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1. INTRODUCTION

We thank you for your purchase of an Innowater chlorinator. SMC chlorinators are manufactured following the strictest quality controls and using the most advanced technology of saltwater electrolysis resulting from our experience and research for over 20 years.

Adopting a basic maintenance and following elementary rules for installation and use, you will enjoy an extremely performing device for many years.

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

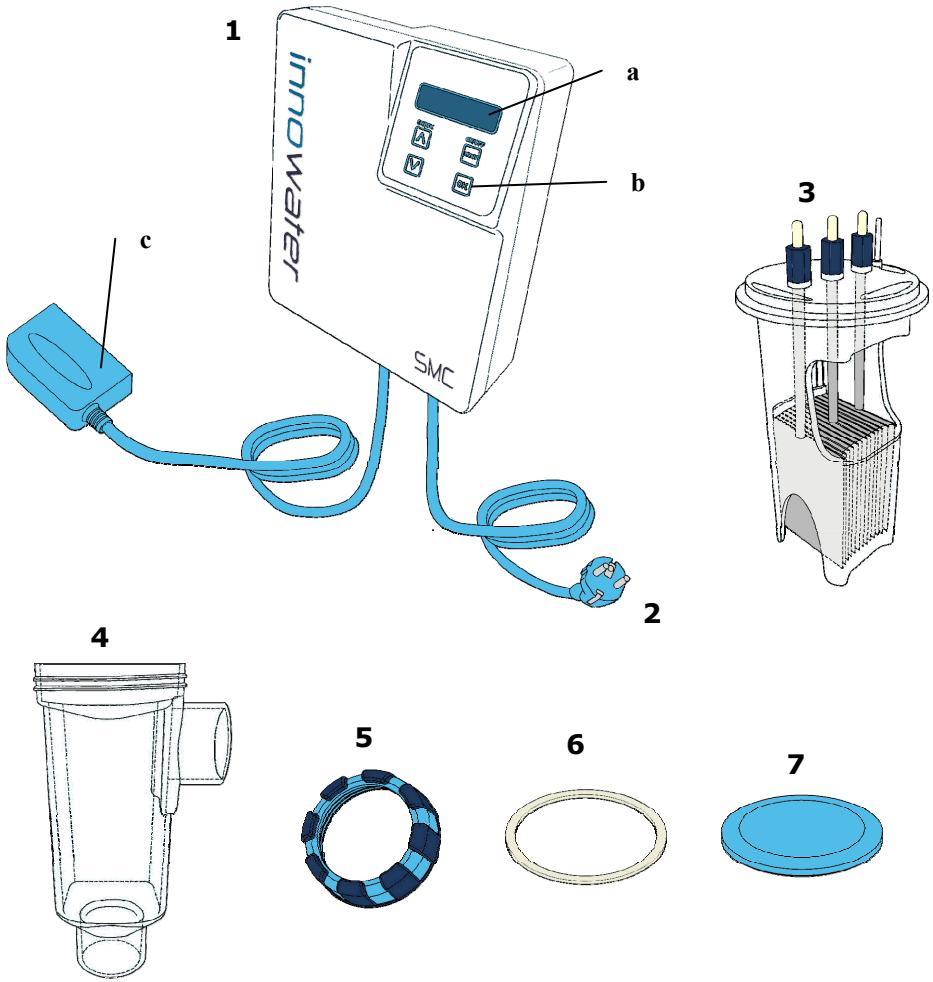
The sections concerning the installation require electricity and swimming pool installation knowledge. We recommend the installation by a professional.

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 cancellation of the warranty.

2. SALT WATER CHLORINATOR DESCRIPTION

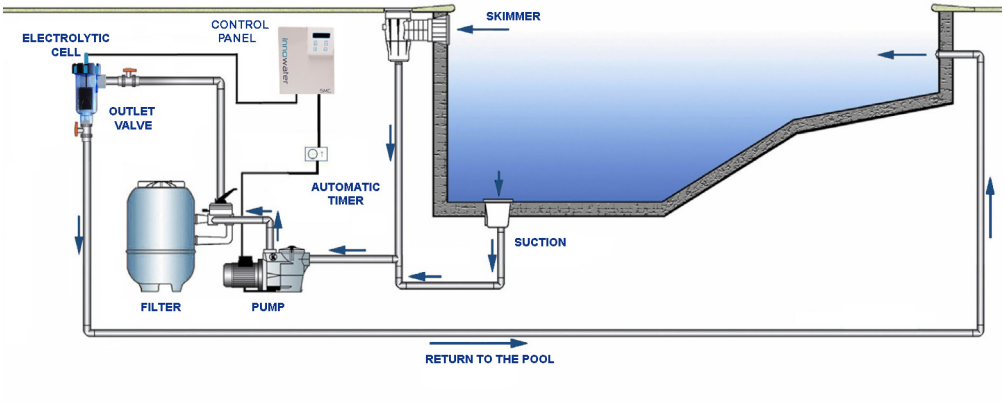
You will find the following items in your SMC box:



1 Control unit
- **a** LCD screen
- **b** Keyboard
- **c** DC cell cable and connector

2 220 VAC power supply cable
3 Electrolytic cell
4 Cell housing
5 Thread lock
6 Cell seal
7 Cell plug

3 INSTALLATION



Control Unit

Install the control unit on a wall using the bracket and the screws supplied. Choose a place for easy access and reading. The control unit must be placed at 1.5 meters max. away from the electrolytic cell. Choose a place with good ventilation and protected from possible flooding, rain, water leaks or splash.

Please, make sure that a residual current circuit breaker protects the installation. This is a legal requirement and very important for your safety.

Connect the earth wire (yellow and green) of the 230 VAC power supply cable to the earth of the swimming pool electric panel. Connect the phase (brown) and the neutral (blue) to the output contacts of the pump contactor in such a way that the chlorinator will be powered only when the pump is working. Connect the chlorinator wires to non occupied contacts. **Do not use the contacts in use by the pump.** This will prevent the chlorinator to be electrically connected to the pump when the contactor is switched off what could cause serious damage. Verify that the chlorinator switches off itself when the pump stops. This operation should be performed by a professional.

The chlorinator should be powered to 230 VAC only if the pump is working and the water is flowing through the cell. Please pay special attention if your installation is three-phase (380 VAC pump)

Cell housing

The cell housing must be installed in the return flow to the swimming pool and as

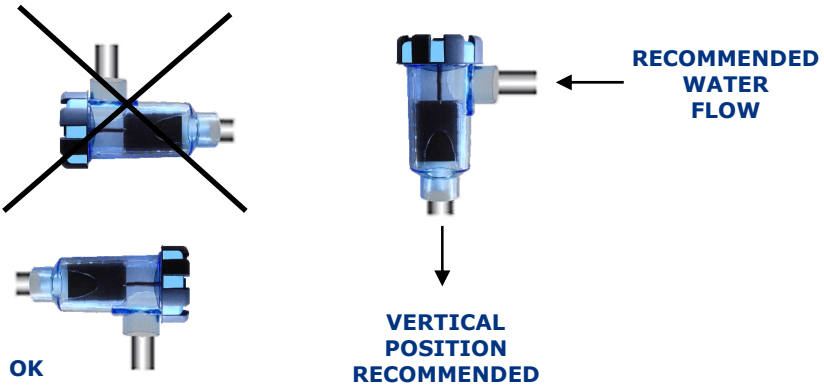
the last element the water goes through before returning to the pool: always after the filter and any the heat pumps, solar panels, etc. Use special glue for rigid PVC and wait until it **completely dries <u>before inserting the cell</u>**.

If an automatic pH regulation system has been installed, the injection of the product must take place unconditionally after the cell. Otherwise, the electrodes will corrode due to the acid contact and the warranty will be cancelled. Place the acid tank far from the chlorinator and outside the pump room if you have a covered in-ground pump room. Otherwise the corrosive vapor will corrode any electronic component quickly.

Whenever it is possible, a by-pass installation with three valves is always 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 pump with certain power, 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 position is recommended, the cell housing may be installed vertically or horizontally, according to the characteristics of your site. In the vertical position, however, the cell housing can be opened without water spillage. Provide enough room to unscrew the thread lock and extract the cell once the housing has been installed.

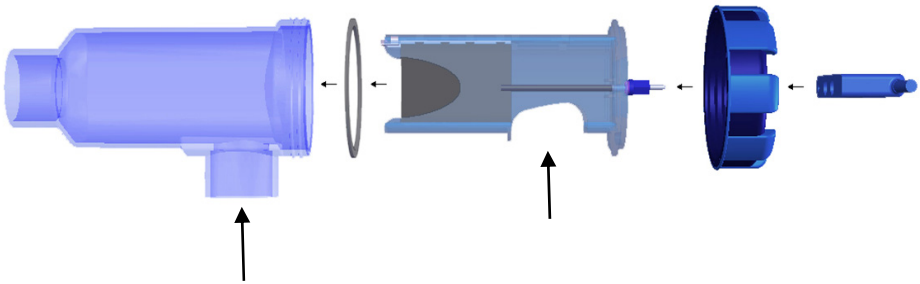
NEVER INSTALL THE CELL WITH ITS SIDE WATER INLET FACING UPWARDS



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.



4. 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 (normally 1 kg per 25m^3 of water). Do not exceed the dose because this will block the disinfection action of the chlorine.

NOTE : 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

5. ADDING SALT



The chlorinator must remain totally disconnected during this operation and until the salt is completely dissolved. Operating the chlorinator with non dissolved salt could irreversibly damage the cell and the power supply, and lead to a cancellation 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.



If you have a cement pool just built, let it cure for at least four weeks before adding 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 don't consume salt. However, the salt concentration may be reduced over time due to the rain or other periodic freshwater contributions (filling up, filter cleaning, etc.). Whenever the salt concentration needs to be corrected, pour salt as close as possible to the return lines. Never pour salt in the skimmers or in the drain inlet.

6. OPERATION

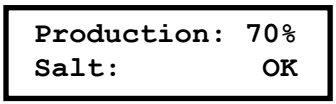
The chlorinator and its different menus are controlled with a four key keypad. The keys **Λ** and **MENU** also have a secondary function (**SHOCK** and **ON/OFF** respectively) accessible by holding down the key for 2 seconds.

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.

6.1 ON/OFF



The **ON/OFF** function (**MENU** key + 2 seconds) turns the chlorinator alternatively ON and OFF. Once switched on, the 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.

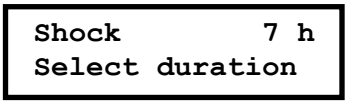
To increase or decrease the chlorine production rate press the **Λ** or **V** arrows. The chlorinator modules the production by varying the operating time in periods of 10 minutes. At 100% the chlorinator works constantly.

You will soon get to know the needs of your pool which will depend on the different conditions (number of users, temperature, etc.) allowing you to anticipate in the production setting. In general, to enjoy the benefits of salt water chlorination, we recommend setting the minimum production rate that produces a crystal clear water in your pool. Avoid chlorinating during high sunshine hours 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 during the night or at low sunshine hours.

Shock Mode

The shock mode 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.

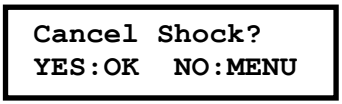
To activate the shock mode, go to the Production Screen and press **Λ (SHOCK)** for a few seconds. The following screen will appear:



Select a number of hours, by using the **Λ** or **V** arrows and press **OK** to accept or **MENU** to exit. If you click **OK**, you will enter into the Shock mode and the following screen will be displayed:



If you want to quit the Shock mode press any key. The following screen will be displayed:



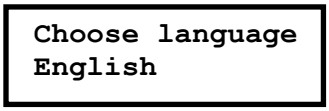
Press **OK** to exit the shock mode or **MENU** to continue the shock treatment.

1 Language setting

From the Production Screen press MENU. The following screen will appear:



Press OK to enter the Language menu.



Choose a language using he arrows **Λ V** and confirm by pressing **OK**. Press **MENU** to return back to the production screen.

2 Polarity period setting

The polarity applied to the cell is periodically reversed to remove calcium built-up. The factory pre-programmed period is 8 hours. 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 shorter the period, the shorter the cell life span**. A period of less than 4 hours will drastically reduce the life of the cell. Inversely, you should increase this period if your cell don'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.

To change the polarity period, go to the Production Screen and press **MENU**. The following screen will appear:



Press the **Λ** or **V** buttons until you reach the menu 2 Polarity period as shown in the following screen:

```
MAIN MENU
2 Polarity per.
```

Press **OK.** The following screen will be displayed:

```
Polarity     7h
Select period
```

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**.

```
Chang. polarity
remaining: 8 min
```

When a polarity change is taking place the unit will enter in pause mode during 10 minutes. This will be indicated by the screen on the left showing the remaining pause time.

3. T V I readings

```
MAIN MENU
4 T V I readings
```

This menu allows you to read find the temperature inside the control unit, the voltage applied to the cell and the current passing through it. These parameters can be very useful when servicing or diagnosing.

```
T=  29.8°C
V= 23.40V I=3.4A
```

4. LCD contrast

```
MAIN MENU
6 LCD contrast
```

Go to the **MENU 6 LCD contrast** and press **OK**

```
  LCD contrast
- ■ ■ ■ ■ ■ ■ +
```

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

5. Fault messages

```
LOW WATER
LEVEL IN CELL
```

This screen is displayed when the probe detects no water and the control system stops the production. Verify that there is water in the cell and that its level reaches the top where the probe is located. A low water level can result from operating the chlorinator with the pump not turning. In this case switch the chlorinator off immediately.

THE CHLORINATOR SHOULD NEVER BE POWERED IF THE PUMP IS NOT WORKING OR IF THE WATER IS NOT FLOWING SUFFICIENTLY. THE CHLORINATOR POWER SUPPLY SHOULD DEPEND ON THE PUMP POWER SUPPLY.

A low water level in the cell may also be due to a dirty filter, an obstructed circuit or to a pump not powerful enough. As soon as the water level is restored the fault disappears.

```
SALT TOO
LOW
```

This screen appears when the salt concentration in the water is too low to prevent cell damage. Add enough salt (5 to 6 kg/m³) and wait until the salt is completely dissolved. Then press OK to restart the chlorinator. This screen can also be displayed if the water temperature is too low, if there is a bad electrical connection between the control unit and the cell or if there is calcium built up on the electrodes.

```
CELL NOT
DETECTED
```

This screen appears when the control unit does not detect a celle connected to it. Make sure the cell is well connected and press OK to restart.

7. RECOMMENDATIONS AND WARNINGS

The bipolar cells of your SMC 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
- Water temperature below 10º C
- 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 damaged 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 temperature is below 10º C
- There is calcium build up on the electrodes

8. MANUAL CELL CLEANING

Your SMC 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), 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. 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 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 DC 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 (HCl 30%) 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 gas.

4 As soon as the calcium build up dissolves, 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 min. Do not scratch the electrodes with metal objects. For safety reasons, always add the acid into the water and never inversely.

9. WARANTY, TECHNICAL SERVICE AND SPARE PARTS

Warranty

1. The electrolytic cell and the control board will be guaranteed for 3 years against any manufacturing defect. The cell is a consumable part whose wear depends on the operating conditions and is not covered by the warranty.

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 assembly diagram on page 4)

f. If acids are poured into the skimmers or cell without having disconnected the rectifier.

g. Placement of an acid tank near the chlorinator with insufficient ventilation.

h. Operation with calcium built up on the electrodes.

i. Using the chlorinator under 3.000 ppm salt

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-valve. All they have in common is the connection to filtration timer.

Spare parts

Innowater S.L. or its distributor have spare parts at your disposal. 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 cancel the warranty.

10. TECHNICAL CHARACTERISTICS

	SMC10	SMC15	SMC20	SMC30
Maximum flow lt/min	450	450	450	450
Máximum pressure bar	4	4	4	4
Pressure drop kpa	5	5	5	5
Chlorine production gr/h	10	15	20	30
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 gr/l	5-35	5-35	5-35	5-35
Cell housing material	PC	PC	PC	PC
Cell life span h	14.000	14.000	14.000	14.000
Electrode substrate material	Titanium grade 1	Titanium grade 1	Titanium grade 1	Titanium grade 1
Maximum swimming pool size m^3				
- Temperate climate	30	50	90	150
- Tropical climate	20	34	60	100
Power supply VAC	230	230	230	230
Power consumption W	58	75	100	144
Weight Kg	3,2	3,5	4,0	4,3