

2024-1325  
2024-08-06

HYPROLYSER Compact 240  
Chlorine Generator

Controls Bacteria and Algae in  
Commercial Swimming Pool (Spa) Waters

A maximum of 500,000 L of water can be treated with one Hyprolyser Compact 240 unit.  
Maximum output of hypochlorous acid equivalent to 5.7 kg of free available chlorine per day

For swimming pools, a range of 1-3 ppm of free available chlorine must be maintained.  
For spas, a range of 3-5 ppm of free available chlorine must be maintained.

READ THE LABEL AND OPERATING MANUAL BEFORE USING  
KEEP OUT OF REACH OF CHILDREN  
REGISTRATION NO. 33151 *PEST CONTROL PRODUCTS ACT*

WARNING: Operating a Hyprolyser Compact 240 without water flow through the cell can cause a buildup of flammable gases which can result in FIRE OR EXPLOSION.

NOTICE TO USER: This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *PEST CONTROL PRODUCTS ACT* to use this product in a way that is inconsistent with the directions on the label.

Pinnacle Aquatic Group Inc.  
5423 61 Ave SE Unit 140  
Calgary AB T2C 5N7

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HYPROLYSER Compact 240  
Compact 240 Electrolyser Replacement Cell

Replacement cell for the Hyprolyser Compact 240 chlorine generating device.  
REGISTRATION NUMBER 33151, *PEST CONTROL PRODUCTS ACT*. This cell must only be used on this model of chlorine generating device.

Read the Label, the Installation Manual and Operation Manual of the Hyprolyser Compact 240 chlorine generating device before using.

Pinnacle Aquatic Group Inc.  
5423 61 Ave SE Unit 140  
Calgary AB T2C 5N7



## HYPROLYSER® Compact 240

Electrolysis system for on-site hypochlorite generation



### User Guide

EN

Read and refer to the operation and maintenance instructions before start-up!

To be held for further reference.

# TABLE OF CONTENTS

INTRODUCTION.....	5
SAFETY INFORMATION... ..	6
INTENDED USE / WARRANTY INFORMATION .....	7-8
PRODUCT DESCRIPTION... ..	9-10
TECHNICAL DATA.....	11-13
INSTALLATION.....	14-17
START UP. ....	18-19
OPERATION .....	20
MAINTENANCE AND CLEANING... ..	21-24

*On-site Electrolytic Chlorination System, Hypolyser Model Compact 240 & 480*

HYPOCHLORITE GENERATION  
CONTROLS BACTERIA AND ALGAE  
in  
Swimming Pool (and Spa) Waters

COMMERCIAL

For swimming pools, a range of 1.0 – 3.0 ppm of free chlorine must be maintained.

For spas, a range of 3.0 – 5.0 ppm of free available chlorine must be maintained.

KEEP OUT OF REACH OF CHILDREN

READ THE LABEL AND OPERATION MANUAL BEFORE USING

REGISTRATION NO. 33151 PEST CONTROL PRODUCT ACT

**WARNING:** Operating the *On-site Electrolytic Chlorination System, Hypolyser Model Compact 240 & 480*, without water flow through the cell can cause a buildup of flammable gases which can result in FIRE OR EXPLOSION.

**NOTICE TO USER:** This pest control product is to be used only in accordance with the directions on the label. It is an offence under the *Pest Control Products Act*, to use this product in a way that is inconsistent with the directions on the label.

**Pinnacle Aquatic Group Inc.** 5423 61 Ave SE Unit 140, Calgary, Alberta, T2C 5N7, Canada.  
Tel. 1 (403) 453-1944 Email: [info@pinnacleaquaticgroup.com](mailto:info@pinnacleaquaticgroup.com) Web: [www.pinnacleaquaticgroup.com](http://www.pinnacleaquaticgroup.com)

# Introduction

This user manual provides significant assistance in the successful and smooth running of the Hyprolyser® Compact 240 & 480 series electrolysis systems, also referred to, in short, as “system” in the following instructional text.

The operating manual for the Hyprolyser® Compact 240 & 480 electrolysis systems must always be available where the system is located and has to be read and used by every person who is assigned to working on the system. This includes amongst other things:

- the installation
- the servicing and repair work
- the maintenance (maintenance, care, repair)
- the transport

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The operating manual is a significant component of the Hyprolyser® Compact electrolysis system. The operator must ensure that the service personnel learn these guidelines.

The operating manual is to be supplemented by the operator regarding the operating instructions, national regulations for Health and Safety at Work and Environmental Protection, including information on the responsibilities of supervision and the observance of operational specifics, e.g. concerning labour organizations, operational sequences and appointed personnel.

Besides the operating manual and the obligatory regulations for Health and Safety at Work applicable in the country of use, as well as in the place of use, the recognized specialist technical regulations for safe and professional work must also be observed.

The operator of the Hyprolyser® System may not make any changes, attach fittings or make alterations to the construction of the Hyprolyser® System that may impair security, without the written consent of Pinnacle Aquatic Group Inc. This also applies to the installation and setup of safety devices.

Any replacement parts to be used must correspond to the technical requirements specified by Pinnacle Aquatic Group Inc. This is always guaranteed in the case of original spare parts.

# Safety Information

## **General Warnings**

The following warnings are intended to help you to eliminate the dangers that can arise while handling the device. Risk prevention measures always apply regardless of any specific action. Safety instructions warning against risks arising from specific activities or situations must be followed.

## **Hazards Due To Non-Compliance with the Safety Instructions**

Failure to follow the safety instructions may endanger not only persons, but also the environment and the device.

- failure of important functions of the device and of the corresponding system
- failure of required maintenance and repair methods
- danger to persons

## **Working in a Safety-Conscious Manner**

Besides the safety instructions specified in these operating instructions, further safety rules apply and must be followed:

- accident prevention regulations
- safety and operating provisions
- environmental protection provisions
- applicable standards and legislation

## **Personal Protective Equipment**

Based on the degree of risk posed by the dosing medium and the type of work you are carrying out, you must use corresponding protective equipment. Although the dosing media produced by the Hypolyser® System is classified non-hazardous, the following protective equipment is recommended when carrying out certain tasks:

- Commissioning
- Working on pressurized dosing devices
- Shutdown
- Maintenance
- Disposal

## **Personnel Qualification**

Any personnel who work on the device must have appropriate knowledge and skills. Anybody who works on the product must meet the conditions below:

- attendance at all the training courses offered by the owner
- personal suitability for the respective activity
- sufficient qualification for the respective activity
- training in how to handle the device
- knowledge of safety equipment and the way this equipment functions
- knowledge of these operating instructions, particularly of safety instructions and sections relevant for the activity
- knowledge of fundamental regulations regarding health and safety and accident prevention.

## **All Persons Must Generally Have the Following Minimum Qualification**

- training as specialists to carry out work unsupervised on the device
- sufficient training that they can work on the device under the supervision and guidance of a trained specialist

# Intended Use / Warranty Information

## Notes on Product Warranty

Any non-designated use of the device can impair its function and the protection provided. This leads to invalidation of any warranty claims! Please note that liability is on the side of the user in the following cases:

- The device is operated in a manner which is not consistent with these operating instructions, particularly safety instructions, handling instructions and the section "Intended Use".
- Information on usage and environment (see "Technical Data") is not adhered to.
- Personnel that operate the device who are not adequately qualified to carry out their respective activities.
- Unauthorized spare parts or accessories of Pinnacle Aquatic Group Inc. are used.
- Unauthorized changes are made to the device.
- The user uses different salt quality than that indicated in this instruction manual.
- Maintenance and inspection intervals are not adhered to as required or not adhered to at all.
- The device is commissioned before it or the corresponding system has been correctly and completely installed.
- Safety equipment has been bridged, removed or made inoperative in any other way.

## Intended Purpose

The HYPROLYSER® on-site electrolytic chlorination system is intended for the following purpose: Generation of a <1% sodium hypochlorite solution using salt, water and electrical energy, with the resulting media to be used as a disinfection agent for the chlorination of drinking water and swimming pools. The concentration of the sodium hypochlorite solution produced is 0.6% (+/-0.1%) Cl<sub>2</sub> by weight.

## Device Revision

This operating instruction manual applies to the following devices:

Device	Month /year of manufacture
HYPROLYSER® Compact 240, Compact 480 models.	07/2015 onwards

## Sodium Chloride Chemical Specification

The HYPROLYSER® system is designed to be used with dry crystalline/granular salt. When ordering salt from your supplier always specify the brand or specific quality you require, so that, in the unlikely event of any shortage of stock, you will still receive an equivalent grade of salt. *Use dry crystalline/granular salt that is pool quality grade.*

## Water Quality

Drinking water or water of a similar quality should be used. It should be free of solids and suspended matter. The temperature of the water entering the system must be in the range of 8-20°C

## Standard Warranty Conditions

Equipment	*Warranty Period
Electronic devices	2 years
Electrolyser	5 years limited, pro-rata
Wearable items	12 months

\* From the date of invoice



# Product Description

## Scope of Delivery

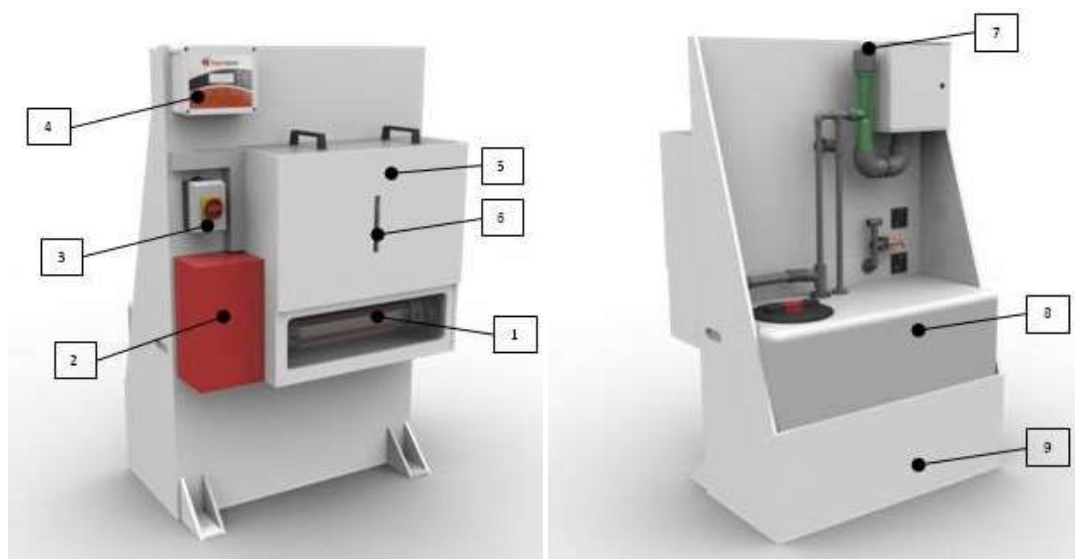
Please compare the delivery note with the scope of delivery:

- HYPROLYSER® system
- Operating Instructions
- Optional - dosing pump/s, accessories.

## Design and Function

### Structure of the Device

HYPROLYSER® COMPACT 240/480 SKID



Item	Description
1	Electrolyser
2	Water flow management control module
3	Electric supply isolator
4	Control panel
5	Salt saturator / hopper
6	Visual salt level indicator and brine saturation chamber
7	Ventilation exhaust
8	Product storage tank
9	Floor standing skid and integrated spill containment

## Function Description

HYPROLYSER® Compact is a fully automatic system for the preparation of dilute sodium hypochlorite solution containing 0.5-0.7%  $\text{Cl}_2$  from the raw materials of salt, softened water and electrical energy.

The operator is required to fill the salt saturator hopper (5) with salt. From this, the system automatically produces a concentrated brine solution which is then diluted with water to the correct strength for efficient electrolysis at the water flow control module (2). The diluted brine is then delivered to the electrolytic cell (1) where a low voltage DC current is passed through the solution, producing sodium hypochlorite. The hypochlorite solution produced is delivered to a product storage tank (8) ready for dosing via a chemical dosing pump (optional extra). The batching process is continued automatically until the product storage tank (8) is filled. The filling of the product storage tank and the batching process is managed automatically by the control panel (4). A small quantity of Hydrogen gas is produced as a by-product of electrolysis. This gas is safely vented to an outdoor position via a dedicated centrifugal fan and venturi system (7).

The control sequence is managed by the control panel according to the diagram. In automatic operation the sequence continues until the product tank is full.

# Technical Data

## Output Data

HYPROLYSER® Compact 240 / 480			
Model:		<b>240</b>	<b>480</b>
Chlorine capacity	g/h	240	480
Chlorine concentration as Cl <sub>2</sub>	g/l	5 - 7	
Liquid product output	l/h	40*	80*
Liquid product storage*	L	200	200
Salt storage capacity	kg	100	

\* at the default production setting of 6g Cl<sub>2</sub>/L (0.6%).

## Operating Conditions and Limits

HYPROLYSER® Compact 240 / 480			
Model:		<b>240</b>	<b>480</b>
Nominal water consumption	l/h	40	80
Nominal salt consumption	kg/h	0.72	1.44
Operating pressure	Bar	1.5 – 8.0	
Ambient temp	°C	+5 to + 45	
Water supply temp	°C	+8* to +20*	

\*Water heating required below 8°C. Water chiller required above 20°C.

## Electrical Specifications

HYPROLYSER® Compact 240 / 480			
Model:		240	480
Power supply	Ø	1Ø, 230VAC	
Power consumption	kWh	1.75 (7.6A)	3.33 (14.5A)
Protection class	IP	54	

## Connection Dimensions

Description	Size
HYPROLYSER® Water connection	½" BSPm x 8mmOD push-fit tube adaptor
Water softener connections	¾" BSPm
Hydrogen vent line	2" / 63mm uPVC solvent socket
Electrical connection point	M20 x 1,5 female thread, or M25 cut-out.
Control panel cable terminations	M20, max. 12mmOD 3 core cable, 1.0mm <sup>2</sup>

## Components Coming into Contact with the Media

Description	Material
Electrolytic cell	PVC, titanium, PTFE, FPM.
Product transfer pipe	PVC
Product tank	MDPE
Product tank level switch assy	PVDF/PVC, FPM

## Other Data

HYPROLYSER® Compact 240/480			
Model:		240	480
Empty weight	kg	92	96

	<b>Swimming pool</b>
Free available chlorine	1.0 - 3.0 ppm
pH	7.2 - 7.8
Total alkalinity	100 - 120 ppm
Calcium hardness	200 - 300 ppm

# Installation

## Installation Location

### Space Requirements

#### Precondition for action:

- ✓ A firm and level floor is required for the skid mounted system.
- ✓ The plant room has high level natural ventilation.
- ✓ The system must be accessible for operation, day-to-day filling with salt and for maintenance.
- ✓ Follow installation procedure.

#### Perform the following steps:

1. Place the skid unit into its intended permanent position allowing sufficient space to connect services to the connection ports to the side and top of the system.
  2. Install the hydrogen gas detector above the location of the Hyprolyser® System, preferably up against the underside of the room ceiling or at the highest point in the immediate room. The sensor head unit is supplied with a fixing bracket that must be used in order to facilitate quick and easy replacement of the sensor head at the time of future maintenance/replacement.
- ✓ **Location of skid system complete**

### Water Supply

#### Precondition for action:

- ✓ A minimum cold water supply pressure of 1.5 bar is required for the water softener to operate correctly.
- ✓ A verifiable double check valve or pipe disconnecter is installed in the drinking water supply and fitted upstream of the entire HYPROLYSER® System and any water softening equipment, if the local regulations require it.
- ✓ A pressure reducing valve should be fitted to the water supply if the supply pressure is greater than 8.0 bar.

### Auto Regenerative Water Softener

A hydraulically operated duplex water softener is provided with the Hyprolyser 240 / 480 models. It must be installed in all circumstances.

#### Precondition for action:

- ✓ Suitable water supply available

### Perform the following steps:

1. Install the softener unit on a firm level base within easy reach of the HYPROLYSER® system and near to a local waste water drain point.
2. Follow the general installation instructions. Ensure the softener is fitted with isolation valves on the inlet and outlet connections in order to facilitate future maintenance of the unit.
3. A softened water sample tap should be fitted to the pipe-work between the water softener and the Hyprolyser to enable regular testing of the softened water.
4. Connect the softener' water outlet to the HYPROLYSER® using the ½" BSPm x 8mmOD tube adaptor supplied with the system. Use flexible 8mmOD tubing to connect to the 8mmOD inlet fitting of the HYPROLYSER® unit.

### Product Tank

The HYPROLYSER® Compact 240/ 480 models are provided with an integrated product tank of 200 litres capacity. The product tank is pre-plumbed and wet tested at the factory.

### Installation of Dosing Pumps

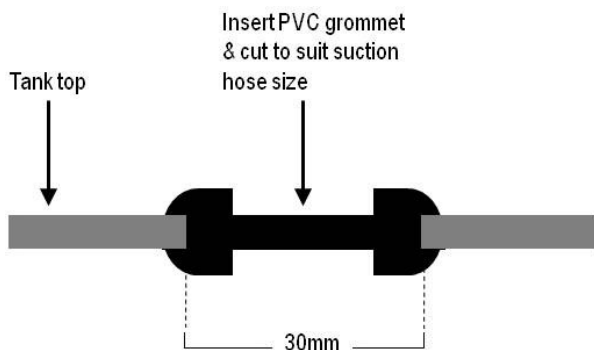
**IMPORTANT:** Dosing pumps should not be mounted directly onto the product tank. A wall or floor mounted bracket/shelf should be used. A suction line grommet in chemical resistant PVC (4 provided) must be used when installing the dosing pump suction lines to ensure the air tightness of the tank.

#### Damage or failure of the system due to incorrect installation of dosing pumps.

The Hyprolyser system will not operate if the air tightness of the product tank or ventilation system is compromised.

c:> Always use the correct suction line grommet and installation method for each pump suction line and pressure relief line.

c:> Mount the dosing pumps on a wall or floor mounted bracket.



### Hydrogen Ventilation

The HYPROLYSER® Compact requires the installation of a ventilation pipe duct between the unit and a suitable outside termination vent point (normally at high level >3m), in order to safely vent any hydrogen gas liberated from the electrolytic process.

The exterior vent pipe termination point must be installed so as to respect zone safety requirements around the opening of the vent. Refer below to "External Zone 2 Requirement" for guidance.

Plan the pipe route as direct and straight as possible and always on a slight incline from the vent discharge connection on the Hydrolyser skid to a discharge point within 15 metres.

For pipe runs longer than 15m a larger diameter duct pipe should be used, according to the table below, so that the airflow volume can be maintained above the minimum of 40m<sup>3</sup> per hour.

Vent pipe length	Minimum duct size
≤ 15m	2"/63mm
> 15m	3"/90mm
> 30m	4"/110mm

For vent lines longer than 30m use wide radius bends instead of elbows to reduce air friction. DO NOT install any unions or any disconnection points at any point along the vent pipe work. All vent pipe/ductwork should be solvent welded throughout its length.

To comply with Health & Safety requirements the vent termination point on the external wall should not be located directly beneath any air intake and must be located at a minimum distance (zone radius, below) from any window or possible source of ignition. If the external vent pipe work is located in a public area, or there is a possibility of vandalism, it should be protected with a suitable steel cage/pipe capping.

The ventilation ducting should be labelled for clear identification at regular intervals along its length.

## External Zone 2 Requirement

The following External Zone 2 requirements are necessary at the point of the external vent as indicated.

System type	External vent "Zone 2" radius
Compact 240	0.8m
Compact 480	1.0m

If in doubt, contact your supplier for further advice.

## Standard Hydrogen Ventilation (<15m)

### Precondition for action:

- ✓ suitable outside vent point provided
- ✓ adequate natural room ventilation

### Perform the following steps:

1. Install 2"/63mm ventilation piping from the 2" socket connection at the HYPROLYSER® Compact to the exterior vent point.
2. Provide and fix appropriate signage at the vent point in accordance with local rules.
  - ✓ **standard ventilation installation complete.**



## Electrical Installation

### Precondition for action:-

- ✓ Unit located correctly
- ✓ Identify system model/type

### Perform the following working steps:

1. Use the correct cable size for the load, length of the circuit and installation conditions. Select the circuit protection device according to local regulations.
2. Connect the main electrical power supply to the rotary isolating switch located beneath the Hyprolyser control panel. Access is provided for 20mm or 25mm cable glands.
3. Ground the equipment in accordance with local regulations.
4. Hyprolyser Compact 240 & 480 skid system components are pre-wired.

# Start Up

## Turning on the System

### Precondition for action:

- ✓ The system is configured according to the factory setup.
- ✓ The system has been installed.
- ✓ The control device is grounded.

### Perform the following working steps:

- Set the main rotary isolator switch to ON
  - Start-up screen appears
  - System will perform a set number of water and brine batch cycles to initially charge the electrolytic cell with a minimum volume of brine solution prior to automatically starting normal generation/batch cycles.
- ✓ **Device switched ON.**

## Commissioning the System

### Precondition for action:

- ✓ A softened water supply is connected and ready either via a regenerative softener or softener filter cartridge supplied within the scope of the system or via an existing soft water supply already available on site.
- ✓ The softened water supply should be confirmed by performing a water hardness YES/NO test. The sample will be a GREEN result for soft water and RED result for hard water. The result MUST BE GREEN, i.e. soft water. DO NOT PROCEED further until a reliable softened water supply is available.
- ✓ The salt saturator is filled with a pre-charge of the correct specification of granular salt.
- ✓ Four (4) litres of cold (preferably softened) water has been manually added to the salt saturator 30 minutes prior to initial start-up to ensure an adequate volume of saturated brine solution is available (only necessary for initial start-up event).
- ✓ The hydrogen gas sensor detection kit is correctly installed and electrically connected via the 4-pin plug/M12 cable assembly as per installation instruction.

### Perform the following working steps:

1. If an auto regenerative softener is fitted to the system, the hardness setting of the softener should be set to 50mg/l CaCO<sub>3</sub> above the hardness value of the source water.
2. Start-up the HYPROLYSER®.
3. Check the clock settings by pressing and holding the scroll UP key, while in System Healthy display screen, for 5 seconds. The MANUAL INHIBIT screen will appear and stop the system.
4. Press the ENTER button for 5 seconds to access the Service Menu. The (PIN? 0....) screen will appear.
5. Using the UP/DOWN scroll keys, enter the service code 2236. Each digit needs to be individually selected and entered.
6. Scroll UP until Program 6 is revealed.
7. Press ENTER and then scroll DOWN to adjust date and time accordingly. Pressing ENTER at the EXIT screen will revert to Service Menu.

8. Scroll UP until Program 1 / End Program Mode is reached. At this point press ENTER and the display will return to the MANUAL INHIBIT screen.

9. To restart the system, press and hold the scroll UP key for 5 seconds.

10. System will now resume its previous automatic status.

11. When the SYSTEM HEALTHY screen is visible, scroll DOWN to observe engineer display 1:

The normal DC Volts reading should be in the range of:

Hyprolyser Compact 240 = 12v (+/-1v) 100A

Hyprolyser Compact 480 = 24v (+/-1v) 100A

\* The DC volts reading may take several hours to stabilize on initial commissioning owing to the water/brine solution strength stabilising.

12. Using a DC clamp ammeter, check that the DC current is at 100A (+/- 5A during the initial running-in period).

13. Continue to scroll DOWN to observe Eng. Display 4 which provides a visual indication of the hydrogen threshold as a percentage. An acceptable level of <50% should always be the case. The hydrogen gas detect system is factory set and requires only an annual service inspection/test.

14. After 12 to 24 hours of operation it is recommended to perform a chlorine product strength test. The result should ideally read 0.6% +/- 0.1%.

15. Complete a Commissioning record.

✓ **System commissioning completed.**

# Operation

## **Automatic Operation**

The on-site electrolytic chlorine generation and preparation HYPROLYSER® System is automated. The softened water supply is automatically regulated according to the system demand. The salt saturator should be refilled with salt manually before allowing it to become empty. Avoid allowing the level to drop <25% full.

The system process will START and STOP according to the level of the product storage tank facility.

When the tank is full the display will show: (STOPPED)

When the system is generating and the tank is filling the display will show: (GENERATING)

## **Manual Inhibit**

The automatic process may be interrupted by placing the control cycle in to MANUAL INHIBIT mode. This will STOP the automatic electrolytic process.

While the system is displaying SYSTEM STOPPED or SYSTEM HEALTHY, the scroll UP key may be pressed for 5 seconds to place the system into MANUAL INHIBIT mode which halts the system.

Press the scroll UP key again for 5 seconds to resume automatic operation.

## **Remote Inhibit**

The HYPROLYSER® may be connected to an external switch intended to stop the system remotely. If the system is stopped remotely, the screen will display REMOTE INHIBIT. The system will not resume automatic operation until the remote inhibit function is released.

## **Softener Regeneration**

Failure to provide a softened feed water supply for the normal operation of the system will most likely result in failure of the system and affect the warranty conditions.

If an automatic regenerative softener has been fitted as part of the scope of the system, the softener will automatically regenerate and whilst doing so place the system into STOP mode.

The system will resume automatic operation once the regenerative process, approximately 60 minutes, is complete.

## **Emergency Shutdown**

In the event of an emergency, you must immediately disconnect the device from the main electrical supply. This can be achieved by switching the rotary isolator to the off position.

If an auxiliary Emergency Stop device has been connected to the device, this can be activated to stop the system. If this is the case, the HYPROLYSER® System will need to be reset on the panel by pressing the ENTER button once the Emergency Stop device has been released.

## **Record Log of Operation**

In order to maintain and monitor the performance of the system and ensure the system is operated within manufacturer warranty conditions, the operator has the responsibility to complete an Operator Log.

✓ **Warranty compliance**

# Maintenance and Cleaning

The HYPROLYSER® Compact Units are manufactured to the highest quality standards and have along service life. However, some parts are subject to operational wear. This means that regular visual inspections are necessary to ensure a long service life. Regular maintenance will protect the system from operational interruptions.

## Maintenance Intervals

The system requires regular maintenance to prevent errors, poor performance and even failure. This table gives an overview of maintenance work and the intervals at which you must carry it out. The Operation Manual contains instructions for carrying out this work.

Interval	Level	Maintenance
On demand	Operator	■ Replace softener cartridge if fitted
Annual	Technician	■ Clean water flow restrictor ■ Check water & brine solenoid valve integrity ■ Check & Test hydrogen gas sensor
2 yrs. (or >10,000 operating hours)	Technician	■ Replace pipe gaskets ■ Check, Test & Replace hydrogen gas sensor
5 yrs.	Technician	■ Major overhaul

## Clean Water Flow Restrictor

The flow restrictor may occasionally be compromised due to sediment fouling carried in via the water supply. One of the reasons the HYPROLYSER® may alarm on "NO WATER FLOW" could be a result of a blockage at the point of the restrictor.

### Precondition for action:

- ✓ Isolate the power supply to the HYPROLYSER® via the rotary isolator switch.
- ✓ Isolate the feed water supply to the HYPROLYSER®.

### Perform the following working steps:

1. Remove the HYPROLYSER® front outer red plastic protective mechanical cover by removing the black protective nut cap. Unscrew the single retaining nut and remove the red cover.
2. Push back the tube fitting collar with finger and thumb and pull out the red restrictor from the assembly. Check the internal orifice is clean and free of debris.
3. Replace the restrictor in reverse operation to above ensuring that the restrictor fully engages into the tube fittings to make a water tight seal.
4. Refit the red mechanical cover.
5. Start-up the system.

- ✓ **The restrictor has been successfully checked.**

## Check Water & Brine Solenoid Valve Integrity

One or both solenoids may eventually wear and allow a small discharge flow of water when normally closed.



One of the reasons the Hyprolyser® may alarm in “VOLTAGE HIGH” is due to the water solenoid valve inadvertently passing water and producing a low salinity brine solution entering the electrolytic cell.

One of the reasons the Hyprolyser® may alarm in “VOLTAGE LOW” is due to the brine solenoid inadvertently passing brine, allowing a high salinity brine solution to build up in the electrolytic cell.

### Precondition for action:

- ✓ Isolate the power supply to the HYPROLYSER® via the rotary isolator switch.

### Perform the following working steps:

1. Remove the HYPROLYSER® front outer red plastic protective mechanical cover by removing the two black protective nut caps. Unscrew the two nuts and remove the red cover.
2. Detach the flexible tubing from out of the top exit point of the relevant solenoid valve (or both solenoid valves during major service). Remember to push the tube fitting collar down with finger and thumb to enable the release of the tubing.
3. There should be no water passing/leaking through the solenoid valve. If there is any slight leakage then the solenoid should be dismantled and cleaned or replaced.
4. After checking/replacing the water solenoid valve, reinsert the tubing into the tube fitting. Ensure the tube fully engages into the tube fitting to make a water tight seal.
5. Start-up the system.

- ✓ **The solenoid valves have been successfully checked/replaced.**

## Hydrogen Gas Detector Inspection

The hydrogen gas (H<sub>2</sub>) detection system is very important to ensure a safe environment. The H<sub>2</sub> detector should be routinely tested annually in order to verify a safe system of work. For reference, a hydrogen sensor reading of 100% is equivalent to less than 25% of the Hydrogen LEL value. The H<sub>2</sub> level detected in the immediate atmosphere is displayed on the screen and should normally be below 50%. This reading can be displayed by scrolling DOWN at the HYPROLYSER® panel to reveal Eng. Display 4:

### Precondition for action:

- ✓ HYPROLYSER® System in normal automatic operation.

### Perform the following working steps:

1. Prepare the HYPROLYSER® H<sub>2</sub> test device (available separately) as per device instructions.
2. Position the tester device so that it liberates its test gas directly at the sensor head as per the device instructions.
3. The reading on the display will quickly rise to 100% at which point will trigger the hydrogen sensor fault.
4. Remove the H<sub>2</sub> test device from the sensor and the reading will quickly return to a low reading below 50%. If the sensor does not react or read 100% during the test then the sensor must be replaced.

\* When the display reads 100%, this is equivalent to a H<sub>2</sub> detection level in the atmosphere of less than 25% of the LEL threshold.

- ✓ **The hydrogen gas detection system has been successfully checked/sensor replaced.**

## Replace Gaskets

Elastomers exposed to the electrolytic process are subject to wear and require routine replacement every two years regardless of operating hours.

Prior to commencing this maintenance action, the electrolytic hydraulic circuit requires purging.

### Precondition for action:

✓ Perform Short-term shut down procedure.

### Perform the following working steps:

1. Remove the electrolyser cell enclosure window by removing the vertical window bead retainers and then the horizontal window bead retainers.
2. Carefully loosen the cell inlet and outlet union collars until the cell can be carefully rested on to the base of the electrolyser chamber with the inlet and outlet connections facing upward to prevent further spillage.
3. Replace the flat gaskets with the correct spare parts.
4. Refit the cell to the union assemblies taking care not to over-tighten the union collars.
5. If the HYPROLYSER® is a manufactured skid system model, the O-ring at the product tank inlet union connection will require replacement with the correct O-ring part.
6. Ensure all pipe connections are correctly aligned and hand-tight prior to start-up.
7. Ensure the electrolyser chamber window is refitted correctly back into position.
8. Ensure the water supply is turned on to the system
9. Perform start-up.

✓ **Gasket replacement successfully carried out.**

## Major service

A major overhaul of the HYPROLYSER® System is required every 5 years, regardless of operating hours. An approved HYPROLYSER® service technician will be required to conduct this maintenance regime.

Control devices, the electrolytic cell, the salt saturator and all associated pipe work will require thorough inspection and cleaning and worn/defective parts replaced as necessary.

The water and brine solenoid valves will require replacement.

The electrolytic cell will require an acid clean and its two cell casing end cap gaskets replacing and the two terminal O-rings replacing.

All standard pipe connection elastomers will require replacement.

The hydrogen gas detect sensor head will require replacement.

If an auto regenerative softener is fitted, the softener will require a full service of its valve head assembly and the internal softener resin replacing.

All safety switches and safety devices to be fully tested.

### Action to be taken:

c:> **Contact your HYPROLYSER® service provider to arrange a major overhaul service.**

✓ **General overhaul will provide for future safe operation and continued routine service.**

## Electrolyser Cleaning

The electrolyser (electrolytic cell) may require acid cleaning periodically to remove the presence of water hardness scaling and also any metal deposition e.g. iron and manganese deposits.



One of the reasons the Hyprolyser® may alarm in “VOLTAGE HIGH” is due to the electrolyser becoming heavily scaled or fouled with other deposits.

### Precondition for action:

- ✓ Perform Short-term shut down procedure.

### Perform the following working steps:

1. Remove the electrolyser cell enclosure window by removing the vertical window bead retainers and then the horizontal window bead retainers.
2. Carefully loosen the cell inlet and outlet union collars until the cell can be carefully rested on to the base of the electrolyser chamber with the inlet and outlet connections facing upward to prevent further spillage.
3. Connect the acid wash cleaning system to the electrolyser in accordance with the operating instructions provided with the HYPROLYSER® acid washing kit.
4. Completely rinse out and drain the electrolyser with water prior to refitting into the electrolyser chamber.
5. Refit the electrolyser cell to the union assemblies taking care not to over-tighten the union collars.
6. Ensure the electrolyser chamber window is refitted correctly back into position.
7. Ensure the water supply is turned on to the system
8. Perform start-up.

- ✓ **Electrolyser acid wash carried out successfully.**

## Finishing Maintenance

### Perform the following working steps:

1. Make a note of the date and scope of the maintenance performed.
2. Complete any operational, service or commissioning log sheets associated with the HYPROLYSER® System and as per any associated documents.
3. Attach a sticker displaying the maintenance date to the system.
4. To assure correct start-up procedures, refer to the “Start-up” section.

- ✓ **Maintenance completed.**