innowater

smc chlorinator

ALLIGUARD
WATER TREATMENT SOLUTIONS

Lasithiou 77, Glyfada Athens, Greece 16674
M: 6947 810 227 • 6906 185 915 / E: grakanidis@alliguard.gr
www.alliguard.gr

09-24

1. SAFETY WARNINGS

- Disconnect the equipment from the mains supply before any intervention.
- All electrical connections must be carried out by a qualified approved electrician
- Check that the device is plugged into a power outlet that is protected against short-circuits. The device must also be powered via an isolating transformer or a residual current device (RCD) with a nominal operating residual current not exceeding 30 mA.
- The unit must be connected to a proper protective earth conductor by its earth wire of its mains power cable.
- Check that the supply voltage required by the product corresponds to the voltage of the distribution network and that the power supply cables are suitable for the product power supply.
- Chemicals can cause internal and external burns. To avoid death, serious injury and/or damage to equipment, wear personal protective equipment (gloves, goggles, mask, etc.) when servicing or maintaining this device. This device must be installed in an adequately ventilated place.
- To reduce the risk of electric shock, do not use an extension cable to connect the device to the mains. Use a wall socket.
- Carefully read the instructions that appear in this manual and on the device. Failure to comply with the instructions can cause injuries. This document must be given to every pool user, who should keep it in a safe place.
- This appliance can not be used by children or by people with reduced physical, sensory or mental capabilities, or those who lack experience or knowledge. Children must not play with the device.
- Use only original Innowater parts.
- Only the manufacturer is authorised to repair the device or to replace any parts or components.

- If the power supply cable is damaged, it must be replaced by the manufacturer, the after-sales service or similarly qualified persons to avoid danger.

- The device must not be used if the power cord is damaged. An electric shock could occur. A damaged power cord must be replaced by the after-sales service or similarly qualified person to avoid danger.

- Do not operate the chlorinator if the pump is not running or if the flow through the cells is too low. The gas generated in the electrolytic process could break the cell and eventually explode.

- The chlorinator must be the last element the water passes through before returning to the pool. Otherwise gas generated in the cell could build up in the circuit and cause an explosion.

- Never install the cell before the filter because the hydrogen generated could build up in the filter and provoke an explosion.

- Install the unit in a fresh and well ventilated area and protected from flooding and water splashing.

- Never connect a voltage source to any of the outputs or inputs of the control box.

2. INTRODUCTION

We thank you for your purchase of an Innowater chlorinator. Innowater chlorinators are manufactured following the strictest quality controls using the most advanced technology of electrolysis resulting from our many years of swimming pool industry experience .

With minimum maintenance and following elementary rules for installation and use, you will enjoy an extremely efficient device for many years.

Please read this manual carefully before installation or start-up, and keep it for further reference.

The sections concerning the installation require certain technical knowledge and we always recommend that installation is conducted by an industry professional.

Please pay special attention to the points marked with the following symbol:

Any damage caused to the chlorinator resulting from not complying with these warnings may lead to a void of warranty.

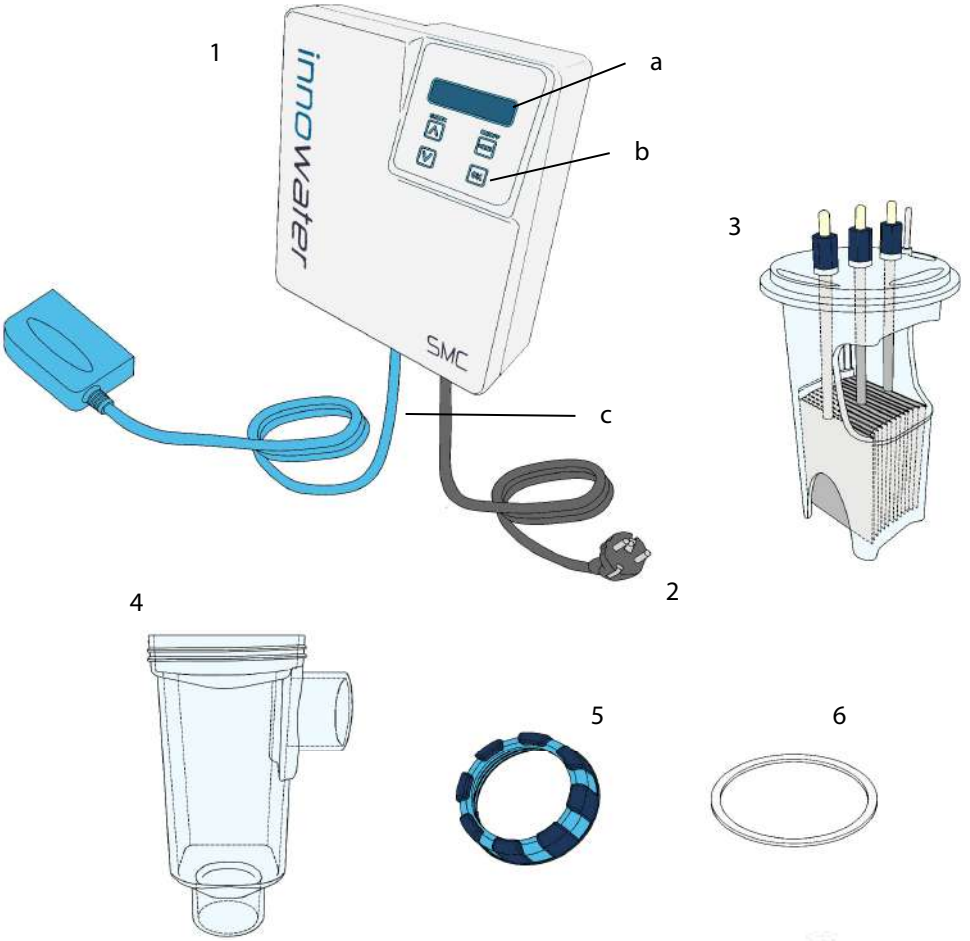
We trust you will enjoy your Innowater chlorinator—thanks for choosing Innowater.

3. TECHNICAL CHARACTERISTICS

	SMC10	SMC15	SMC20	SMC30
Chlorine production g/h	10	15	20	30
Maximum flow lt/min	450	450	450	450
Maximum pressure bar	1	1	1	1
Pressure drop kpa	5	5	5	5
Max. output voltage VDC	24	24	24	24
Max. Output current ADC	2,0	2,5	3,5	5,0
Cell configuration	Bipolar	Bipolar	Bipolar	Bipolar
Recommended salt concentration g/l	5-35	5-35	5-35	5-35
Cell housing material	PC	PC	PC	PC
Electrode quality	Ti grade1 10K	Ti grade1 10K	Ti grade1 10K	Ti grade1 10K
Maximum estimated pool size m^3				
- Temperate climate	30	50	90	150
- Tropical climate	20	34	60	100
Power supply VAC	230	230	230	230
Max. power consumption W	58	75	100	144
Weight Kg	3,2	3,5	4,0	4,3

4. CHLORINATOR DESCRIPTION

You will find the following items in your Innowater SMC box:



1 Control unit

- a LCD screen
- b Keyboard
- c DC cell cable and connector

2 Power supply cable

3 Electrolytic cell

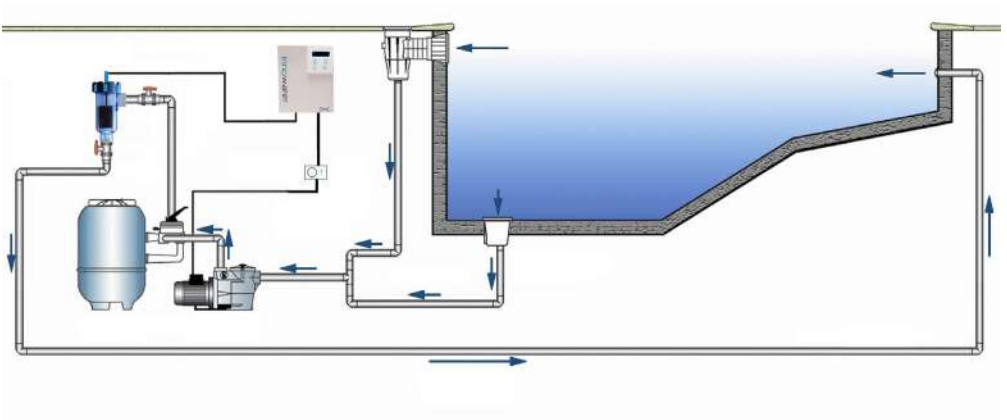
4 Cell housing

5 Thread lock

6 Cell O Ring

7 Cell cap

5 INSTALLATION



Chlorinator Control Unit

Mount the control unit on a wall using the bracket on the back and the screws provided. The unit should be installed in vertical position, at no less than 1 meter from the floor. Leve 20 cm of free space above and below the device to allow the air circulation. Choose a place for easy access and reading, with good ventilation and protected from the rain and other possible water leaks or splashing.

We recommend that you have an electrical safety circuit breaker fitted to your swimming pool electrical circuit.

Once mounted you can connect your swimming pool pump power cable to the power socket located at the bottom of the chlorinator control unit. Your Innowater chlorinator is designed to automate your pool pump operation.

Cell housing

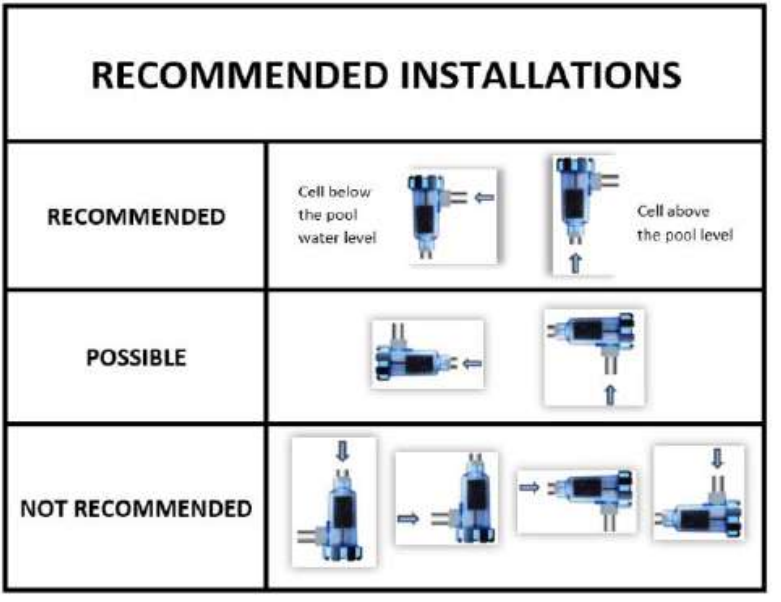
The cell housing must be installed on the return flow plumbing line which runs to the swimming pool and it should usually be the last element the water goes through before returning to the pool. For positioning this means either always after the filter or if you are running pool heating like a heat pump or solar panels, then the cell should be positioned after these components. Use special glue for rigid PVC connection and wait until it completely dries before inserting the cell .

If an automatic pH regulation system has been installed, the injection of the acid must take place unconditionally after the cell. Otherwise, the electrodes will corrode due to the acid contact and the warranty will be void. Do not place the acid tank near the chlorinator with insufficient ventilation as the gases will corrode the electronic components quickly. Any acid containers should be kept outside of the plant room.

Whenever it is possible, a by-pass installation with three valves is recommended. This allows the amount of water flowing through the cell to be adjusted and the swimming pool to work with the cell housing disassembled. In any case, when there is a high flowing single speed pump, the by-pass is necessary to reduce the speed of water through the cell housing to lower the pressure and avoid vibrations.

Although the vertical cell position is recommended, the cell housing may be installed vertically or horizontally, according to the characteristics of your site. The vertical position also allows for disassembling the cell without water spillage. Allow enough room to unscrew the thread and extract the cell once the housing has been installed. WATER MUST ENTER THE CELL THROUGH THE HIGHER SIDE OPENING.

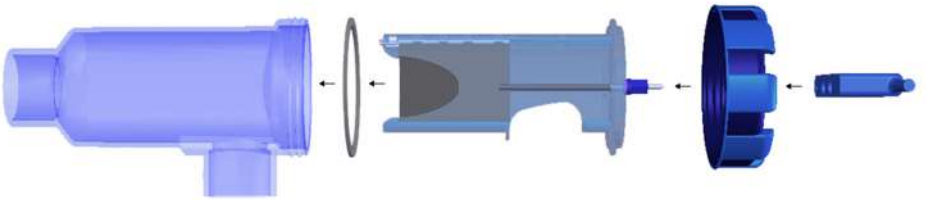
A good filtration is essential in salt chlorination. Please, verify that your filter and filtrating material are in optimal working conditions.



Cell

Insert the cell in the cell housing making sure that its open side window is pointing to the side water inlet . Make sure the O-ring is fitted correctly and tighten the thread. Then, connect the cell cable connector to the cell terminals. Verify that the connector is orientated so that its small hole is aligned with the thin pin on the cell before trying to plug the connector.

NOTA: The cell pins should only be tighten slightly and always by hand. Never use a tool because the cell could be damaged. Water tightness is assured by the internal seal.



6. WATER PREPARATION

Use preferably water from the metropolitan network. If water from a different origin is used, have it analyzed and verify so that there is no contraindication regarding salt electrolysis (such as a high concentration of metals or calcium, for example). Make also sure the water complies with health standards.
Balance the water before starting your chlorinator and add the amount of chlorine stabilizer prescribed by the manufacturer (usually 1 kg per 25m^3 of water). Do not exceed the dose because this will block the disinfection action of the chlorine.

NOTA : Stabilizer prevents the disintegration of chlorine due to UV radiation. The lack of stabilizer could make it difficult to reach a chlorine residual concentration during high sunshine periods and will oblige you to produce more chlorine reducing the life span of your cell. In general, and specially if you don't use stabilizer, we recommend to chlorine during low sunshine hours.
The water must be clean and clear, presenting the following parameters:

Salt	5-6 kg/m^3 (gr/l)
pH	7,2-7,6 (cement) 6,8-7,0 (polyester)
TAC	60-100 ppm
TH	15-20º French
Stabilizer	20-30 ppm (or according to the indications by the manufacturer)
Temperature	>10 º C

7. ADDING SALT

The chlorinator must remain OFF during this operation and until the additive is completely dissolved. Operating the chlorinator with non dissolved salt could irreversibly damage the cell and the power supply, and lead to a void of the warranty.

Calculate the volume of the swimming pool and add 5 to 6 Kg of salt per cubic meter. Make sure the chlorinator is disconnected and make the filtration system to work for at least 24 hours.

For any recently coated cement pool please wait for four weeks or ask your pool builder before adding the salt.

The salt dissolving process can be accelerated using the pool cleaner. Check the salt concentration is between 5 and 6 kg/m^3 using a kit from a specialized pool shop.

The salt chlorination process does not consume the additive itself. However, the concentration may be reduced over time due to rain or other periodic freshwater contributions (topping up, filter cleaning, etc.). Whenever the concentration needs to be corrected, pour the additive into the pool aiming for the shallow end floor. The natural progression of your pool floor from shallow to deep end should allow the additive to flow downward assisting in a quicker dissolving time. Never pour salt directly into the skimmer box area.

8. OPERATION

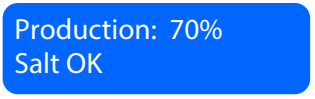
The chlorinator and its different menus are controlled with a four key keypad. Three of these keys, **Λ** , MENU and OK , also have a secondary function accessible by pressing and holding down the corresponding key for 2 seconds

NOTE: At some points of activity or during a change of function the keyboard may seem as it is not responding immediately. This is completely normal. Just wait a few seconds for the task to be completed and the display will respond.

8.1 ON/OFF

The ON/OFF function (MENU key held for 2 seconds) turns the chlorinator alternatively ON and OFF.

Once the chlorinator is switched on, the main production screen will appear:



This screen indicates the current production rate and the existing salt level in the water. It may take a few seconds for the salt level to appear. If you are on a different screen you can always come back to the production screen by pressing the MENU button repeatedly.

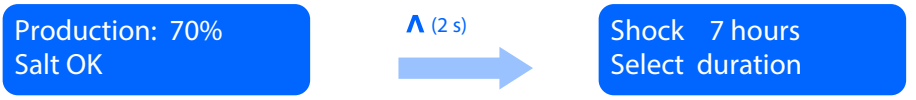
To increase or decrease the chlorine production rate press the **Λ** or V arrows. The chlorinator modules the production by varying the operating time in periods of 10 minutes. At 100% the chlorinator works constantly. At 0% the production is halted.

You will get to know the needs of your pool which will depend on the different conditions (number of users, temperature, etc.) allowing you to anticipate the best setting. In general, to enjoy the benefits of mineral/salt water chlorination, we recommend setting the minimum production rate that produces a crystal clear water in your pool. Avoid chlorinating during high sunshine periods because chlorine will quickly disappear due to the UV radiation and won't have the time to disinfect your pool thoroughly. We recommend to program the chlorinator to work during the night or at sunrise.

8.2 Shock Function

The shock function allows you to apply a shock treatment (chlorinator at 100%) for a selectable period of time with automatic return to the previous production rate once the shock period has ended. This feature is useful if the chlorine level has fallen suddenly for some reason and you want to recover it quickly.

To activate the shock, go to the production screen and press the up arrow **Λ** for a few seconds. The following screen will appear:



Select a number of hours, by using the **Λ** or V arrows and press OK to confirm or MENU to exit. If you activate the function the production screen will show the indication SHOCK and the remaining shock time (updated every 10 min):

If you want to quit the Shock function press the **Λ** or the V key. The screen on the right will be displayed. Press OK to exit the shock function or MENU to continue the shock treatment.

8.3 Menus

To enter the different menus or functions press MENU from the production main screen. The following screen will show:

Then, use the arrows **Λ** or V to go to the desired function and press OK . Press MENU again one or more times to come back to the main screen.

9 MENUS AND FUNCTIONS

9.1 Menu 1—Language

Use the arrows Λ V to choose the language and press OK.

9.2 Menu 2—Polarity period.

The polarity applied to the cell is periodically reversed to remove calcium build-up. The factory pre-programmed period is 8 hours and this is recommended. Depending on the conditions of your pool it may be necessary to reduce this period in order to increase the frequency of cleaning. Note that the longer this period is, the longer the cell duration will be . A period of less than 4 hours will drastically reduce the life of the cell. Inversely, you can increase this period if your cell doesn't need to be cleaned that frequently. We recommend, in general, to set this period to the larger number of hours as long as there is not calcium build-up on the electrodes.

Use the Λ or V buttons to select the period and then press OK to confirm and save the setting. Then press MENU once or more to return to the production screen. You can also exit without saving the setting by pressing MENU .

9.3 Menu 3—T V I Readings

This screen shows the temperature inside the control unit and the voltage and current in the cell. These values can be used for diagnose in case of malfunction.

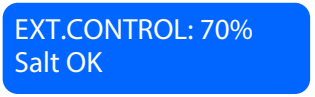
9.4 Menu 4—LCD contrast

Adjust the LCD contrast using the Λ or V keys. Press OK to save and exit.

9.5 Menu 5—External control

This function allows you to use the external control input to change automatically the production percentage. External control input works by connecting the two wires

of the control cable (optional) to a dry contact. If you have a cover, for example, you can use it to reduce or stop production when the cover is extended. You can also use this function to control the chlorinator production with a chlorine or redox regulator.



When the external control signal is detected the display on the left and the production is locked to the control percentage programmed.

NEVER connect the external control cable to a voltage source.
Connect only voltage-free (dry) contacts to this input.

9.5.1 Function ON / OFF

Choose ON or OFF using the arrows and confirm with OK.

9.5.2 Contact type

Select the behaviour of the relay to be connected to the external control input:

Open = active	Ext. Control will activate when the contact is open
Closed = active	Ext. Control will activate when the contact is closed

9.5.2 Production setting

Choose with the arrows the production percentage when the external control signal is active.

NOTA:
If you are using an Innowater chlorine or redox controller, configure the chlorinator and the controller as follows:

Chlorinator:		Controller:	
External control:	ON	Relay Output mode :	ON/OFF
Contact type:	Abierto = active		
Production when active:	0%		

9.6 pH Function (optional)

MAIN MENU
6 pH Function

This function allows the pH to be measured and to be regulated with the wireless acid pump. Read the pH Wireless Function manual to use the function.

9.7 Redox Control F unction (optional)

MAIN MENU
7 RX Control

This function allows the RX potential to be measured and chlorinator production to be automatically controlled. Read he RX Control Function manual to use the function.

9.8 Modbus (opctional)

MAIN MENU
8 Modbus

The Modbus function allows the chlorinator to be remotely contolled using the Modbus RTU protocol. Read the Modbus Option manual to use this function.

9.9 Factory configuration

MAIN MENU
9 Factory conf.

This menu is for factory configuration only and is not user accessible.

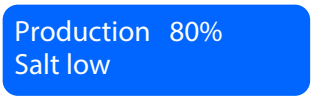
10 FULT MESSAGES

Production 80%
LOW WATER LEVEL

This message will flash when the water does not contact the probe in the cell cap and the control system stops the production. Verify that there is water in the cell and that the level reaches the probe.

The chlorinator must never function if the pump is not turning or with an insufficient water flow. The chlorinato r power supply must be pump turning dependant.

A low water level in the cell may be due to a dirty filter, obstructed skimmer basket, obstructed pump basket or to a pump not powerful enough. As soon as the water level is restored the messaged stops and the chlorine production resumes.



This message is displayed when the electric current through the cell is lower than the expected value what limits the chlorine production. This can be due to a low salt concentration, a worn cell or, in general, to any means which limits the electric current through the cell: calcium build up, air bubbles, water too cold, low water level, etc. The message disappears as soon as the conditions go back to normal.

The message on the left is displayed when the electric current through the cell is too low. If this condition remains for a certain time the chlorine production will stop and the screen on the right will be displayed. If you press OK , the chlorine production will resume and, if the conditions come back to normal, the fault message will disappear. The causes of this message are the same of the previous message but with a higher effect.

This message is displayed when the electric current trough the cell equals zero. If this condition remains for a certain time the chlorine production will stop and the screen on the right will be displayed. If you press OK , the chlorine production will resume and, if the conditions come back to normal, the fault message will disappear. This message may be caused by a wrongly connected cell, a broken cell cable, a broken electrode pin, a no water working cell, a totally clogged or consumed cell.

This message is displayed when the electric voltage trough the cell is lower than expected. If this condition remains for a certain time the chlorine production will stop and the screen on the right will be displayed. If you press OK , the chlorine production will resume and, if the conditions come back to normal, the fault message will disappear. If this message is shown contact the Technical Service.

11. RECOMMENDATIONS AND WARNINGS

The bipolar cells of your Innowater chlorinator have been manufactured using an exclusive technique and rigorous quality controls conferring extraordinary duration and resistance. However, there are several factors that may irreversibly reduce the properties of any electrode that you should avoid in order to obtain the best performance and longest lifespan of your chlorinator. These are:

- Operating with calcium build up on the electrodes
- Excessive chlorine concentration (chlorine is corrosive above 3.0 ppm)
- pH too low or too high
- Insufficient salt concentration
- Adding salt to the pool with the chlorinator working
- pH corrector acid injection before the cell housing, in the skimmers or in the bottom drain inlet

We recommend you to periodically check the cell for calcium build up, corrosion or leakage. The rods insulation and top sealing must be in perfect condition. If there is any damage please send the cell to the technical service for replacement.

NEVER operate the chlorinator if:

- Your installation is not provided with a residual current circuit breaker
- Water is not flowing through the cell
- Valves are closed
- The filter is being cleaned
- The swimming pool is being emptied
- The water is frozen
- Electrodes are blocked by calcium build-up

12. MANUAL CELL CLEANING

Your Innowater chlorinator is provided with a self-cleaning polarity change system that in normal conditions eliminates maintenance work. However, in exceptional cases, when the calcium concentration is very high (very hard water, old concrete pools), polarity change may not be enough to completely eliminate the calcium build up. Visually inspect the cell regularly to detect the presence of calcium and, if necessary, clean the cell manually. Let the cell dry completely during one or more days for the calcium build up to detach by itself. You can help this by slightly knocking the cell but do not introduce any element that could scratch the electrodes. Their coating is fragile. You can also use a high pressure water jet. DO NOT USE ANY METALLIC OR STABBING ELEMENT TO SCRATCH THE ELECTRODES.

If you are not able to remove the calcium build up in the way described, proceed as follows:

1 Turn off the pump and the chlorinator.

2 Disconnect the power cable for the cell, unscrew the thread lock and extract the cell.

3 Immerse the electrodes in a hydrochloric acid solution made from 1 part of acid and 9 parts of water. Do not immerse the rods or the cap of the cell. The hydrochloric acid will react with the calcium and will dissolve it producing a fizzing sensation.

4 Once the calcium build up has dissolved, rinse the cell immediately with freshwater, dry the terminal area properly and reinstall the cell in its housing.

Never leave the cell in the acid solution for more than 5 minutes. Do not scratch the electrodes with metal objects. For safety reasons, always add the acid into the water and never inversely.

13. WARANTY, TECHNICAL SERVICE AND SPARE PARTS

Warranty

1. The electrolytic cell and the control unit will be guaranteed for 3 years against any manufacturing defect.

2.The manufacturer declines any responsibility in the following cases:

a. If the instructions in this manual are not followed
b. Faulty electrical connections
c. Accidental damage
d. Damage due to water in the control board
e. Pump of more than 1.5 V power without installation of a "By-Pass" (according to sembly diagram on page 4)
f. If acids are poured into the skimmers or cell without having disconnected the rectifier.
g. Presence of an acid tank near the chlorinator with insufficient ventilation.
h. Operation with calcium built up on the electrodes.

3. The chlorinator shipping cost will be paid by the client/distributor.

4. It should be clarified that the Innowater chlorinator installation is completely independent from the filtration equipment, pump or multi-port valve. All they have in common is their connection.

Spare parts

Innowater have spare parts available at your disposal via a network of pool shops around the world. The use of non-original parts or the manipulation of the equipment by personnel not authorised by Innowater may cause serious problems to your chlorinator and will void the warranty. If you do require any servicing or spare parts please contact us directly at www.innowater.es.