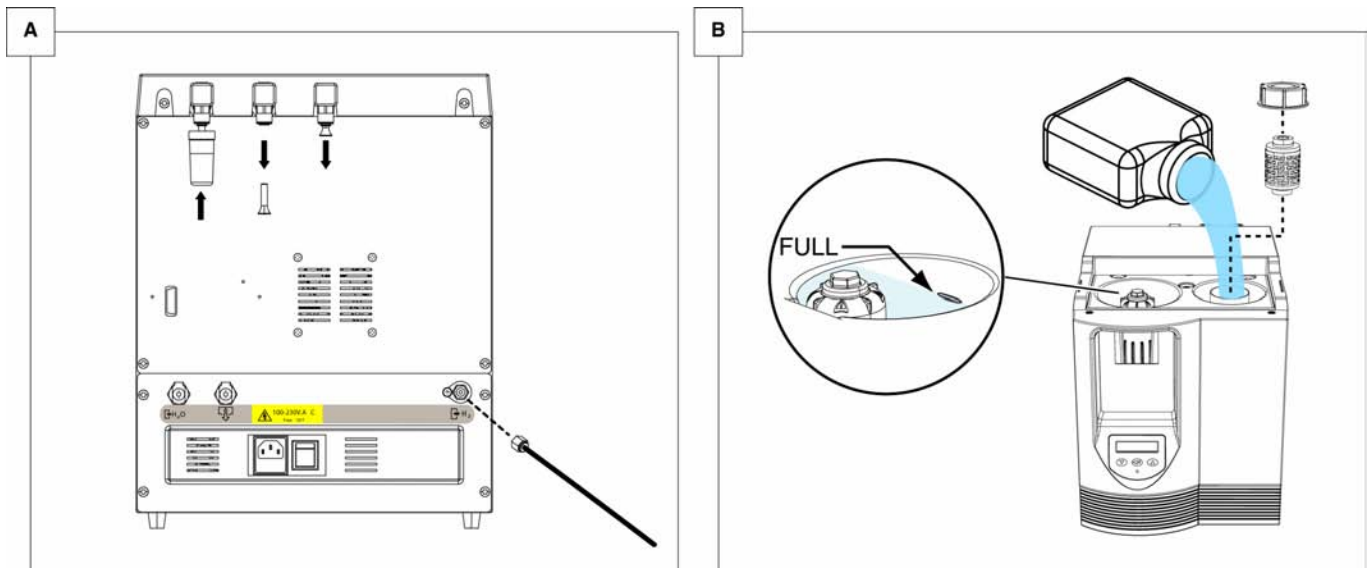
Caution

The application piping will require purging for at least 15 minutes to remove any trapped oxygen.

Once suitably located, remove the three transit plugs from the O₂ vent, excess H₂ vent and the water bottle vent and fit the environmental filters.

Connect the Hydrogen outlet port of the generator to the application piping.

Fill the water bottle using deionized water (Deionized, ASTM II, >1 Mohm – cm) to the "FULL" mark on the water reservoir and insert the deionizer cartridge into the water bottle as shown in figure.



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3.2.1 Optional Water Fill

The factory fitted optional water fill allows the generators water bottle to be pumped or gravity fed directly from a suitable de-ionized water supply. When the water level falls below the mid-point, the water bottle is replenished from the de-ionised water supply.

The generator should be connected to the de-ionized water supply using the tube supplied. Connect the quick release push in fitting to the water fill connection on the rear of the generator. Refer to section 2.1 for water supply requirements.



The use of any water other than deionized water (Deionized, ASTM II, >1 Mohm – cm) within this generator will cause damage to the hydrogen cell and reduce its life time.

3.3 Electrical Installation

Attach the mains power supply cable provided to the IEC 320 socket located on the rear of the generator and connect to the electrical supply.

If a cordset, other than the one provided, is used to connect the equipment to the electrical supply ensure that it is suitably rated for the application and in accordance with local and national code regulations.



The equipment must be grounded to earth through the cordset.

Installation Kits:

Kit Number	Description	Quantity
IK7532	Installation Kit including:	
	Copper Tube	50 ft
	1/8" tube nuts	3
	Front and back ferrules	3
	1/8" tube T-piece	1

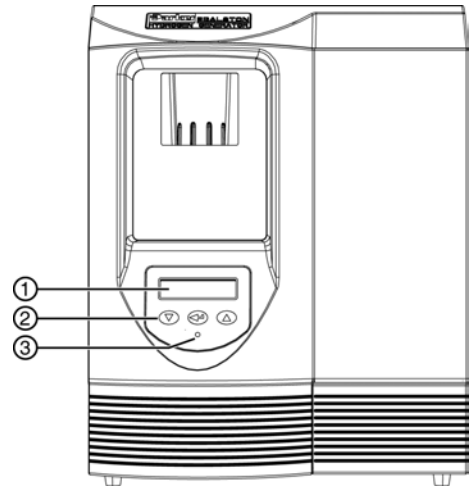


4 Operating the equipment

4.1 Overview of Controls


1. 16x2 line menus display.
2. Control key pad used for menu navigation and generator operation.
3. Tri colored System Check Indicator.

Indicator	Generator Status
Flashing Green	- Start Up Initialization
Solid Green	- On-line
Flashing Red	- Non Critical Errors
Red	- Critical Errors (System Locked)
Amber	- On-line, Service Required



4.2 Starting the equipment

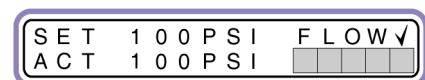
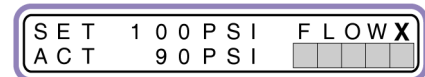
Turn the generator on at the power switch (located on the rear of the generator) and wait until the default menu is displayed as shown.

If the generator had an error prior to being powered down, it is possible that it will revert to this same error on power up. If so Press  to clear the error and continue with the start up procedure.


Note: If the error cannot be cleared, use the fault finding procedure in section 6 for guidance.

The internal pressure (“ACT” pressure) of the generator will build up to the required operating pressure (“SET” pressure).

Once the required pressure is maintained the outlet valve of the generator will be opened, as indicated by “FLOW ✓” on the display, and hydrogen will be supplied to the application.

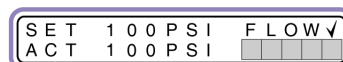


4.3 Operating Menus



There are 6 menus used by the generator to display and access operational parameters and data. These can be accessed from the default menu by sequentially pressing  the controller.

4.3.1 Default Menu



The default menu displays the following data:




SET – The outlet pressure required by the application.

The required outlet pressure can be adjusted up and down using the  and  keys respectively.

ACT – Actual Pressure
Current actual internal / outlet pressure of the generator


FLOW X /  - Indicates the status of the generator outlet valve: “X” - Outlet is closed, “” – Outlet is open.

 100% - The shaded blocks indicate the rate of hydrogen production. Each block represents 20% of the rated capacity of the generator.


During initial start up or after a massive pressure drop all five blocks will be shaded indicating that the generator is building up pressure and not currently on line.

When the generator is on-line and delivering gas to the application, the number of blocks shaded will depend upon the flow required by the application.

Standby Mode

The flow of hydrogen to the application can be interrupted by switching the generator into standby mode. Press and hold  to select standby. The default menu will change to the standby menu as shown to indicate that the outlet valve is closed and hydrogen is no longer being supplied to the application.



To return to normal operation, press .

Reset

Pressing the enter key (middle key) during an error condition will reset the system.



4.3.2 Conductivity

The conductivity (Water Quality) menu gives a graphical indication of the water quality. When all 10 blocks are shaded the water quality is to specification.

When the number of shaded blocks drops to four, the “Change Water” error message will be displayed. The water bottle indicator will flash red and an intermittent alarm will sound. Hydrogen will continue to be delivered to the application.

If the water quality degrades to the point at which none of the blocks are shaded the outlet valve of the generator will be closed and a conductivity error generated. The water bottle indicator will illuminate red and a continuous alarm will sound. **Hydrogen will not be delivered to the application**

Press  to advance to the next menu.



The water bottle should be drained and refilled with deionized water ASTM II, > 1 Mohm – cm at the earliest convenient time.



4.3.3 Pressure Measurement

The units of pressure measurement may be changed between bar, psi and Mpa.

Press to change the units of measurement.

When the desired units have been selected, press to advance to the next menu.

```
P R E S S U R E   U O M
P S I
```

4.3.4 Run Time Data

The Run Time Data Menu displays the following data:

HOURS RUN – Time in hours that the generator has been producing hydrogen.

SERVICE IN – The time in hours that the generator can produce hydrogen before a service is required.

```
H O U R S   R U N   X X X X X
S E R V I C E   I N   X X X X X
```

4.3.5 Flow

The Flow menu displays the current flow and the total amount of hydrogen produced by the generator when on-line.

Flow cc/min Current flow in cc/min being produced by the generator. This is for indication only and we recommend the use of a flow meter to gain an accurate measurement.

Litres Total amount of hydrogen produced by the generator measured in litres.

```
F L O W   m l / M I N   0 0 0
L I T R E S   0 0 0
```

4.3.6 Generator Self Test



The outlet fitting must be removed before the self test is initiated

This menu is used for diagnostic purposes to allow the user to verify that the generator is operating correctly. From the Self Test Menu press and hold and .

The menus will change as follows during the self test:

Pressure release - All pressure in the generator is released the test will not proceed until 0 psi is achieved.

```
P R E S S U R E   R E L E A S E
1 0 0 P S I   ← C A N C E L
```

Pressure build - The unit will build pressure to 100 psi while monitoring the time taken.

```
P R E S S U R E   B U I L D
1 0 0 P S I   ← C A N C E L
```

Pressure Hold The generator will perform a pressure decay test for a pre-determined time.

```
P R E S S U R E   H O L D
1 0 0 P S I   ← C A N C E L
```

Pressure Release The outlet solenoid is opened and the pressure released. The test will not progress unless 0 psi is achieved.

```
P R E S S U R E   R E L E A S E
1 0 0 P S I   ← C A N C E L
```

Test Passed / Failed If all criteria are met then a pass is displayed, otherwise fail is displayed.

```
T E S T   P A S S E D
S T A N D B Y
```

NOTE

It is recommended that the self-test feature be used when a part of the pressure circuit is serviced, such as a desiccant cartridge change.





4.4 Hard Reset

The generator should have a hard reset whenever a critical error occurs or non-critical error occurs 3 times in succession.

Before a hard reset is performed the initial fault must be rectified; refer to section 6 of this user guide for troubleshooting guidance.

When the faults are rectified, switch the generator off at the mains switch.

Press and hold , at the same time re-apply the power to the generator. When the generator has powered up, press  again. The generator will reset all errors then continue with the normal start up procedure.



4.5 Stopping the equipment and depressurizing



Warning

The equipment contains pressurized hydrogen gas. Ensure that it is fully depressurized prior to shipment or servicing.

1. Ensure that the application instrumentation no longer requires hydrogen.
2. Switch the generator off at the mains power switch and disconnect it from the electrical supply.
3. Slowly disconnect the Hydrogen outlet connection pipe from the side of the generator allowing the system to depressurize.



Warning

Hydrogen gas will escape under pressure when the piping is disconnected.

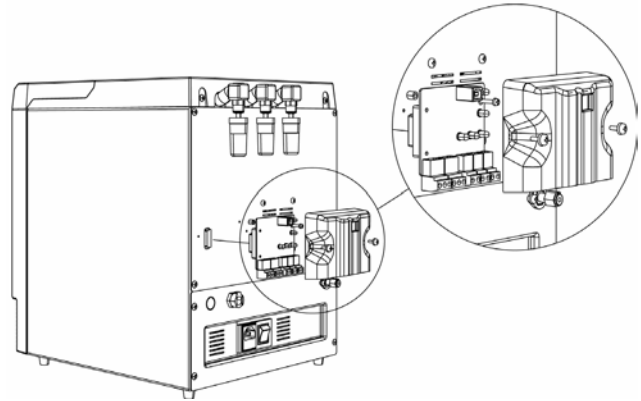
4. The generator is now shut down. If the generator is to be transported, drain the water from the generator as described in section 5.4.2. Re-fit the hydrogen outlet port cover and the three transit plugs to the O2 vent, excess H2 vent and the water bottle vent. Refer to section 3.2.

4.6 Options Board Accessory

4.6.1 Fitting the Options Board

Plug the options board into the 15-way D-type connector on the rear of the generator. The board should be secured in place using the retaining screw and spacer provided.

Place the cover over the options board and secure in place using the 2 retaining screws provided.



4.6.2 Wiring the Options Board

JP3 Remote Stop

The remote stop function allows the generator to be connected to an external stop circuit.

The terminals on JP3 should be volt free under normal operating conditions. When a dc voltage (9- 12v) is applied to terminal (+) of JP3 (Terminal (-) is common) the generator will stop.

JP4 Alarm Output

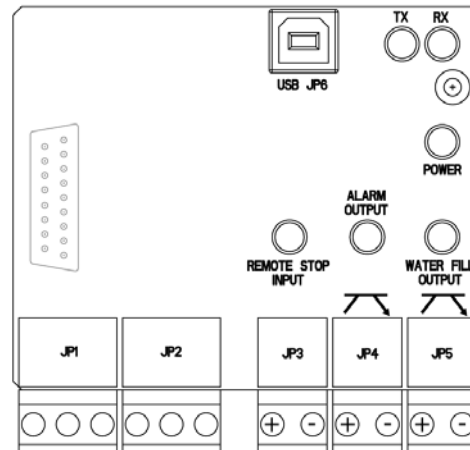
The alarm output is an open collector digital output designed for remote alarm indication. When an error occurs on the generator, the output switching circuit is activated causing the remote circuit to be complete.

The remote alarm circuit will be reset when the generator error has been reset.

JP5 Water Fill Output

The water fill output is an open collector digital output designed for remote monitoring of the water bottle level. When the water level drops below the mid-point in the water bottle the output switching circuit is activated.

The circuit will only be de-energized when the water bottle is filled to its upper limit.



Note: Observe the polarity and JP4 and JP5

RS485	JP1_1	NOT USED (DO NOT CONNECT)
RS485	JP2_1	NOT USED (DO NOT CONNECT)
Remote Stop	JP3_+	9 – 12vdc Input
	JP3_-	GND
Alarm Output	JP4_+	Open Collector Output
	JP4_-	
Water Full Output	JP5_+	Open Collector Output
	JP5_-	
USB	JP6	



JP4 and JP5 are designed for connection to Safe Extra Low Voltage (SELV) systems only: Maximum 12vdc 50mA. Refer to the markings on the Options board for the correct configuration of these outputs.



5 Servicing



The recommended service procedures identified in table 5.2 and all other repair and calibration work should be undertaken by a Parker Hannifin approved Engineer.

5.1 Cleaning

Clean the equipment with a damp cloth only and avoid excessive moisture around any electrical sockets.

If required you may use a mild detergent, however do not use abrasives or solvents as they may damage the warning labels on the equipment.

5.2. Service Intervals

Description Of Maintenance Required		Recommended Maintenance Interval			
Component	Operation	Daily	Weekly	Every 6 Months (4000 Hrs)	Every 24 Months (16000 Hrs)
Generator	Check the Power ON indicator is illuminated				
Generator	Check STATUS / FAULT Indicators located on the controller				
Generator	Check Water Level				
Generator	Check Water Conductivity				
Generator	Check for leaks				
Generator	Check Desiccant Cartridge (Replace when indicating material turns opaque)				
Generator	6 Month Service Kit				
Generator	24 Month Service Kit				

KEY:



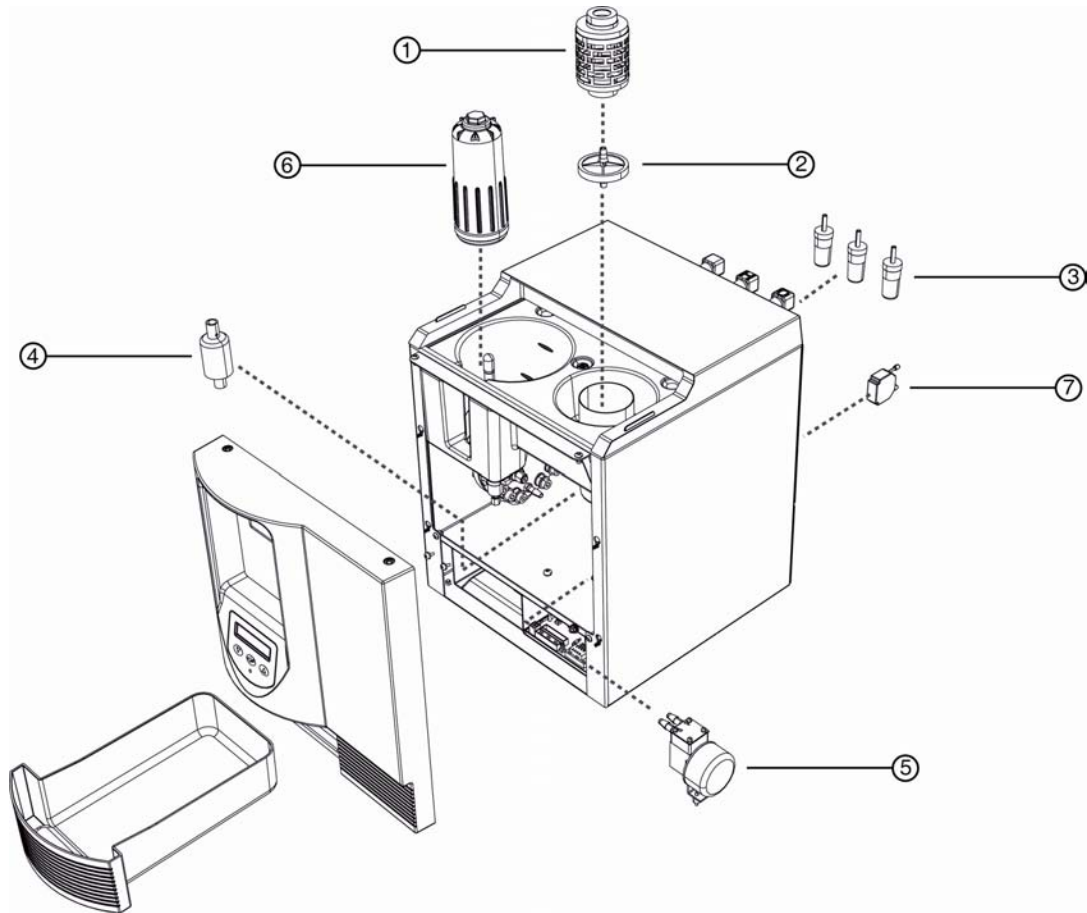
Check



Essential Procedure



5.3 Service Kits



Service Kit	Interval	Description	Kit No	Description
Desiccant Cartridge	As required	Replace cartridge	MKH2PEM-D	Kit Includes: (6) Desiccant Cartridge
A	Every 6 months (4000 Hrs)	Filter Service	MKH2PEM-6M	Kit Includes: (1) Deionizer Cartridge (2) Water Filter (3) 3 Environmental Filters (x3)
B	Every 24 months (16000 Hrs)	Complete Service	MKH2PEM-24M	Kit Includes: (1) Deionizer Cartridge (2) Water Filter (3) Environmental Filters (x3) (4) Float (5) Water Pump (6) Desiccant Cartridge (7) Service Reset Dongle

5.4 Consumable Replacement Procedure

5.4.1 Re-Filling the Water Bottle

Remove the top front cover and the water bottle cap. Fill the water bottle to the "FULL" mark using deionized water **(A)** and refit the water bottle cap and top front cover.

Note: If the water has been changed due to high conductivity, the de-ionizer cartridge must also be changed.

5.4.2 Water Drain Procedure

Locate the drain port on the rear of the generator and insert the drain line **(B)**. Allow the water bottle to drain completely into a suitable container. Once the water bottle is drained, remove the drain line by pressing the lock downwards and removing the line **(C)**.



Do not re-use the old water.

Caution

5.4.3 Replacing the Water Filter.



Switch the generator into Standby mode, remove the top front cover and the water bottle cap and drain the water bottle. Remove the de-ionizer cartridge and store in a clean area for re-use later.



Always change the deionizer cartridge if the generator was indicating bad conductivity levels prior to starting this procedure or if it has become contaminated in any way.

Caution

The water filter is removed from the water bottle using the tool supplied in the Filter Service kit. Insert the tool into the barbed connection of the filter and push it until the filter is held by the tool. Lift the filter out of the water bottle **(D)** and discard. Fit the replacement filter onto the tool and put into the water bottle. Push down until the new filter is fully located in to position in the recess at the bottom of the water bottle. Refit the de-ionizer cartridge, fill the water bottle, and refit the water bottle cap and top front cover.

5.4.4 Replacing the De-ionizer Cartridge.



Care should be taken to avoid contamination from handling.

Caution

Switch the generator into Standby mode and remove the top front cover and the water bottle cap. Remove the deionizer cartridge and fit the replacement cartridge. Refit the water bottle cap and top front cover.

5.4.5 Replacing the Environmental Filters.

Locate the three vents on the rear of the generator **(E)**. Push the outside of the gland upwards **(E)** to release the filters and remove. Fit the New Environmental Filters as supplied in the Filter Service Kit.

Note: Environmental filters should be changed every six months as there is no visual indication of exhausted filters.

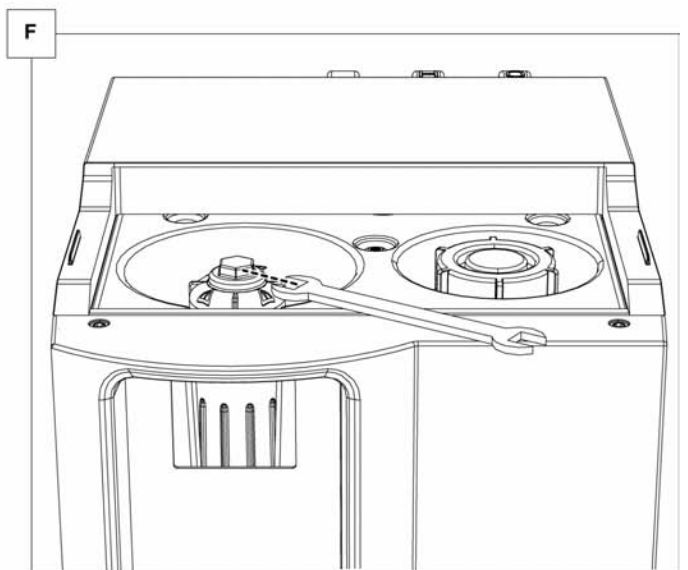
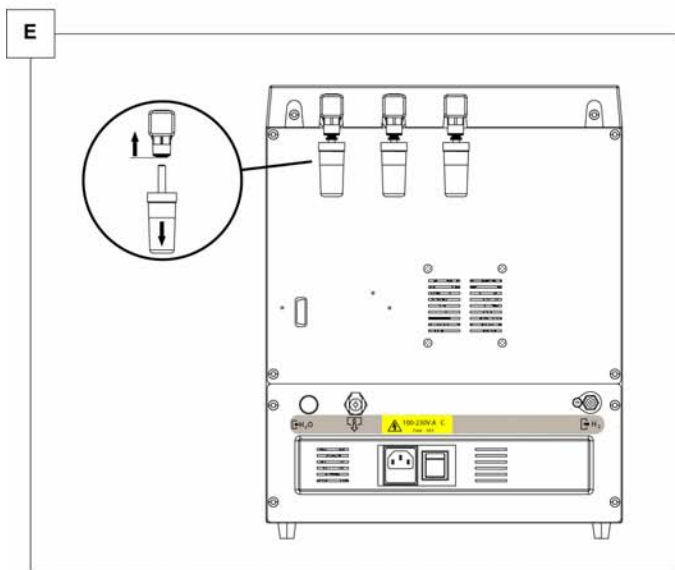
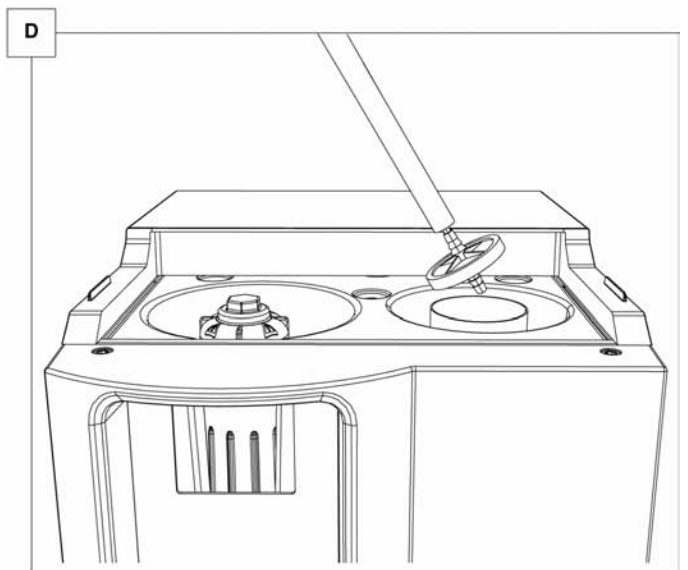
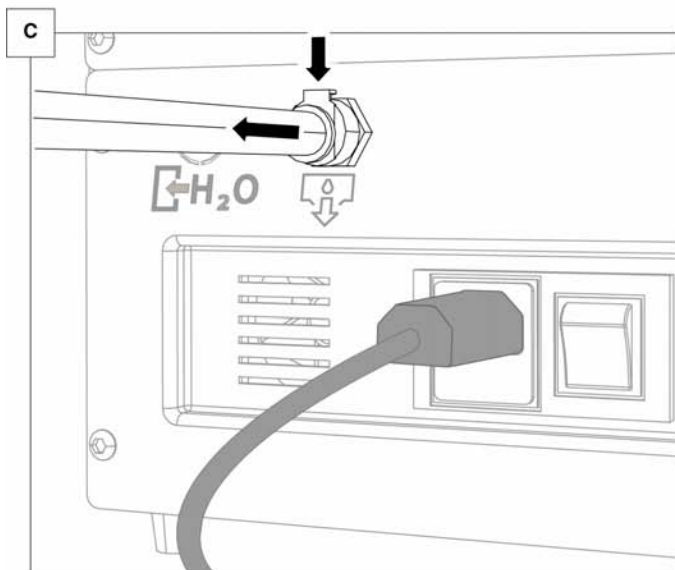
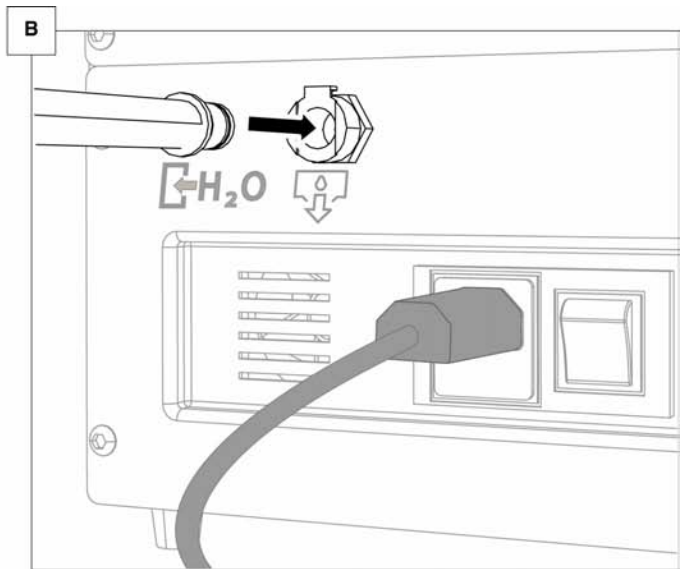
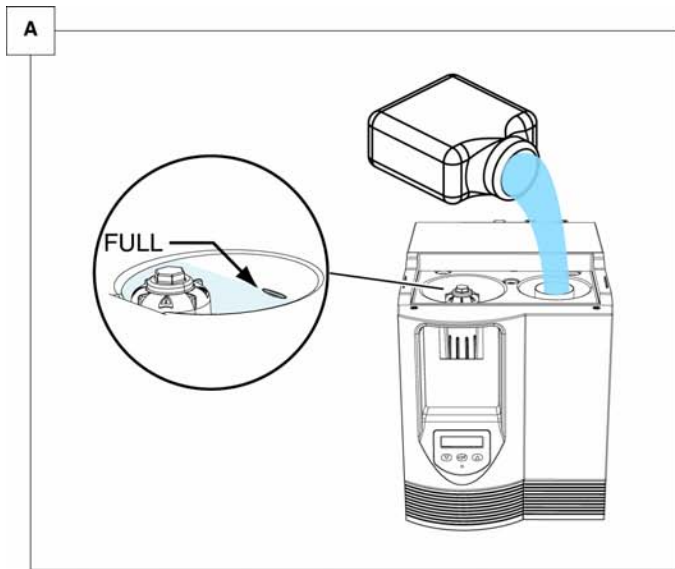


5.4.6 Replacing the Desiccant Cartridge.

Switch the generator off and disconnect the electrical supply. Ensure that the generator is fully depressurized by removing the outlet fitting on the rear.

Remove the top front cover. Break the seal of the cartridge using a size 19mm open ended wrench **(F)** and then unscrew by hand. Remove the cartridge and fit the replacement. The new cartridge should be tightened by hand and then nipped up with the size 19mm open ended wrench. A 1/8th turn from hand tight will be sufficient.

Refit the top front cover and the outlet fitting. Restart the generator and initiate a self test as described in sub-section 4.3.6.



5.5 Service Record

Date of Commissioning	
-----------------------	--

Service (Hours)	Hours Shown	Date	Serviced By	Work done / Comments / Observations
			Initials	
4,000				
8,000				
12,000				
16,000				
20,000				
24,000				
28,000				
32,000				
36,000				
40,000				
44,000				
48,000				
52,000				
56,000				
60,000				
64,000				
68,000				
72,000				

6 Troubleshooting guide

In the unlikely event that a problem occurs on the equipment, this troubleshooting guide can be used to identify the probable cause and remedy.







Troubleshooting should only be attempted by competent personnel. All major repair, and calibration work should be undertaken by a Parker Hannifin trained approved engineer.

When an error occurs the LCD will cycle between the default menu and the error message. In addition to the error messages the generator will provide a visual and audible indication using the System Check LED, Water Bottle Indicator and its integral sounder. The operating status of each indicator is dependent upon the error as shown in the table below.





Error Type	System Check LED	Water Bottle Indicator	Audible Indicator
Critical Error	Red	Not Illuminated	Continuous
Non Critical	Red (Flashing)	Normal Conductivity State*	Continuous
Pre-Alarm	Red / Green	Red / Normal Conductivity State*	Intermittent

Note: * Normal Conductivity is the status of the water bottle indicator prior to the error.

Water Level and Quality






Error Message / Probable Cause	Hydrogen Production	Remedy
	The water has dropped below the mid-point.	Yes
	Water has dropped below minimum point.	
	Water conductivity is high.	Yes
	Water conductivity is unacceptably high.	No

Internal Electrical Faults








Error Message / Probable Cause	Hydrogen Production	Remedy
	The hydrogen cell voltage is too high.	No
	The hydrogen cell voltage is too low.	
	The hydrogen cell current is too high.	
	The hydrogen cell current is too low.	



Pressure Errors





Error Message / Probable Cause	Hydrogen Production	Remedy
	No	<p>Check that the drying cartridge is fitted correctly.</p> <p>Check the internal pressure circuit.</p> <p>Contact Parker Hannifin for advice.</p>
	No	<p>Check outlet piping and connections.</p> <p>If problem persists contact Parker Hannifin for advice.</p>
	No	<p>Check that the drying cartridge is fitted correctly.</p> <p>Check the internal pressure circuit.</p> <p>Contact Parker Hannifin for advice.</p>
	No	<p>Check for external leaks on the outlet of the generator.</p> <p>Verify that the generator is specified correctly for the application.</p> <p>Contact Parker Hannifin for advice.</p>
	No (System Locked)	<p>Depressurize the generator and perform a hard reset.</p> <p>If problem persists contact Parker Hannifin for advice.</p>

Sensor Faults

Error Message / Probable Cause	Hydrogen Production	Remedy
	No	Contact Parker Hannifin for advice.
		
		
		
		
		
		



Other Faults

Error Message / Probable Cause	Hydrogen Production	Remedy
	Yes	Fit Service Kit
	No (System Locked)	Remove the blockage and perform hard reset. If the problem persists contact Parker Hannifin for advice
	No	Press [⏪] when required to reset the generator.
	No (System locked)	Resolve the initial fault and reset the generator.



7 Warranty

This warranty applies to the generator and associated parts (the Equipment) manufactured and supplied by **Parker Hannifin Ltd, (Parker Hannifin)**.

Use of the equipment without the recommended inlet air quality or genuine parts will expressly invalidate the warranty.

It should be noted that the generator must be installed and running within three months of dispatch from **Parker Hannifin** to ensure the optimum efficiency of the PEM cell. If this is not adhered to the warranty will be invalid.

Should the Equipment be defective as to materials or workmanship, **Parker Hannifin** warrants that it will remedy such defect. Where the Equipment is the generator, the warranty period will be 12 months from the date of shipment to the buyer. Where the equipment is the PEM CELL, the warranty period will be 24 months from the date of shipment to the buyer. In the case of Equipment other than the generator, the warranty period shall commence from the date of dispatch. Should any defect occur during the warranty period and be notified in writing to **Parker Hannifin** or its authorized distributor within the said period, **Parker Hannifin** will, as its sole option, remedy such defect by repair or provision of a replacement part, provided that the Equipment has been used strictly in accordance with the instructions provided with each item of Equipment and has been stored, installed, commissioned, operated and maintained in accordance with such instruction and with good practice. **Parker Hannifin** shall not be under any liability whatsoever under the warranty, if, before giving notification in writing to **Parker Hannifin** as aforesaid, the Customer or any third party meddles, interferes, tampers with or carries out work whatsoever (apart from normal maintenance as specified in the said instructions) in relation to the Equipment or any part thereof.

Any accessories, parts and equipment supplied by **Parker Hannifin** but not manufactured by **Parker Hannifin** shall carry whatever warranty the manufacturer has given **Parker Hannifin** providing it is possible for **Parker Hannifin** to pass on such warranty to the customer.

To claim under the warranty, the goods must have been installed and continually maintained in the manner specified in the User Guide. Our product support engineers are qualified and equipped to assist you in this respect. They are also available to make repairs that may become necessary in which event they will require an official order before carrying out the work. If such work is to be the subject of a warranty claim, the order should be endorsed for consideration under warranty.



Declaration of Conformity

EN

Parker Hannifin Ltd
Dukesway, TVTE, Gateshead, Tyne & Wear, NE11 0PZ. UK

Laboratory Hydrogen Generator **H2PEM-100, H2PEM-165, H2PEM-260, H2PEM-510**

Directives

2006/42/EC
73/23/EEC,
89/336/EEC
93/68/EEC, 92/31/EEC

Standards used

EN ISO 12100-1 : 2003, EN ISO 12100-2 : 2003,
EN 61326 : 1997 (A1:1998, A2: 2001, A3: 2003) *
BSEN 50366 : 2003
EN 61010-1 : 2001

Authorised Representative

Barry Wade
Quality Manager
Parker Hannifin

Declaration

I declare that as the authorized representative, the above information in relation to the supply / manufacture of this product, is in conformity with the standards and other related documents following the provisions of the above Directives.

Signature:



Date: 28/11/2006

Declaration Number: 0045/281106

Filtration Group Technical Sales & Service Locations

Filtration Group North America

Filtration and Separation Division
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Haverhill, MA 01835-0723
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Haverhill, MA
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In Europe, 0800-2727-5374
or visit our web site
www.parker.com/pag

Parker Worldwide Sales Offices

Contact Parker's worldwide service and distribution network by calling:

Argentina.....+54 (11) 4752 4129	Hong Kong.....+852 (2) 428 8008	Singapore.....+65 6261 5233
Australia.....+61 (2) 9 634 7777	Hungary.....+36 (1) 252 8137	South Africa.....+27 (11) 392 7280
Austria.....43-2622-23501-0	India.....91-22-790-7081	Spain.....+34 (91) 675 7300
Belgium.....+32 (67) 280900	Italy.....+39-02-451921	Sweden.....46-8-5979-5000
Brazil.....55-12-3955-1000	Japan.....81-3-6408-3900	Switzerland.....41-0-22-307-7111
Canada.....1-800-272-7537	Jordan.....(962) (6) 810679	Taiwan.....+866 (2) 2298 8987
Central & South America/Caribbean.....1-300-470-8800	Korea Choongnam.....82-41-583-1410	Thailand.....+662 693 3304
China.....+86 (21) 6445 9339	Korea Kyoungnam.....82-55-389-0100	United Arab Emirates...971-2-6788587
Czech Republic.....42-0-20830-85-221	Korea Seoul.....82-2-559-0420	United Kingdom.....+44 (0)1924-487000
Denmark.....45-0-43-56-04-00	Mexico.....1-800-272-7537	USA.....1-800-272-7537
Finland.....+358 (0)3 54100	Netherlands.....31-0-541-585000	Venezuela.....58-212-238-54-22
France.....33-0-254-741403	New Zealand.....+64 (9) 573 1523	
Germany.....49-0-2131-513-350	Norway.....47-64-91-1000	
	Poland.....48-22-863-4942	

Note: The (+) sign in front of the country code indicates that you may need to dial an additional prefix.



Parker Hannifin Corporation

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