

ELECTROCHLOR®

Mineral Chlorinator PLUS

Owner's Manual

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WARNING

This equipment must be installed and serviced by a qualified technician.

Improper installation can create electrical hazards which could result in property damage, serious injury or death. Improper installation will void the warranty.



Notice to Installer

This manual contains important information about the installation, operation and safe use of this product. Once the product has been installed **this manual must be given to the owner/operator of this equipment.**

WATERCO

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Warning

This equipment must be installed and serviced by a qualified technician. Improper installation can create electrical hazards which could result in property damage, serious injury or death. Improper installation will void the warranty.



Warning

Electrochlor operates with 240 volts and must be installed by licensed electricians and must be installed in accordance to the local statutory authority regulations.



Warning

The appliance should be supplied through a residual current device (RCD) having a rated residual operating current not exceeding 30mA.



Warning

Disconnect all AC power during installation.



Warning

Electrochlor 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 provided supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.



Warning

In certain situations, unexpected start-up may occur when the appliance is in automatic mode. The installer should assess the risk associated with unexpected start-up of any connected device which, in any circumstance should have no hazardous effect.



Warning

Electrochlor should be deactivated if the pool or spa has been drained.



Warning

Parts incorporating electrical components, except remote control devices, must be located or fixed so that they cannot fall into the spa - pool.

SAVE THESE INSTRUCTIONS.

GENERAL SAFETY RULES

1. The equipment mentioned in this manual is specially designed for the sanitizing of water in swimming pools.
2. It is designed to work with clean water at a temperature not exceeding 35°C (95°F).
3. The installation should be carried out in accordance to the safety instructions of swimming pools especially Standard HD 384.7.702 and the specific instructions for each facility.
4. The rules enforced on accident prevention should be carefully followed.
5. Any modification of the chlorinator requires the prior consent of the manufacturer.
6. Original replacement parts and accessories authorized by the manufacturer ensure a high level of safety. The manufacturer accepts no liability for the damage and injuries caused by unauthorized replacement parts and accessories.
7. During operation, some parts of the chlorinator are subject to dangerous electric voltage. Work may only be performed on the chlorinator or on the equipment connected to it after disconnecting them and the starting device from the mains power.
8. The user should make sure that assembly and maintenance tasks are carried out by qualified authorized persons and that these persons have first carefully read the Service and Installation Instructions.
9. The operating safety of the chlorinator is only guaranteed if the Installation and Service instructions are correctly followed.
10. The limit values stated in the Technical Specifications should not be exceeded under any circumstance.
11. In the event of defective operation or fault, contact the manufacturer's Technical Support Department or its nearest Authorized Agent.
12. If the supply cord is damaged, it shall be replaced by the manufacturer or its service agent or similarly qualified person in order to avoid a hazard.
13. 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.
14. The appliance is not intended for use by young children. Young children should be supervised to ensure that they do not play with the appliance.

These chlorinators are approved and conformed to AS3136 Swimming Pool Equipment, as a prescribed article under Australian Registration.

These chlorinators conform to the Australian Electromagnetic Compatibility Standard marked by the C-tick.

1. WHAT'S IN THE BOX?

- Electrochlor Power Pack
- Electrochlor Accessories kit
- Owner's Manual
- Warranty Booklet

NOTE:

If bought as Salt Water Chlorinator unit, the electrolytic cell is provided in a separate carton.

2. INTRODUCTION

Consistently maintained sanitiser levels in the pool water will prevent the growth of all common algae and bacteria. A salt-water chlorinated pool requires much less attention than a chlorine pool.

A chlorine generator's main function is to produce chlorine for the pool. This keeps a residual of chlorine in the pool that prevents algae and bacteria from growing. The chlorine then turns back into salt and the system continues as long as the generator is functioning properly.

Through the process of electrolysis, a saline solution passing over an electrolytic cell, the saline solution is separated into its basic components: chlorine and sodium. The chlorine is instantaneously transformed into hypochlorous acid; this the chlorine form that kills algae and other harmful organisms in the water.

About the ELECTROCHLOR

Electrochlor Mineral Chlorinator consists of a Power Pack (power supply) and an electrolytic salt cell (where the chlorine is produced).

Electrochlor Power Pack

The Power Pack monitors and regulates chlorine production by regulating the amount of electrical energy supplied to the electrolytic salt cell.

Electrolytic Salt Cell

Waterco's salt cell consists of a series of titanium electrodes with opposite charges. Waterco's clear salt cell housing is constructed using clear U.V. stabilized acrylic, and allows visual inspection of the salt cell plates.

Both anode and cathode of the self-clean chlorinator are made from uniquely coated titanium plates for extra durability.

Self-Cleaning Cell - How it works

The Electrochlor Power Pack powers up the salt cell (anode and cathode) and holds an electrical potential difference between them for a designated period of time. This difference is reversed after that period of time has expired and then the anode becomes the cathode and the cathode becomes the anode.

The reversing of polarity or electrical potential difference will then start to remove any calcium build-up, which may have been deposited onto the cathode.

This continuous reversing of polarity will keep the cell clean from calcium deposits during its operation, providing the chemical balance and flow of the pool water thru the cell is maintained within normal parameters.

3. INSTALLATION



Warning

Ensure that the electrolytic cell is the last piece of equipment installed on the filtration system - this is so the chlorine produced will not damage other equipment such as heaters.



Warning

The electrolytic cell may be installed above or below water level. If it is below water level, an isolation valve must be installed so the unit can be serviced without losing water from the pool.

Installing the Power Pack

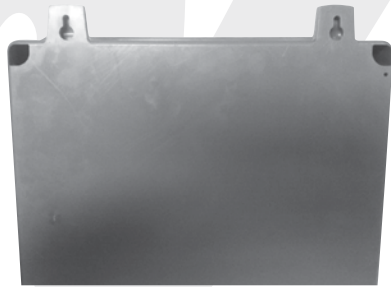
Choose a location for the Power Pack close enough to the Cell/Housing and filtration pump so that both may be connected/disconnected easily. The PowerPack should not be mounted in areas where chemicals are stored (e.g. acid and chlorine). Also, ensure the Power Pack can be connected to the mains power outlet of the pool area. Note that this outlet must meet the current applicable local standards at the time of installation.



Warning

The Power Pack should not be mounted in areas where chemicals are stored (e.g. acid and chlorine).

Install the Power Pack in a protected location out of direct sunlight. At top rear of the control panel locate two keyhole fixing points. Mount two pan head type screws at 216mm centres using a spirit level on an adequately stable vertical surface. Align the screw heads with the keyhole fixing points and allow the enclosure to slide down on the screws.



To access the Electrochlor for connection of cabling and sensors, there are screw wells in each corner of the front panel. To open the panel, insert a flat blade screwdriver and half turn anti-clock wise to release the spring-loaded locking pin. Ensure the pins are fully released prior to opening the hinged front panel.



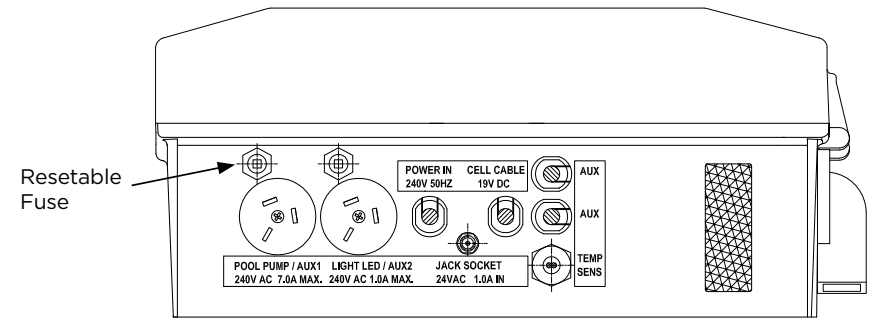
Warning

The PUMP socket outlet in the base of the Power Pack is dedicated to the filtration pump only. Do not use a double adaptor to connect another pump as this will overload the system and void warranty.

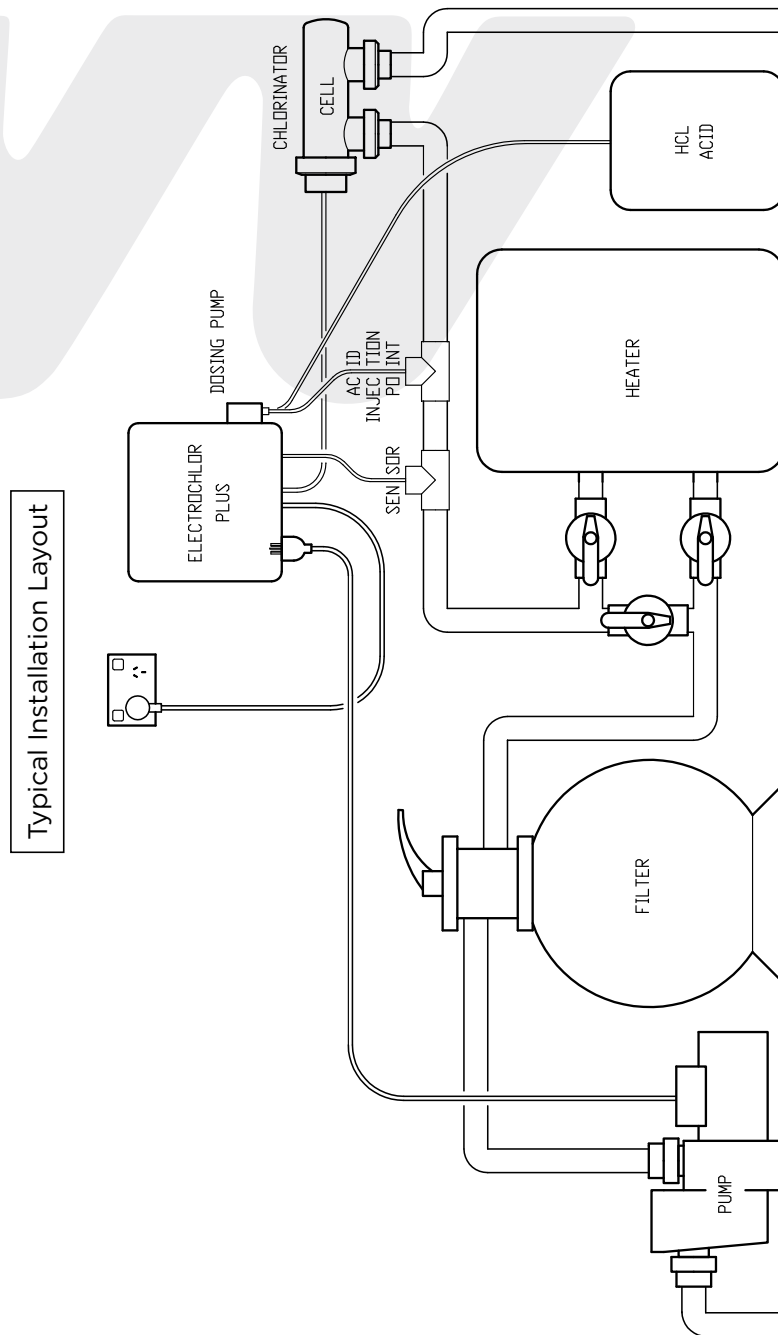
Electrochlor Mineral Chlorinator Power Outlets/Inputs

The Electrochlor has the following input/output connections:

1. A GPO for the pool pump or auxiliary equipment (AUX2) with a maximum current output of 7.0A and 240V.
2. A GPO for a pool light or auxiliary (AUX1) with a maximum current output of 1.0A and 240V.
3. A 24VAC jack socket to supply power to valve actuator with a maximum current input of 2.0A.
4. Provision for 2 cables input/output for a variable speed control cable and for low chlorine/spa signal cable (dry connection).



Bottom View Electrochlor Mineral Plus Chlorinator



4. INSTALLING THE CHEMICAL INJECTION POINTS

- 4.1. The acid injection point is to be installed on the pool **return line**, **after all other pool equipment**.
- 4.2. Dry fit the chemical injection point saddle to ensure sufficient space and clearances.
- 4.3. Ensure that the heads of the chemical injection points have a minimum of 200mm clearance so that the chemical feeder hoses may attach freely.
- 4.4. Whilst in dry fit, mark the holes to be drilled into the pipes, so they are directly under the open head of the chemical injection point.
- 4.5. Using a hole saw (22 mm), drill the first hole and clean the swarf (Figures 4.1 and 4.2).
- 4.6. Install the lower and upper clamps (Figure 4.3 and 4.4), so that the hole is directly beneath the open head of the upper clamp. Then secure the clamps together using the nuts and bolts provided, tightening with an adjustable wrench or 10mm socket wrench.



Figure 4.1



Figure 4.2

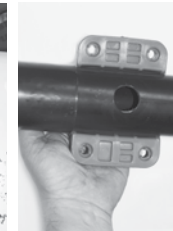


Figure 4.3

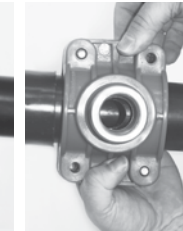


Figure 4.4

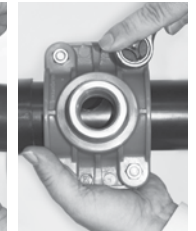


Figure 4.5

- 4.7. Using the Teflon tape provided, install the reducing bush to the top of the acid injection clamp (Figures 4.6 and 4.7). Hand tighten, and then $\frac{1}{2}$ turn with an adjustable wrench (Figures 4.8). Do not overtighten.
- 4.8. Using the Teflon tape provided, install the chemical injector to the reducing bush. Hand tightens, and then $\frac{1}{4}$ turn with an adjustable wrench (Figures 4.9 and 4.10).



Figure 4.6

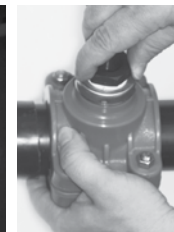


Figure 4.7

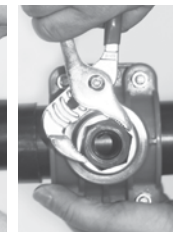


Figure 4.8



Figure 4.9



Figure 4.10

5. CONNECT THE CHEMICAL SUPPLY TUBES

The Electrochlor pH is supplied with ample chemical supply tubes which may be cut to length using a sharp utility knife.

- 5.1. Connect to chemical injection assembly, use Figure 5.1 as a reference for the assembly of the connection point of the tubing to injection valve and the acid dosing pump.

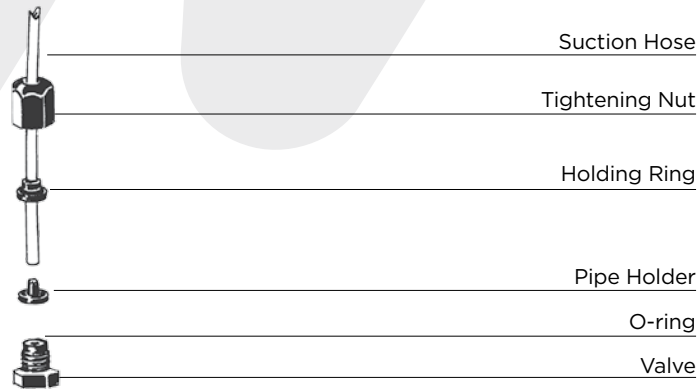


Figure 5.1 Connection Point Assembly

- 5.2 Take one end of the chemical supply tube and feed it through the tightening nut and holding ring. Then push the end of the tube over the pipe holder. Ensure that the tube is pushed on firmly over the tip and screw the tightening nut hand tight. See images below.

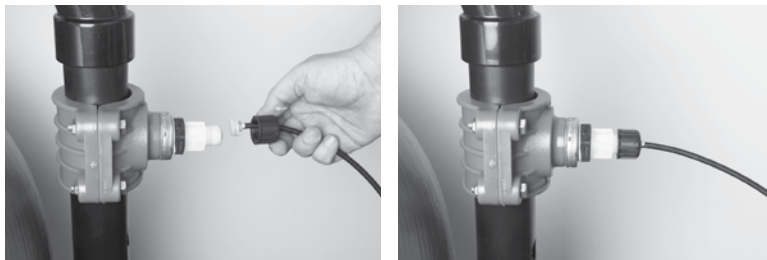


Figure 5.2 Connecting acid feed line to injector

6. CONNECT CHEMICAL INJECTION POINTS TO THE CHEMICAL DOSING UNIT

- 6.1 Cut the chemical supply tube connected to the chemical injection point to a suitable length allowing enough slack. Then feed the tightening nut and holding ring over the tube. Push the open end of the tube onto the pipe holder in the base of the chemical dosing unit RIGHT-HAND SIDE (OUT/discharge side Figure 6.1) and screw the collar hand tight (Figures 6.2 to 6.4).

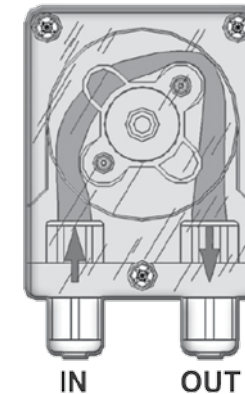


Figure 6.1 Peristaltic Pumps Layout

- 6.2 Repeat so both tubes are now connected with one end joined to the chemical injection point and the other joined to the RIGHT-HAND SIDE (discharge side) of the chemical dosing unit pumps.



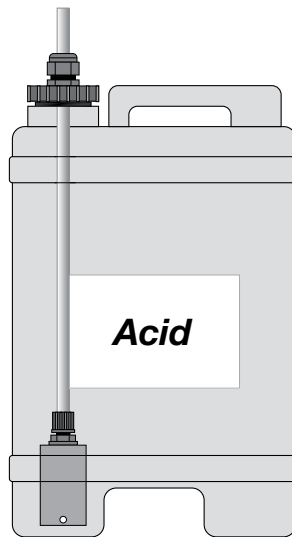
Figure 4.2

Figure 4.3

Figure 4.4

7. ASSEMBLE THE FOOT FILTER

- 7.1 Position the chemical drums in a safe and secure location, preferably about 2 metres from Electrochlor Power Pack.
- 7.2 Ensure acid have been diluted if necessary (See page 23 for details on how to dilute chemicals).
- 7.3 Drill a 10mm hole in the lid of the drum and pass a length of tubing through the hole.
- 7.4 Place a foot filter on the end of the tubes and then attach the appropriate drum filter.
- 7.5 Lower the drum filter and sinker into the drum and screw on the lid.



8. ELECTROCHLOR MAINTENANCE

The Electrochlor ensures that the correct residual level of pH is maintained within the swimming pool. Periodical maintenance of the Chemical Dosing unit is required.

8.1. pH Probe/Sensor

The Probe should be removed and cleaned every 3-6 months.

Turn the system OFF. Remove the Probe, being careful not to touch the sensor tip. Clean the tip with a soft, clean cloth dipped in a small amount of mentholated spirits.

8.2. Peristaltic Pump

The squeeze tubes of the peristaltic pump should be replaced every one (1) year depending on the amount of chemical being used. The higher the usage, the more often replacement is required.

8.3. Changing of the tube without dismantling the rotor



Important: Use originals squeeze tube only!

Important: Never grease the tube!

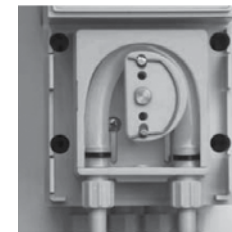


Figure 8.1

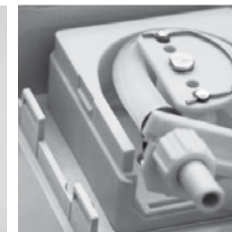


Figure 8.2

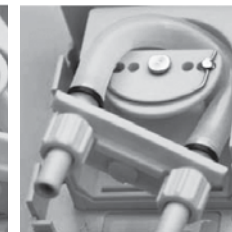


Figure 8.3



Figure 8.4



Caution: Before changing the tube always ensure, that the tubes don't contain residual chemical. Acid may cause dangerous injuries to your eyes and to your skin. Wear protection glasses and gloves and protect the environment from escaping dosage product with a cloth if necessary.

Caution: The turning rotor can cause dangerous contusions! Always first ensure that the pump stays disconnected from the operational voltage during the changing of the tube (Switch off power to the Electrochlor!).

DAILY MAINTENANCE

- Clean skimmer baskets if required.
- Remove floating leaves if required.
- Remove any large accumulation of debris on the bottom with a leaf scoop.
- Check that the water level is high enough for the pump to operate correctly.
- (water level should be in the middle of the skimmer mouth opening).

WEEKLY MAINTENANCE

If the Pool/Spa is heavily used (such as in hot weather) it must be checked more frequently. As a general guide, it is recommended that the check should be made at least twice weekly in the swimming season and once every two weeks in the non-swimming period. Seek guidance from your local authority or qualified Pool/Spa maintenance technician if necessary.

- Check and clean pump and leaf baskets if required.
- Check filter and backwash the media filter or clean cartridge filter as necessary.
- Make sure there is adequate diluted acid in the tank of the automatic feeder for the next week.
- Always add acid to the water, never water to acid.
- Test the pH & free chlorine levels in the Pool/Spa water.

MONTHLY MAINTENANCE

- Test the TA, adjust if required.
- Check the stabiliser level and make sure it is in range.
- Check Squeeze tubes.
- Change water, spa applications only.

QUARTERLY, HALF YEARLY OR YEARLY MAINTENANCE

- Check and clean probe if required.
- Check squeeze tubes & all tubing; Squeeze tubes need to be replaced based on usage. If tubing is stiff or swollen then replace tubing. Take care as chemical will be in tubing.
- Clean salt cell: follow chlorinator manual instructions to accomplish this step.

9. INSTALLING THE PH SENSOR

- 9.1. The pH sensor is to be installed on the pool **suction line, before acid injection point and salt cell.**
- 9.2. Dry fit the pH sensor saddle to ensure sufficient space and clearances.
- 9.3. Whilst in dry fit, mark the holes to be drilled into the pipes, so they are directly under the open head of the chemical injection point.
- 9.4. Using a hole saw (22 mm), drill the first hole and clean the swarf (Figures 9.1 and 9.2).
- 9.5. Install the lower and upper clamps (Figure 9.3 and 9.4), so that the hole is directly beneath the open head of the upper clamp. Then secure the clamps together using the nuts and bolts provided, tightening with an adjustable wrench or 10mm socket wrench, (Figure 9.5).

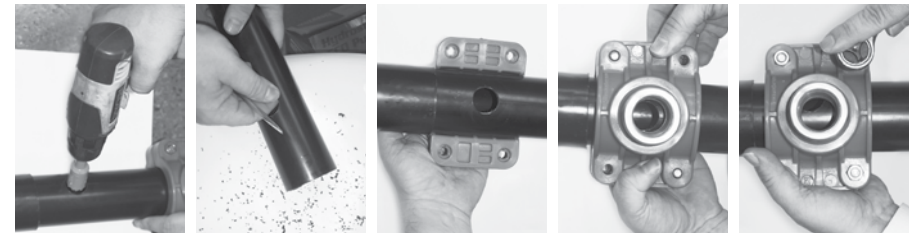


Figure 9.1

Figure 9.2

Figure 9.3

Figure 9.4

Figure 9.5

- 9.6. Using the Teflon tape provided, install the 20mm probe nipple on the injection clamp Hands tighten, and then ½ turn with adjustable wrench Do not over tighten (Figure 9.6).
- 9.7. using the Teflon tape provided, install the pH sensor injector to the probe nipple. Hand tightens (Figures 9.7).
- 9.8. Connect the pH Sensor BNC connector Electrochlor (Figure 9.8).

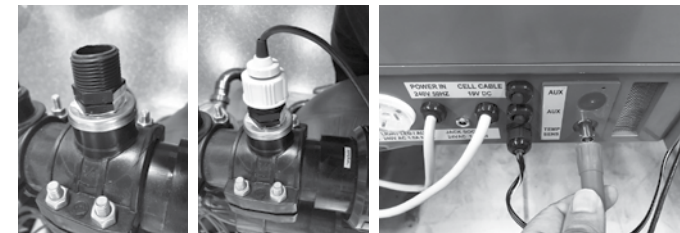


Figure 9.6

Figure 9.7

Figure 9.8

10. SETTING THE PH SETPOINT

Proportional Controller

The Electrochlor use a proportional controller using a calculated percentage between two set values that enable or disable the pH dosing pump.

Push the Electrochlor Plus wheel, navigate to the Settings Menu. Navigate using the arrow to Setpoint Menu.



Figure 10.1 Navigate to the setting menu

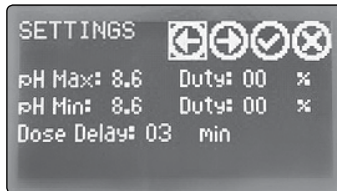


Figure 10.2 Using arrows (←→) Navigate to pH Settings



Figure 10.3. Define pH Range

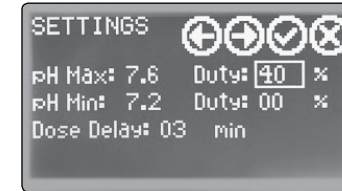
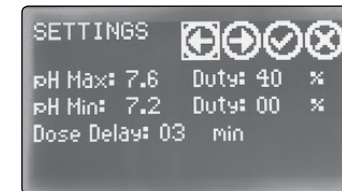


Figure 10.4 Define dosing pump duty

Setting the Setpoint and Pump Duties

Select the high value, in this example 7.6pH, the select the duty (%) in the below example 50% Select the lower value (min value) in this example 7.2pH, set the duty to 0%.



Setpoint photo here

Figure 10.5 Setting Operating Values for pH

Example: Proportional mode with a range of 7.2pH (0%) and 7.6pH (100%). In this mode, the pH peristaltic pump will be 'ON' for values greater than 7.6 pH and it'll be 'OFF' for values lower than 7.2 pH. For values of the 7.4pH peristaltic pump will be 'ON' for 20 seconds out of every 100 seconds.

Table 10.1 Reference pH Settings for Different Pool Sizes

Pool Size	Range	Proportion (%)	Response rate
< 20kL	7.2-7.6	5%	Slow
40-60kL	7.2-7.6	50%	Average
> 80kL	7.2-7.6	100%	Fast

Should any adjustment be required, adjust the desired set point in increments of 0.1. The proportion (%) can be adjusted as desired. Allow the pool to circulate for 48 hours before testing and adjusting again.

11. CALIBRATING THE SENSOR

This step requires a pH 7.00 reference solution (Waterco P/N 60121387). This step requires the sensor to be removed from its saddle clamp. It is also important to disconnect/stop the pump while performing this operation.

With the Electrochlor On, push the wheel and navigate to pH, select this option and using the wheel navigate to Calibrate and press enter.

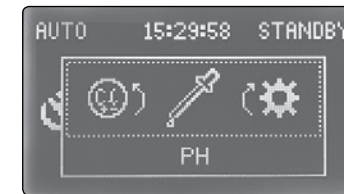


Figure 11.1 pH Settings Menu

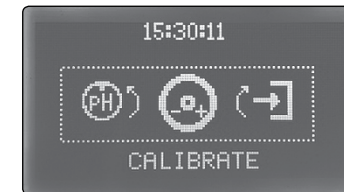


Figure 11.2 pH Calibration Menu

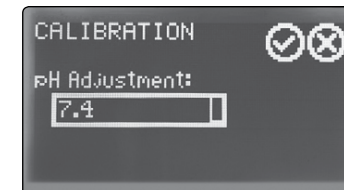
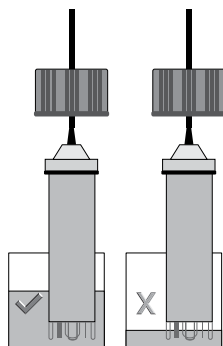


Figure 11.3 Calibration pH Sensor

Calibration Procedure:

- 11.1 Switch the pool pump OFF and unplug it from the **POOL PUMP** GPO.
- 11.2 Remove the pH sensor from the tapping saddle. For installations where this fitting is below the level of the pool, close the Isolation valve before removing the probe.
- 11.3 Plug the pH sensor into the pH sensor BNC connector socket (if not already connected).
- 11.4 Rinse probe in distilled water. Shake off as much water as possible. Blot the outside of the probe dry.
- 11.5 Place the pH probe into a small sample of pH 7.00 buffer. Ensure that the entire and reference junction is immersed, as per the diagram below.

DO NOT place pH Sensor directly into buffer bottles.



- 11.6 Wait until the reading value is stable according to the buffer solution value and then rotate the wheel until it is the same as on the display. Default value is 7.00pH.
- 11.7 Save the setting by rotating the wheel to the checkmark.
- 11.8 Re-install the sensor to the pipeline on the saddle clamp, reconnect the pump and set Chlorinator back to operation.

NOTE:

buffer solution value may change if the solution temperature is different than 20°C. Read the buffer solution's label for more information. If the value is different from the default value of 7.00 then the 'pH Default' value must be changed to the correct one.

12. CHEMICAL HANDLING

Important Safety Measures

- Always add concentrated chemicals to water.
- Don't allow chemicals to mix.
- Always wear protective clothing, footwear, gloves and eye protection when handling pool chemicals to avoid injury.
- If a spill occurs, wash the affected area with fresh water immediately and seek medical attention.
- Work in a well-ventilated area and avoid inhalation of fumes.
- Read and follow safety instructions on chemical drums.

Diluting Chemicals

- Always wear protective clothing, footwear, gloves and eye protection when handling pool chemicals to avoid injury.
- Always add acid to the water, never water to acid.