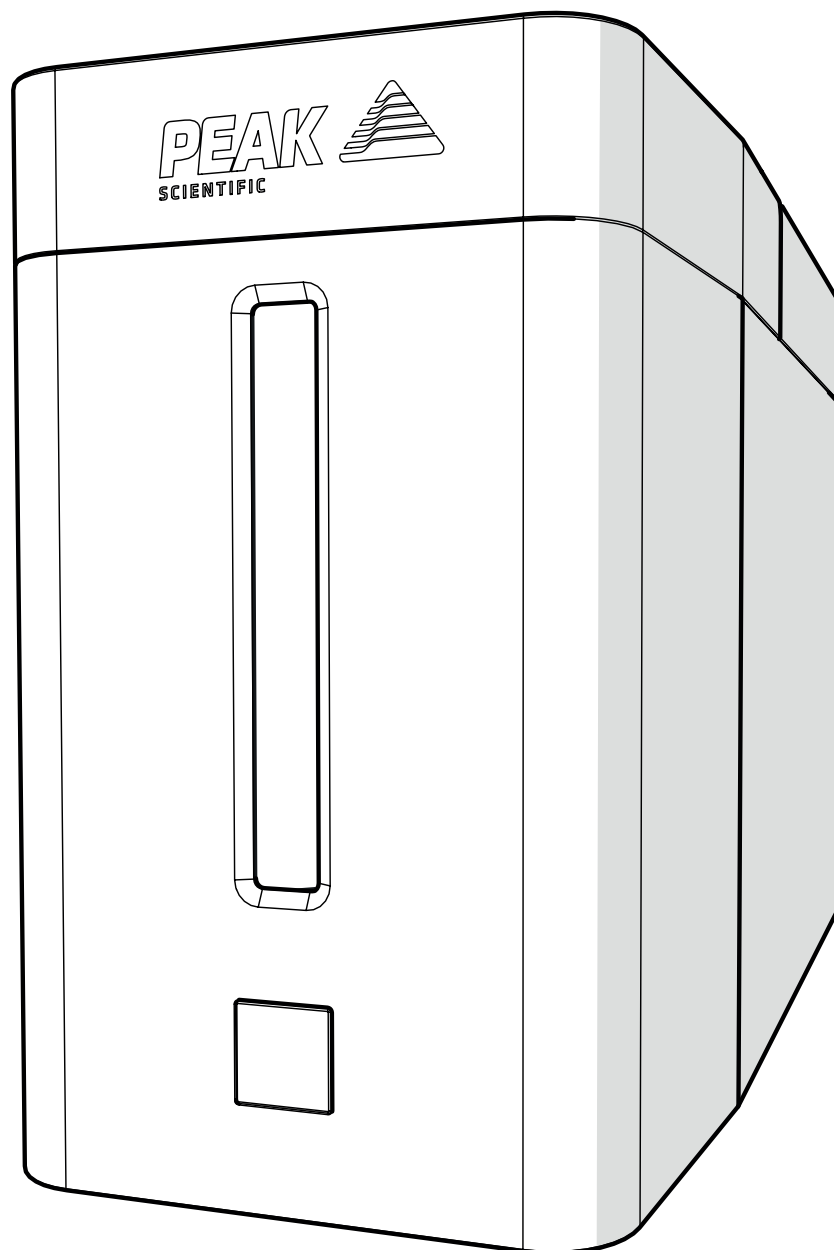


# Precision Hydrogen SL

Service Manual



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## Change History

Rev	Comment	Name	Date

## How to use this Manual

This manual is intended for Field Service Engineers and technically competent end users has been written as a reference document where you can skip to the relevant information.

Users can refer to the contents page to find the relevant information.

Please review each of the following sections carefully.




Thank you for selecting Peak Scientific to meet your gas generation needs, and should you require any further assistance or support please do not hesitate to contact Peak Scientific or the Peak Partner from which you purchased your generator.

# Safety Notices

Peak Scientific Instruments cannot anticipate every possible circumstance which may represent a potential hazard. The warnings detailed within this manual refer to the most likely potential hazards, but by definition cannot be all inclusive. If the user employs an operating procedure, item of equipment or a method of working which is not specifically recommended by Peak Scientific, the user must ensure that the equipment will not be damaged or become hazardous to persons or property.

## Symbols

This manual uses the following symbols to highlight specific areas important to the safe and proper use of the generator.

 WARNING	A WARNING notice denotes a hazard. It calls attention to an operating procedure, process or similar, which if not correctly performed or adhered to, could cause personal injury or in the worst case death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood or met.
 CAUTION	A CAUTION notice denotes a hazard. It calls attention to an operating procedure, process or similar, which if not correctly performed or adhered to, could cause damage to the generator or the application. Do not proceed beyond a CAUTION notice until the indicated conditions are fully understood or met.
	Caution, risk of electric shock. Ensure power to the generator has been removed before proceeding.

## Safety Notice to Users



These instructions must be read thoroughly and understood before installation and operation of your Peak Generator. Use of the generator in a manner not specified by Peak Scientific MAY impair the SAFETY provided by the equipment.



When handling, operating or carrying out any maintenance, personnel must employ safe engineering practices and observe all relevant local health and safety requirements and regulations. The attention of UK users is drawn to the Health and Safety at Work Act 1974, and the Institute of Electrical Engineers regulations.



If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment maybe impaired.

# Safely Isolated Condition

Definition: The unit is in a Safely Isolated Condition when it is disconnected from its application, fully de-pressurised and isolated from the Electrical Supply. Directions for isolating the Generator are shown below.



Failure to place the Generator in a safely isolated condition when instructed to do so may lead to personal injury or injury to others and even death.

## Isolating the Generator:

The generator may be restored to a depressurised state by pressing and holding the front button for at least three seconds. This will cause the generator to cease hydrogen production, illuminate the water tank blue, and exhaust any stored hydrogen through the exhaust port at the rear of the generator.

At this point you may switch the generator off at its rear power switch.

## Safe State After Repair

To guarantee the generator is in a safe state after a repair, please ensure the following conditions are met;

- **The electricity cable has been correctly refitted.**  
The mains cable should be plugged into the IEC power inlet located on the rear panel of the generator. This unit is classified as SAFETY CLASS 1. THIS UNIT MUST BE EARTHED.

# Health and Safety Data

## Deioniser Resin

This sheet to be retained by the 'Health & Safety Officer'

The recipient of this Health & Safety Data sheet is required to ensure that all personnel handling, using or likely to come into contact with the material are made aware of the Health & Safety information contained herein.

### General Description

Bag containing ion exchange resin. 60% Cation and 40% Anion by mass.

### Chemical Components

Polystyrene divinylbenzene cation and ion exchange resin.

<b>Form</b>	Solid beads
<b>Flash Point</b>	N/A
<b>Colour</b>	Tan
<b>Ignition Temperature</b>	427 °C (Estimated)
<b>Odour</b>	None
<b>Explosion Limits</b>	N/A
<b>Decomposition Temperature</b>	Over 220 °C
<b>Vapour Pressure @ 25 °C</b>	17mm CFH @ 20 °C (Water)
<b>Viscosity @ 25°C</b>	N/A
<b>Solubility in Water</b>	Negligible
<b>Specific Gravity @ 25°C</b>	1.1-1.3
<b>pH @ 25 °C</b>	7-9.5 in aqueous slurry
<b>Eye Protection</b>	Safety Glasses (BS2092C)
<b>Storage</b>	Store in a cool place above 0 °C, out of direct sunlight
<b>Fire &amp; Explosion Hazards</b>	Toxic combustion products may include sulphur dioxide and sulphur trioxide
<b>Disposal</b>	This product can be disposed as ordinary waste if local regulations permit

### Emergency & First Aid Procedures

#### Spillages

Floor may be slippery. Use care to avoid falls. Wear protective glasses.

Sweep up and transfer to containers for recovery and disposal.

#### Extinguishing Media

Carbon Dioxide (CO<sub>2</sub>), Water Fog and Dry Powder.

#### Fire Fighting and Protection

Wear HSE approved, pressure demand, self-contained breathing apparatus or equivalent.

**First Aid****Skin Contact**

Wash effected areas with soap and water. Consult doctor if irritation persists.

**Eye Contact**

Product can cause severe eye irritation. Flush eyes with large amounts of water for at least 15 minutes. Consult a doctor if irritation persists.

**Inhalation**

This product should present no hazard if operated under normal conditions. If irritation persists, move patient to fresh air.

**Ingestion**

If resin has been confined to the mouth, administer 250 ml. of water as a mouthwash. Avoid swallowing. This product is considered non-hazardous if ingested in small amounts; however, it is advisable to seek medical advice.

**Toxicological Data**

No toxicity data available on this product

**Occupation exposure limits**

STEL/TLV = None established.

**Incompatible Materials (to avoid hazardous reactions)**

Avoid contact with concentrated nitric acid and any other strong oxidising agents at all times.

## Desiccant

This sheet to be retained by the 'Health & Safety Officer'

The recipient of this Health & Safety Data sheet is required to ensure that all personnel handling, using or likely to come into contact with the material are made aware of the Health & Safety information contained herein.

### General Description

Column containing orange to green indicating silica gel.

### Chemical Components

Amorphous silica 98.2%, activated colouring agent 0.2% max.

<b>Form</b>	Beads
<b>Flash Point</b>	N/A
<b>Colour</b>	Dry: yellow/orange      Saturated: Green
<b>Ignition Temperature</b>	>1000 °C
<b>Odour</b>	Odourless
<b>Explosion Limits</b>	N/A
<b>Decomposition Temperature</b>	Over 155 °C
<b>Vapour Pressure @ 25 °C</b>	17mm CFH @ 20 °C (Water)
<b>Viscosity @ 25°C</b>	N/A
<b>Solubility in Water</b>	less 1.0% in weight
<b>pH @ 25 °C</b>	2-10 at 5% w/w in water
<b>Eye Protection</b>	Safety Glasses (BS2092C)
<b>Storage</b>	All containers must be closed air tight and kept in a dry place.
<b>Fire &amp; Explosion Hazards</b>	N/A
<b>Disposal</b>	This product can be disposed as ordinary waste if local regulations permit.

### Emergency & First Aid Procedures

#### Spillages

Contain spillage. Collect in suitable containers for recovery or disposal. During collection avoid creating dust.

#### Extinguishing Media

N/A. Inorganic compound. Not combustible.

#### Fire Fighting and Protection

Wear HSE approved, pressure demand, self-contained breathing apparatus or equivalent.



**First Aid****Skin Contact**

Wash spillage from skin with soap and water.

**Eye Contact**

Wash immediately with copious amounts of water and obtain medical attention.

**Inhalation**

Remove from source of exposure.

**Ingestion**

Wash out mouth with water. If large amount swallowed or symptoms develop obtain medical attention.

**Toxicological Data**

The lethal dose for humans for synthetic amorphous silica is estimated at over 15,000 mg/kg

**Occupation exposure limits**

DNEL/PNEC < 1 = No immediate concern.

**Incompatible Materials (to avoid hazardous reactions)**

None known.

## Molecular Sieve

This sheet to be retained by the 'Health & Safety Officer'

The recipient of this Health & Safety Data sheet is required to ensure that all personnel handling, using or likely to come into contact with the material are made aware of the Health & Safety information contained herein.

### General Description

Column containing white to tan molecular sieve.

### Chemical Components

Quartz (SiO<sub>2</sub>) <10%, balance Zeolite.

<b>Form</b>	Spheres
<b>Flash Point</b>	N/A
<b>Colour</b>	White to tan
<b>Ignition Temperature</b>	N/A
<b>Odour</b>	Odourless
<b>Explosion Limits</b>	N/A
<b>Decomposition Temperature</b>	N/A
<b>Vapour Pressure @ 25 °C</b>	N/A
<b>Viscosity @ 25°C</b>	N/A
<b>Solubility in Water</b>	Insoluble
<b>pH @ 25 °C</b>	N/A
<b>Eye Protection</b>	Safety Glasses (BS2092C)
<b>Storage</b>	All containers must be closed air tight and kept in a dry place.
<b>Fire &amp; Explosion Hazards</b>	N/A
<b>Disposal</b>	This product can be disposed as ordinary waste if local regulations permit.

### Emergency & First Aid Procedures

#### Spillages

Contain spillage. Collect in suitable containers for recovery or disposal. During collection avoid creating dust.

#### Extinguishing Media

N/A. Inorganic compound. Not combustible.

#### Fire Fighting and Protection

Wear HSE approved, pressure demand, self-contained breathing apparatus or equivalent.

**First Aid****Skin Contact**

Wash spillage from skin with soap and water.

**Eye Contact**

Wash immediately with copious amounts of water and obtain medical attention.

**Inhalation**

Remove from source of exposure.

**Ingestion**

Wash out mouth with water. If large amount swallowed or symptoms develop obtain medical attention.

**Toxicological Data**

The lethal dose for humans for synthetic amorphous silica is estimated at over 15,000 mg/kg

**Occupation exposure limits**

DNEL/PNEC < 1 = No immediate concern.

**Incompatible Materials (to avoid hazardous reactions)**

None known.

# Technical Specification

## Precision Hydrogen SL

### Environment

	100 cc	200 cc
Minimum Operating Ambient Temperature	10°C (50°F)	
Maximum Operating Ambient Temperature	35°C (95°F)	
Maximum Altitude	3000 m	
Maximum Relative Humidity	90% Non-Condensing	
Minimum Storage Temperature*	10°C (50°F)	
Maximum Storage Temperature*	25°C (77°F)	

### Generator Outlets

Max Flow Rate	100 cc/min	200 cc/min
Purity	99.9995%	
Gas outlet	1 x 1/8" Swagelok compression fitting	
Delivery pressure	100 psi (6.9 bar)	

### Electrical Requirements

Voltage	100-240VAC +/-10%	
Frequency	50/60 Hz	
Current	6A Max.	
Input Connection	C14 Connection	
Power Cord (Supplied)	C13 socket to local connection (10A minimum)	
Pollution Degree	2	
Installation / Over Voltage Category	II	

### General

Generator Dimensions cm	16.0 (6.3") x 38.5 (15.2") x 25.0 (9.8")	
Generator Weight	8 kg (17.6 lbs)	
Shipping Crate Dimensions cm	23.4 (9.2") x 59.4 (23.4") x 34.2 (13.5")	
Shipping Weight	11 kg (24.2 lbs)	
Noise Level @ 1 m	<55 dB	
Heat Output	1000 BTU / Hr	
Water Purity Requirement	ASTM Type II (<1 µS/cm / >1 MΩ-cm)	

\* When taken out of storage the Generator should be allowed to acclimatize at room temperature for a minimum of 3 hours before operation.

# Service Requirements

## Service Schedule

Purchase Interval	Component	Visit
12 Months	Precision Hydrogen SL 100cc 12 Month Kit	<a href="http://www.peakscientific.com/ordering">www.peakscientific.com/ordering</a>
	Precision Hydrogen SL 200cc 12 Month Kit	
24 Months	Precision Hydrogen SL 100cc 24 Month Kit	
	Precision Hydrogen SL 200cc 24 Month Kit	

Note: Only Peak approved components should be used.

## Replacement Parts

All parts shown as replaceable in this document can also be ordered by visiting:  
**[www.peakscientific.com/ordering](http://www.peakscientific.com/ordering)**

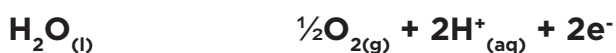
## Principle of Operation

The Peak Scientific hydrogen generator produces high purity hydrogen gas, H<sub>2</sub>. Hydrogen does not occur naturally on earth and must be formed via the decomposition of other molecules, in this case via the splitting of water molecules into hydrogen and oxygen in a process known as electrolysis.

The electrolyser used in the Peak Scientific hydrogen generator is known as a Proton Exchange Membrane (PEM) electrolyser. This type of electrolyser was first described in the mid-1960's by General Electric as a method for producing oxygen for the Gemini space program. PEM electrolysis has been continually developed since its introduction and has remained the state-of-the-art technology for water electrolysis and the production of high purity hydrogen ever since.

The most important element of the generator is the electrolyser cell where the electrolysis reaction takes place. This consists of two electrodes (an anode and a cathode), which are separated by the proton exchange membrane which gives the technology its name. During operation deionised water is fed to the anode of the electrolysis cell where it is split into oxygen, protons and electrons with the aid of a precious metal catalyst. The oxygen is vented to atmosphere from the generator. The protons travel across the membrane and simultaneously the electrons travel around the external electrical circuit. These protons and electrons then recombine at the cathode of the electrolyser, again with the aid of a precious metal catalyst to produce the hydrogen gas. The high purity of the hydrogen is assured by the membrane which completely separates the hydrogen produced at the cathode from the oxygen being produced at the anode. These processes are described by the following equations:

Anode Reaction



Cathode Reaction

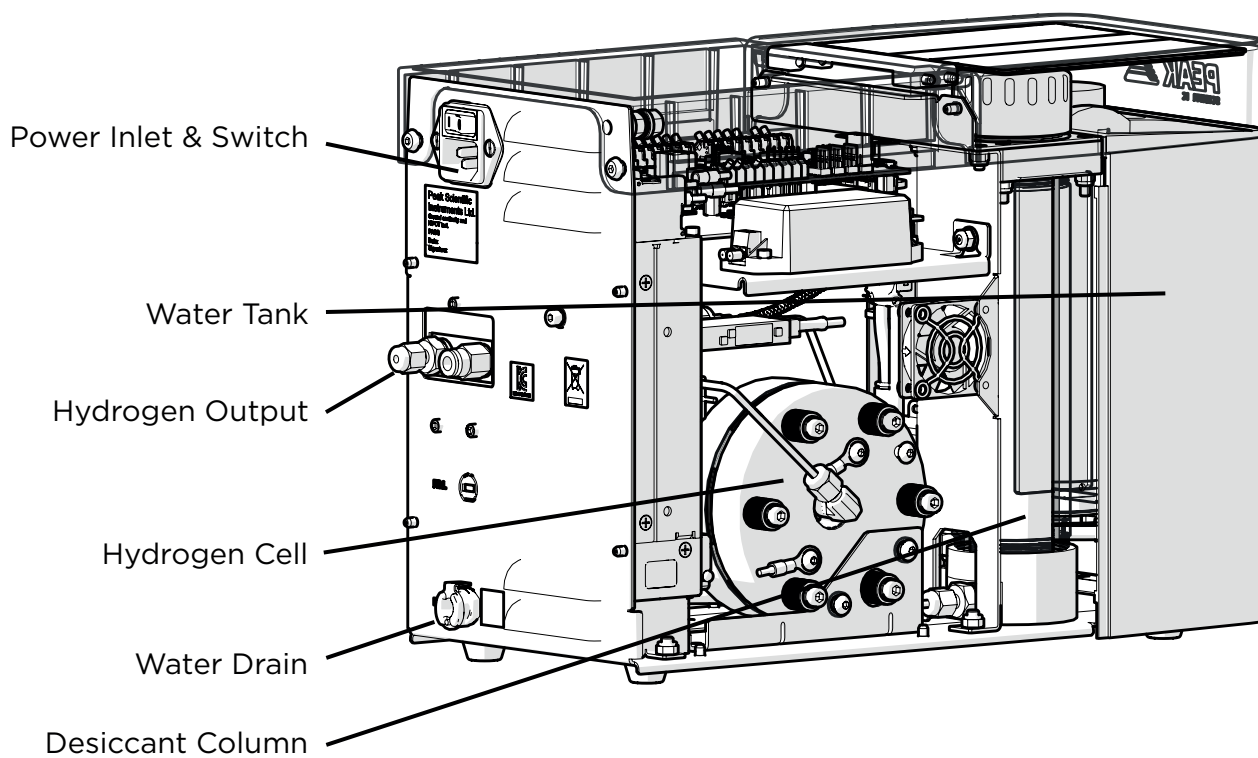
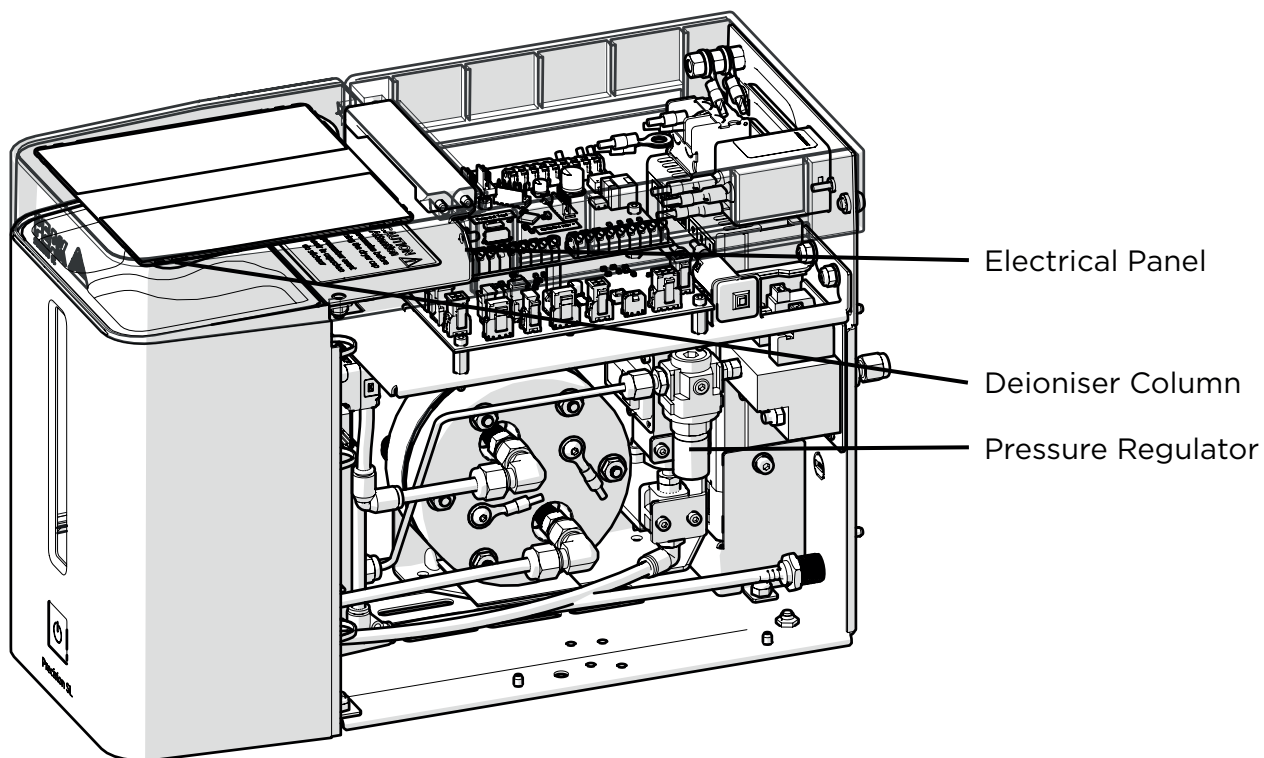


Deionised water is critical to the operation of the system and must have a purity of 1µS/cm or better to prevent damage to the membrane. Failure to use this grade of deionised water will invalidate the 2 year warranty of your generator. The water is automatically loaded (either at power up or periodically during operation) and the rate at which the water is consumed depends on the amount of hydrogen being produced.

A small amount of the electrical energy input is lost as heat and this is removed from the generator by the ventilation system.

The Peak Scientific hydrogen generator generates hydrogen on demand. By maintaining the pre-set pressure and using this as a reference value, the generator will produce the precise amount of hydrogen required. As soon as the demand ceases, no further hydrogen will be sent to the user's application. During this time bubbles may still be observed in the water tank. This is due to the generator maintaining its internal pressure and ensuring that clean, dry hydrogen is available immediately on demand when the user requires it.

# Product Overview

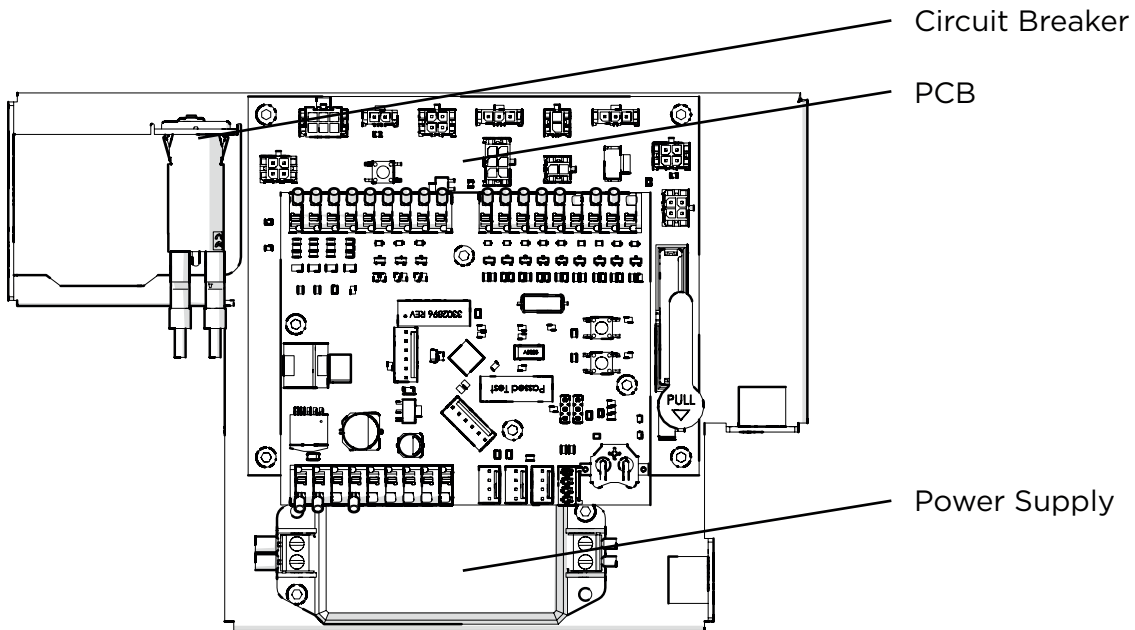


# Electrical Panel Layout



Risk of electric shock, accessing the electrical panel without safely isolating the generator should only be carried out by trained service personnel.

**For instructions on how to replace the PCB Assembly,** please refer to WI-1608.





# Setting Precision SL100 model

To set generator to SL100 model, generator must be programmed first! Once programmed follow steps below:

1. Power up the generator.
2. Simultaneously press and hold three pushbuttons: DB USER PB, MB USER PB and MB RESET PB.
3. While observing PSU On LED, release MB RESET PB whilst still holding DB USER PB and MB USER PB. Hold both pushbuttons for about 5 seconds until PSU On LED blink once indicating SL100 model has been set successfully.

To confirm, power cycle generator while observing PSU On LED. One blink indicates Precision SL100 and two blinks SL200 model.

*Note: Alarm LED may blink/illuminate during above process, this is a normal operation.*

For pushbutton position see figure 1 below.

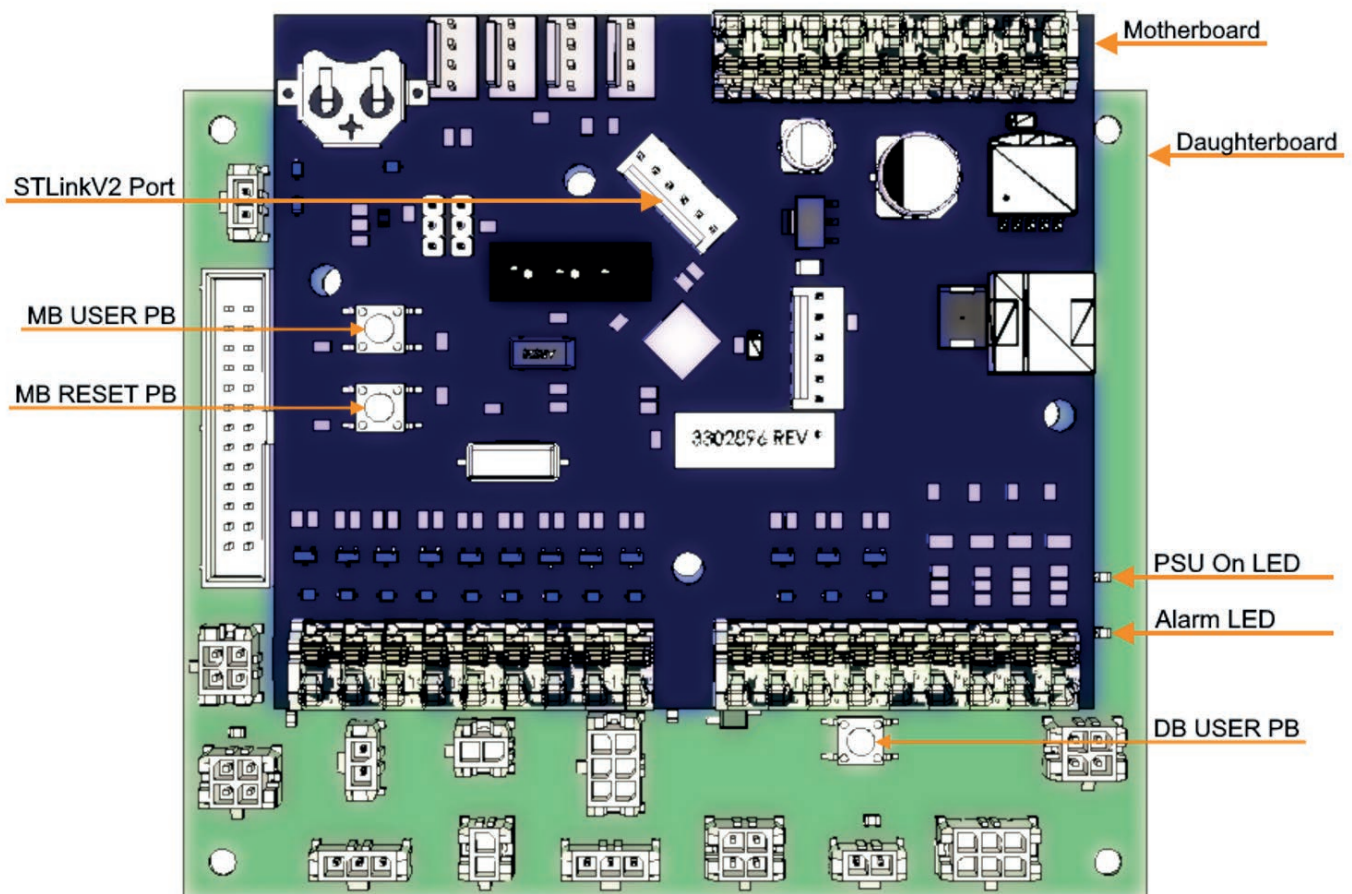


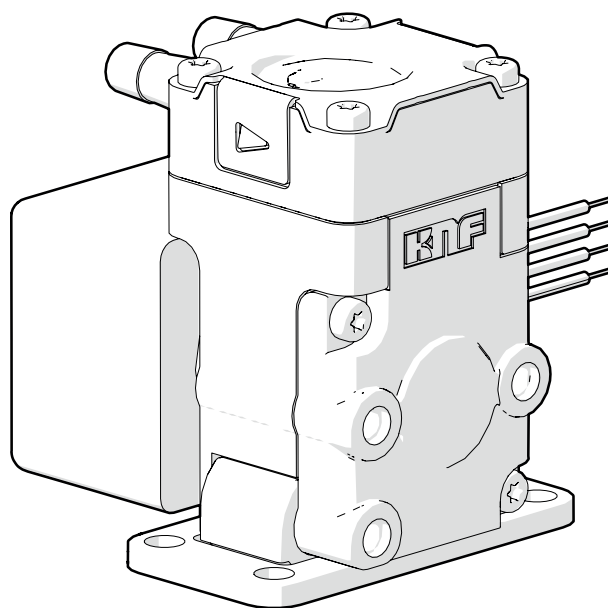
Figure 1 - Precision SL PCB assembly Figure 1 - Precision SL PCB assembly

# Circulation Pump Replacement



Ensure that Generator is in a Safely Isolated Condition.

1. First drain the water from the generator, using the drain connection on the rear of the generator. The DI Cartridge should be removed to allow the system to drain properly. Connect to an empty tank of at least 3 litres to ensure the tank can hold all the water from the generator.
2. Disconnect the 4-way Molex connection between the pump and the electrical panel.
3. Un-clip the pump from its bracket.
4. Disconnect the old pump from the system tubing.
5. Use fresh tubing provided to fit to the new pump.
6. Fit the new pump to the support bracket by clipping it into place.
7. Re-connect the tubing from the pump into the generators pneumatic circuit, as shown on the pneumatic schematic provided later in the manual and re-connect the electrical connection.
8. Return the generator to a Safe State of Repair, installing the DI Cartridge and connecting the generator to a clean fresh supply of deionised water.
9. Check all water connections to ensure there are no leaks and that the pump is circulating water towards the electrolyser stack.

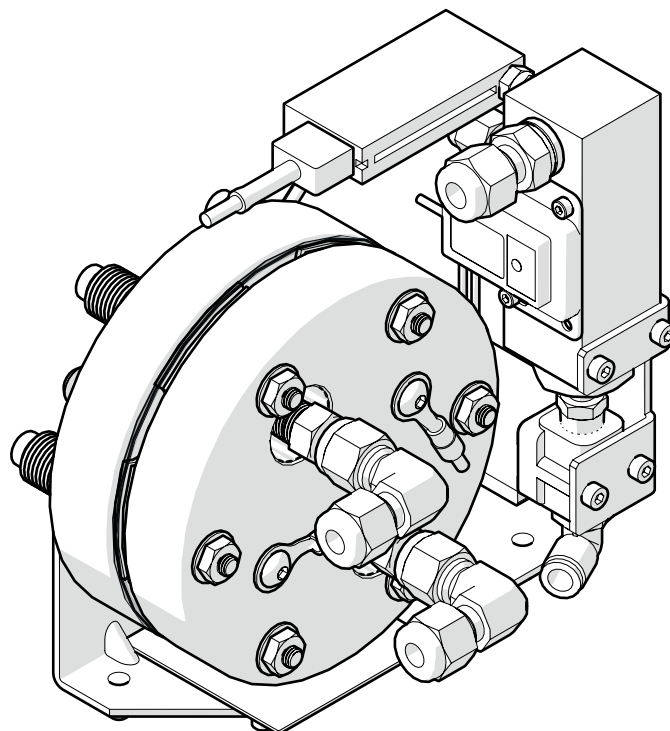


# Cell Replacement



Ensure that Generator is in a Safely Isolated Condition.

1. First remove the DI cartridge and drain the water from the generator, using the drain connection on the rear of the generator. Connect to an empty tank of at least 3 litres to ensure the tank can hold all the water from the generator.
2. Now disconnect the power cables from the electrolyser cell.
3. Remove the 4x M5 Nyloc nuts from the underside of the generator, retain for later use,, and disconnect the tubing connected to the cell.
4. Disconnect the separation tank valve, separation tank sensor and pressure switch connection on the electrical panel.
5. Remove the old cell and fit a new cell to the bracket, using a 1/8" Allen key. Then fit the sub assembly to the generator, ensuring the M5 Nyloc nuts are securely tightened. Refit the positive and negative power supply cables ensuring that they are securely tightened.
6. Finally, reconnect all water and gas hoses as per the schematic provided later in this manual.
7. Reconnect the separation tank valve and sensor as well as the pressure transducer.
8. Install a fresh DI cartridge prior to returning the generator to a safe state of repair

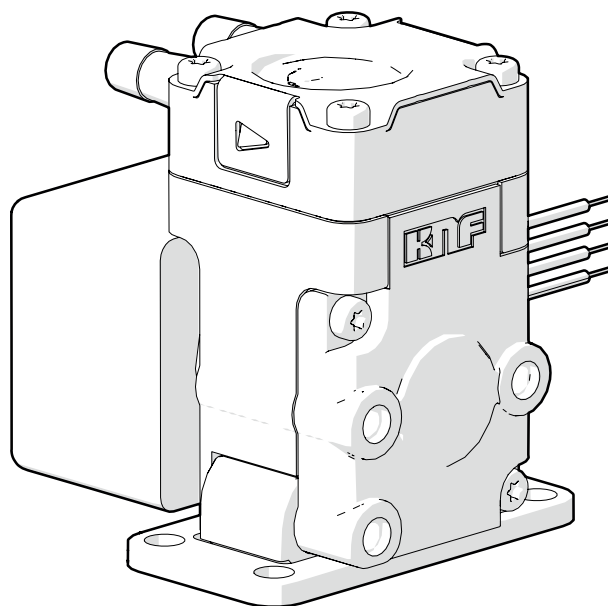


# Load Pump Replacement



Ensure that Generator is in a Safely Isolated Condition.

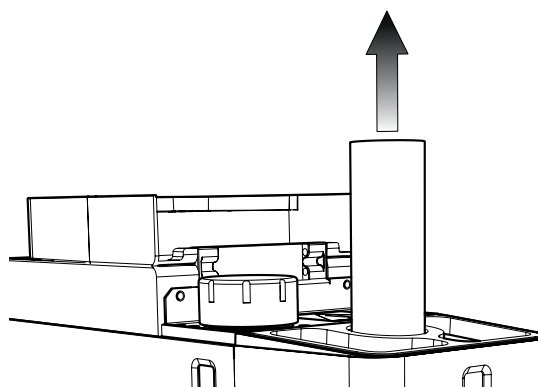
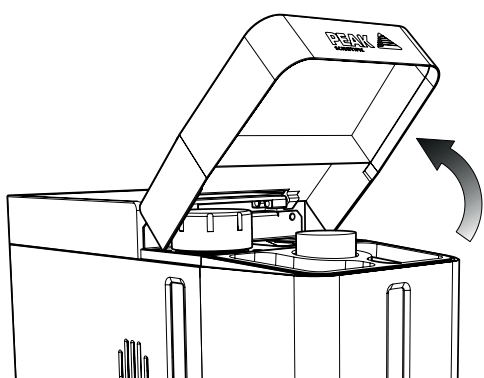
1. First remove the DI cartridge and drain the water from the generator, using the drain connection on the rear of the generator. Connect to an empty tank of at least 3 litres to ensure the tank can hold all the water from the generator.
2. Disconnect the tubing connected to the pump.
3. Disconnect the electrical connection at the pump.
4. Unclip the pump from it's bracket.
5. Hardwired pump wires should be connected to the PCB.
6. Clip the new pump into the already installed bracket.
7. Re-connect the tubing as per the schematic provided later in this manual.



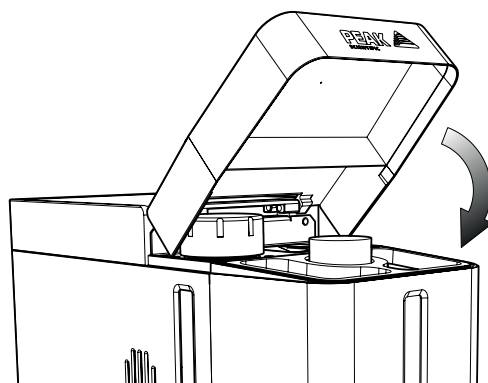
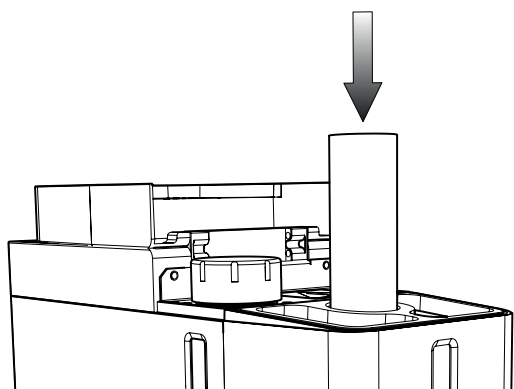
## Deioniser Column Replacement

DI column is an annual change, although should also be changed if the water supply is contaminated with water of a conductivity above the specified limit. Replacement of the DI column (the column in the middle of the water tank) is by rotating 90° anti-clockwise then pulling up and out of the tank. The new column is put in by lowering into the recess and twisting 90° clockwise to lock in position.

- 1. Depressurise the generator and disconnect power.** To replace the column, lift the hinged lid back, then remove the deioniser column by turning 90° anticlockwise and pulling upwards..



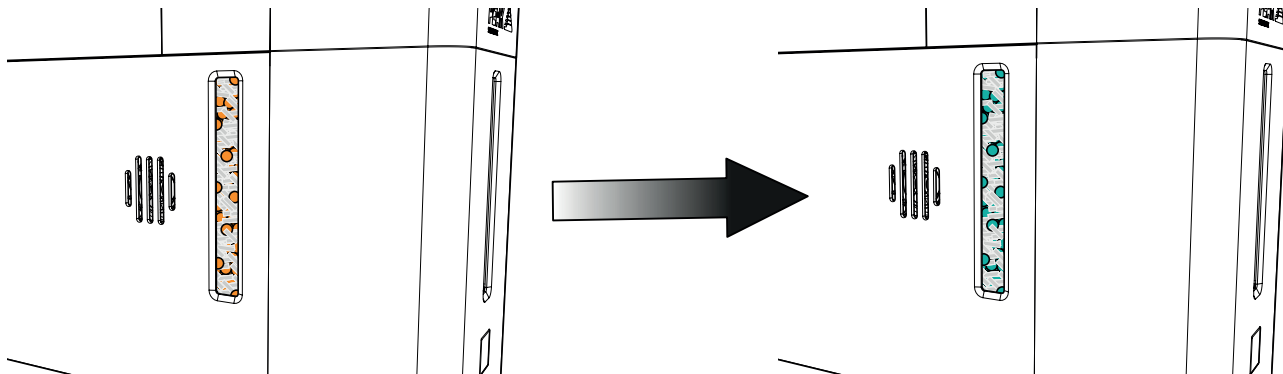
2. Drain the tank using the drain port on the rear of the generator. Once tank is empty, wipe down with a clean, lint-free cloth.
3. Lower the new column into the recess and rotate 90° clockwise to lock in position, then close the lid.



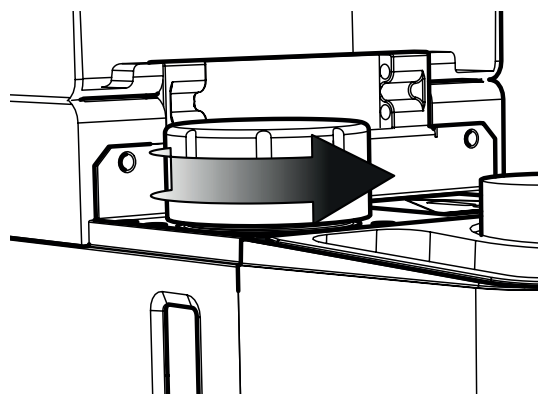
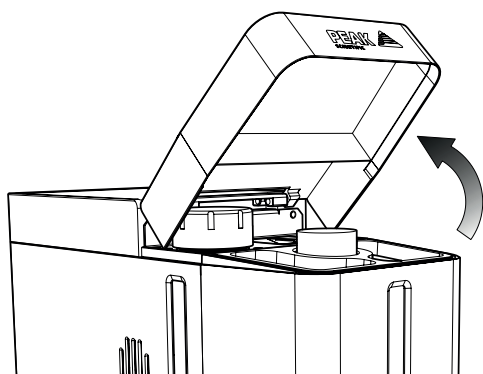
4. The unit can now be re-filled with water and switched on.

## Replacement of Desiccant Column

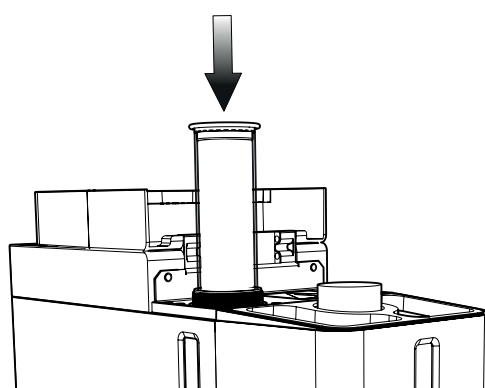
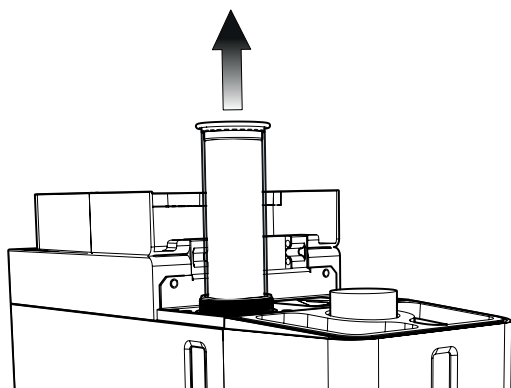
The desiccant column has a minimum expected life of 12 weeks. The column consists of molecular sieve interspersed with silica gel, viewable through the window on the side of the generator. The column should be replaced when all of the silica gel has visibly darkened.



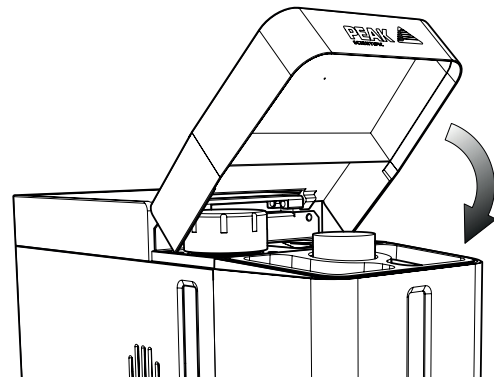
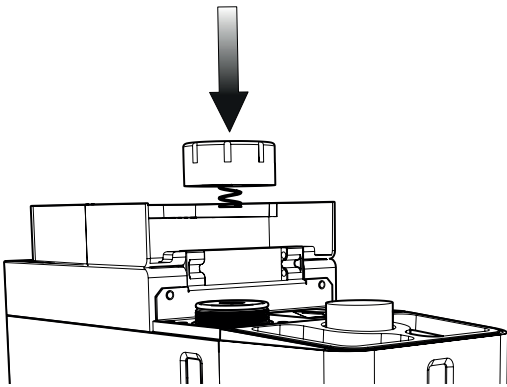
1. To replace the column, **depressurise the generator and disconnect power**. Lift the hinged lid back, then unscrew the column cap anticlockwise to remove.



2. Next withdraw the inner tube and dispose as per your company's hazardous waste disposal policy. The new column may now be inserted into the outer collar.



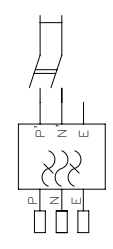


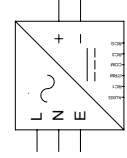
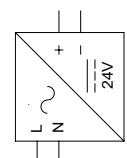
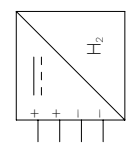
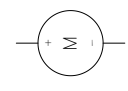

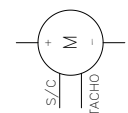
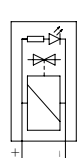
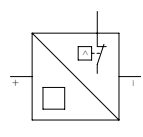
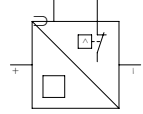
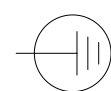



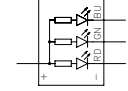



1. The cap can then be replaced ensuring not to over-tighten the cap and the hinged lid can be closed.



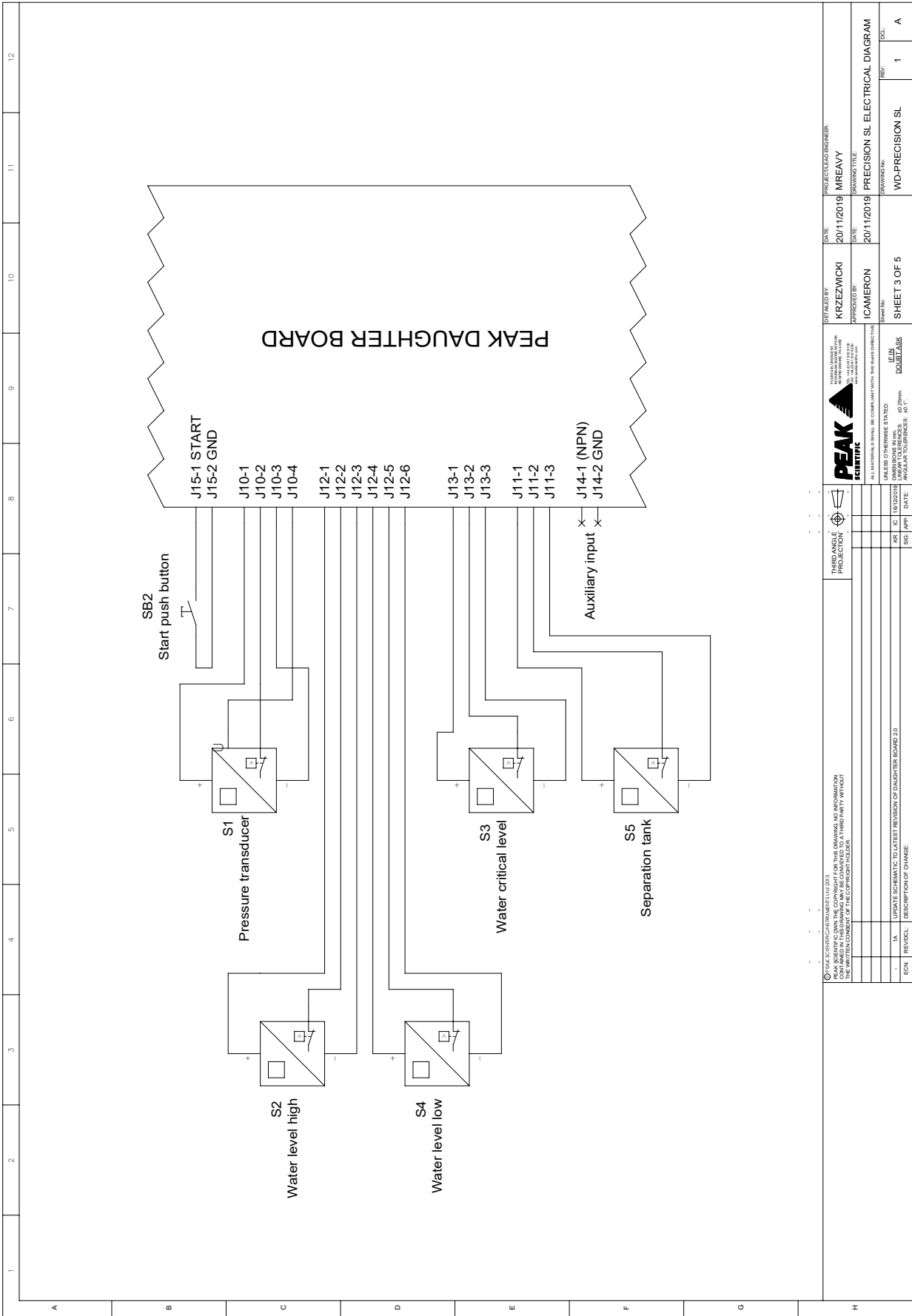




# Electrical Diagram

		1	2	3	4	5	6	7	8	9	10	11	12
A													
B	 DESCRIPTION: *MAINS SWITCH WITH EMI FILTER	 DESCRIPTION: *PEAK PCB ASSEMBLY (MOTHER / DAUGHTER BOARD)	 DESCRIPTION: *CIRCUIT BREAKER SINGLE POLE	 DESCRIPTION: *HYDROGEN CELL POWER SUPPLY	 DESCRIPTION: *24V DC POWER SUPPLY								
C	 DESCRIPTION: *HYDROGEN CELL FOR HYDROGEN AND HYDROGEN TRACE MODELS	 DESCRIPTION: *FIXED SPEED WATER PUMP	 DESCRIPTION: *PUSH BUTTON	 DESCRIPTION: *WATER PUMP WITH SPEED CONTROL & TACHO	 DESCRIPTION: *SOLENOID VALVE (OPTIONAL LED INDICATOR)								
D	 DESCRIPTION: *LEVEL SWITCH	 DESCRIPTION: *COMBINED PRESSURE TRANSDUCER/SWITCH	 DESCRIPTION: PROTECTIVE EARTH	 DESCRIPTION: INTER-SHEET CONNECTIONS	 DESCRIPTION: *RESISTOR								
E	 DESCRIPTION: *EQUIPMENT FAN	 DESCRIPTION: LED STRIP	 DESCRIPTION: *	 DESCRIPTION: PLUG	 DESCRIPTION: ---								
F													
G													
H	<p>© PEAK SCIENTIFIC INSTRUMENTS 2013. ALL RIGHTS RESERVED. THIS DRAWING IS AN INSTRUMENT DRAWING AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT THE WRITTEN CONSENT OF THE COPYRIGHT HOLDER.</p> <p>THIRD ANGLE PROJECTION</p> <p>UNLESS OTHERWISE STATED:            ALL DIMENSIONS SHALL BE COMPLIANT WITH THE FIRST DIRECTIVE            UNLESS OTHERWISE STATED:            UNLESS OTHERWISE STATED:            LINE AND DIMENSIONS: 40/20mm.            ANGULAR TOLERANCES: 40/1°.</p> <p>DATE: 20/11/2019            DRAWING TITLE: PRECISION SL ELECTRICAL DIAGRAM            PROJECT LEAD ENGINEER: MREAVY            APPROVED BY: ICAMERON            DRAWING NO: SHEET 1 OF 5            DRAWING NO: WD-PRECISION SL            REV: 1            A</p>												





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PEAK SCIENTIFIC INSTRUMENTS LLC 10000 W. 14TH AVENUE DENVER, CO 80202		DRAWN BY: <b>ICAMERON</b>	CHECKED BY: <b>ICAMERON</b>	DATE: <b>2011/2019</b>	DRAWING TITLE: <b>PRECISION SL ELECTRICAL DIAGRAM</b>
ALL MATERIALS SHALL BE COMPLIANT WITH THE RELEVANT DIRECTIVE: EN 60947-3 EN 60947-2 EN 60947-1 EN 60947-5-1 EN 60947-5-2 EN 60947-5-3 EN 60947-5-4 EN 60947-5-5 EN 60947-5-6 EN 60947-5-7 EN 60947-5-8 EN 60947-5-9 EN 60947-5-10 EN 60947-5-11 EN 60947-5-12 EN 60947-5-13 EN 60947-5-14 EN 60947-5-15 EN 60947-5-16 EN 60947-5-17 EN 60947-5-18 EN 60947-5-19 EN 60947-5-20 EN 60947-5-21 EN 60947-5-22 EN 60947-5-23 EN 60947-5-24 EN 60947-5-25 EN 60947-5-26 EN 60947-5-27 EN 60947-5-28 EN 60947-5-29 EN 60947-5-30 EN 60947-5-31 EN 60947-5-32 EN 60947-5-33 EN 60947-5-34 EN 60947-5-35 EN 60947-5-36 EN 60947-5-37 EN 60947-5-38 EN 60947-5-39 EN 60947-5-40 EN 60947-5-41 EN 60947-5-42 EN 60947-5-43 EN 60947-5-44 EN 60947-5-45 EN 60947-5-46 EN 60947-5-47 EN 60947-5-48 EN 60947-5-49 EN 60947-5-50 EN 60947-5-51 EN 60947-5-52 EN 60947-5-53 EN 60947-5-54 EN 60947-5-55 EN 60947-5-56 EN 60947-5-57 EN 60947-5-58 EN 60947-5-59 EN 60947-5-60 EN 60947-5-61 EN 60947-5-62 EN 60947-5-63 EN 60947-5-64 EN 60947-5-65 EN 60947-5-66 EN 60947-5-67 EN 60947-5-68 EN 60947-5-69 EN 60947-5-70 EN 60947-5-71 EN 60947-5-72 EN 60947-5-73 EN 60947-5-74 EN 60947-5-75 EN 60947-5-76 EN 60947-5-77 EN 60947-5-78 EN 60947-5-79 EN 60947-5-80 EN 60947-5-81 EN 60947-5-82 EN 60947-5-83 EN 60947-5-84 EN 60947-5-85 EN 60947-5-86 EN 60947-5-87 EN 60947-5-88 EN 60947-5-89 EN 60947-5-90 EN 60947-5-91 EN 60947-5-92 EN 60947-5-93 EN 60947-5-94 EN 60947-5-95 EN 60947-5-96 EN 60947-5-97 EN 60947-5-98 EN 60947-5-99 EN 60947-5-100		SHEET NO: <b>SHEET 3 OF 5</b>	DRAWING NO: <b>WD-PRECISION SL</b>	REV: <b>1</b>	QTY: <b>A</b>
EGN:	REVISION:	DESCRIPTION OF CHANGE:	DATE:	BY:	CHECKED BY:





## Cleaning

Clean the outside of the generator only using warm soapy water and a clean damp cloth. Ensure all excess fluid is thoroughly removed from the cloth prior to use.



Cleaning should only be undertaken with the power switched off and the power cord removed from the rear of the generator.



CAUTION






Under no circumstances should any solvents or abrasive cleaning solutions be used as these can contain fumes that could be harmful to the generator.



CAUTION

Care should be taken with Leak Detections Liquids.

# Troubleshooting

Problem	Possible Solution
The Generator does not start.	<ul style="list-style-type: none"> <li>• Check that power is available from source.</li> <li>• Ensure power cord is plugged into the Generator and that the power socket is turned on.</li> <li>• Check the fuse in the power cord plug.</li> <li>• Contact your service provider.</li> </ul> 
The HMI is on but the generator will not start.	<ul style="list-style-type: none"> <li>• Check the cell isn't Over Pressure.</li> <li>• Check the unit is not in stand-by mode.</li> <li>• PLC Fault, Contact your service provider.</li> </ul> 
Generator fails to load water.	<ul style="list-style-type: none"> <li>• Ensure water supply is connected and is full.</li> <li>• Contact your service provider.</li> </ul>
The generator fails to produce pressure during start up or normal operation.	<ul style="list-style-type: none"> <li>• Ensure there are no leaks in the system.</li> <li>• Check that there are no faults in the wiring, valve or cell.</li> <li>• Check desiccant column has been replaced correctly.</li> <li>• Contact your service provider.</li> </ul> 
Generator fails to maintain flow.	<ul style="list-style-type: none"> <li>• Check that demand is within the systems capability.</li> <li>• Ensure there are no leaks in the system.</li> <li>• Check that there are no faults in the cell or valve.</li> <li>• Check cell power connection.</li> <li>• Check for excess demand fault.</li> <li>• Check desiccant column has been replaced correctly.</li> <li>• Contact your service provider.</li> </ul> 
Generator fails to make hydrogen.	<ul style="list-style-type: none"> <li>• Check connections</li> <li>• Check for cell fault.</li> <li>• Check if over pressure switch is active.</li> <li>• Check connections to switch mode power supply.</li> <li>• Contact your service provider.</li> </ul> 

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