



POSI-CHLOR[®]

SALT WATER CHLORINATOR

OWNER'S MANUAL



Should the installer or owner be unfamiliar with the correct installation and/or operation of this type of equipment, please contact the distributor or manufacturer for the correct advice before proceeding with the installation or operation of this product.

IMPORTANT

Please attach your sales invoice/docket here as proof of purchase should warranty service be required. Please do not return warranty form to Pentair Australia - Retain for your records.

PURCHASED FROM:
PURCHASE DATE:
SERIAL NO:
MODEL NO:

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1. GENERAL DESCRIPTION



ATTENTION

Before installing the salt water chlorinator, please read this manual carefully. If you need to clarify any point or have any doubts, please contact your dealer.

Thank you for purchasing the **Posi-Chlor®** salt water chlorinator, which will enable you to enjoy your swimming pool in perfect conditions, without the need to add any chemical disinfectants.

The salt water chlorination system produces chlorine directly from the pool water by means of electrolysis of the salt water. "Free chlorine" (hypochlorous acid, **HClO**) is produced which is a strong disinfectant.

Saline electrolysis is a reversible process, meaning that once active elements react with organisms present in the water, it reverts to common salt and water.

The equipment includes an electronic monitoring and regulation control and an electrolysis cell through which the pool water flows and which is installed in the filtration circuit.



Eco Select®

The Eco Select® brand identifies our most eco-friendly products

As the global leader in pool and spa equipment, we've made a strong commitment to develop and offer the most environmentally responsible products available.

When you see the Eco Select® brand on one of our products, you'll know it is our "greenest" and most efficient product in that equipment category.

These products do the best job of saving energy, conserving water, reducing noise, or otherwise contributing to a more environmentally responsible equipment system. In every case, a product that earns the Eco Select brand is clearly our "greenest" and most efficient choice.

1. GENERAL DESCRIPTION

1.1 Product range

You will find various models within our range, depending on its production and features.

1.1.1 Posi-Chlor® BASIC

- Chlorine production from 15 to 35g/h.
- Advanced features and data display through an LCD screen.
- Adjustable output.
- Filtration pump control with built-in battery backed-up timer.
- Upgradeable to Auto-pH or Advanced pH/ORP with optional kit.

1.1.2 Posi-Chlor® PH

- Chlorine production from 15 to 35g/h.
- Advanced features and data display through an LCD screen.
- Adjustable output.
- Filtration pump control with built-in battery backed-up timer.
- Included acid-dosing peristaltic pump.
- Automatic algorithm based dosing of acid to correct pH (no probe).
- Upgradeable to Advanced pH/ORP with optional kit.

1.1.3 Posi-Chlor® AUTO-PH/ORP

- Chlorine production from 15 to 35g/h.
- Advanced features and data display through an LCD screen.
- Adjustable output.
- Filtration pump control with built-in battery backed-up timer.
- Included acid-dosing peristaltic pump.
- pH and ORP readings from included probes.
- Automatic control of chlorinator and pH based on readings from the included probes.

1.2 Technical specifications

Models	Posi-Chlor®-15	Posi-Chlor®-25	Posi-Chlor®-35
Supply Voltage	230-240VAC, 50Hz		
Chlorine Production	15g/hr	25g/hr	35g/hr
Maximum Power	112.5W	187.5W	263W
Cell Current			
Dimensions	280x250 x135mm	280x250x135mm	280x250x135mm
Weight	4Kg	4Kg	4Kg
Protection	IP65	IP65	IP65
Max. Temperature	40 °C	40 °C	40 °C

1. GENERAL DESCRIPTION

1.2.1 Common features in all Posi-Chlor® equipment

- Adjustment of chlorine production by switched mode power supply
- Power supply performance >90%
- Automatic switch-off owing to lack of water flow.
- Automatic switch-off owing to the accumulation of gas in the cell, with automatic restart once the water flow is restored.
- Automatic voltage adjustment depending on the concentration of salt and the temperature, keeping continuous chlorine production.
- Automatic cleaning cycle of electrodes.
- Automatic restart in the event of supply failure.

1.3 Recommendations and Safety Precautions

- The equipment should always be installed by qualified professionals.
- Disconnect the equipment from the mains before performing any assembly or maintenance operation
- **The Posi-Chlor® chlorinator must be connected to a GPO that is supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30 mA.**
- **It is important to ensure that the supply cables of the electrolysis cell are tightly connected, otherwise the equipment could overheat and break down.**
- Ensure that the heat-sink wings (in the rear part of the equipment) are not blocked and that air can easily circulate through them.
- For optimum results, you should ensure the correct hydraulic operation of your swimming pool equipment.
- Equipment housing has IP65 protection. However, it is highly recommended not to install the equipment directly exposed to sunlight.
- Corrosive environments may reduce the lifespan of the equipment. Do not leave open containers with acids or other chemicals near the equipment.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
- Children should be supervised to ensure that they do not play with the appliance.
- If the supply cord is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons in order to avoid a hazard.

2. PREPARING THE SWIMMING POOL

2.1 Adding salt to the water

To ensure that the chlorinator works correctly, a small amount of salt should be added and the pH level should be suitable.

The recommended **salt and pH** levels are the following:

Salt Concentration (Range)	Salt Concentration (Ideal)	pH
3000-8000ppm	3500ppm	7.2 - 7.6
3-8kg/m ³	3.5kg/m ³	
3-8g/L	3.5g/L	

Note: When using mineral salts, ensure total salt concentration is as per the above table, however it is necessary to ensure that mineral salt blend does not allow total magnesium chloride to exceed 1000ppm.

Although the equipment will start to operate with lower amounts of salt, the optimum production of salt will be reached with concentrations of over 3000ppm. We recommend starting with a concentration of 4000ppm to offset small losses of salt occurring when backwashing the sand filter, the effect of rainfall, spillover, etc.

To calculate the salt to be added, multiply the total volume (m³) of your swimming pool x 4kg.

Example: A swimming pool measuring 9m in length x 4m in width x 1.4m in depth, using an Posi-Chlor®;

$$9 \times 4 \times 1.4 = 50.4 \text{ m}^3 \text{ (cubic meters)}$$

$$50.4 \times 4 = 201.6 \text{ kg}$$

Therefore approximately 200kg of salt needs to be added.

We recommend using salt that is especially prepared for use in salt water chlorination installations, as it is especially prepared for rapid dissolution and to achieve optimum results. You can find it at retailers specializing in swimming pool products.



ATTENTION

When adding salt to the swimming pool, first disconnect the chlorinator (or turn it **OFF**), and start-up the filter for 3 or 4 hours, in order for the salt to fully dissolve and not to overload the equipment. Once dissolved, switch on the chlorinator.

It is advisable to add salt to the swimming pool gradually, in 2 or 3 lots, so as not to exceed the recommended amount. Excess salt can overload the chlorinator, in which case it will automatically stop working and water will have to be added to reduce the concentration.

We also recommend not to add salt near the suction points (skimmer, drains), to avoid undissolved salt from circulating in the water circuit.

2. PREPARING THE SWIMMING POOL

2.2 Chemical balance of the water

The effectiveness of chlorination and the quality of water for healthy bathing, depends largely on the pH of the water. Therefore, it should be checked regularly and adjusted as necessary.

There are other parameters which should be considered for the correct operation of the salt water chlorinator. We recommend an in-depth analysis of the water when installing a salt water chlorinator.

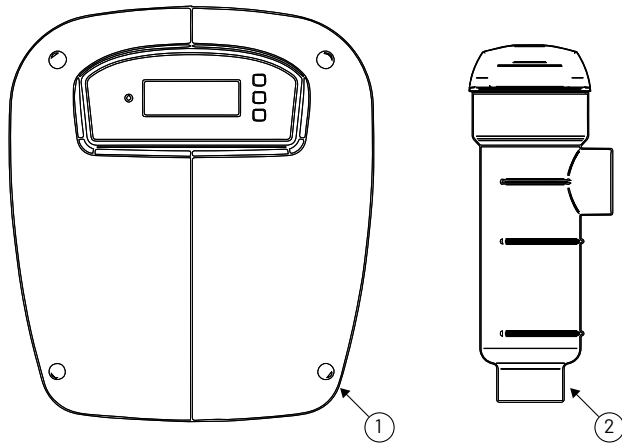
Parameter	Units	Minimum Value	Maximum Value
PH		7.2	7.6
Free Chlorine	ppm	1.0	4.0
Combined Chlorine	ppm	0.0	0.6
Total Bromine	ppm	3.0	6.0
ORP	mV	650	750
Cyanuric Acid (Stabiliser)	ppm	–	<30
Total Alkalinity	ppm	80	120
Calcium Hardness	ppm	200	500
Copper	ppm	0.0	0.1
Iron	ppm	0.0	0.1
Phosphates	ppm	0.0	0.1

3. INSTALLATION OF THE EQUIPMENT

3.1 Contents of Package

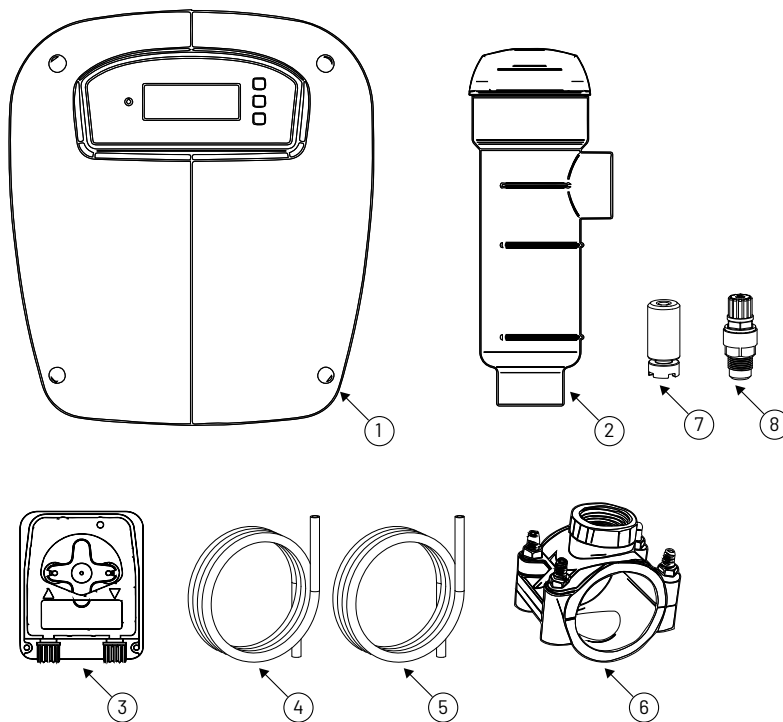
3.1.1 Posi-Chlor Basic Kit

The pH Kit or pH/ORP kit can be added to any Posi-Chlor® series basic unit. The following figures show the parts of the Basic kit.



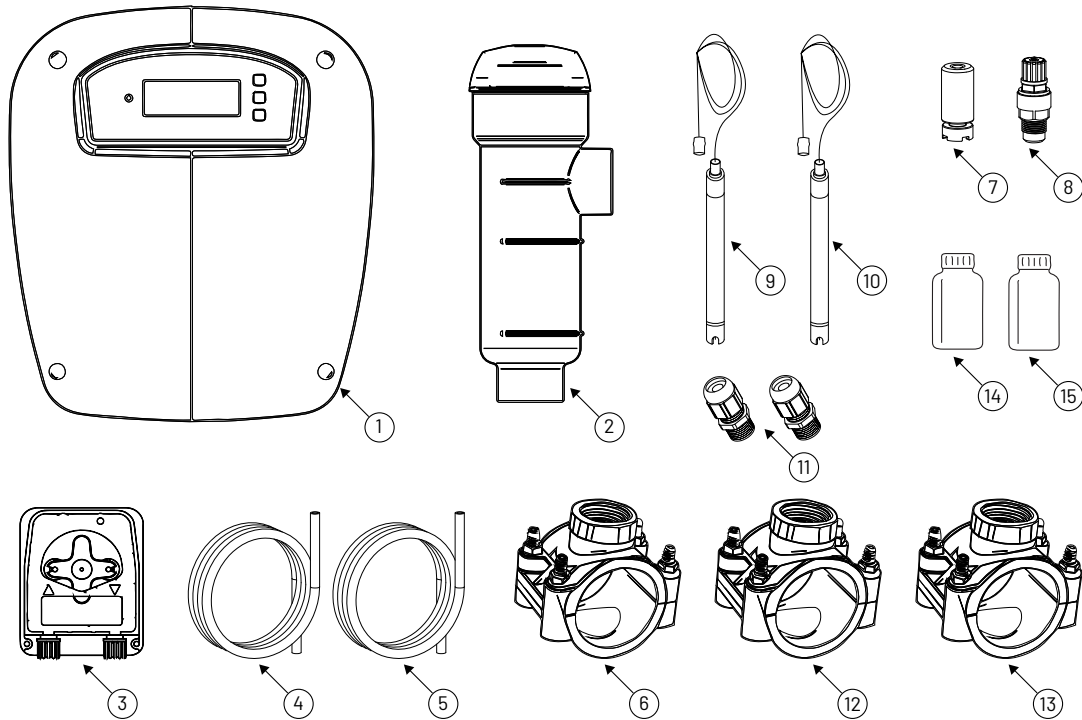
3.1.2 Posi-Chlor pH Kit

The Auto pH/ORP kit can be added to any Posi-Chlor® series pH unit. The following figures show the parts of the Posi-Chlor® series pH unit.



3. INSTALLATION OF THE EQUIPMENT

3.1.3 Posi-Chlor Auto pH/ORP Kit



3.1.4 Parts

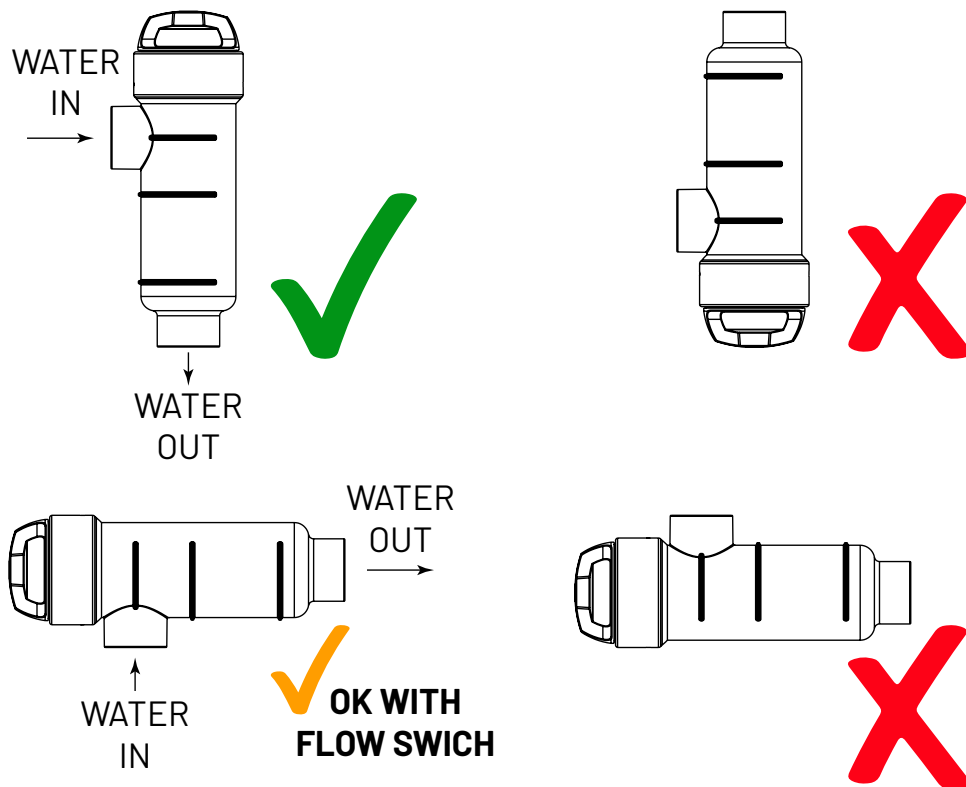
1. Posi-Chlor® Control Centre
2. Electrolysis Cell
3. Peristaltic Pump (For Acid Delivery)
4. Suction Tube (Flexible)
5. Injection Tube (Rigid).
6. Saddle Clamp (For Acid Delivery).
7. Suction filter (place vertically on the bottom of the acid container)
8. Injector (place with the arrow facing downwards)
9. pH Probe
10. ORP Probe
11. Probe Holders
12. Saddle Clamp (For pH Probe).
13. Saddle Clamp (For ORP Probe).
14. pH4 Calibration Liquid
15. pH7 Calibration Liquid



3. INSTALLATION OF THE EQUIPMENT

3.2 Installation of Electrolysis Cell

- Place the chlorine cell in a vertical position with electrical connections on the top. If this is not possible, it can be assembled in a horizontal position, with the addition of the optional flow switch.
- Place the chlorination cell in the highest position possible of the filtration circuit and always after the filter.
- If there is a heater present, install the chlorination cell after the heater, with a check valve before the cell.
- For below water installation, ensure there are corresponding shut-off valves to facilitate maintenance of the cell.
- Do not place the pH or ORP probe after, or too near, the chlorinator cell, as faulty readings could be made owing to the proximity of the electrolysis circuit.
- The pH and ORP probes should be installed after the filter.
- If it is not possible to keep probes a minimum distance from the cell, after the filter they can be installed before the filter. However, in this case more frequent maintenance of the probe may be required (see "Maintenance" for further info).
- A good earth connection is essential. Ensure equipotential bonding of pool structure, bond beam, metal pool fencing and any pool equipment that is not double insulated to water circuit (e.g. heaters).



3. INSTALLATION OF THE EQUIPMENT

3.3 Mounting of the Control Centre

- It is highly recommended that the control centre unit be installed where it is protected from the elements. Although inherently protected from rain (IP rated), continued exposure to rain and sunlight will accelerate the aging of the unit.
 - It should also be mounted in a position where it is away from accidental water spray.
 - The unit should be installed so that adequate air flow can circulate freely around the control centre and allow it to perform efficiently.
 - The control centre is to be mounted at least 800mm above ground level.
 - If the control centre is installed in an enclosed room, acid and other chemical containers should not be present in the same room, unless the room is adequately ventilated.
1. A printed template is included in the Posi-Chlor kit. Place the template on the wall where you wish to mount the control centre.
 2. Using a pencil or pen, mark the position of the four mounting holes.
 3. Drill holes in the wall using a suitable drill bit for the wall material (e.g. timber, brick, plasterboard, fibre-cement).
 4. Insert plugs into holes for all wall types except timber.
 5. Insert screws with screwdriver until screw head is approximately 5mm from the wall.
 6. Place Posi-Chlor power centre over the four screws taking care to line up with the mounting holes.
 7. Let the power centre drop to lock into the slots above mounting holes.



3.4 Connection of pH peristaltic pump kit

Once the equipment from section 3.2 and 3.3 is installed, the following connections should be done.

1. Place the saddle clamp (6) on the pipe as indicated in the hydraulic connection diagram (3.6.3). The saddle clamp corresponds to the injector and should be connected after the electrolysis cell. Make sure the o-ring is in the groove on the top of the clamp, sealing the pipe to the saddle clamp.

3. INSTALLATION OF THE EQUIPMENT

2. When the saddle clamp is in position, drill a hole in the PVC pipe. Using the threaded port as a guide. Use a 10mm drill bit, careful not to touch the threads.
3. Connect one end of the suction tube (4) to the peristaltic pump (3) inlet.
4. Connect the other end of the suction tube (4) to the suction filter (7).
5. Place the suction filter (7) inside the ACID drum.
6. Connect one end of the injection tube (5) to the peristaltic pump (3) outlet.
7. Place the pipe adaptor and injector (8) inside the saddle clamp's threaded port.
8. Connect the other end of the injection tube (5) to the injector (8).

3.5 ADVANCED kit (pH/ORP)

The equipment continuously measures the bactericide level of water through this probe, by means of an "ORP" probe. Simply adjust the required level and the equipment automatically maintains the level of disinfection by adjusting the production of chlorine to the real needs of the swimming pool. The screen shows the ORP level (bactericide capacity) present in the swimming pool.

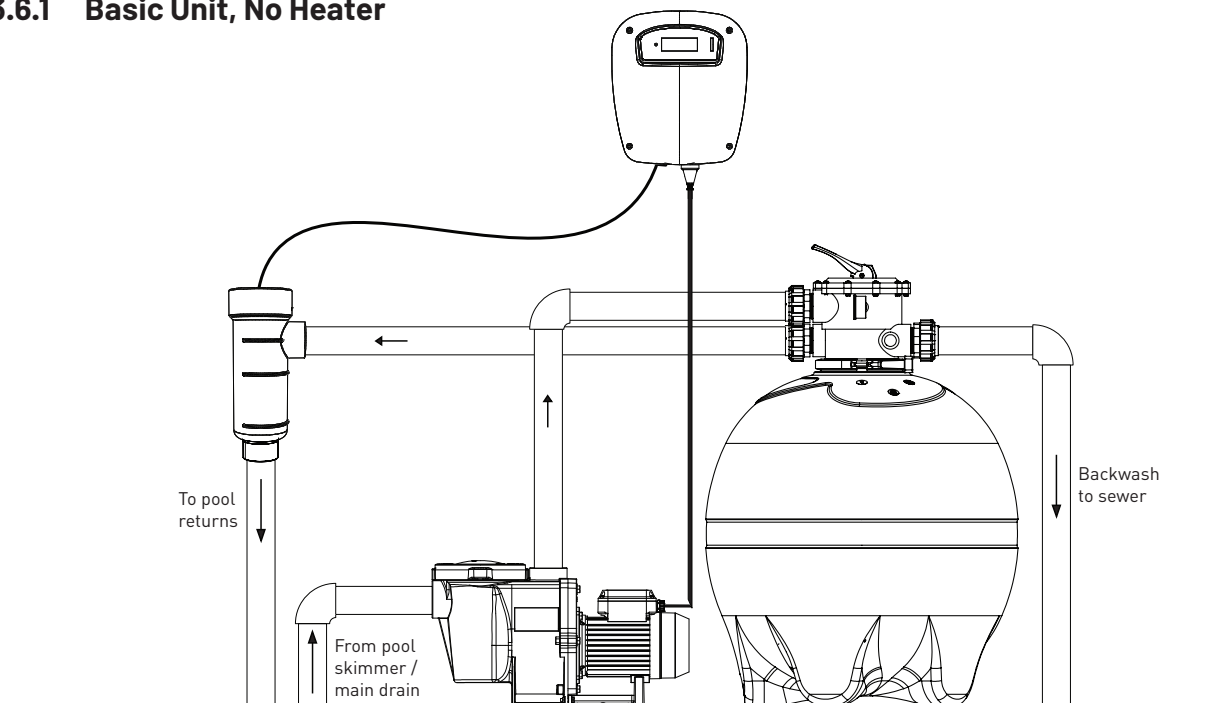
The ORP (Oxidation Reduction Potential) is the electrical voltage that indicates the oxidation capacity or reduction of a solution. In swimming pools, the oxidation capacity is directly related to the bactericide power of the water, which is directly related to the concentration of free chlorine in the pool. This probe enables you to adjust the equipment in AUTOMATIC operating mode.

1. Place the saddle clamp (12) in the pipe as indicated in the hydraulic connection diagram. The saddle clamp (12) corresponds to the PH probe and should be connected before the electrolysis cell and after the filter. Make sure the o-ring is in the groove on the top of the clamp, sealing the pipe to the saddle clamp.
2. When the saddle clamp is in position, drill a hole in the PVC pipe. Using the threaded port as a guide. Use a 10mm drill bit, careful not to touch the threads.
3. Place the probe holder (11) inside the flange (12).
4. Place the PH probe (9) inside the probe holder (11).
5. Place the PH probe (9) connector in the BNC connector on the base of the control centre.
6. Place the saddle clamp (13) in the pipe as indicated in the hydraulic connection diagram. The saddle clamp (13) corresponds to the ORP probe and should be connected before the electrolysis cell and after the filter. Make sure the o-ring is in the groove on the top of the clamp, sealing the pipe to the saddle clamp.
7. When the saddle clamp is in position, drill a hole in the PVC pipe. Using the threaded port as a guide. Use a 10mm drill bit, careful not to touch the threads.
8. Place the probe holder (11) inside the flange (13).
9. Place the ORP probe (10) inside the probe holder (11).
10. Place the ORP probe (10) connector in the BNC connector on the base of the control centre.

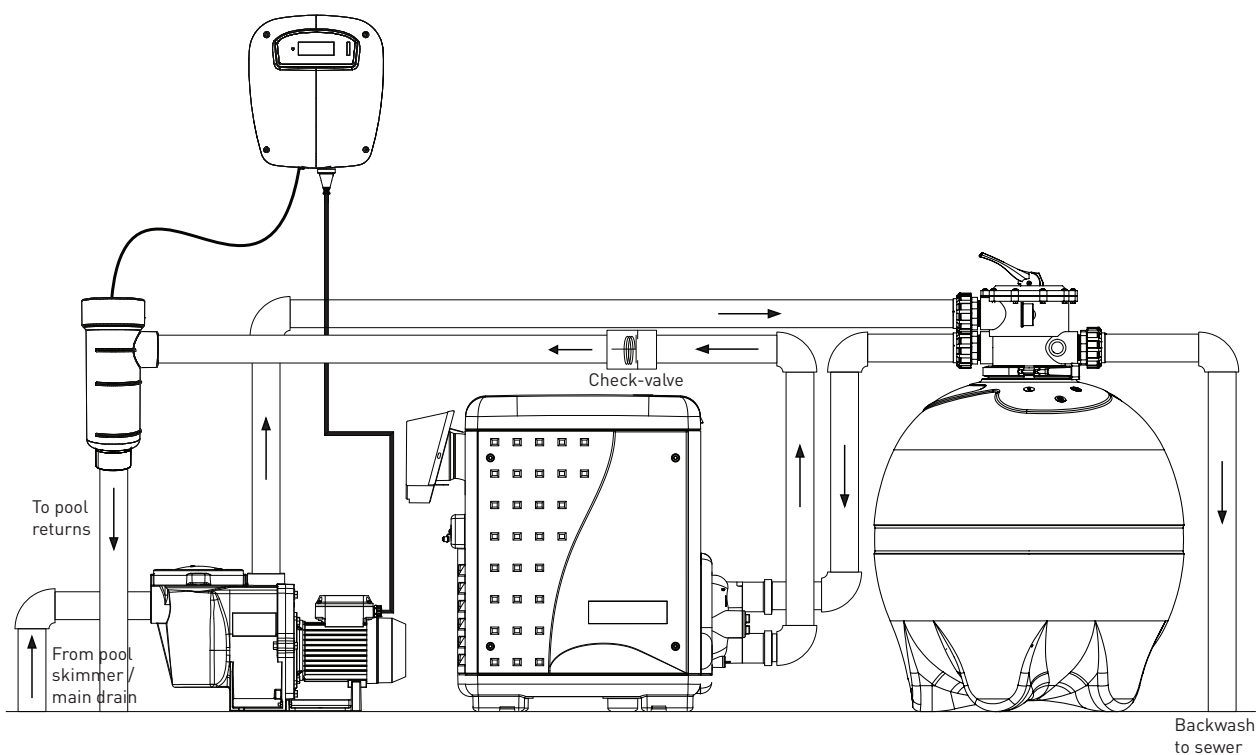
3. INSTALLATION OF THE EQUIPMENT

3.6 Hydraulic Connection Diagram

3.6.1 Basic Unit, No Heater

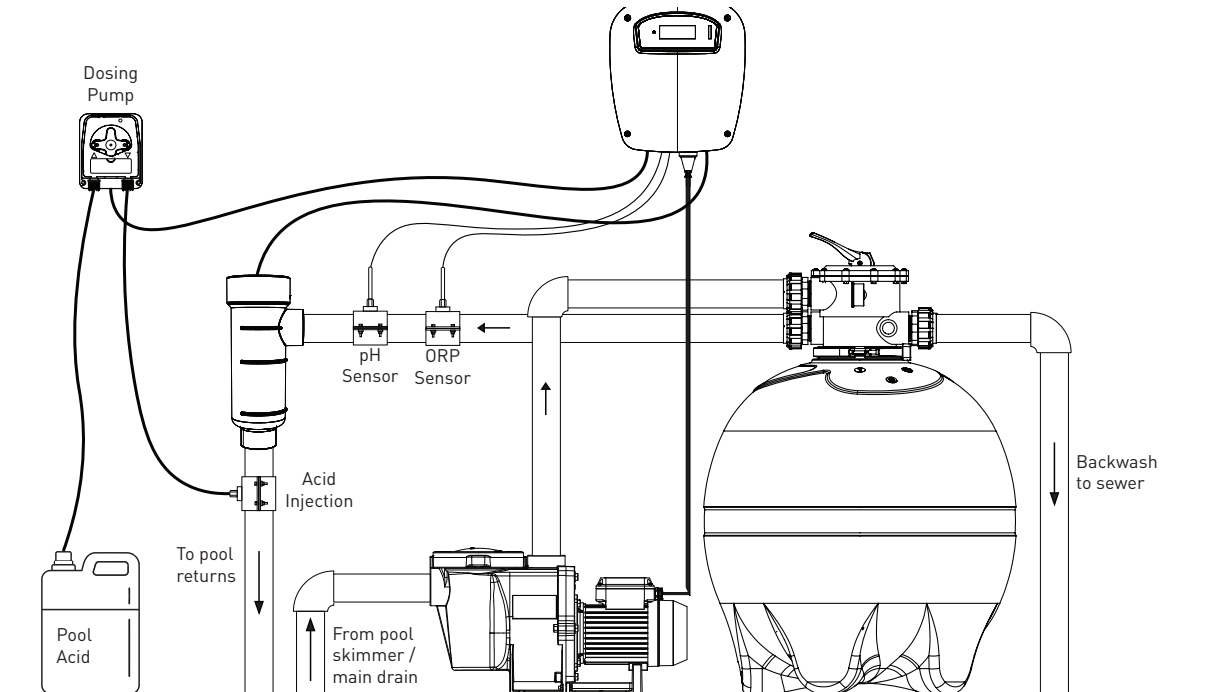


3.6.2 Basic Unit, With Heater

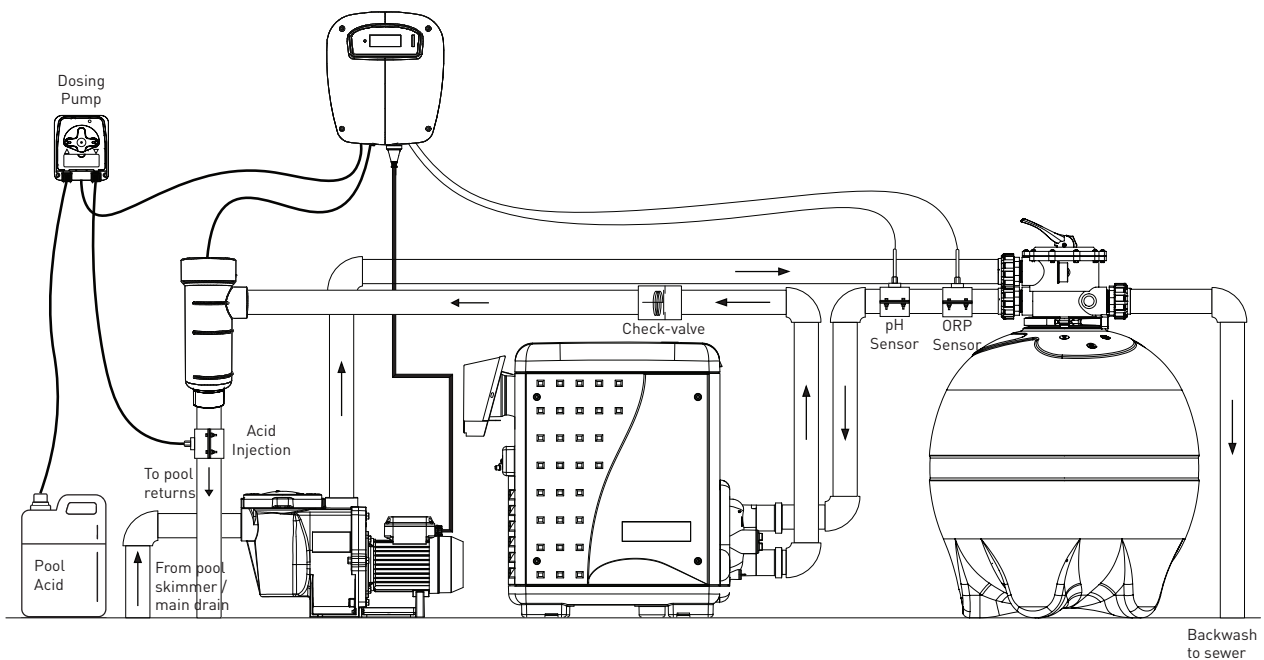


3. INSTALLATION OF THE EQUIPMENT

3.6.3 Advanced Unit, No Heater

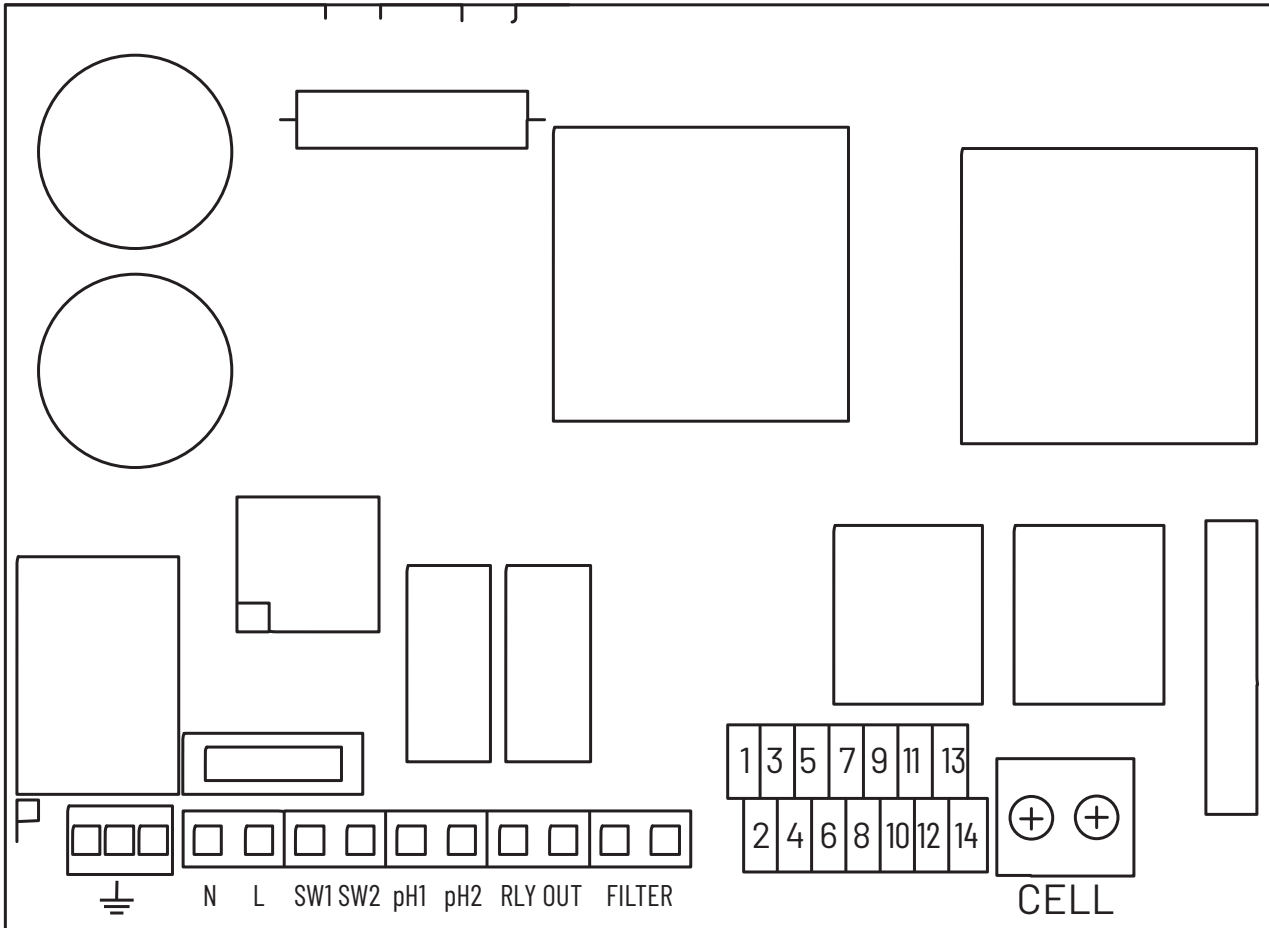


3.6.4 Advanced Unit, With Heater



3. INSTALLATION OF THE EQUIPMENT

3.7 Electrical wiring diagram



Terminal	Description	Notes
Earth	Earth Connections	Pre-wired in factory.
N, L	230-240VAC Supply	Pre-wired in factory.
SW1, SW2	On/Off Switch Input	Bypassed in factory. Remove loop between SW1 and SW2, to connect automation.
pH1, pH2	Acid Pump Output (230VAC)	Connection for acid dosing pump.

3. INSTALLATION OF THE EQUIPMENT

Terminal	Description	Notes
RELAY OUT	Filter Pump Output (230VAC)	Pre-wired in factory.
FILTER	Not Used in Australian Version	Pre-wired in factory.
1 & 2	Acid level sensor	Not Used.
3 & 4	Pool cover input	Connection from pool cover control (optional).
5	Water Sensor / Gas Sensor	Connection to water sensor in cell (white cable).
5 & 6	External Flow Switch	Connection to external flow switch (optional). Also, activate in the configuration menu.
7 & 8	Temperature Probe	Connection to water temperature sensor (optional)
9 & 10	ORP Sensor	Pre-wired in factory.
11, 12, 13, 14	Not used	

Class A Equipment:

This device is classified as Class A equipment

Warning: Operation of this equipment in a residential environment could cause radio interference.

4. START-UP AND ADJUSTMENTS

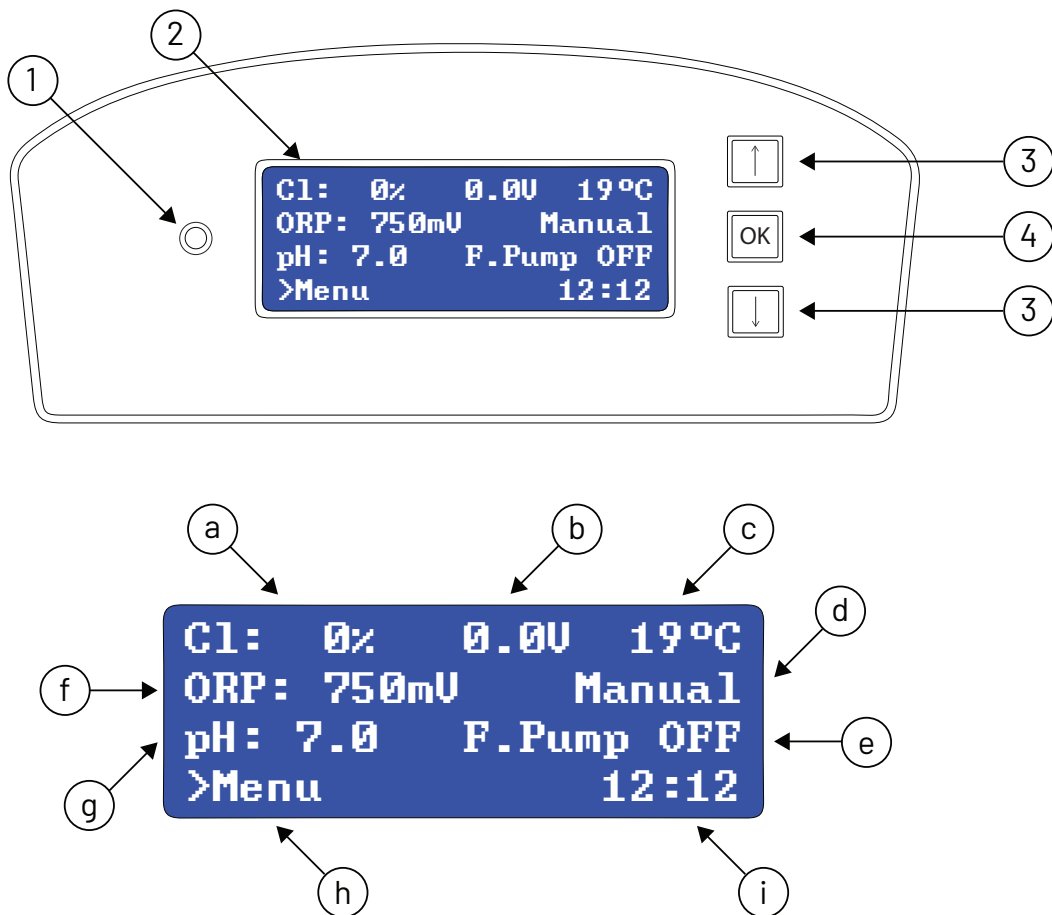
4.1 Display and Control

Once the Posi-Chlor® salt water chlorinator has been installed, you can start up your salt water chlorination equipment. Follow the instructions carefully.

The following sections detail the operation of different models.

4.1.1 Display and Main Screen



The Posi-Chlor® series equipment has an LCD screen, in which you can view and configure all operations of the equipment. On starting up the equipment, a screen will be displayed with the main parameters.





4. START-UP AND ADJUSTMENTS

Key	Description	Notes
1	Alarm Light	Will flash when there is an alarm condition. It may also flashes briefly during menu selections.
2	LCD Screen	For setting and displaying parameters. Also see a-j.
3	Up and Down Buttons	Used for navigating the menu's and altering values.
4	OK Button	Entering Menu. Confirming selections.
a	Chlorine Production Level	Displays the current product level 0-100%.
b	Cell Voltage	Displays the cell voltage.
c	Water Temperature	Displays the current water temperature (with optional water temperature sensor).
d	Operating Mode	Displays the selected operating mode; manual, semi-auto or auto. Default is Manual
e	Filter Pump Status	Displays the status of the filter pump On or Off.
f	ORP Level	Displays the current ORP reading (with advanced pH/ORP kit only).
g	pH Level	Displays the current pH reading (with advanced pH/ORP kit only).
h	Menu	Press OK to access menu.
i	Clock	Displays the current time.

When browsing through the menus, an arrow is displayed on the left hand side > which indicates the selected line.

When there is more than one line to select, the buttons   enable you to move the arrow up or down to select the required option. The **OK** button confirms selection.

When a value has to be adjusted, for example the time or level of chlorine, the buttons   enable you to increase or decrease the value. Press the **OK** button to confirm the value.

4. START-UP AND ADJUSTMENTS

4.2 Main Menu

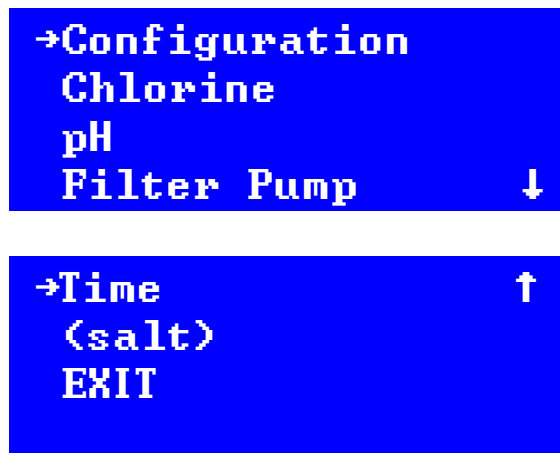
The following table shows how to organise the configuration menu of the equipment:

Main Menu	Sub Menu	Default	Notes
Configuration	Language	English	Use to change display language.
	Control	Manual (Basic & pH). Auto (Adv. pH/ORP).	
	Cleaning	6 Hours	Use to select cleaning cycle (reversing) time.
	Volume	20m3	Use to select pool volume.
	Outdoor / Indoor	Outdoor	Use to select pool location.
	Cover	N	Use to select option pool cover input switch.
	Flow Switch	N	Use to select optional flow switch.
	Acid	Alkali	This option cannot be changed.
	pH Alarm	Y	Use to select optional pH alarm.
	Chloride Alarm	N	Alarm detects if there is no change in ORP after 2 hours of SCG operation.
	Buzzer	N	Turns on audible buzzer with associated alarms.
Chlorination	% of production	50%	Select chlorine output of cell 0-100%.
	Max ORP / Cl	700	ORP set point value.
	Super chlorination	Off	Super-chlorination function.
pH	pH +/-	7.3	pH set point value.
	Probe Calibration		For probe calibration on initial start-up.
	Manual Pump Priming		Press to manually run pH dosing pump

4. START-UP AND ADJUSTMENTS

Main Menu	Sub Menu	Default	Notes
	On/Off pH	On (pH/ORP units)	Turns on/off pH control
Filter Pump	On/Off	Off	Turn filter pump on manually
	Program 1	0:00-0:00	Set single daily program
	Program 2	0:00-0:00	Set dual daily programs
	Program Off		Deactivate programs
	Timer	0	Run filter pump for a set time
Time	Set Clock		Set the time

Press the "OK" button from the main screen to access the main menu.

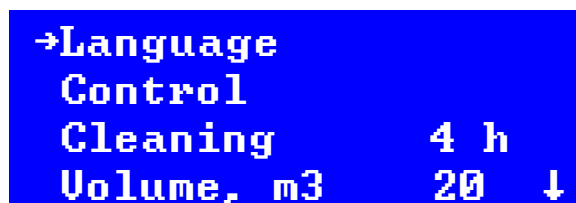


Using the buttons **↓** **↑** you can select a line of the menu, indicated by the arrow (→). The OK button is used to confirm the selection.

To access the configuration menu, you need to confirm the operation by selecting (S) through the arrow, **↑** and pressing OK.

4.3 Configuration

In the configuration menu you can select the configuration parameters, which usually only have to be adjusted when installing the equipment.



4. START-UP AND ADJUSTMENTS

→Outdoors		
Cover	N	
Flow Switch	N	
Acid → Alkali		↓
Alarm: pH	Y	↑
Alarm: Chlorine	N	
→Buzzer	N	
Exit		



ATTENTION: A password will be required when trying to change some options of this menu, to avoid an involuntary change of some parameter that could affect to the right behaviour of the unit. **Password: 1234**

4.3.1 Language

From the configuration menu select "Language", press the **OK** button, and once the required language has been selected, press the OK button and **EXIT**. Choose between; English, Spanish, Catalan, French, Italian, Dutch, Portuguese, Turkish, Hebrew, German, Czech, Croatian or Indonesian.

4.3.2 Control

The equipment allows you to select from 4 different modes of control:

● **Manual:** The equipment produces chlorine continuously, depending on the % of production selected. If you have a fitted **ADVANCED** probe Kit probe, it will ignore its value and chlorination will not stop even though the set value has been exceeded. When selecting this mode, the equipment will ask if you want to display the value of the Redox probe (ORP) on the main screen.

Select this mode if you do not have an ADVANCED (ORP) probe Kit, by adjusting production and hours of filtering depending on the nature of your swimming pool, its volume number of bathers and season of the year.

● **Automatic**

Select this mode only if you have an ADVANCED probe Kit (ORP). If you do not have a probe, the equipment will act at random and end up by stopping and showing an error.

This mode enables you to automatically adjust the level of chlorine in your swimming pool. Based on the adjusted set value in the "chlorine" menu, the equipment will stop when it reaches this value, and start-up again automatically when there is a need for chlorine.

4. START-UP AND ADJUSTMENTS

Ⓒ **Semi-automatic**

Select this mode only if you have a temperature probe kit (optional). If you do not have one, the equipment will not operate correctly in the semi-automatic mode.

This work mode enables you to determine the daily hours of operation of the salt water chlorinator based on the volume in m³ of the pool and the water temperature. Once they have been reached, the chlorinator will stop although the filtering pump will continue to operate.

Bear in mind that the equipment makes an approximate calculation of chlorine which it has to produce, based on two known parameters. However, other factors are not considered, such as the consumption of chlorine caused by the number of bathers per day.

4.3.3 Cleaning

The equipment includes an automatic cleaning system, based on reversing polarity in the electrolysis cell. These cleaning cycles are performed regularly. The time between cleaning (in hours) can be adjusted depending on the water hardness of your swimming pool.

It is possible to select cleaning intervals from 1 to 8 hours.

Note: You should select the longest reversing time possible and only reduce it if scaling becomes a problem. Short reversing times will effectively clean the cell, but reduce the working life. If scaling of the cell occurs, the optimal solution is to reduce the calcium hardness of the pool water and leave the reversing time at 8 hours.

4.3.4 Volume (of the swimming pool)

Note: Ignore this option unless you are using the optional temperature probe in semi-automatic mode.

Configure the volume of your swimming pool in m³, if the equipment is to work in semi-automatic mode. The daily chlorination time will be calculated based on this parameter and the water temperature. Whenever the value is changed, on exiting the menu the screen will display the minimum filtering time the pump should work.

If at the end of the day, the filtering pump operates for less time than stipulated by the equipment for an optimum level of chlorine in the water, the equipment will display a warning message.

4.3.5 Location of the swimming pool

Note: Ignore this option unless you are using the optional temperature probe in semi-automatic mode.

The swimming pool may be installed outdoors or indoors. Function changes between INDOOR and OUTDOOR when the OK key is pressed. With this function, the equipment automatically reduces production to ½ if it is an indoor pool to avoid excess chlorine.

4. START-UP AND ADJUSTMENTS

4.3.6 Cover

The equipment may detect the presence of a cover on the swimming pool (**only for automatic covers**). In this case, it is only necessary to place the limit switch of the cover in the terminal block, as indicated in the section on electrical installation.

On placing the cover, the chlorinator automatically reduces production to 20%. This variation will be reflected in the production %, and the letter "C" will be displayed on the right side of production in the main screen. This will indicate that the cover is activated.

Once the cover detection is activated, the system will ask which is the type of sensor you have installed: Normally open (N.O.) or Normally Closed (N.C.).

```
→Switch n.o.      *
Switch n.c.
EXIT
```



If chlorination is carried out with the cover in place, when it is removed, the pool should not be used straight away. It is better to wait ½ hour for any vapours between the water and cover to dissipate.

Note: Password "1234" is required to modify this function.

4.3.7 Flow switch

The flow sensor detects whether or not there is water flow in the piping. If it detects that there is no flow, the production will stop, and an alarm will sound accompanied by a red warning LED. Once the flow has been re-established, the equipment will return to normal operation.

The "Flow Kit" (**optional**) is necessary to activate the flow sensor, which is done by pressing OK in the menu **Flow Switch = Y**.



4. START-UP AND ADJUSTMENTS



If the cell is installed horizontally instead of vertically, the flow switch must be used. In the horizontal installation, gas may escape preventing the gas sensor from functioning.

In the vertical installation of the cell, the gas sensor will function to shut off chlorine production in the event of a pump malfunction and as such the flow switch is not necessary.

Note: Password "1234" is required to modify this function.

4.3.8 Acid / Alkali

This option is unavailable, all units are set to control acid to lower the pH.

4.3.9 pH Alarm

The pH adjustment system will give an alarm and the dosing pump will stop operating when the pump works continuously for more than 2 hours,

This could occur for the following reasons:

- The acid tank is empty and therefore pH corrector is not being injected into the swimming pool.
- The pH probe is dirty or worn, and cannot read the real value correctly.

However, what could occur, particularly when starting up the equipment for the first time, is that the real pH of the water is a long way from the set value. The alarm can be disabled if it is calculated that the pump needs to work continuously for several hours to correct the pH. However it is recommended to enable the alarm once values near the set values are reached.

Note: Password "1234" is required to modify this function.

4.3.10 Chlorine Alarm

When the unit is configured in automatic mode, it is possible to disable the "Chloride Alarm". This alarm will detect if the ORP reading hasn't changed for two hours or more, despite the unit has been in production.

Despite this alarm is been implemented to detect if a probe is not in good conditions, or there is some chemical issue in the water, it can be disabled if the user wants to maintain the production despite everything.

Note: Password "1234" is required to modify this function.

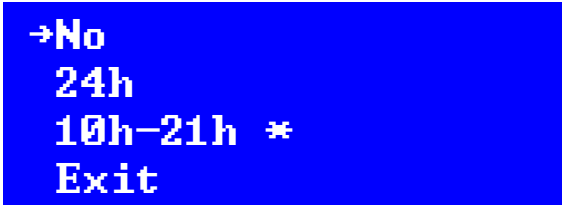
4. START-UP AND ADJUSTMENTS

4.3.11 Buzzer

When an alarm occurs, the unit stops its production and shows an acoustic and visual alarm to indicate that it's necessary to correct the problem.

However, it is possible to configure the acoustic signal with the following options:

- No: Acoustic alarm is disabled
- 24h: Acoustic alarm is activated 24h.
- Adjustable: The user can adjust the time range where the buzzer is active in case of alarm.

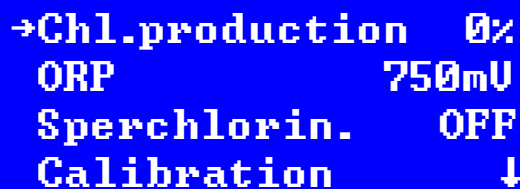


```
→No
24h
10h-21h *
Exit
```

Note: In case of alarm, the unit will stop its production and will show the cause on the display, regardless of the acoustic alarm configuration.

4.4 Chlorine menu

With this menu you can select all parameters related to chlorine production.



```
→Chl.production 0%
ORP 750mU
Sperchlorin. OFF
Calibration ↓
```

4.4.1 Chlorine Production

Configuration of the maximum production of chlorine.

From 0% to 100% Press "OK" and use the arrows **↓** **↑** to change the value. Press "OK" to confirm the adjustment.

Note: Chlorine production may be limited regardless of the operation mode (manual, automatic...) that is selected.

4.4.2 Adjustment of the set value (Max. ORP)

ORP Mode in which an ORP (Redox) probe (OPTIONAL) is installed.

In this case, adjust the oxidation potential to the required level. For private swimming pools that are not used frequently, 650 mV is a sufficient value 700 mV is the suitable value for the majority of swimming pools. Press "OK" to confirm the adjustment. However, the best way to adjust the optimal ORP value is to analyse the water and determine the ratio between ORP and PPM, because there are some differences between several types of water.

4. START-UP AND ADJUSTMENTS

NOTE: if working in automatic, you can also adjust the production percentage from 0% to 100%,

On connecting the equipment in automatic mode, the ORP value will flash for 5 min before the equipment starts to produce chlorine.

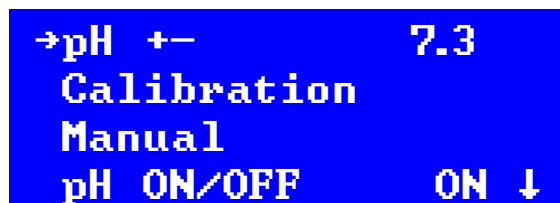
4.4.3 Super chlorination

Select this option if you require super-chlorination of your swimming pool, bearing in mind the following:

- If the equipment is working in semi-automatic mode (**with the Temperature Probe Kit**), the equipment will calculate the time necessary depending on the volume and Temperature. The filtering time to perform super-chlorination will be displayed on the screen.
- Without a Temperature probe, super-chlorination will be carried out for 24 hours. If filtration is stopped, super-chlorination is suspended.

4.5 pH Menu (Advanced)

With this menu, you can adjust the parameters related to the pH adjustment of your swimming pool. It only appears in advanced pH/ORP model units. The reading of the pH probe can be seen in the 3rd line of the main screen. You can access the pH menu from the main menu by pressing OK.



```
→pH +- 7.3
Calibration
Manual
pH ON/OFF ON ↓
```

4.5.1 pH Adjustment

Go to the main menu, select "pH" and in the pH menu that is displayed, select "pH +-". Use the buttons **↓** **↑** to adjust the required pH and confirm with "OK".

4.5.2 Calibration of the pH probe

To calibrate the probe, prepare a glass with clean water. Remove the probe from the storage liquid, shake off the liquid and stir it in the water. Shake it again to remove the water. Dry with a clean cloth, without rubbing.

In the control, go to "Menu" - "pH" - Calibration. The 1st line of the display indicates "pH cal. = 7". Submerge the probe in the pH7 solution and press OK.

4. START-UP AND ADJUSTMENTS

```
pH cal. = 7
pH = 7.05      -2 mV
                32 s
```

A 60 seconds countdown will start (remaining time is shown on the 3rd line). Keep the probe in the solution until it finishes. When the countdown is finished, you will be asked to use the pH4 solution. Remove the probe from pH7, shake off the liquid and stir it again in water. Shake it again to remove the water and dry it with a clean cloth. Submerge it to the pH4 solution.

```
pH cal. = 4
pH = 7.12      -7 mV
Pulse OK      0 s
```

Press OK and wait again for a 60 seconds countdown.

After the countdown, if the calibration is successful, a "Calibration OK" message will be shown. Press OK to exit.

```
pH cal. = 4
pH = 7.12      -7 mV
pH = 4.10      171 mV
Calibration OK
```

In case of getting a "calibration NO OK", the unit will keep the previous calibration. Please check the probe conditions, and clean it or replace it if necessary. Another cause for a failed calibration can be that the pH7/pH4 solutions are in bad conditions.

Repeat the calibration when the problem is solved.



ATTENTION: It is required to do a pH probe calibration during the equipment installation. New calibration should be done on changing or cleaning the probe.

4.5.3 Switching the pH Adjustment On and Off

To switch off or start-up the pH control again stopping the acid pump, access the main menu, select "pH" in the last line. In the pH menu select the bottom line. By pressing "OK", it alternatively passes from "pH ON" to "pH OFF".

When the pH control is off, the 3rd line of the screen displaying the parameters indicates "pH OFF".

4. START-UP AND ADJUSTMENTS

pH adjustment does not start up until 5 minutes after the equipment has been switched on.

A proportional control automatically adjusts the pH without the need for controller adjustments. The pump will start up every minute and with a variable operation time of between 0 and 60 seconds.

4.5.4 Priming the Pump.

Once the acid pump has been installed, it should be primed to eliminate the installation air. Go to the "pH" menu and select "Manual". Keeping the "OK" button pressed, the pump will be running. Keep the pump running with the "OK" button until the liquid has passed throughout the tube until injection.

4.5.5 Automatic Shut-down and Error Message.

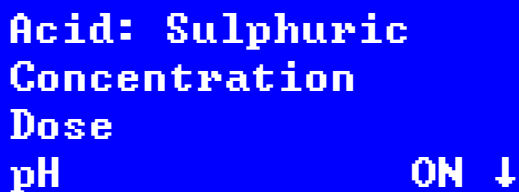
If the acid pump shuts down and the message "pH ERROR" appears, the pump has been operating too long without the pH value lowering to the required level. The causes could be:

- There is no acid.
- Problem in the pump or in the acid duct.
- The probe or probe cable are damaged.

NOTE: To cancel the error alarm, press the "OK" button

4.6 pH Menu (predictive algorithm)

This menu will show instead on the Posi-Chlor pH units, for probe-less control of pool pH.



```
Acid: Sulphuric
Concentration
Dose
pH           ON ↓
```

4.6.1 Acid

You can choose between sulphuric and muriatic (hydrochloric acid). Muriatic or Hydrochloric acid is the default for Australian pools.

4.6.2 Concentration

This is the concentration of acid in the solution. It will be on the label of the acid container. If you further dilute the acid, this needs to be taken into account also. For example, if diluting to a ration of 3 to 1 and the acid container is 32%, after diluting it will be $1/(3+1) = 1/4 \times 32\% = 8\%$

4. START-UP AND ADJUSTMENTS

4.6.3 Dose

You can increase or decrease the acid amount you're dosing. Default (100% is the result of the theoretical formula, but you can adjust from 50% to 150%)

4.6.4 pH On/OFF

ON/OFF to enable/disable the pH control

4.7 Filter Pump

The Posi-Chlor series chlorinators have a programmable filter pump relay that can be used to control the filtering pump.

```
→Manual          OFF
Program (1/24h) *
Program (2/24h)
Program OFF      ↓
```

4.7.1 Manual

This manually turns the relay on / off.

4.7.2 Program (1/24h)

This allows one single programming a day from 0h to 23.59. Press the OK button to save the value and move to the next. After the last option is saved, it will automatically exit this menu and this option will be selected. An asterisk will show next to this option. Press the buttons ↓ ↑ together to cancel and revert to the previous menu.

```
Run:             8:00
Stop:            16:00
↑↓ = EXIT
```

4. START-UP AND ADJUSTMENTS

4.7.3 Program (2/24h)

This allows two individual daily programs. Press the OK button to save the value and move to the next. After the last option is saved, it will automatically exit this menu and this option will be selected. An asterisk will show next to this option. Press the buttons \downarrow \uparrow together to cancel and revert to the previous menu.

```
1 Run:      8:00
1 Stop:     12:00
2 Run:      16:00
2 Stop:     20:00
```

4.7.4 Program OFF

Cancels and details the programs carried out.

4.7.5 Timer

Runs the filter pump for a set time 0-120minutes, before pump automatically turns off.

4.8 Time

The equipment has a time clock, which will be taken as the reference when programming times of the auxiliary relay. The clock keeps the time setting even when the equipment is without supply.

```
→Time      12:32 ↑
EXIT
```

4.9 Adding the Optional Temperatur Probe - Salt Calculation

The optional temperature probe can be installed on terminals 7&8 on the internal terminal block. Once the temperature probe is added the unit will automatically start displaying the current water temperature and also a calculated value for the water salinity.

```
Cl: 50%  12.1U  13°C
ORP: 718mV  Auto.
pH:7.4  Filt.pump:ON
→Menu  3.5g/l  8:32
```

5. TROUBLESHOOTING

5.1 Warning messages and alarms

In the event of abnormal operation, the Posi-Chlor® will display an alarm message on the 4th line of the screen, together with an acoustic warning. The alarms shut-down the equipment until the problem is solved.

Similarly, it will display a warning also in the 4th line, but without an acoustic signal or shutting down the equipment. In this case, the equipment can continue operating, although you are informed that corrective action should be taken.

5.1.1 Warnings

Message:	Causes:	Action required:
"LACK OF SALT"	Lack of salt in the water.	Add salt to the swimming pool.
	Incrustations or objects in the electrolysis cell causing lack of current.	Clean the cell.
	The electrolysis cell is worn.	Replace the electrolysis cell with a new one.
"EXCESS SALT"	Excess salt in the water.	No action required if excess is not very significant.
	Incrustations or objects in the electrolysis cell causing excess current.	Clean the cell.
"CLEANING"	The chlorinator is in the self-cleaning process. The process lasts 5 minutes.	None.
"TEMPERATURE".	The ambient temperature is >40°	Try and place the equipment in another position where it is not over 40° or perform forced ventilation. Leave the equipment to rest for a few minutes.
	The radiator fins are obstructed or are not in a vertical position.	Place the equipment so that air is circulated for correct cooling.

5. TROUBLESHOOTING

5.1.2 Additional Warning Messages

Message:	Causes:	Action required:
ORP or PPM value is flashing	The ORP or free chlorine probe are balanced in automatic mode. When the probe is balanced, the value remains set.	None.
pH value is flashing	The pH probe is balancing. When the probe is balanced, the value remains set.	None.
Value -- ⁰ (Water temperature) is flashing	The value of the water temperature is under 15 ⁰ .	Consider the use of a winter hibernator product.
Filter time	The equipment has switched off before the time set in semi-automatic.	Restart the filtering cycle.

5.1.3 Alarm Messages

In the following cases, the chlorinator shuts down and the alarm and acoustic alarm LED is activated (automatic reset once the fault is solved):

Message	Causes	Action Required
"NO WATER FLOW"	Excess gas in the electrolysis cell. It may have occurred because the pump has shut-down. The gas is hydrogen gas which is highly flammable.	The piping should be drained to eliminate gas or accumulated water. Check the pump.
	Sensor cable of the cell is incorrectly connected or broken.	Check the sensor cable (white cable)
	Cell sensor is dirty.	Clean. See maintenance.
	No water flow	Check the water system
"SHORT CIRCUIT"	The cell is incorrectly connected.	Check wiring.
	Metal debris in the cell.	Turn off the equipment and remove the metal debris from the plates

5. TROUBLESHOOTING

Message	Causes	Action Required
"OPEN CIRCUIT"	Cell is incorrectly connected.	Check the cell connection and ensure that cables and connection terminals are in good condition.
	Cell is damaged or completely worn down.	Check the condition of the cell electrodes, and replace it if any damage is observed.
	Swimming pool water with very low salt concentration.	Ensure that the water has salt and that it is dissolved.
"Chl. Error"	Chlorine probe is incorrectly connected or damaged	Check the cabling of the probe and the probe itself. Check 5.1. It can work in manual mode if necessary.
	Water contains very low redox potential.	Leave the equipment to chlorate in manual mode for at least 2 hours. Check the chemical balance of the water. (Appendix 1)
	The equipment does not have a probe and is in "automatic mode".	Install a ORP or Free Chlorine probe, or configure "manual" mode.

5.2 Operation time

It may be useful to see the operation times for regular maintenance operations. From the main screen, press both buttons **↓** **↑** at the same time.

5.3 Electrolysis cell life

The electrolysis cells from our units are designed to reach a lifespan of 10.000 hours. However, this lifespan is directly related with the quality of the water and specially with the correct use of the equipment. Please, read the following suggestions in order to guarantee that your cell reaches the specified lifespan.

- a) Salt concentration:** It is very important that the water of your swimming pool has a sufficient salt concentration, otherwise the cell will degrade prematurely if you keep it working permanently in low salt conditions. It is important to add salt when the unit shows the "lack of salt" indication.
- b) Low temperature operation:** Don't make the system work hard in low water temperature conditions (under 15°C). As an alternative, there are some hibernation products that keeps the water in good conditions in winter time. If you still want to use it in low water conditions, please consider to reduce the maximum production value, for example, set it at 50% instead of 100%.
- c) Automatic cleaning cycles:** The time between automatic cleaning can be adjusted, so it can be adapted to the water hardness of your swimming pool. The chlorinator is configured by default to 8 hours. If your swimming pool water is very hard, you can decrease this value, so the automatic cleaning will perform more frequently, but the lifespan of the cell will be reduced. On the other hand, if the water is soft, you can increase the cleaning time cycle, and the cell's lifespan will be increased.
- d) Deficient cleaning:** If you observe calcium deposits between the cell electrodes, clean it as shown in the maintenance section. Don't allow to keep the cell working in these conditions for a long time.

6. MAINTENANCE

Carefully follow the recommendations and safety warnings detailed in section 1.4 of this manual.

The chlorinator has a self-cleaning system of the chlorination cell, which reduces maintenance considerably. In any event, it is advisable to clean the cell and check the chlorine (ORP), free chlorine or pH probe if available.

Bear in mind that both the electrolysis cell and the ORP probe wear out through use. If after cleaning, the equipment does not work normally, the probe or cell should be replaced. Your dealer will be able to advise you on the need to change these elements.

6.1 Cleaning the electrolysis cell

The electrolysis cell should be cleaned in the following circumstances:

- If the low level of salt indicator comes on and the concentration is correct.
- If the overload indicator comes on and the level of salt is correct.
- If lime scale is observed on the surfaces of the electrodes. In this case, the equipment can also be adjusted so that the frequency between each automatic cleaning operation is less. This frequency will depend on the hardness of water in your area.

Submerge the cell in a hydrochloric acid solution, or use a commercial product to clean electrolysis cells (CELL CLEAN). Do not use sharp objects that could damage the titanium coating of the electrodes.

6.2 Checking and maintenance of the ORP probe (OPTIONAL)

Select Menu, and Man. Chl.

Adjust the chlorine to 0%. Go back to the display screen.

Rinse the probe carefully in clean water.

Insert the probe into a 465mV standard solution and stir gently. Observe the voltage on the label, which corresponds to the ambient temperature at that time. Wait for the reading of the ORP value displayed on the screen to stabilize.

Check that the value does not differ by more than about 10 mV of the value indicated on the label. If the value is incorrect, it can be attempted to regenerate the probe by cleaning it. In any event, annual cleaning is always advisable.

- Stir the probe in a glass of water, in which a spoonful of dish-washing detergent has been mixed. Rinse well in clean water.
- Mix a commercial brand of hydrochloric acid at 23% in a glass, with four times its volume of water. Leave the probe in the solution for a few minutes, stirring from time to time.
- Thoroughly clean the probe in pure, preferably distilled water. Shake the probe to remove the water.

6. MAINTENANCE

Recheck the value of the probe. A probe that gives an error lower than around 30 mV can continue to be used provisionally while it is replaced.

Never leave the probe outside. If the probe has been dry for a time, it can be regenerated with the hydrochloric acid solution.

6.3 Checking and maintenance of the pH probe

It is recommended to clean and check the probe at least once a year. Stir it in a glass of water in which a spoonful of detergent has been dissolved. Then wash it under the tap and leave it for a few hours in a glass of water in which 1 cm³ of hydrochloric acid has been added.

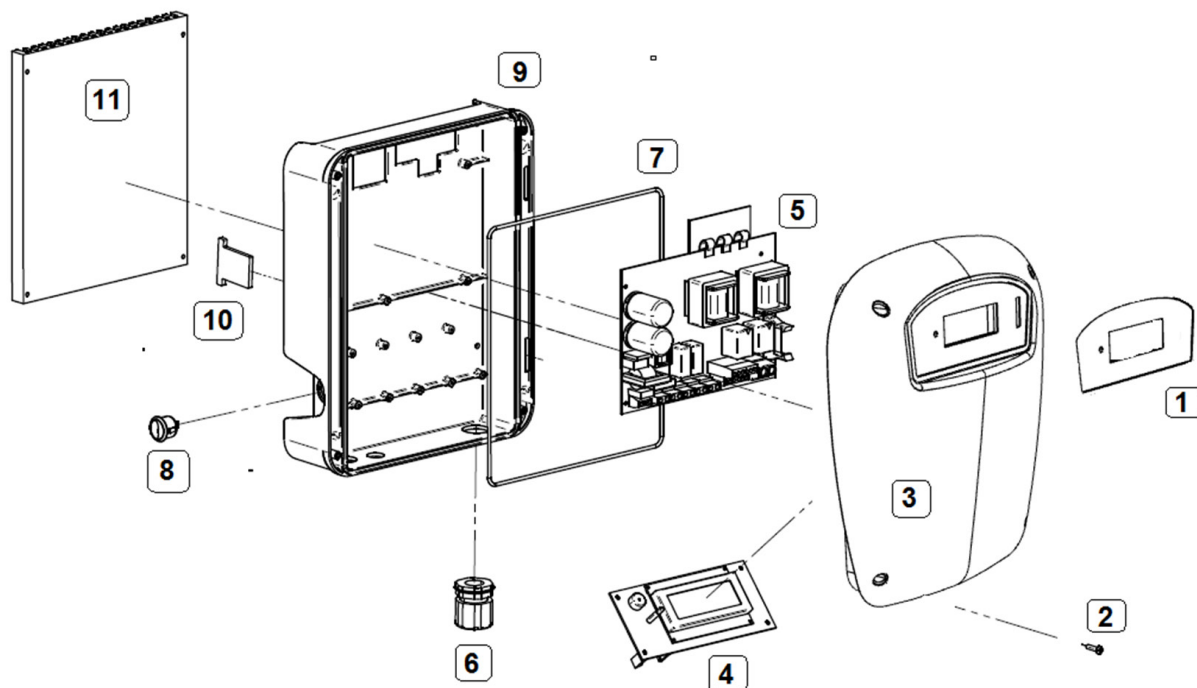
Recalibrate the probe again.

If well maintained, a probe can last for two or three years.

The probe should never be left to dry. If it is kept outside the installation, the original cap should be placed, or it should be submerged in a glass of water. If a probe has been left to dry, it can be regenerated by leaving it for 12 hours in a glass of water, preferably adding a few drops of hydrochloric acid.

7. SPARE PARTS

7.1 Power Center Spares

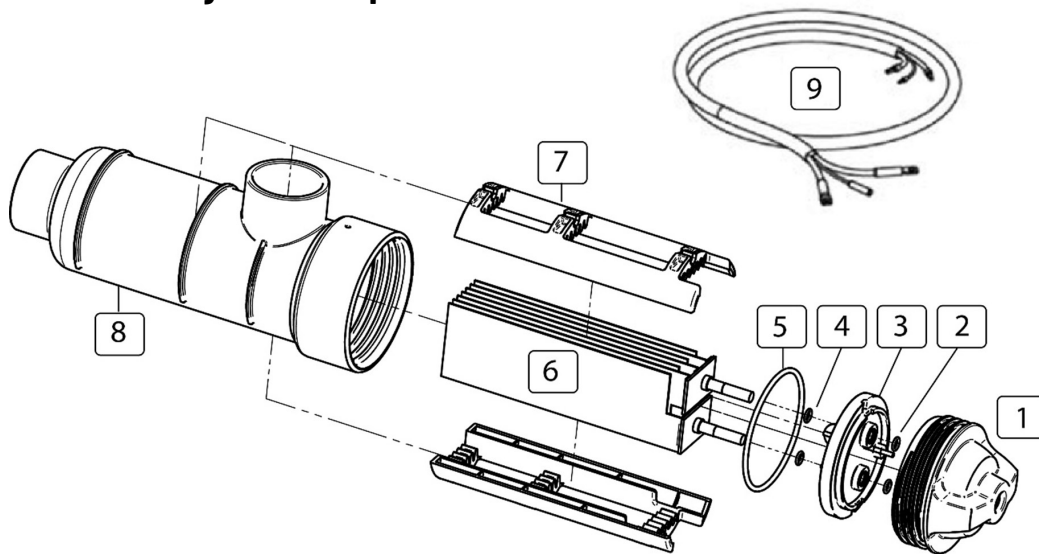


Ref:	Part No.:	Description:
1	811010	Keypad
2	N/A	Screw - See cover
3	811011	Cover
4	811012	PCB - Control
5	811013	PCB - Power
6	N/A	Cable entry gland

Ref:	Part No.:	Description:
7	811014	Gasket
8	811015	Switch
9	N/A	Base cabinet
10	N/A	Hinge - See cover
11	N/A	Heat sink
-	811016	Power center complete

7. SPARE PARTS

7.2 Electrolysis Cell Spares



Ref:	Part No.:	Description:
1	811017	Screw Cap - Cell
2	N/A	Nut
3	N/A	Washer
4	N/A	O-Ring - Pin
5	811018	O-Ring - Cell Housing
6	N/A	Electrolysis plates

Ref:	Part No.:	Description:
7	N/A	Cell spacer
8	811019	Cell housing
9	N/A	Cell Cable
-	811020	Cell 15g/hr (incl. 1-7 & 9)
-	811021	Cell 25g/hr (incl. 1-7 & 9)
-	811022	Cell 35g/hr (incl. 1-7 & 9)

8. GUARANTEE AND SERVICE

This unit is guaranteed for a period of 3 years in control main unit. The electrolysis cells have a warranty against defects for a period of 3 years as long as they have not exceeded 10,000 hours of operation*.

This guarantee is given to the owner of the equipment and it is not transferable.

This guarantee does not cover damage caused by corrosion, excess damp, current, temperature or vibration, or by incorrect installation, unsuitable handling, over-voltage, accidents or any other cause beyond the operation of the equipment. For full terms and conditions, please refer to the Pentair Warranty Schedule.

It is important to bear in mind that all repairs are performed by Pentair or by an authorized Pentair Service Agent.

* Note: It is normal for the maximum output from the cell to reduce over its lifetime. Reduction in performance related to wear and tear is not covered by warranty.



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