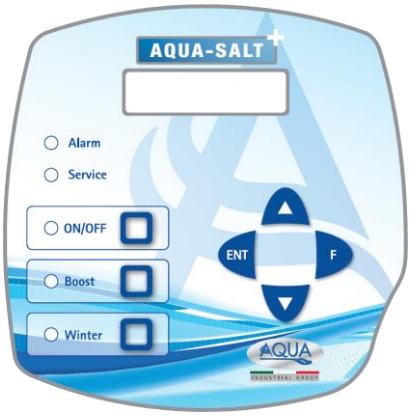
AQUA SALT +

For other languages please visit

AQUA SALT + - EXTERNAL TIMERS operating mode

This section illustrates the procedure to quickly programme the **EXTERNAL TIMERS** mode of your chlorine generator.



When to use **EXTERNAL TIMERS**

Use this operating mode of your generator in case you want to switch it on or off by connecting it to a timer of the pool control box, or in case you want the generator's activation to depend on the ignition and shut-down of the recirculation pump of the system. When this mode is activated, you will only need to supply the generator and follow the procedure below.

AQUA SALT + KEYPAD

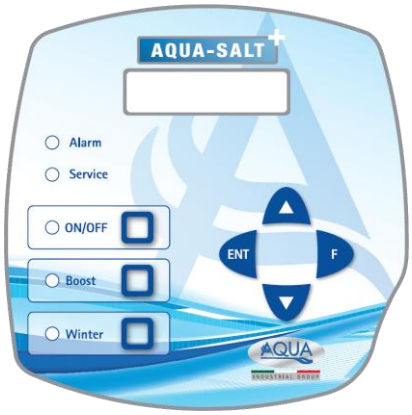
1 Switch on or off your AQUA SALT + with the ON/OFF key.
2 Press and hold Enter →You will switch to the Password Menu.
3 Default password: 0000 → Press and hold Enter → You will switch to the Installer Menu.
4 Press F to scroll the Menu down to Pool Settings.
5 Press Enter to access the submenu.
6 Press F to scroll down to Pool Capacity.
7 Insert the capacity of your pool using UP or Down.
8 Press F to confirm and scroll down to the Generator Operation.
9 Scroll with UP or Down and select External Timers.
10 Press and hold Enter to save the modifications and go back to the Installer Menu.
11 Press F to scroll down to System Settings → Press Enter to access the submenu.
12 Press F to scroll down to Cell Type.
13 Select the dimensions of the installed cells using UP or Down.
14 Press and hold Enter to save the modifications and go back to the Installer Menu.
15 Press F to scroll down to Programming →Press Enter to access the submenu.
16 Insert the desired percentage of chlorine production using Up and Down.
17 Press and hold Enter to save the modifications and go back to the Installer Menu.
18 Press and hold Enter to go back to the User Menu.

EXAMPLE: Base Chlorine: 50%

EXPLANATION: When chlorine generator receives power supply and water flow/ pressure reaches the electrolytic cell, the device produces chlorine for 7.5 minutes (50% of 15 minutes). After that, chlorine generation stops for 7.5 minutes. This repeats cyclically when generator is set to ON.

AQUA SALT + - with pH probe operating mode

This section outlines the procedure to quickly programme the generator in case it comes equipped with a pH probe and a pump to restore the correct pH value. *We recommend to first calibrate the probe following the procedure you can find at paragraph 4.5.5 of this Manual.*



EXAMPLE

set point= 7, operating mode=alkaline, cycle time= 15 minutes
pH proportional range=0.5, pH from the probe= 6

EXPLANATION

The pump cyclically doses the pH corrector during the whole cycle time, until the pH level is below 6.5. Once this value is reached, it calculates a dosing time that is proportional to the difference between the set point and the value read by the probe. The dosing time gradually decreases as the difference between these values does, until the set point is reached.

AQUA SALT + KEYPAD

1 Switch on or off your **AQUA SALT +** with the ON/OFF key.
2 Press and hold Enter →You will switch to the Password Menu
3 Default password: 0000 → Press and hold Enter → You will switch to the Installer Menu
4 Press F to scroll the Menu down to Pool Settings →Press Enter to access the submenu
5 Press F to scroll down to Pool Capacity
6 Insert the capacity of your pool using UP or Down
7 Press F to confirm and move to Generator Operation
8 Scroll with UP or Down and select the desired operating mode
9 Press and hold Enter to save the modifications and go back to the Installer Menu
10 Press F to scroll down to System Settings →Press Enter to access the submenu
11 Press F to scroll down to Cell Type
12 Select the dimensions of the installed cells using UP or Down
13 Press and hold Enter to save the modifications and go back to the Installer Menu
14 Press Enter to access the submenu
15 Press F to scroll down to Programming →Press Enter to access the submenu
16 Press F to scroll down to pH Set Point
17 Insert the desired value with UP and Down (standard values 6.8-7.2)
18 Press F to switch to the Ph Work Mode Menu
19 Use UP or Down to scroll and select Acid or Alkaline Mode
20 Press F to switch to the following menu line: pH proportion range
21 Scroll with UP or Down and select the desired operating mode
22 Press F to switch to pH Cycle Period
23 Use Up and Down to select the minutes for the pH cycle period
24 Press and hold Enter to save the modifications and go back to the Installer Menu
25 Press and hold Enter to go back to the User Menu

ADDENDUM – ADDITION OF SALT

NOTE FOR AQUASALT DEVICE WITH ELECTROLYTIC CELL TO 200 mc

PROCEDURE FOR ADDITION OF SALT IN THE BALANCE TANK OR IN SKIMMER

1. CHECK THE NEEDED QUANTITY OF SALT

2. SWITCH OFF THE DEVICE

3. ADD THE QUANTITY OF SALT RECOMMENDED

4. WAIT FOR DISSOLUTION OF SALT ADDED MAINTAINING THE SYSTEM OF CIRCULATION ASSETS (12-24 HOURS)

5. TURN ON AGAIN THE DEVICE

6. CHECK THE SALINITY IS RETURNED TO NEEDED VALUES

Index

1 Introduction

AQUA SALT + is a multi-function chlorine generator that generates disinfectant active chlorine directly from the **salt** of the pool. The system is designed for small and medium pools, up to 200 m^3

1.1 Warnings

Please read the label on the product and respect the following points:
At the receipt, make sure that generator's packaging and components are not broken or damaged.
In the event of a fault, please inform the qualified personnel before any operation.This manual must be kept in a safe place for future reference.
Before installing the generator, make sure that the data on the label of the device correspond to those of the electrical system .Do not use the device with wet hands or feet! Do not leave the device exposed to the weather!The device must be used by trained personnel!In case of faults during the operation of the generator, cut the power supply immediately and consult our service centres for possible repairs.
For the correct operation of the generator, it is necessary to use original spare parts or accessories.
The manufacturer will not be held responsible for any fault or damaged provoked by tampering or non-original spare parts and accessories
The electrical system must be complying with the standards of the Country it is installed in.
The temperature of the environment must not be above 45° C.
In order for the generation of chlorine takes place, the water temperature of the pool should be at least 5° C.
Before the installation, read these instructions carefully and follow them during the process.
Failure to follow the instructions of this manual may cause personal harm and damage to the device and/or the system.

1.2 Reference standards

Our devices are built in compliance with the general regulations in force and the following European directives:

no. **2004/108/EC** “Electromagnetic compatibility directive EMC”
no. **2006/95/EC** “Low voltage Directive LVD”
no. **2002/95/EC**, **2002/96/EC** “RoHs and WEEE directives”

1.3 Electrical Features

- Power supply: European range from 180 to 260 VAC at 50/60 Hz
- Max. absorbed power: 300W
- Cell power supply: 24VDC at 10 A
- Max. chlorine production: 40 g/h
- Cell hydraulic connections: DN50 or DN63
- Max. operating temperature: 45°C
- Max. operating pressure: 3.75 bar

1.3.1 Performance

Model	Produced chlorine (g/h)	Pool dimensions (cu. m)	Salt level (g/l)	Salt level (PPM)	Current density (mA/sq. cm)	Current (A)	Max. current (A)	Absorbed power (W)
Cell 50	10	50	3.5 ÷ 4.5	3500 ÷ 4500	31.66 ÷ 44.83	1.90 ÷ 2.69	3	90
Cell 100	20	100	3.5 ÷ 4.5	3500 ÷ 4500	30.96 ÷ 44.46	3.75 ÷ 5.33	6	150
Cell 150	30	150	3.5 ÷ 4.5	3500 ÷ 4500	29.61 ÷ 41.83	5.33 ÷ 7.53	8	200
Cell 200	40	200	3.5 ÷ 4.5	3500 ÷ 4500	32.90 ÷ 40.08	7.90 ÷ 9.62	10	300

1.3.2 Electrical techniques

- Plate short-circuit and device overheating protection

The system is equipped with a block chlorine production protection that activates in case of a short-circuit on the titanium plates of the electrolytic cell. It also has a protection to save the device from internal overheating.

- Maximum efficiency of the electrolytic cell

The voltage/current control on the plates of the electrolytic cell makes them work always in the highest efficiency range (current density between 30 and 40mA/sq. cm) even with salt concentrations higher than those present in the previous table. This guarantees a longer useful life to the electrolytic cell.

- Environment operating temperature: 0 ÷ 45 °C
- Packaging and transport temperature: -10 ÷ 50 °C
- Protection degree: IP65

2 Aqua salt + description

A salt chlorine generator is a device that produces chlorine to **disinfect** pool water through an electrolytic reaction that produces sodium hypochlorite from an aqueous solution of sodium chloride (common **cooking salt**). This way, you will no longer have to buy, handle or store the common chemicals for pools (sodium hypochlorite, trichloro, dichloro). You will only have to add a certain amount of salt, depending on the size of your pool, until reaching a concentration between **2.00-4.5 g/l** (2,000-4,500 ppm). **After** disinfection, sodium and chlorine will naturally tend to re-join to form salt. Therefore, the initial dose of sodium chloride is continuously recycled and reused. Potential loss can be caused by water additions, reflux or drainage.

2.1 Functioning

General information: chlorine production takes place only if a **stabilized water flow** goes through the cell. When this occurs, chlorine generated is directly proportional to the current of the cell, whose electrodes have a constant potential difference. In its turn, the current depends on the concentration of salt in the water, and on the disposition of the electrodes. The electrolytic cell works with a series of cycles of 15 minutes. Each cycle is composed by an alternation of **ON/OFF** phases whose duration is proportional to the set chlorine percentage (Internal or External timer mode) or proportional to the measured value of chlorine or Redox (proportional operating mode). Chlorine generation is periodically interrupted to switch the electrode polarization, which maintains stable performance and prevents limescale from depositing on the surface of the electrodes. After a programmable polarization time (from 1 to 16 hours), the “Clean” phase will start. This lasts 10% of the set polarization period. At the end of this phase, before resuming chlorine generation, the polarity of the electrodes is switched again. The activation can be done as follows:

- ***External timer***: in this case, the electrolytic cell generates chlorine when it is electrically supplied. It is sufficient to power the device through a timer of the pool, by a timer (time switch) or directly via the circulation pump and set the desired percentage of production of chlorine.

✓ **Proportional**: The generator reads the redox potential or the ppm of chlorine present in the pool. In the case of the redox potential, the installer will have to determine the correspondence between pH - redox and the ppm of chlorine required (Ex: 7.2 pH - 650 mV @ 1.2 ppm). Having established the desired ppm of chlorine, you program this value as set point. If the chlorine level is below the set point the apparatus produces chlorine in proportion to the difference "set point - read value".

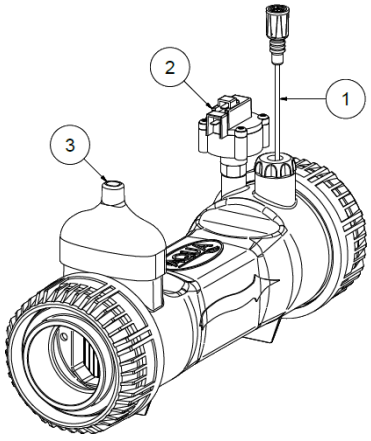
Whitout Flow

Stabilized flow

2.2 The device

The salt chlorine generator is formed by two main parts: the control system and the electrolytic cell.

- **The control system** manages the functions of the chlorine generator through an interface that allows the user to interact with the system (see chapter: 3 Programming).
- **In the electrolytic cell** there are the electrodes, a flow sensor/pressure and a temperature sensor. The cell is equipped with another safety measure, as it is designed to host a vent valve to purge possible hydrogen residues. The picture below shows the cell.



1. Electrolytic Cell

1	**Flow sensor**
2	**Pressure switch**
3	**Cell/temperature probe supply connection**

2.3 Other operating modes

✓ **SPECIAL MODES:**

The system has two operating modes:

- ***Winter mode:*** is activated when water temperature goes below 15 °C. At these temperatures, chlorine consumption is lower, and its generation is reduced by 15% min. (programmable).
- **Shutter mode*:*** allows the proportional adjustment of chlorine generation. When the pool is covered, chlorine generation is automatically reduced by 50% of the starting value for 1 to 12 hours (programmable). After this lapse, chlorine generation linearly decreases for 24 hours since the initial covering input. At this point, chlorine production has reached 10% of the initial value, and stays constant for the whole duration of covering. The device has an input that detects the presence of the covering on the system. The shutter mode is not compatible with proportional mode.

✓ **OTHER MODES:**

There are other operating modes related to system's restart, first installation or maintenance:

- ***Superchlorination (boost)***: When this work mode is on, the generator stops its internal adjustments and starts working at 100% for 12 hours. At the end of superchlorination, the generator goes back to the set work mode. We suggest to wait up to 15 minutes between two consecutive boosts.

✓ **OTHER FEATURES:**

- ***Salinity control:*** This system estimates the salt level of water every time chlorine generation is enabled. The value depends on current intensity, and it is reliable only if the electrodes are clean. Depending on the calculated value, the system can run several operation
- ***Automatic brine dosing***
  It is possible to increase salt concentration with the help of an external pump that automatically doses brine depending on the estimated salinity result.
- ***Estimated chlorine generation***
  The system provides an estimate of the generated chlorine that includes the ratio between salinity concentration, current efficiency and temperature.

2.4 Chlorine generator models

Depending on the additional operating modes and accessories it is equipped with, there are 4 main models of chlorine generators:

- **STANDARD.**
- **pH:** includes a pH probe to monitor the pH of the water and a peristaltic pump to dose the pH corrector.
- **pH/CLJ**: includes two probes to monitor the pH and chlorine values; a peristaltic pump to dose the pH corrector; and a level probe.
- **pH/Redox**: includes two probes to monitor pH and Redox values, a peristaltic pump to dose the pH corrector, and a level probe.

Models available	Standard	pH	pH/ClJ	pH/Redox
pH electromagnetic pump output	×	✓	✓	✓
Brine dosing electromagnetic pump output	×	✓	✓	✓
Temperature sensor	✓	✓	✓	✓
Electrolytic cell self clearing	✓	✓	✓	✓
Replaceable electrolytic cell	✓	✓	✓	✓
Automatic chlorine regulation	×	×	✓	✓
Superchlorination mode (boost)	✓	✓	✓	✓
Shutter mode	✓	✓	✓	✓
Winter mode (***winter***)	✓	✓	✓	✓
Password	✓	✓	✓	✓
RS232 serial connection	✓	✓	✓	✓
Bluetooth connection	×	○	○	○
Estimated useful life of the electrolytic cell	5/7 years	5/7 years	5/7 years	5/7 years
Flow sensor/Pressor switch	✓	✓	✓	✓
pH reading and pH pump injection	×	✓	✓	✓
Chlorine reading through AJ cell	×	×	✓	×
Chlorine reading through Redox probe	×	×	×	✓
✓ Available × Not available ○ Optional				

3 Installation

General instructions

The installation of the generator must be done as follows:

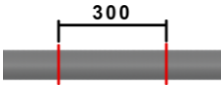
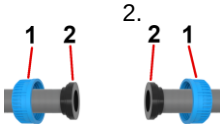
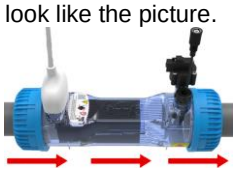
- In vertical position, with an inclination below +/-15°.
- Far from heat sources, in dry places, at a temperature between 0 °C and 45°C.
- In a ventilated location that can be easily accessed for periodical maintenance.
- Do not install the generator above the tank if you use liquids that emit vapours, unless the tank is hermetically closed.
- Keep the unit closed.
- Installation and mounting instructions are the same for every model.
- It's strongly advised to use the grounding kit (optional) for the protection of the measuring instruments and metal parts of the pool installation

3.1 Standard model installation

Before installing the product, please read what this process will require and familiarize with the components. This section provides all information required for a correct installation of the chlorine generator and its components.

3.1.1 Electrolytic Cell Installation

Follow these simple steps to install the electrolytic cell in your system.

1.	2.	3.	4.
			
Cut the pipe where the electrolytic cell must be placed, according to the dimensions shown in the picture above	Insert the blue ring nuts labelled with number 1, and stick the reducers indicated with number 2 at the two extremities of the pipe. Wait as much as indicated on the glue packaging before moving to the following step.	Place the electrolytic cell in the direction indicated by the arrows, i.e. the direction water flows through the system.	Screw the blue ring nuts to fix the cell to the pipes. At the end of this phase, the electrolytic cell must look like the picture. 

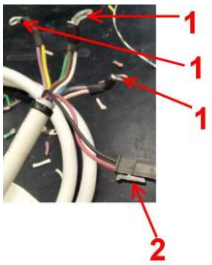
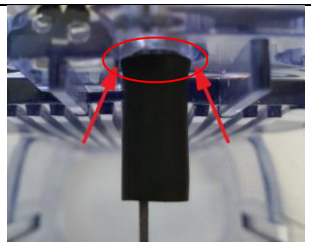
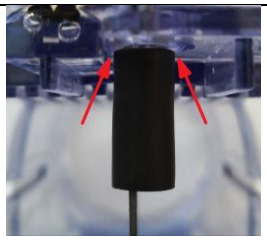
3.1.2 Control, box Installation

Control box has to be fastened to the wall. Screws and bracket for a proper wall fastening are included in the supply.

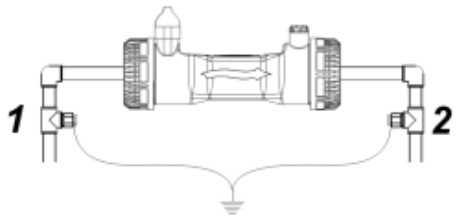
1	2	3
		
Fastening kit	Place the bracket in the direction shown by the picture using the screw included.	Insert the control box, making it slide on the bracket from the top to the bottom up to the end limit.

3.1.3 Electrolytic Cell and control box installation

At this point, it is necessary to connect the electrolytic cell to the control box by connecting flow sensor/pressure, temperature probe and the part that provides voltage to the plates, as indicated in the image sequence below:

1.	2.	3.
 1 → cell supply voltage 2 → temperature sensor	 Connect the temperature probe.	 Insert the white rubber cap to cover the connection wires..
CAUTION: **Check the correct tightening of the rubber protection, which must adhere to the cell, to ensure perfect sealing and PIN protection.**	 **CORRECT**	 *NOT CORRECT*

3.1.4 Grounding Kit

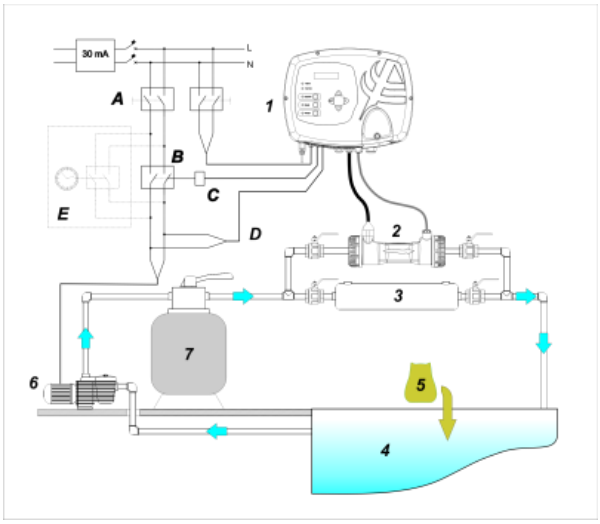


The kit prevents electric noise from plastic pipes and tubes, which may cause wrong indications on measurement instruments, especially pHmeters and Rxmeters. Please install the grounding electrodes upstream (1) and downstream (2) the cell and connect them to a ground lead.

✓ **Connect to ground circuit separate and independent from the main circuit.**

3.1.5 Installation example

The sample installation diagram below refers to the standard chlorine generator.



2. Standard model installation example

	Description
1	AQUA SALT + control system
2	Electrolytic cell
3	Heat exchanger
4	Pool (max. capacity 200 cu. m)
5	Pool salt (NaCl)
6	Recirculation pump
7	Sand filter

	Description
A	Bipolar switches
B	Contactor to activate the circulation pump
C	Control relay of the contactor
D	Circulation pump operating feedback
E	External auxiliary activation

3.2 pH, Rx, ClJ model installation

The sample installation diagram below refers to pH, pH/Redox, pH/ClJ chlorine generators. To fasten, install and connect the electrolytic cell and control box, please follow the instructions provided for the standard model.

- The probe-holder is installed on a D50 or D63 diameter tube on which a 24 mm diameter hole has been carried out;
- Check the direction of the flow in the tube to insert the injection tube correctly;
- The probe-holder must be positioned vertically +- 45°

Performing a D24 mm hole

- Conduct a 5 mm pre-hole at the centre of the upper part of the tube;
- Expand the hole with the 24mm drill bit supplied in the installation kit, until you introduce the whole drill bit in the tube;
- Deburr the hole by removing the PVC residues

Installing the probe-holder:

- Insert the O-ring on the small injection tube;
- Insert the small injection tube on the tube by following the direction of the flow, as indicated by the arrow on the label;
- Position the O-ring in place and hold it there. Apply the upper part of the probe-holder on the pool tube;
- Insert the two screws (if it is a DN63 tube use the two spacers between the upper probe-holder and the lower collar). Apply the lower part of the probe-holder on the tube and tighten the nuts on the screws;

Screw the clamping screws evenly to achieve proper fastening. Do not tighten a screw fully home when the other one is still unscrewed.

Installing a long electrode (120 mm)

- It is possible to use a standard electrode (12x120 mm). In this case it is necessary to use all the parts supplied;
- Insert the following in sequence on the body of the probe: the ring nut and then alternate a spacer and an O-ring as shown forward
- Gently insert the electrode on the probe-holder by carrying out small clockwise and anticlockwise rotations to make the O-rings move down. When all the components are in place, tighten the ring nut manually.

Never bend the electrode, which would otherwise be irreparably damaged. The internal part of the electrode is very fragile!

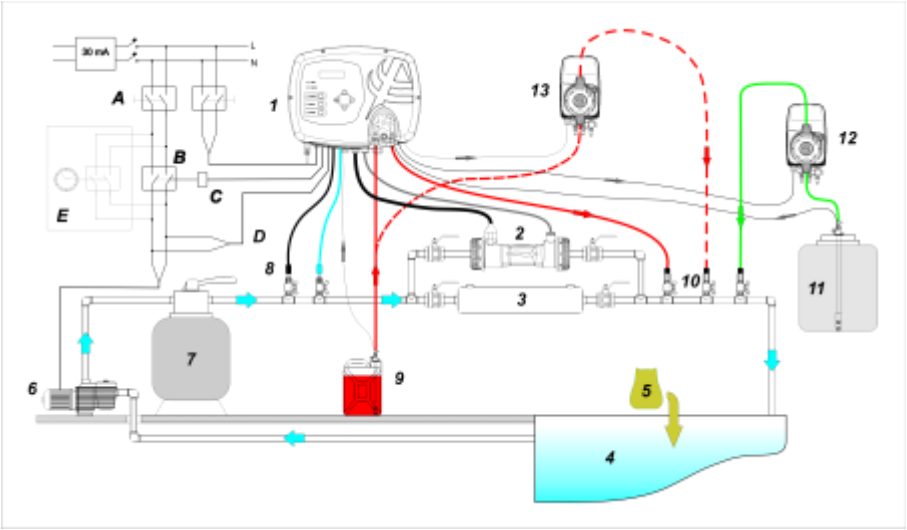
3.2.1 pH, Rx, ClJ probe connection

pH, Redox and Chlorine probes installed in the system must be connected to the control box through the BNC connectors, as shown below. The label on the right of the connectors indicates their correct use.

3 Connector overview. Lower part of the control box

3.2.2 Installation example

The sample installation diagram below refers to the pH, pH/Rx, pH/ClJ models.



4. Installation example pH, Rx and ClJ models. It is advisable to enter the redox / chlorine probe before the sand filter.

Number 12 in picture 9 indicates the electromagnetic pump for brine restoration. In order for the pump to work correctly, it is necessary to connect the level signal of the product in the tank. Connect the pump to the connector indicated with PBr, and the level signal to the connector indicated with LBr, both shown in picture 8. Number 13 in picture 9 indicates an external pump to correct pH. If you want to use the external pH pump, connect it to the PPh connector, and connect the level signal to the connector indicated with LPh, shown in picture 8.

ID	Description
A	Bipolar switches
B	Contactor to activate the circulation pump
C	Control relay of the contactor
D	Circulation pump operating feedback
E	External auxiliary activation

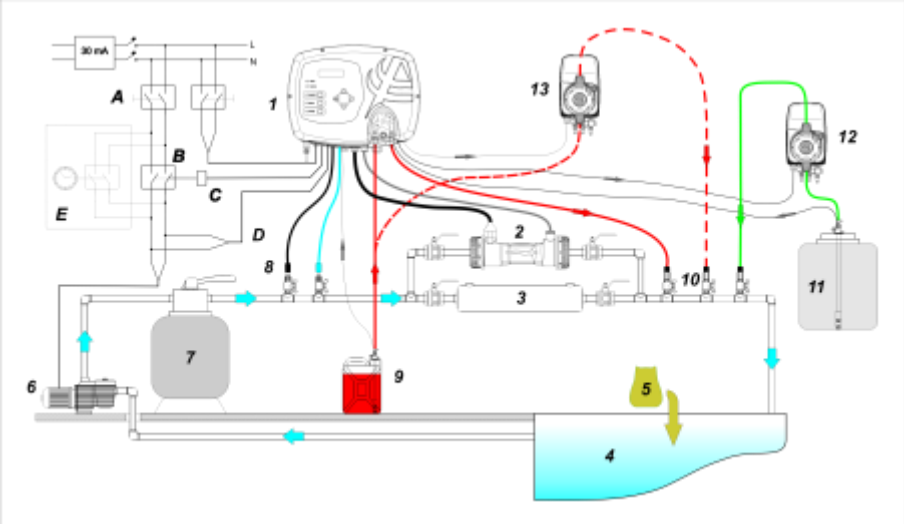
ID	Description
1	**AQUA SALT** + control system
2	Electrolytic cell
3	Heat exchanger
4	Pool (max. capacity 200 cu. m)
5	Pool salt (NaCl)
6	Recirculation pump
7	Sand filter
8	Probes (pH, Redox)
9	pH corrector tank
10	Injection valves
11	Brine
12	Brine electromagnetic pump
13	pH electromagnetic pump

3.3 Hydraulic connections

To properly install the chlorine generator in your system, we recommend to create a deviation on which to place the electrolytic cell, as indicated in the diagram below. However, installing the generator on the main pipeline does not affect the its correct functioning. See paragraph 3.1.1 for further information.

3.4 Electrical connections

- Cut the power supply during installation.
- Check that the voltage indicated on the unit (180..260 VAC @ 50/60 Hz) corresponds to the voltage available at the installation place before connecting the devices.
- If the supply cable is damaged, please contact the manufacturer, the local representative or other qualified personnel to replace it and prevent any danger.
- Electrical connections must be done exclusively by authorized and qualified personnel, in compliance with the regulations of the Country of installation See the picture below for an example of electrical connections.
- It is possible to supply the control box by connecting it to the electrical system with the supplied cable. It is also possible to connect it to an external timer, to another control box or to a main switch (see letter E, picture 5). Moreover, you will be able to make the chlorine generator work depending on the activation of the circulation pump by connecting the device as indicated in picture 5, letters B and D. For any other connection, please contact your sales representative.



5 **Example of connections Hydraulics and Electrical**

	Description
A	Bipolar switches
B	Contactor to activate the circulation pump
C	Control relay of the contactor
D	Circulation pump operating feedback
E	External auxiliary activation

3.5 System activation

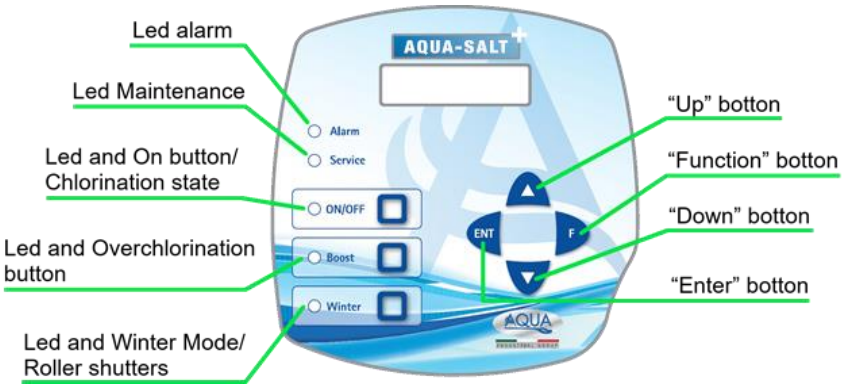
When chlorine generator is activated for the first time and the pool contains water without chlorine, we recommend to run the Boost mode. This operating mode performs a shock chlorination, producing chlorine at its maximum capacity for 12 hours. The daily chlorine production must be set as a function of the number of bathers, depending on the water temperature and size of the pool (with the exception of the proportional operation mode). To activate the chlorine generator, it is necessary to adapt the following parameters to the configuration of your system:
Cell type: insert the capacity value of your pool's cell (50, 100, 150, 200).
Pool capacity: insert the volume (cu. m) of your pool
Operating mode: choose how to operate the chlorine generator (external timer, proportional, see the opening pages of the manual).

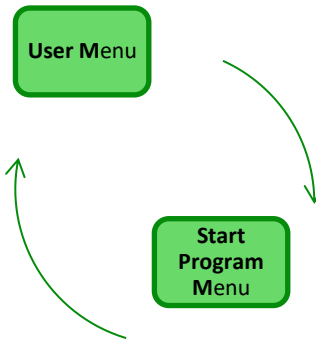
4 Programming procedure

To get the best results from your chlorine generator, **programme** its activity and set the values of its parameters. To do so, the system comes with a user interface equipped with:

- Display
- Keys
- Led

The system can be also programmed through a software you can install on your Windows PC.
Picture 9 shows the user interface. We will now see its main characteristics.





Up/Down keys modify the numerical values for every menu section and scroll the options of the sections.

Enter (ENT) key accesses and exits the submenu sections. By holding it for 1 second from the User Menu, you will access the Installer Menu. If you hold it from the main sections of a Menu, you will go back to the parent Menu.

Function (F) scrolls the sections of the Menus.
Press it for 1 second from the User Menu to access the Programme Start Menu.

CHLORINATION POWER-ON/STATE KEY AND LED:

Pressing the ON / OFF button enables the production of chlorine, the next press production is disabled.
When the production of chlorine is enabled, the LED is:

- Green steady: chlorine production enabled but not running at the moment of viewing;
- flashing green: chlorine production enabled and running.

When the chlorine production is disabled the LED is off.

SUPERCHLORINATION KEY AND LED:
Boost key activates superchlorination. The generator stops its internal adjustments and starts working at 100%, for 12 hours. At the end of the superchlorination process, the generator goes back to the set work mode. Green LED steady on if superchlorination is active.

WINTER MODE/SHUTTER KEY AND LED:
This key allows you to manually activate the Winter mode, which reduces chlorine generation by 15% minimum (within a programmable range from -15% to -100%). The corresponding red LED is:

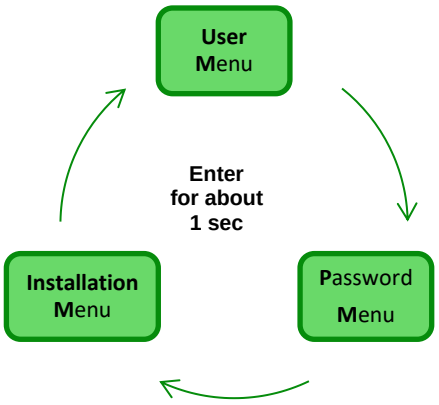
- **steady** if winter mode is active;
- **flashing** if covering shutter is detected.

ALARM LED: **Red steady Led on**, if an alarm not included within those indicated by the Maintenance led goes off (see *Alarms* section);

MAINTENANCE LED: Red steady Led on, if Maintenance Cell or Cell Replacement early-warning/alarm go off;

4.1 The Menus

In order to check the parameters of the pool and to control the correct operation of chlorine generators, you can access menus, submenus and sections using the keypad keys as shown above. We are showing below an overview of the menus available and how to switch from one to the other when you are in one of their sections. A detailed explanation of the various menus and sections is also provided. The picture below shows the three menus available, and how to switch from one to the other.



General instructions to use the menus:

1) Some sections of the menus belong to certain models and/or working modes and/or states or phases of the device, and will be visualized only if the device is set to show them. More in detail:
- **1.1)** Sections related to the pH will be present only if the chlorine generator is equipped with a pH probe
- **1.2)** Values expressed in ppm are present only if working mode is "proportional" and the device is a "pH/Chlorine" model.
- **1.3)** Values expressed in mV are present only if working mode is "proportional" and the device is a "pH/Rx" model.

2) If keys are close to the sections, the values can be **modified**, otherwise they are **read-only**.
3) Press **F** to switch from a section to the following one.
4) The units of measurement of the parameters can be chosen in the System Settings Menu.

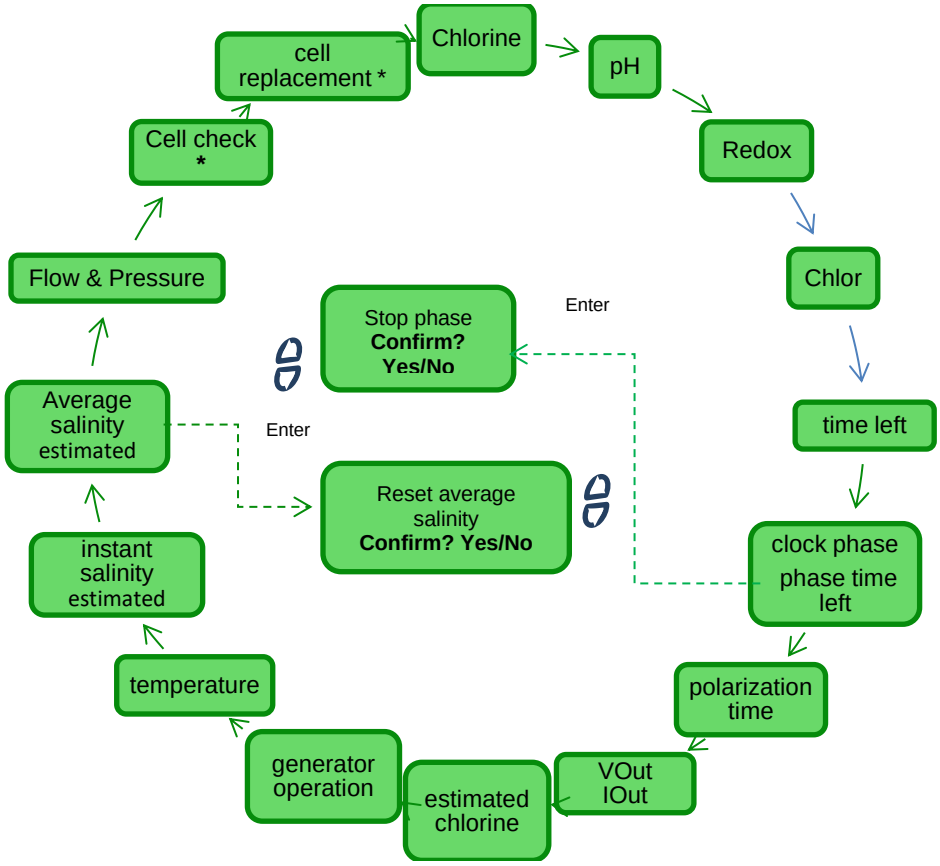
4.2 User Menu

The **U**ser Menu visualizes information regarding the system and some pool parameters. The AQUA_SALT display goes back to the main section of this menu if you do not press any key on the user interface during more than two minutes.

- Press and hold F for 3 seconds to switch to the Programme Start Menu.
- Press and hold Enter for 1 second to access the Password Menu
- The sections marked with * can be visualized also when the device is Off.

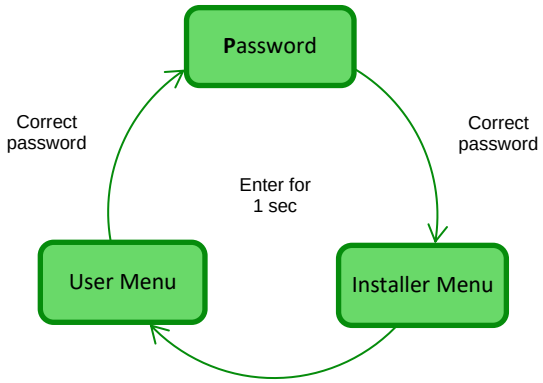
The User Menu visualizes the following sections:

<table>
<tr><td>Chlorine</td><td>The first section shows two columns: the left one shows the state of the device, the right one shows the amount of chlorine generated (in mV or ppm) or the set chlorine percentage. You can modify the % with the keys only if the state is Work, Start-Up and if the shutter is open. Ppm or mV values are read-only. Possible state values are: Work, Work + Winter, Work+Shutter, Boost as specified below:
Work: the device is generating chlorine following the chosen operating mode.
Work + Winter: the device is generating chlorine at a reduced operating mode according to the percentage set.
Work + Shutter: the device is generating chlorine, and the shutter is closed
Boost: the generator is producing chlorine at 100% of its capacity (superchlorination)</td></tr>
<tr><td>pH</td><td>Indicates the pool water pH value between 0 and 14. This item is displayed only if the type of unit includes the presence of the pH probe.</td></tr>
<tr><td>Rx</td><td>The field indicates the Rx value measured in the pool water, expressed in mV. This item is displayed only if the type of unit includes the presence of Rx probe.</td></tr>
<tr><td>Chlo</td><td>Indicates the value of the chlorine in the pool water measured, expressed in ppm. This item is displayed only if the type of unit includes the presence of chlorine Jumo probe.</td></tr>
<tr><td>time left</td><td>A countdown timer that indicates the time left for the current work phase is visualized.</td></tr>
<tr><td>clock phase
time left phase</td><td>The left column shows the current phase of the device, and the right one shows the clock or the remaining time. The clock shows the current time and it is shown during the following phases:
Pause.
Wait timer.
Wait flow.
The value of the remaining time decreases with the time, and it regards the following phases:
Flow stabilization.
Work on.
Work off.
Clean.</td></tr>
<tr><td>polarisation time
The polarisation time indicates the frequency at which the electrodes switch their polarity.</td><td>VOut IOut
The left column shows the value of the voltage; The right column shows value of the current.</td><td>estimated chlorine generation (g/h)
Indicates the amount of chlorine generated in one hour. This amount is an estimate.</td><td>generator operation
This section indicates the operating mode chosen, among ”External timer”, “Proportional”.</td></tr>
<tr><td>Indicates current pool water temperature.
Temperature</td><td>Instant salinity estimeted
Indicates the current amount of salt in the water. This value is an estimate.</td><td>average salinity estimated
Indicates the average value of salinity in the pool. This value can be reset and recalculated by pressing Enter.</td><td>Flow & Pressure
This section indicates if water flows within the electrolytic cell or not.</td></tr>
<tr><td>Cell check</td><td colspan="3">You will visualize a timer that shows the hour, minutes and seconds left before the next check of the electrolytic cell.</td></tr>
<tr><td>Cell replacement</td><td colspan="3">You will visualize a timer that shows the hour, minutes and seconds left before the next replacement of the electrolytic cell.</td></tr>
</table>



4.4 Password Menu

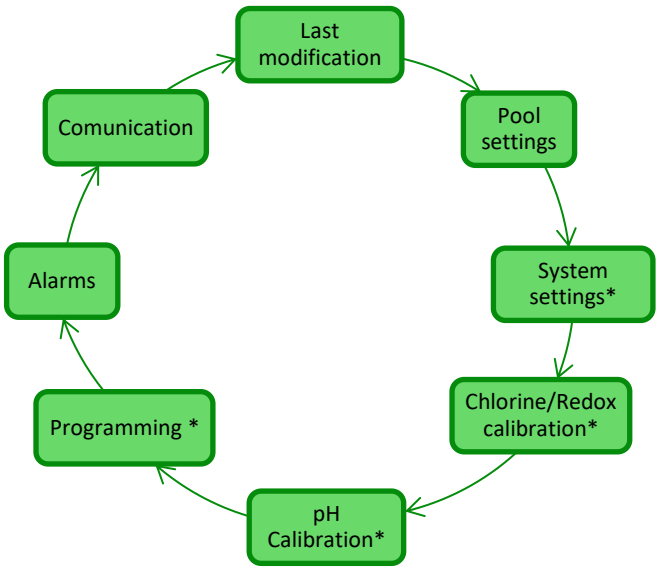
Password Menu gives you access to the Installer Menu after inserting the correct four-character password. After 1 or 2 errors, you will go back to the first section of this menu and you will be asked to insert the password again. After 3 errors, you will return to the User Menu.



4.5 Installer Menu

The Installer menu opens the following submenus:

- Press Enter to access the **submenus.**
- Press and hold Enter for more than 1 second to go back to the User Menu
- When accessing a menu whose sections are marked with * the device pauses **(Stand-by)** and chlorine generation temporarily stops.

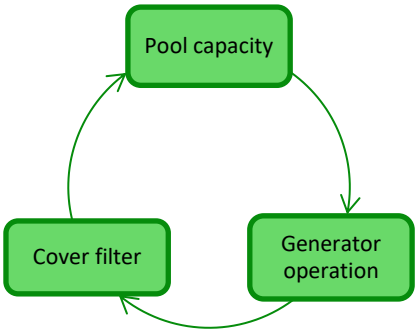


Last modification It shows the date of the last modification to at least one of the system parameters	Pool settings Switches to the Pool Settings submenu	System settings Switches to the System Settings submenu	Chlorine/Redox calibration Switches to the submenu to calibrate chlorine or Redox probe
pH Calibration Switches to the submenu to calibrate the pH probe	Programming Switches to the Programming Menu	Alarms Switches to the Alarms Menu to enable or disable the alarms	Communication Switches to the Communication Menu

4.5.1 Pool settings menu

This menu sets some parameters of the pool and other operation characteristics:

- Press F to scroll the menu sections
- Press and hold Enter for more than 1 second to go back to the *Pool Settings* section of the Installer Menu.

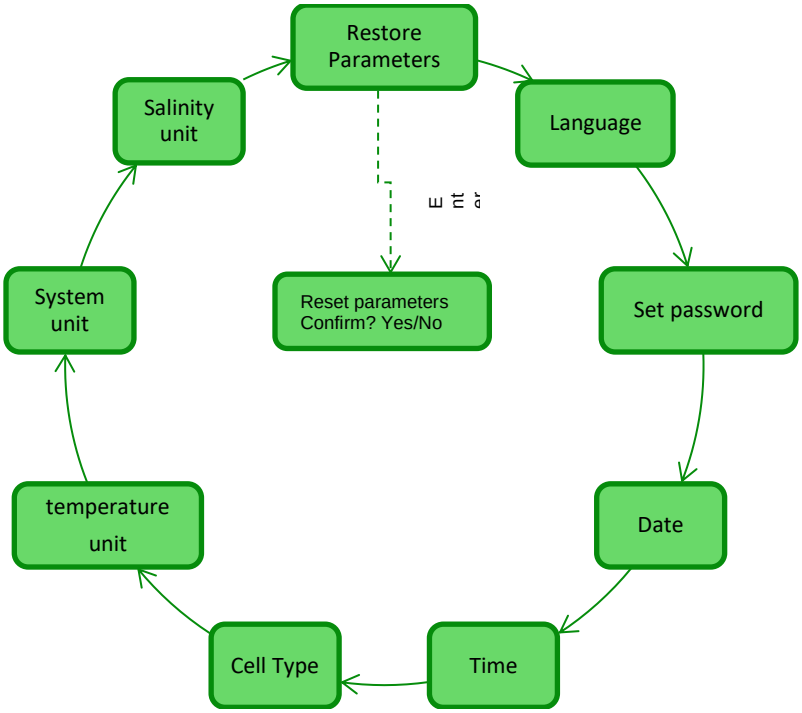


Pool capacity	Sets the amount of water contained in the pool, with progressive increases of **0.5 cu. m or 100 gal.**
Generator operation	Selects the work mode of the chlorine generator choosing among *"external timer"*, *"proportional"*
Cover filter	Sets a programmable time from 1 to 12 hours after which chlorine generator will decrease from 50% to 10% of the initial value gradually within 24 hours. (see *Special modes* paragraph 2.3). Default value: 3 hours.

4.5.2 System settings menu

This menu manages the general operation settings of the chlorine generator, like unit of measurement of temperature and salinity, current date and time, clock type and others.

- Press and hold Enter for more than 1 second to go back to the System Settings section of the *Installer* Menu.



Reset parameters Press Enter	It allows you to set the system back to the initial conditions with the default programming parameters shown in **Annex D**.		
Language Allows you to choose the language	Set password Allows you to set a four-character password. Press **Enter** to confirm the character and move to the next one.	Date Allows you to set the date with the format: Mon…Sun DD/MM/YY Press **Enter** to confirm the character and move to the next one	Time Allows you to set the time with the format: HH/MM Press **Enter** to confirm the character and move to the next one.
Cell type	Indicates the dimensions of the titanium plates inside the electrolytic cell among the following four: 50/100/150/200		
Temperature unit	Choose the temperature unit between **Celsius or Fahrenheit**		
System unit	Sets the reference measurement system between **Metric or English**		
Salinity unit	Choose the salinity unit between **g/l** or **ppm**		

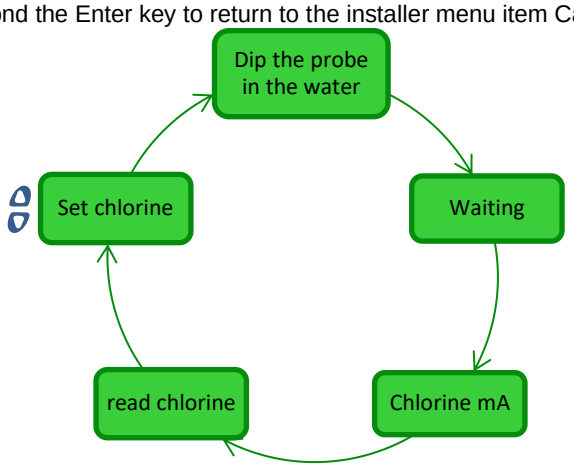
4.5.3 Chlorine probe calibration menu

The Menu "Calibration of chlorine probe" allows you to perform the calibration of the chlorine probe, if the Aqua Salt + model provides for their presence. Calibration should be performed before using the sensor using the following procedure:

1) The probe must be inserted by at least two hours in the probe holders under the following conditions: Flow of 30 l / h, 0.8-4 ppm chlorine level, pH range 4-12 pH, pressure less than 0.5 bar. For proper installation of the probe see the Addendum to this manual, specifically for the CL-J probe.
2) From the screen that prompts you to insert the probe into the water, press ENTER.
3) You will see a countdown at the end of the countdown or after you press the Enter key shows the chlorine value read by the probe expressed in mA. You can leave out this information. A probe functioning correctly (reading range 0-5 ppm) roughly follows the following equation: mA = 4 mA + 3.2mA / ppm.

4) after 5 seconds, it displays the value of the measured chlorine (uncalibrated) from the probe and expressed in ppm.
5) If you press the Enter key returns to the value of the previously measured chlorine. Use the Up and Down keys to change this value to the value measured with the photometer (DPD method).

Pressing for about a second the Enter key to return to the installer menu item Calibration Chlorine.

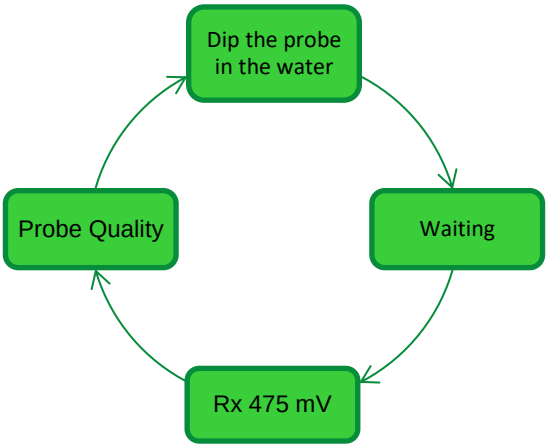


4.5.4 Redox probe calibration menu

The Redox Probe Calibration Menu calibrates the Redox probe in case the model supports it. Probe calibration regulates the measurement tool and improves its **efficiency.** It must be performed before using the probe, following the step-by-step procedure below:

1) Rinse the probe and dip it in the buffer solution at 475mV, move slowly for 10 seconds and press Enter.
2) Wait without touching the probe or its cable for at least 60 seconds, until the value read is stabilized.
3) At the end of the countdown or after pressing Enter, the Redox value of the buffer solution (475 mV) and the value read by the probe will be shown.
4) The procedure ends visualizing the quality of the probe with a percentage from 0 to 100. If quality is below 25%, we recommend to replace the probe.
5) Place the probe in the probe holder or in the filtration system.

Press **Enter** to scroll the menu sections.
Press and hold Enter for about 1 second to go back to the Redox Calibration section of the Installer Menu.



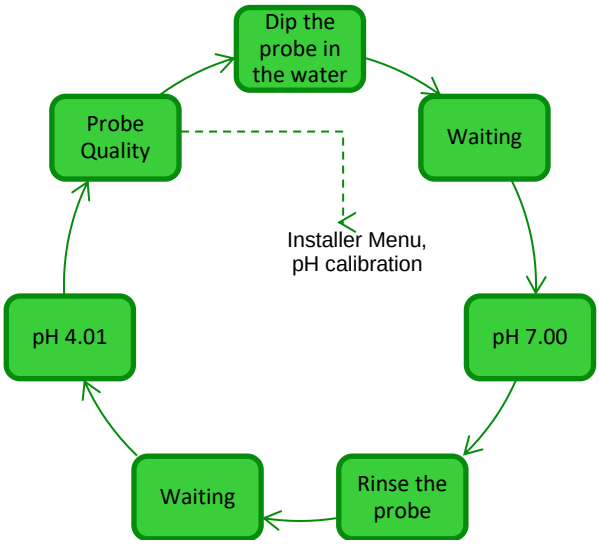
4.5.5 pH probe calibration menu

The pH Probe Calibration Menu calibrates the pH probe in case the model supports it. Calibration regulates the measurement tool and improves its **efficiency.** Calibration may have one or two reference points. pH probe calibration must be done as follows:

1) Rinse the probe in a bottle of drinking water
2) Dip the pH probe in the buffer solution (pH 7), slowly move for 3 seconds and press **Enter.**
3) Wait without touching the probe or its cable for at least 60 seconds, until the value read is stabilized, then press Enter.
4) At the end of the countdown or after pressing Enter, the pH value of the solution (7.00) and the value read by the probe (in mV) will be shown.
5) For a calibration with one reference point, press F and move to point 8. Otherwise, rinse the probe in the drinking water bottle and dip it in the pH 4.01 solution. Slowly stir for 3 seconds, then press **Enter.**

6) Wait without touching the probe or its cable for at least 60 seconds, until the value read is stabilized, then press Enter.
7) At the end of the countdown or after pressing Enter, the pH value of the solution (4.01) and the value read by the probe (in mV) will be shown.
8) The procedure ends visualizing the quality of the probe with a percentage from 0 to 100. If quality is below 25%, we recommend to replace the probe.
9) Place the probe back in the probe holder or on the piping of the filtration system.

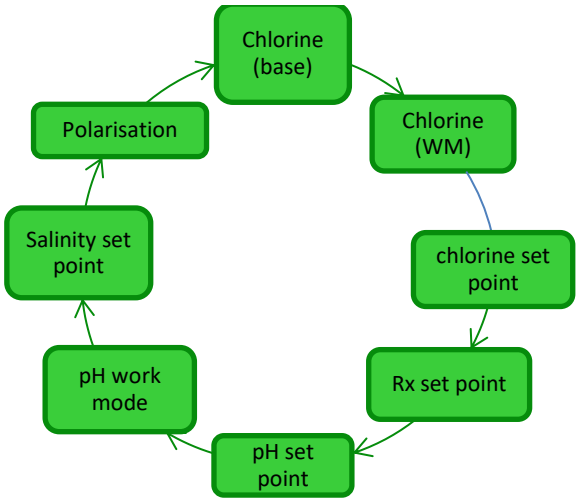
- Press **Enter** to move through the calibration steps.
- Press and hold Enter for about 1 second to go back to the pH Calibration section of the Installer Menu.



4.5.6 Programming Menu

The Programming menu sets the parameters to programme and manage the operation of your chlorine generator.

- Press F to scroll the menu sections
- Press and hold Enter for 1 second to go back to the Programming section of the Installer Menu.

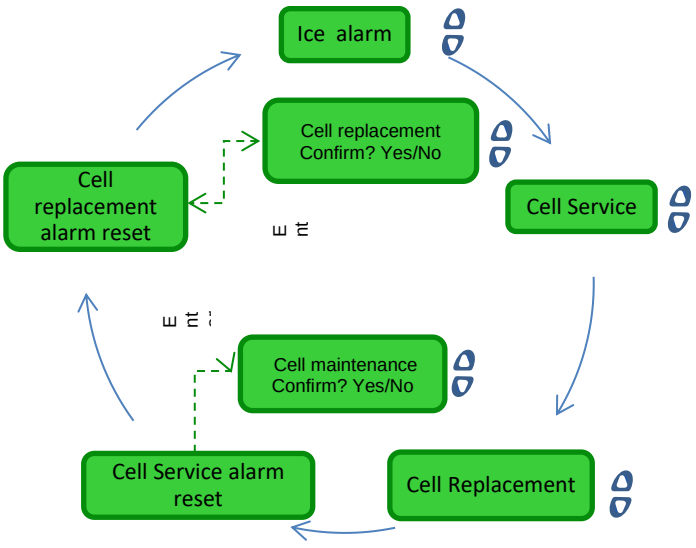


Chlorine (base) It allows you to visualize and change the **percentage** of chlorine the generator has to produce, during operation under normal conditions.	Chlorine It allows you to view and change the percentage amount of chlorine that the generator has to produce, during operation in Winter Mode.	Chlorine set point Visualize and change the value set for the chlorine set point. Item displayed only if the type of unit includes the presence of chlorine Jumo probe, and the operation is "proportional".	Rx set point Visualize and change the value set for the Redox set point choosing among **0…1000 mV.** Item displayed only if the type of unit includes the presence of Redox probe, and the operation is "proportional".
pH set point Visualize and change the value set for the pH set point choosing among **5.0… .9.0**. Item only appears if the control unit includes the presence of the pH probe.	pH work mode Visualize and change the value set for the pH work mode choosing between **acid or alkaline**. Item only appears if the control unit includes the presence of the pH probe.	Salinity set point Visualize and change the value set for the salinity set point choosing between **0.0…5.0 g/l** or **0…5000 ppm**	Polarisation Visualize and change the value set for the polarisation period from **1 to 16 hours.** To learn what Polarisation is, see par. 2.2

4.5.7 Alarms Menu

The Alarms Menu allows to enable or disable the alarms. Read more about the Alarms menu sections at section 5.

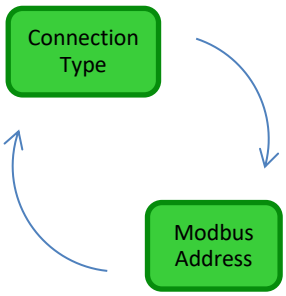
- Press and hold Enter for 1 second to go back to the "Alarms" section of the *Installer* Menu.

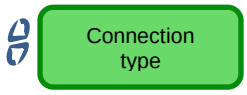
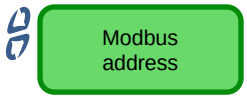


4.5.8 Communication Menu

The *Communication* Menu modifies some characteristics about the communications between the device and the user programme installed on the PC.

- Press and hold Enter for one second to go back to the Communication section of the Installer Menu.



	Select how to connect the control box of the device to the PC. You can choose among: • **RS232** • **Bluetooth**
	Select the address within the range 1-99 used in the Modbus communication protocol. It is recommended not to change the default value (1)

5 Alarms

The alarm signal with the highest priority will be visible alternately to the main section of the **U**ser menu, while the corresponding Led (Alarm or Maintenance Led) will be enabled for all menus

5.1 High/low temperature and ice alarm

1) The High temperature alarm, **which cannot be disabled** from the alarms menu, goes off if temperature read is higher than 60 °C.

✓ The device indicates:

- Audible signal with the buzzer, if enabled (see *Audible Alarm* in the *Alarms Menu*);
- Red alarm LED steady on;
- "**High temperature Alarm**" flashing on the display;

During the alarm, the generator stops working.
The alarm is automatically reset when the probe reads a temperature value below 60 °C.

2) The Low temperature alarm, **which cannot be disabled** from the Alarm menu, goes off if temperature goes below 5 °C.

✓ The device indicates:

- Audible signal with the buzzer, if enabled (see Audible Alarm in the Alarms Menu);
- Red alarm LED steady on;
- "Low temperature Alarm" flashing on the display;

3) In case the temperature read by the probe goes below 2,5 °C and the ice alarm was enabled from the Alarms menu, it will activate as well, together with the Low temperature Alarm.

✓ The device indicates:

- Audible signal with the buzzer, if enabled (see Audible Alarm in the Alarms Menu);
- Red alarm LED steady on;
- "Ice Alarm" flashing on the display;

The ice alarm is reset when the alarm is disabled from the Alarms Menu. It is automatically reset when the probe reads a temperature above 2,5°C. The Low temperature alarm is reset when the values read are above 5 °C.

5.2 Flow & Pressure alarm

The flow alarm, **which cannot be disabled,** goes off whenever the generator is operating, but water flow is absent.

✓ The device indicates:

- Audible signal with the buzzer, if enabled (see ***Audible Alarm*** in the *Alarms Menu*);
- Red alarm LED steady on;
- "**Flow/Pres. alarm**" flashing on the display;

When this alarm goes off, the generator **stops working**.
The alarm will be automatically reset as soon as water flow resumes in the electrolytic cell.
The flow sensor input has a recognition filter that lasts about 10 seconds to prevent false contacts and undesired false alarms.

5.3 Cell maintenance alarm

The maintenance alarm activates when the generator worked for a longer time than the value set under "***Cell Maintenance"*** in the Alarms Menu**.**
The maintenance time can be set within a range of 100-1000 hours, at intervals of 100 hours.
The device indicates:

- Audible signal with the buzzer, if enabled (see *Audible Alarm* in the *Alarms Menu*);
- Red maintenance LED steady on;
- **Cell check Alarm** flashing on the display;

In spite of the alarm, the generator keeps working normally.To deactivate the alarm, after the maintenance of the electrolytic cell has been carried out, go to section **reset cell maintenance alarm.** Access the corresponding submenu by pressing **Enter** and reset the time of the cell maintenance alarm.

5.4 Cell replacement pre-alarm

The alarm activates when the generator worked for a longer time than the value set under “Cell Replacement” in the **A**larms Menu.
The time for the replacement of the electrolytic cell can be set within a range of 5000-20000 hours, at intervals of 1000 hours.

✓ The device indicates:

- Audible signal with the buzzer, if enabled (see ***Audible Alarm*** in the *Alarms Menu*);
- Red maintenance LED steady on;
- **Cell replacement Alarm** flashing on the display;

When this alarm goes off, the generator stops.
The cell replacement alarm is preceded by an **early-warning** state that activates when the generator reaches the 90% of the time set for cell replacement.
Early-warning is shown as follows:

- Audible signal with the buzzer, if enabled (see *Audible Alarm* in the *Alarms Menu*);
- Red maintenance LED steady on;
- **Cell replacement early-warning** flashing on the display;

The generator continues working until reaching the set time (100%%), i.e. until the replacement alarm activates.To deactivate the alarm or the early-warning, after cell has been replaced, go to section **reset cell replacement alarm.** Access the corresponding submenu by pressing **Enter** and reset the time of the cell replacement alarm.

6 Maintenance

General instructions

This section shows the general instructions that ensure the correct use of the generator, and the periodical maintenance operations that help preserve its optimal conditions during time.
Maintenance operations must be carried out by carefully following the instructions below.
It is not easy to define a time schedule for maintenance operations, as there are many factors that may determine the wear of the generator, and more specifically of the electrolytic cell.

6.1 Periodic maintenance

✓ **Winter time and re-start of the system**

When water temperature is below 15°, winter mode automatically activates. It can be manually activated by the user as well. In this operating mode, dosing values are reduced by 15% of the standard.
While public pools must be emptied at least once a year by law, private pools do not need to be emptied that often, which saves water and money. In this case, filtration system must be kept active to preserve the water until the following season.
On the other hand, if you want to empty the pool, you will need to empty all the pipes of the system so that water does not freeze or become the natural habitat for bacteria and micro organisms. Please proceed as follows:

- Make water flow through the dosing pumps before switching them off
- Clean the pre-filter, leave it open, remove the basket and drain the pre-filter
- Drain the filter completely

✓ **Monthly maintenance**

After every filter cleaning or every three months, we recommend to control the sate of the plates. Every 1000 hours of operation, the system warns the user to control the plates through the "Cell Maintenance" alarm. The system is equipped with an automatic cleaning system that in most cases is enough to maintain the cell in perfect conditions. In case of a particularly hard water (rich in minerals) or if the chemical qualities of the water are unbalanced, the cell will require a monthly cleaning.

✓ **Weekly maintenance**

Measure the pH value at least once a week to keep it controlled and to restore its value as quick as possible. Check salinity and restore the correct value.

✓ **Electrolitic cell maintenance**

If you see significant limestones deposits in titanium plates you have to clean its with a specific solution.Follow this procedure to reach this goal. Don’t use brushes or other metal object to remove deposits residue, they can damage plates covering reducing electrodes life and nullify warranty. Pay attention to dont loose different o-ring that provide hydraulic sealing and avoid water laeks. Leave plates in solution for two minutes. Repeat the steps below one more time if you don’t reach the desired results.

1.Switch off circulation pump and close input and output valves in eletrolitic cell system o.

2. Knock off flow sensor and pressure switch cable and temperature probe from AQUA SALT + control box

3. Unscrew off the three electrodes of cable with cap from cell.

4. Unscrew two blu rings from cell

5. Get off locking ring and o-ring from tre cell.

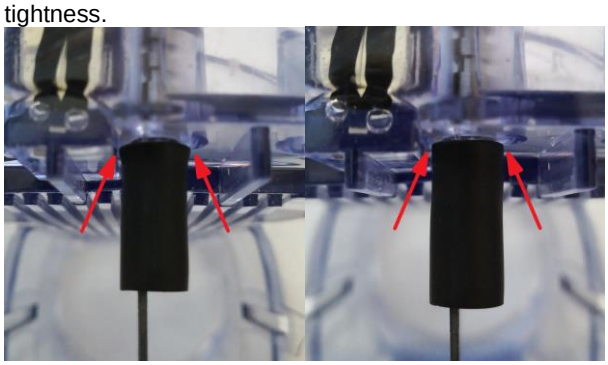
6. Unscrew the three electrodes with a tubular key 8 mm. **Don't loose the three o-ring you find inside.**

7. Remove titanium plates. Don't loose electrodes locking baffler

8. In a bowl put 9 parts of water and add 1 part of hydrochloric acid so that fully dip titanium plates in solution. Avoid to get in contact brass electrodes with acid solution prepared.

9. After cleaning insert plates in the cell slots.Go on from right to left according to this sequence: 1 with electrod – 5 simple – 1 with electrod – 5 simple – 1 with electrod.

10. Screw the electrodes (point 6) up to the stop but without forcing and check that you have replaced the three o-rings in the seats..
The rubber protection must be crushed to ensure water tightness.



CORRECT *NOT CORRECT*

11. At this point proceed from point 6 to point 1 to reassemble the electrolytic cell and reassemble it into the system.

6.2 Returning the product to the manufacturer's after sales service

The material must be sent back in its packaging with all the original protections before the end of the warranty period. The system must be clean.

In case these conditions are not observed, the manufacturer will not be held responsible for possible damages occurred during transportation.

6.3 Warranty certificate

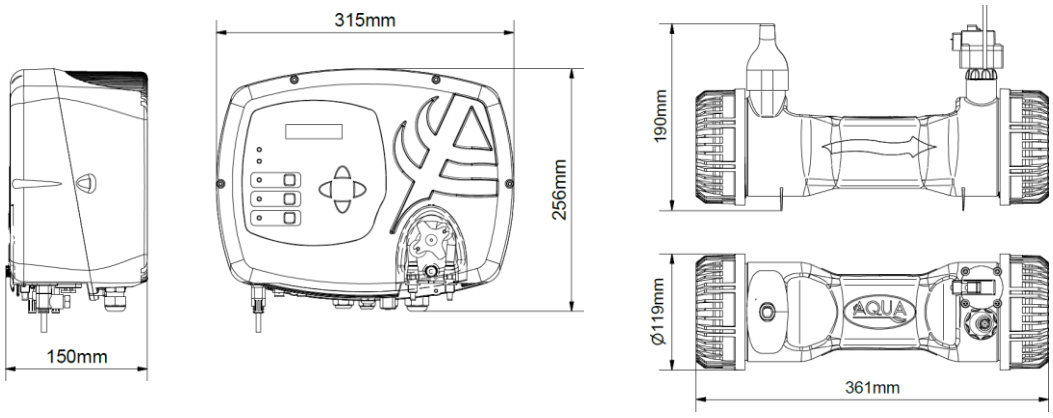
The manufacturer warranty covers the devices for 12 months after the delivery date. The control system of the Aqua Salt + (control unit) is ensured, however, for 36 months.
Within these terms, the manufacturer undertakes to supply for free the spare parts that, according to them or to one of their authorized representatives, present manufacturing or material defects, or to repair them personally or through authorized workshops.
The manufacturer will not be held responsible for other costs, damages and direct or indirect losses provoked by the use of or the impossibility to use, both totally or partially, the chlorine generator.
Repairs or spare parts will not extend nor renew the warranty period.
The user will personally meet the costs arising from the assembly or disassembly of the devices, as well as transport and consumables costs (plates, sensors etc.).
The above-mentioned obligations for the manufacturer will not be valid in case:
The devices are not used following the instructions on the use and maintenance manual;
The devices are repaired, disassembled or modified by unauthorized workshops;
Non-original spare parts have been used;
The electric system is damaged due to external factors like over-voltage, electric discharges, etc.;
After the warranty period, the manufacturer will not be held responsible for any of the above-mentioned points.

7 Annexes

The annexes contain important additional information for quick reference, like menu graphs and default parameters

7.1 Annex A Exploded views

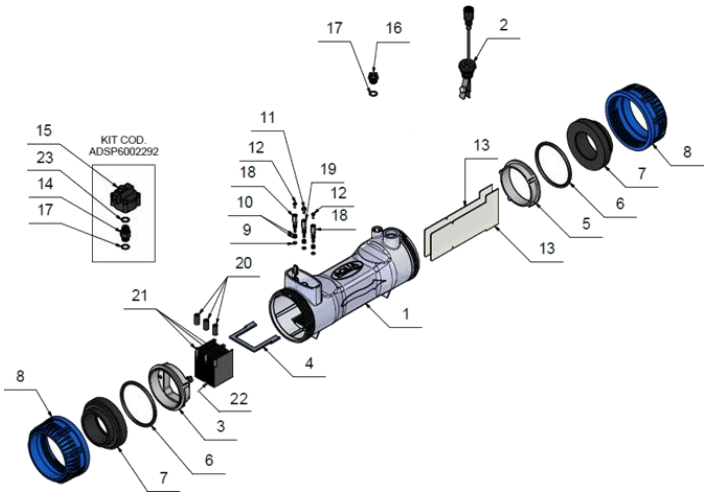
Control system– weight: 3 Kg. Cell – weight: 1.5 Kg (model 100)



7.2 Annex B Dimensions

Below you can see the diagram of the electrolytic cell and its components, together with a table of the codes required to order the parts to be replaced in case of breaking

NUM.	CODE	DESCRIPTION	Q.TY
1	ADSP6002249	AQUA SALT + CELL TUBE WITH RESINATED TEMPERATURE SENSOR	1
2	ADSP6002248	ASSEMBLY OF AQUA SALT + FLOW SENSOR	1
3	ADSP6002211	AQUA SALT + PLATE LOCKING RING	1
4	ADSP6002150	SEPARADOR DE BLOQUEO DE ELECTRODOS L50-150	1
	ADSP6002330	ELECTRODE LOCKING SEPARATOR L100	1
	ADSP6002340	ELECTRODE LOCKING SEPARATOR L200	1
5	ADSP6002220	AQUA SALT CELL CLOSING RING	1
6	ADSP6002230	OR - RIF. 6325 - NBR	2
7	ADSP6002300	AQUASALT D63 PIPE REDUCTION	2
8	A6010720	BLUE RING NUT FP3	2
9	ADSP5007022	OR - RIF. 2015 - BLACK VITON	3
10	ADSP5007199	OR - METRIC D.4x1.5 FKM 75 - BLACK VITON	6
11	ADSP6000812	*SCREW M 4 X 8 UNI 7687 (TCTC) STAINLESS A2	1
12	ADSP6000713	**SCREW M 3 X 8 UNI 7687 (TCTC) STAINLESS A2	2
13	ADSP6002275	AQUA SALT 50 FLOW SENSOR CONVEYOR	2
14	ADSP6001040	FITTING 1/4 "M - 1/4" M FOR AQUA SALT + PRESSURE SWITCH	1
15	P9020050	MINIMUM PRESSURE SWITCH 1/4 "FNPT MAX 40-60 PSI	1
16	S6060050N	1/4 "G PP BLACK FINAL CAP	1
17	MG011300	OR - RIF. 11X2 - FKM75 - BLACK VITON	2
18	ADSP6002208	** PIN HOLDER AQUA SALT + - AISI 316 M3 - MALE PIN	2
19	ADSP6002209	** PIN HOLDER AQUA SALT + - AISI 316 M3 - MALE PIN	1
20	ADSP6001042	AQUA SALT + PROTECTIVE CAP FEMALE PLATE TITANIUM	3
21	PTEPL050106F	TITANIUM PLATE HOLDER RANGE ELECTRODE L 50 - AQUA SALT +	3
	PTEPL100107F	TITANIUM PLATE HOLDER RANGE ELECTRODE L 100 - AQUA SALT +	3
	PTEPL150108F	TITANIUM PLATE HOLDER RANGE ELECTRODE L 150 - AQUA SALT +	3
	PTEPL200109F	TITANIUM PLATE HOLDER RANGE ELECTRODE L 200 - AQUA SALT +	3
22	PTESL050110F	TITANIUM PLATE SIMPLE ELECTRODE L 050 - AQUA SALT +	10
	PTESL100111F	TITANIUM PLATE SIMPLE ELECTRODE L 100 - AQUA SALT +	10
	PTESL150112F	TITANIUM PLATE SIMPLE ELECTRODE L 150 - AQUA SALT +	10
	PTESL200130F	TITANIUM PLATE SIMPLE ELECTRODE L 200 - AQUA SALT +	10
23	MB010570	WASHER D. 12 x 19 x 2 RUBBER	1



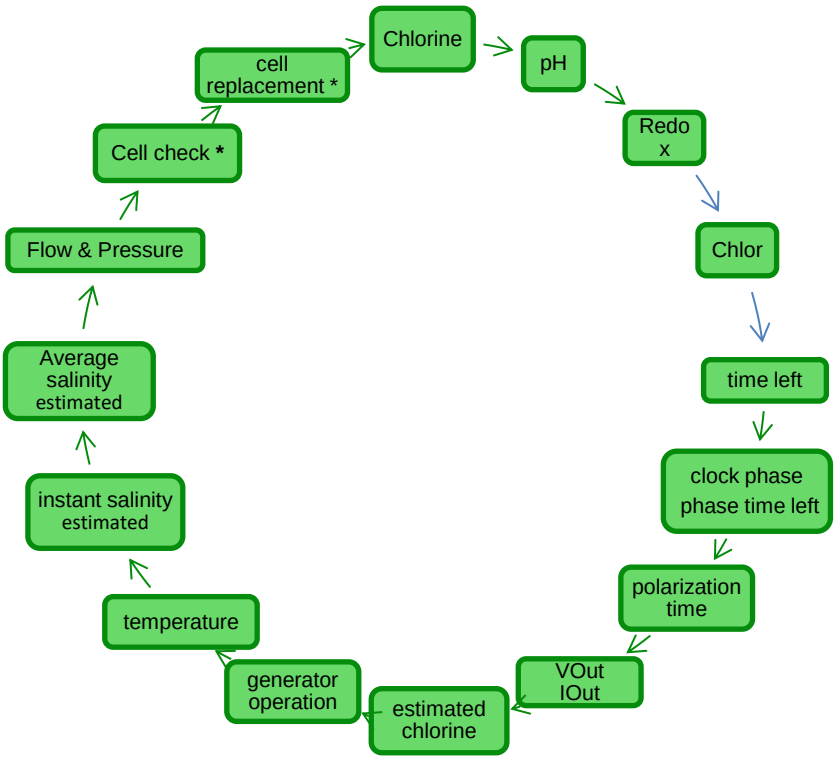
7.3 Annex C Default Parameters

The default parameters are the values that have been assigned to parameters and variable during the development of the system and that you can restore from the System Setup menu to "restore default settings"

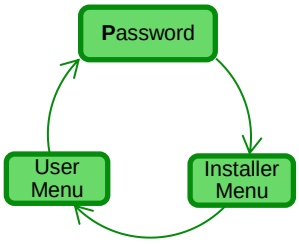
Chlorine content: 100%; Percentage of chlorine in Winter Mode: 85%; Polarization time: 4 hours; Cycle time: 15 minutes; Set point chlorine: 1.00 ppm; band proportionality of chlorine: 0.5 ppm; set point pH: 7.2; way of working pH: acid; band proportionality pH: 1.0; cycle period of pH: 5 minutes; set point salinity: 4.0 g / l; band proportionality salinity: 1.5 g / l; cycle period salinity 150 minutes; tank capacity: 100; generator operation: external timer; filter flow: 10 seconds; filter shutter: 3 hours

7.4
Annex D
MENU MAP

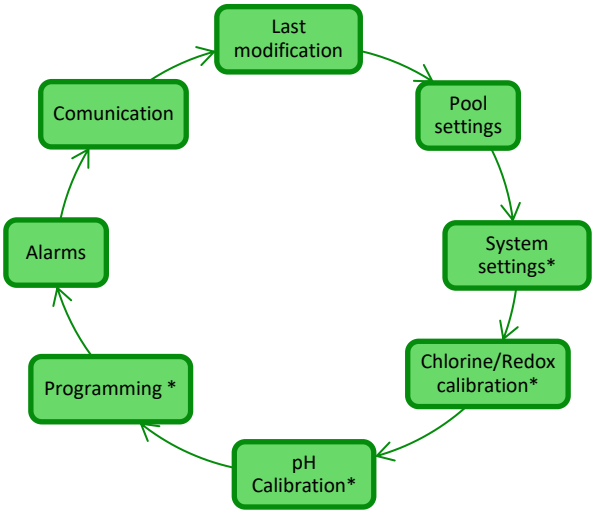
User Menu



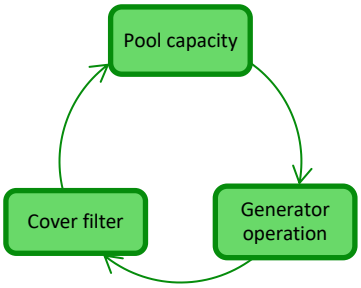
Password Menu



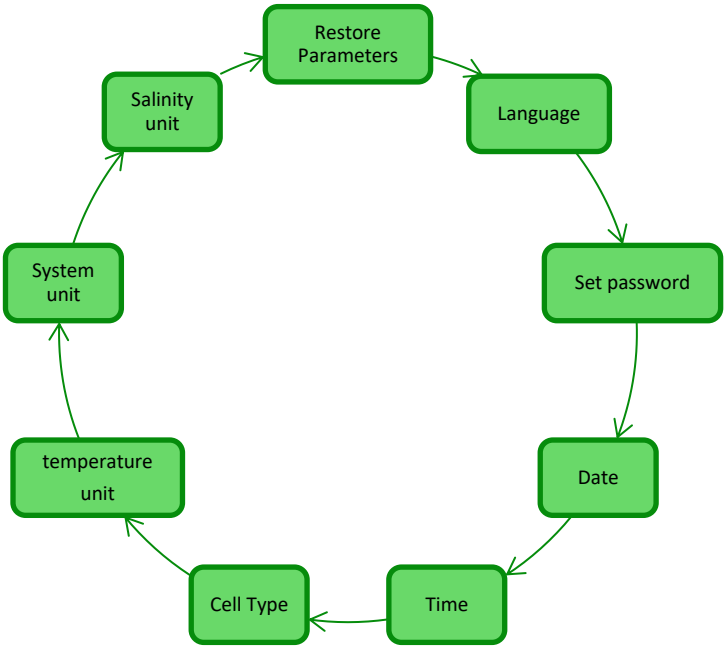
Installer Menu



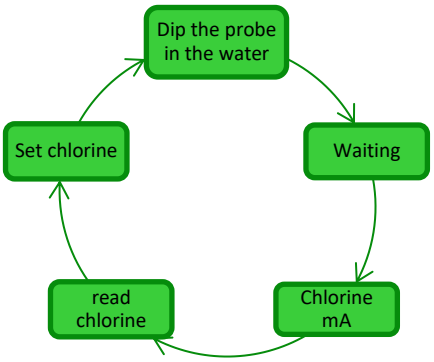
Pool Settings Menu



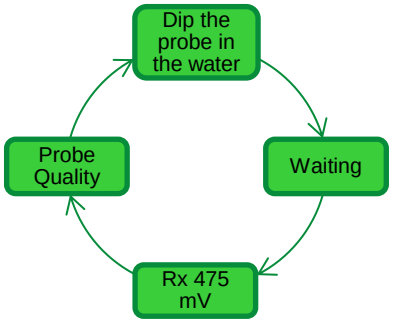
System Settings Menu



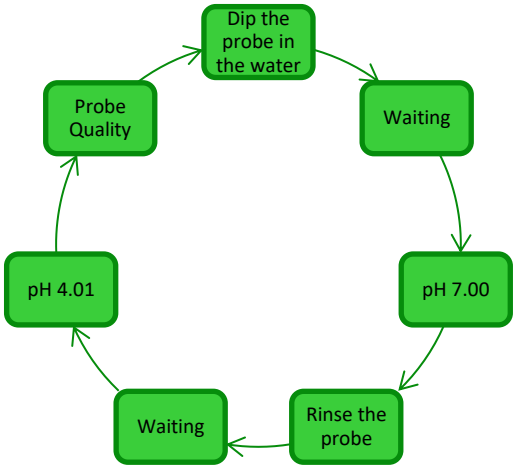
Chlorine Probe Calibration Menu


Dip the probe in the water
Waiting
Chlorine mA
read chlorine
Set chlorine

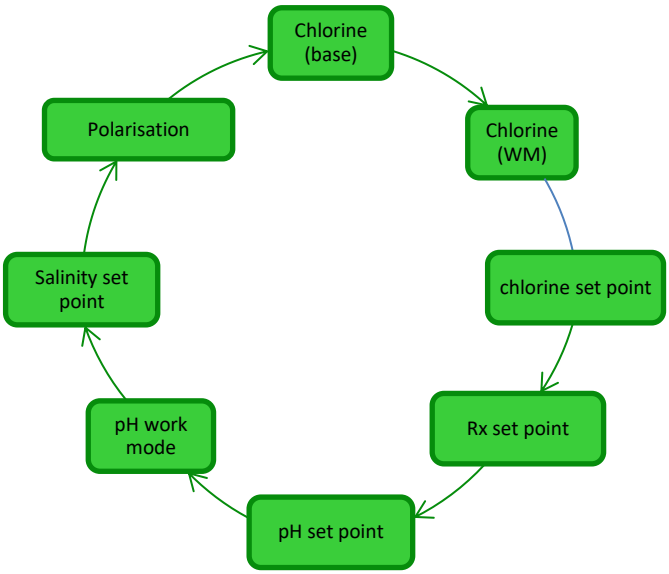
Redox Probe Calibration Menu

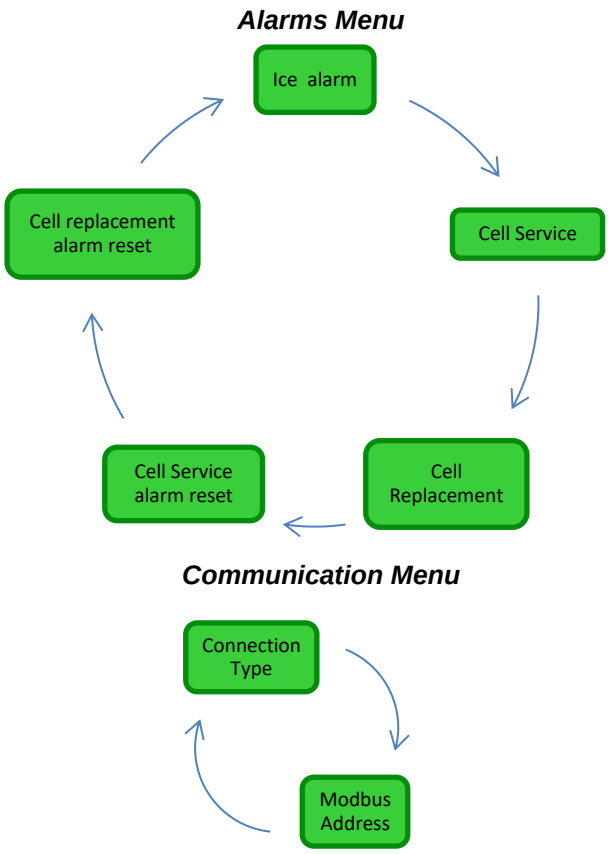


pH Probe Calibration Menu



Programming Menu





7.5 Annex E ELEMENTS OF WATER CHEMISTRY AND OPTIMAL CONDITIONS OF POOLS

A chemically balanced water is fundamental to avoid problems like frequent pH corrections, metallic part corrosion or pipe fouling. We recommend to use public water to fill the pool. Tank water can be used as well, but only in case it has the same characteristic as those of the public water. As a matter of fact, public water is usually already balanced and suitable to be used in pools. Therefore, we suggest to measure the pH value at the first filling. The ideal value is between 7 and 8, and it is the standard one to be restored if the pool is frequently used, or if the new values recorded are different
.
Avoid water with unknown chemical qualities, like water from fire fighting systems, rivers, ponds, wells or spring water. These kinds of water may contain impurities that will make the initial treatment and ordinary maintenance difficult and very onerous.
To ensure a longer useful life to the cell, avoid excessively hard water that provokes calcium or magnesium carbonate fouling. Use waters with a maximum hardness of 30°F.

Water characteristic are not fixed: they vary depending on natural (temperature, evaporation, number of users, rain, wind, dust, soot) or artificial factors (treatment products). Its balance is quite complex, but you will need to focus on just few steps to get clean and healthy water in your pool.

7.6 Annex F THINGS TO KNOW ABOUT YOUR POOL

The first thing you have to know about your pool is its volume. To calculate the volume of your pool, follow the formulas below depending on the shape of your pool:

rectangular pool
length x width x average depth
oval pool
length x width x average depth x 0.893
round pool
diameter x diameter x average depth x 0,785

A pool is the integration of hydraulic, mechanical, electrical and automation systems that form the treatment system. This is necessary to maintain a good level of health and comfort, which in turn are indispensable for a pleasant and correct use of the pool.

Pool water treatments ensure the chemical, physical and microbiological balance of the water. In a properly built pool, recirculation and filtration systems clean the water, but they are not enough to avoid algae and bacteria proliferation. To improve the action of the filters, chemical flocculating agents are added. These flocculants gather the particles in bigger groups that can be easily caught by the filters. Normally, once the pool is filled, it is preferable not to empty it, to ensure the chemical/physical qualities of the water through its treatment instead. This includes ***recirculation, additives, filtration and disinfection.***

8 Software

Manual for the AQUA SALT + remote control software

8.1 HOW TO CONNECT THE DEVICE TO THE PC AND CONFIGURE THE SYSTEM

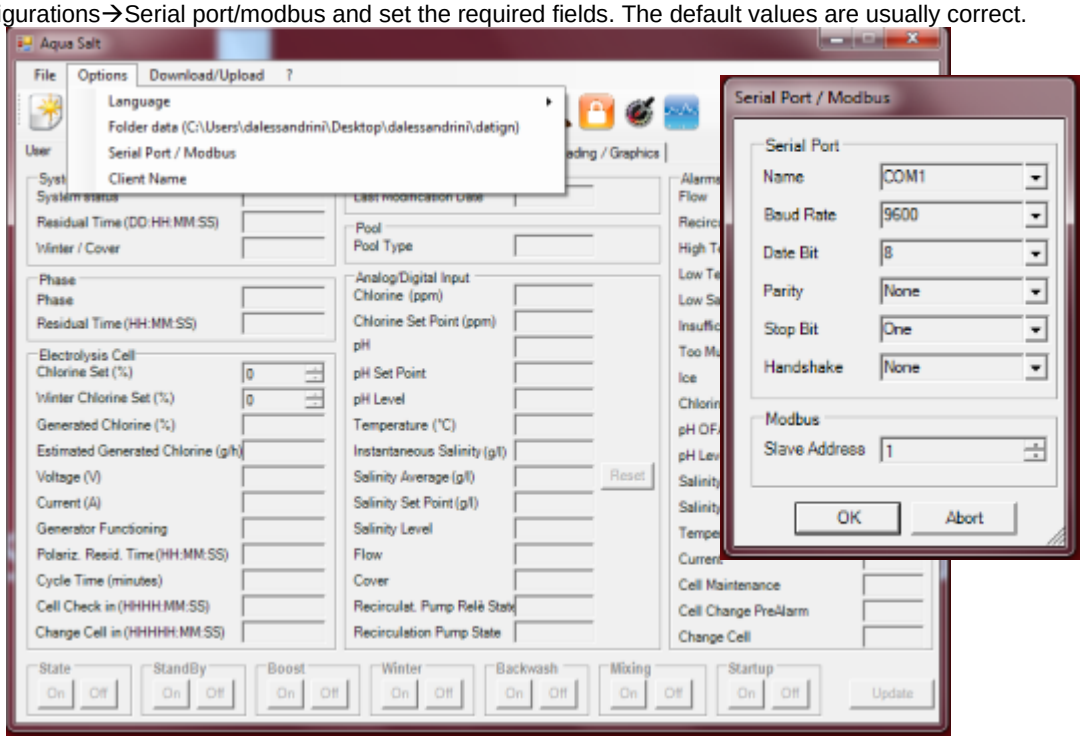
Connect AQUA SALT + to the PC through the serial ports with a serial cable as shown below:

You can use an RS232→USB adaptor if the PC has no serial ports. In order for the devices to communicate, it is necessary to use a null modem serial cable, or a straight serial cable with a null modem adaptor.

Install the software provided on the CD and run the programme by clicking on the icon that will appear on the desktop at the end of installation.

Click on the icon  on the icon bar to activate the serial connection with the PC. Insert the default password 0000 and confirm the connection request.

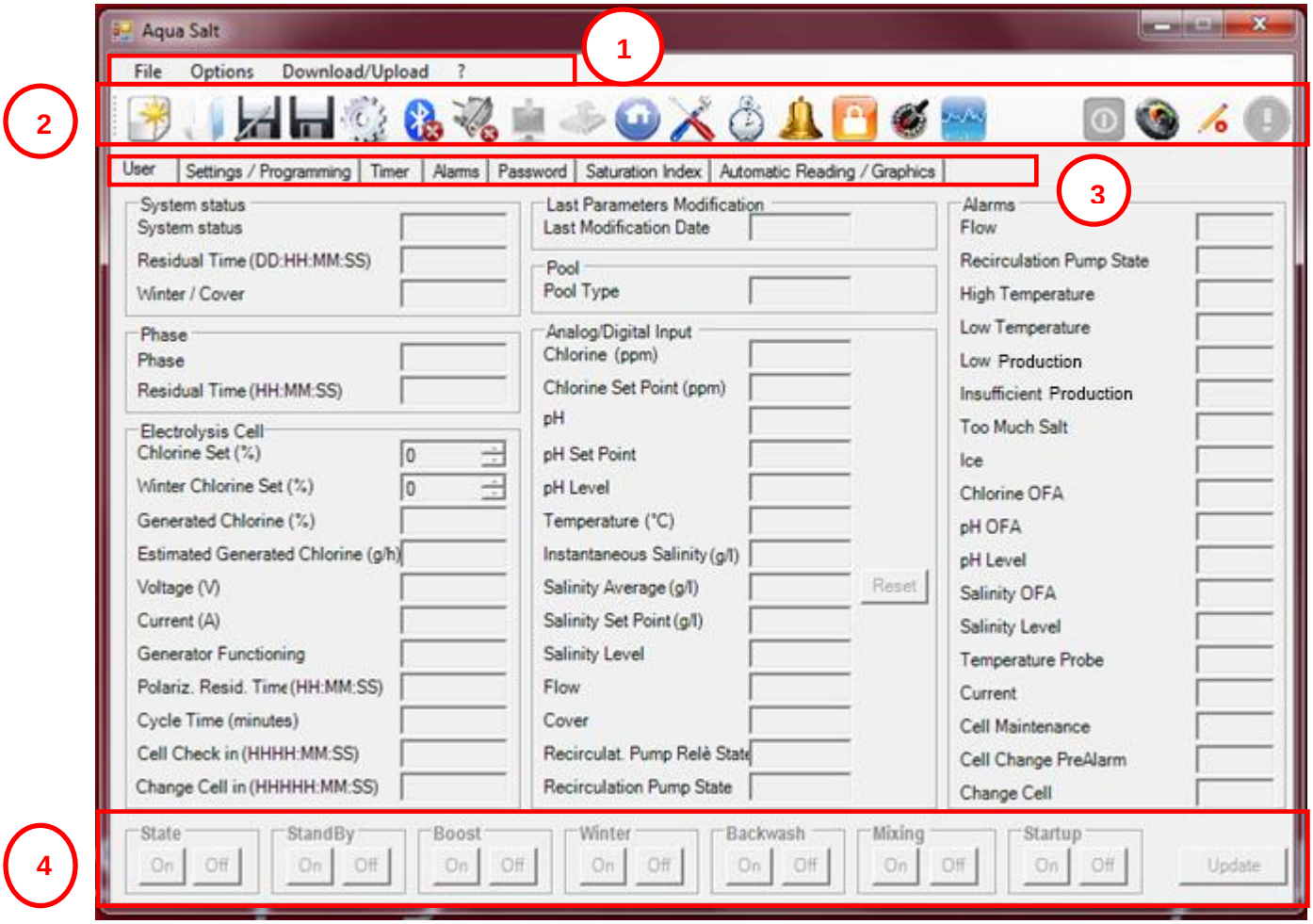
Click on the Configurations→Serial port/modbus and set the required fields. The default values are usually correct.



You can also connect the device to the PC through the Bluetooth connection (if the controller is equipped with Bluetooth module) by clicking on the icon 

8.2 AQUA SALT + SOFTWARE PRESENTATION

The AQUA Salt + management software controls the parameters and programmes the work of your chlorine generator . The software has three menus (1), icons for quicker operations (2), seven tabs (3), buttons to run some programmes or to pause the device (4) as indicated by the picture below.



8.3 MENUS

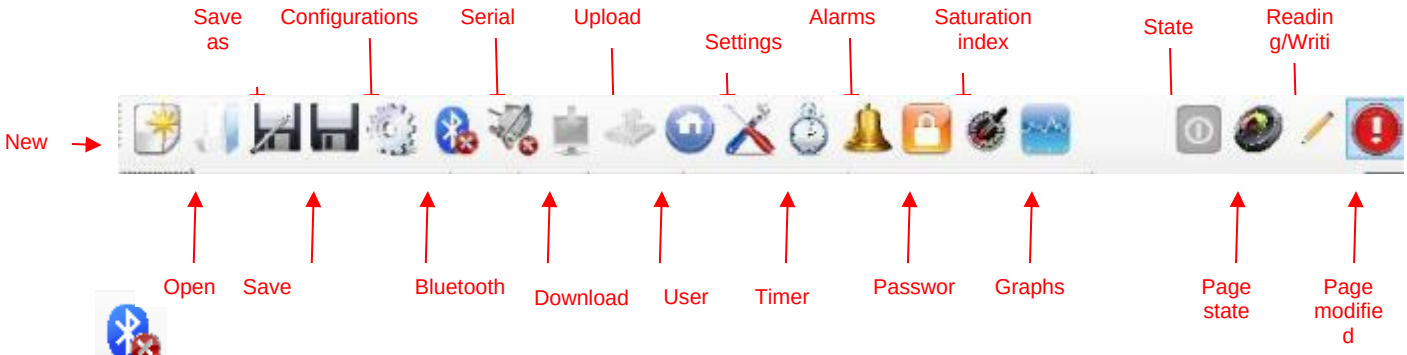
The **File** Menu includes the typical sections: *new, open* to open the files where the working parameters of your generators are saved; *save*, *save as*, *exit* to close the application.

The **Configurations** menu includes the following sections: *set language* to select your language, *data folder* to choose the path (do not select root C:\\ if you are using Windows 7 or Vista) to save the data of the generator, *serial port/modbus* to set the data of serial configuration and modbus, *customer name* to insert the name of the customer.

The **Download/Upload** menu includes the following sections: *download* to download within the remote management software the configuration of the device, *upload* to upload the configuration of the software installed on the PC to the device.

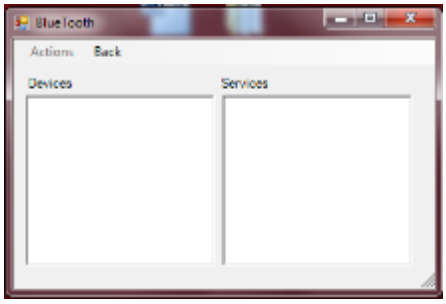
8.4 ICONS

Icons allow to quickly perform some operations of the menus (see menus described above) or of the tabs (see tabs described below). The last four icons provide information about the state of the system.



By clicking on the Bluetooth icon, you can connect the device and the PC through bluetooth connection (if supported). To connect PC and device, follow this procedure:

- Clicking on the icon, the following window will open:

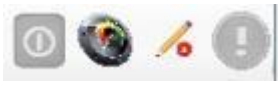


- Click on Actions → Bluetooth Radio On → Searching devices.
- The devices found will appear.
- Double click on the selected device for quick connection.
- Confirm the connection request and insert the password.


By clicking on the serial icon, it is possible to connect the device and the PC through serial interface. After confirming the connection request and inserting the password, the two terminals are connected and the procedure is over. In case the error window should appear:

Check the correct connections of the cables, and make sure that the serial cable is a crossed one. In case the error window "non-chlorine generating device" appears, check that the device connected is a chlorine generator, and that firmware and software are compatible.


Clicking on one the user, settings, timer, alarms, password, saturation index and graphs icons, you will access the respective tabs.


State, page state, reading/writing, page modified icons show: if the device is on, off or paused; if page content is valid (green sector) or not (red sector); if the visualized page can be modified or it is a read-only page; if some parameters have been changed and therefore the page has to be saved not to lose them.

8.5 TABS

✓ The **USER** tab controls some operating parameters of your chlorine generator

Device state	Last modification to the parameters	Alarms
Device state Indicates the current state of the device (Work, Boost, Mix, Start-up, Backwash, Off).	**Last modification date** Indicates the date of the last modification to the parameters of the device.	**Flow** Indicates the state of the Absent Flow alarm.
Time left Indicates the remaining time of the current state, for Work, Boost, Mix or Start-up.	**Pool**	**Recirculation pump state** Indicates the state of the alarm regarding the lack of power supply to the recirculation pump
Winter / Shutter Indicates if Winter mode is on or shutter is closed.	**Pool type** Indicates the pool type (pool or SPA).	**High temperature** Indicates the state of the High Temperature alarm.
Phase	**Analogue/digital inputs**	**Low temperature** Indicates the state of the Low Temperature alarm.
Phase Indicates the current phase of the device (Pause, Recirculation timer Wait, Timer Wait, Flow Wait, Flow stabilization, Work on, Work off, Clean, backwash phases).	**Chlorine/Rx (ppm/mV)** Indicates the value of Chlorine or Redox read by the respective probe, if supported.	**Low production** Indicates the state of the Low Production alarm.
Time left Indicates the time left for the current phase, for Flow stabilization, Work on, Work off and Clean.	**Chlorine/Rx Set Point (ppm/mV)** Indicates the value of Chlorine or Redox Set Point.	**Insufficient production** Indicates the state of the Insufficient Production alarm.
Electrolytic cell	**pH** Indicates the pH value read by the probe, if supported.	**Too much salt** Indicates the state of the Too Much Salt alarm.
Chlorine set (%) Indicates and sets the chlorine percentage to be generated. Corresponds to the ratio between ON time and cycle time, in case other compensations such as temperature or UV are not involved.	**pH set point** Indicates the pH Set Point value.	**Ice** Indicates the state of the alarm "possible icing".
Chlorine set during Winter Mode (%) Indicates and sets the chlorine percentage to be generated during Winter Mode. Corresponds to the ratio between ON time and cycle time, in case other compensations such as temperature or UV are not involved.	**pH level** Indicates if the level of pH corrector is sufficient or insufficient.	**OFA Cl / Rx** Indicates the state of the "Chlorine or Redox OFA" alarm, which goes off if Chlorine or Redox values do not increase as they should during the set time.
Chlorine generated (%) Indicates the chlorine percentage the device actually generates, compared to its maximum capacity. It corresponds to the ratio between ON time and cycle time.	**Temperature (°C / °F)** Indicates the temperature read by the probe.	**pH OFA** Indicates the state of the "pH OFA" alarm, which goes off if the pH value does not change as it should during the set time.
Estimated chlorine generation (g/h) Indicates the amount of chlorine generated in one hour. This amount is an estimate.	**Instant salinity (g/l/ppm)** Indicates the value of instant salinity. This value is obtained from current, voltage and temperature values.	**pH level** Indicates the state of the "Insufficient pH level" alarm.
Voltage (V) Indicates the voltage at the two extremities of the generator's cell.	**Average salinity (g/l/ppm)** Indicates the value of average salinity.	**Salinity OFA** Indicates the state of the "Salinity OFA" alarm, which goes off if the salinity value does not increase as it should during the set time.
Current (A) Indicates the current passing through the generator cell.	**Salinity Set Point (g/l / ppm)** Indicates the Salinity Set Point value.	**Salinity level** Indicates the state of the "Insufficient salinity level" alarm.

Generator operation Indicates the work mode of the generator (Internal timers, External timer, Proportional).	**Salinity level** Indicates if the level of salinity is sufficient or insufficient.	**Temperature sensor** Indicates the state of the "Temperature sensor error" alarm.
Polarisation time left Indicates the remaining time of current polarisation. At the end, after the Clean interval, the polarity of the voltage sent to the cell will be switched.	**Flow & Pressure** Indicates whether flow is present or not.	**Current** Indicates the state of the "Low current" alarm.
Cycle time Indicates the sum of ON and OFF time.	**Shutter** Indicates if the shutter is open or closed.	**Cell maintenance** Indicates it is necessary to check the cell or to run the maintenance operations.
Check cell Indicates the time left before checking the cell or running the maintenance operations.	**Recirculation pump relay state** Indicates if the relay of the recirculation pump is open or closed.	**Cell replacement early warning** Indicates that the generator cell will soon need to be replaced.
Cell replacement Indicates the time left before replacing the generator cell	**Recirculation pump state** Indicates if the recirculation pump is on or off.	**Cell replacement** Indicates that it is necessary to replace the cell of the generator.

- ✓ The **PROGRAMMING/SETTINGS** tab programmes and sets all the functionalities of the chlorine generator.

Pool	**Chlorine/Rx (Generator work mode: proportional)**	**States/phases duration**
Pool type Indicates or sets the pool type (pool or SPA).	**Ppm max (ppm)** Indicates or sets the maximum Chlorine value (depending on the type of chlorine probe you are using).	**Boost (hours)** Indicates or sets the duration of the Boost state.
Pool Capacity (cu. m / gal) Indicates or sets the dimensions of the pool.	**Set point (ppm / mV)** Indicates or sets the value of Chlorine or Redox Set Point.	**Mixing (hours)** Indicates or sets the duration of the Mixing state.
Shutter Filter (hours) Indicates or sets the duration of the shutter filter, i.e. the time in which chlorine generation must be kept constant, although reduced.	**Proportional range (ppm/mV)** Indicates or sets the value of Chlorine or Redox proportional range.	**Start-up (days)** Indicates or sets the duration of the Start-up state.
Electrolytic cell	**Chlorine (Generator work mode: internal or external timers)**	**Cycle time (minutes)** Indicates or sets the cycle time of chlorine generation, i.e. the sum of ON and OFF time.
Chlorine set (%) Indicates or sets the percentage of Chlorine to be generated, compared to the maximum capacity. Corresponds to the ratio between ON time and cycle time, in case other compensations such as temperature or UV are not involved.	**Temperature correction** Indicates or sets the state of correction according to the temperature to apply to the chlorine percentage to be generated (Yes, No).	**pH (probe supported)**
Generator operation Indicates or sets the work mode of the chlorine generator (Internal timers, External timer, Proportional).	**UV correction** Indicates or sets the type of UV correction to apply to the chlorine percentage to be generated (Off, Cold shady, Cold Sunny, Mild shady, Mild Sunny, Tropical shady, Tropical sunny)	**Set point** Indicates or sets the pH Set Point value.

Flow & Pressure filter Indicates or sets the duration of flow & pressure filter, i.e. the minimum time must be present to be recorded.	**Display**	**Work mode** Indicates or sets the pH work mode (Acid, Alkaline).
Cell type Indicates or sets the cell type (50, 100, 150, 200).	**LCD contrast** Indicates or sets the LCD contrast value.	**Proportional Range** Indicates or sets the value of the pH proportional range.
Type of minerals Indicates or sets the type of minerals (Salt, Minerals).	**LCD mode** Indicates or sets the work mode of the LCD display (60 seconds ON, Always ON).	**Cycle period (minutes)** Indicates the cycle period of the pH correction, i.e. the sum of the ON and OFF time of the pump.
Polarisation time Indicates or sets the polarisation time of the cell, i.e. the time for which the polarity of the voltage sent to the cell stays positive or negative.	**Clock type** Indicates or sets the clock type (12 or 24 hours)	
Salinity	**Temperature unit** Indicates or sets the unit of measurement of temperature (Celsius, Fahrenheit).	
Set point Indicates or sets the Set Point value of salinity.	**System unit** Indicates or sets the unit of measurement of pool capacity (cu. m, imperial gallons)	
Proportional Range Indicates or sets the value of salinity proportional range.	**Salinity unit** Indicates or sets the unit of measurement of salinity (g/l, ppm).	
Cycle period (minutes) Indicates or sets the cycle period of salinity correction, i.e. the sum of the ON and OFF time of the pump.		

- ✓ The **TIMER** tab programmes two kinds of timers: recirculation timers manage ignition and shut-down of the recirculation pump; internal timers programme the ignition and shut-down of the chlorine generator, if set on Internal timers mode.

Recirculation timer				**Timer**			
Enabling Indicates or sets the global enabling state of the 12 recirculation timers (On, Off).				**1..4** Identification number of the Internal timer.	**Type** Indicates or sets the type of internal timer (Off, Mon-Fri, Mon-Sun, Sat-Sun).	**Start** Indicates or sets the time of activation of the internal timer.	**Duration** Indicates or sets the duration of the internal timer.
1..12 Identification number of the Recirculation timer.	**Type** Indicates or sets the type of Recirculation timer (Off, Mon-Fri, Mon-Sun, Sat-Sun).	**Start** Indicates or sets the time of activation of the recirculation timer.	**Duration** Indicates or sets the duration of the recirculation timer.				

- ✓ Through the **ALARMS** you can enable, disable and set the alarms you prefer.

Alarms enabling	**Electrolytic Cell Maintenance**
Audible alarm enabling Indicates or sets the enabling state of the audible alarm (On, Off).	**Cell Maintenance (hours)** Indicates or sets the duration of the Cell maintenance interval.
Recirculation pump state alarm enabling Indicates or sets the enabling state of the "Recirculation pump state" alarm (On, Off).	**Cell Replacement (hours)** Indicates or sets the duration of the life cycle of the cell.
Low production alarm enabling Indicates or sets the enabling of the "Low production" alarm (On, Off).	**Current alarm enabling** Indicates or sets the enabling of the "(low) voltage" alarm (On, Off).
Insufficient production alarm enabling	**Temperature probe alarm enabling**

Indicates or sets the enabling of the "Insufficient production" alarm (On, Off).	Indicates or sets the enabling of the "Temperature probe" alarm (On, Off).
Excessive salt alarm enabling Indicates or sets the enabling of the "Excessive salt" alarm (On, Off).	**Temperature probe alarm enabling** Indicates or sets the enabling of the "Temperature probe" alarm (On, Off).
Ice alarm enabling Indicates or sets the enabling of the "Ice" alarm (On, Off).	**Temperature probe alarm enabling** Indicates or sets the enabling of the "Temperature probe" alarm (On, Off).
Chlorine OFA alarm enabling (minutes) Indicates or sets the enabling of the "Chlorine OFA" alarm, and the duration of the reference period, if any (Off, 5...60 minutes).	**Salinity OFA alarm enabling (minutes)** Indicates or sets the enabling of the "Salinity OFA" alarm, and the duration of the reference period, if any (Off, 5...60 minutes).
pH OFA alarm enabling (minutes) Indicates or sets the enabling of the "pH OFA" alarm, and the duration of the reference period, if any (Off, 5...60 minutes).	**pH level alarm enabling** Indicates or sets the enabling of the "pH level" alarm (On, Off).

✓ Through the **PASSWORD** tab, you will be able to set a new password and change the current one.

Password
Old Insert the current password in this field if you want to replace it with a new one.
New Insert the new password in this field if you want to replace the current one.

✓ The **SATURATION INDEX** tab allows to calculate an index that describes the quality of pool water

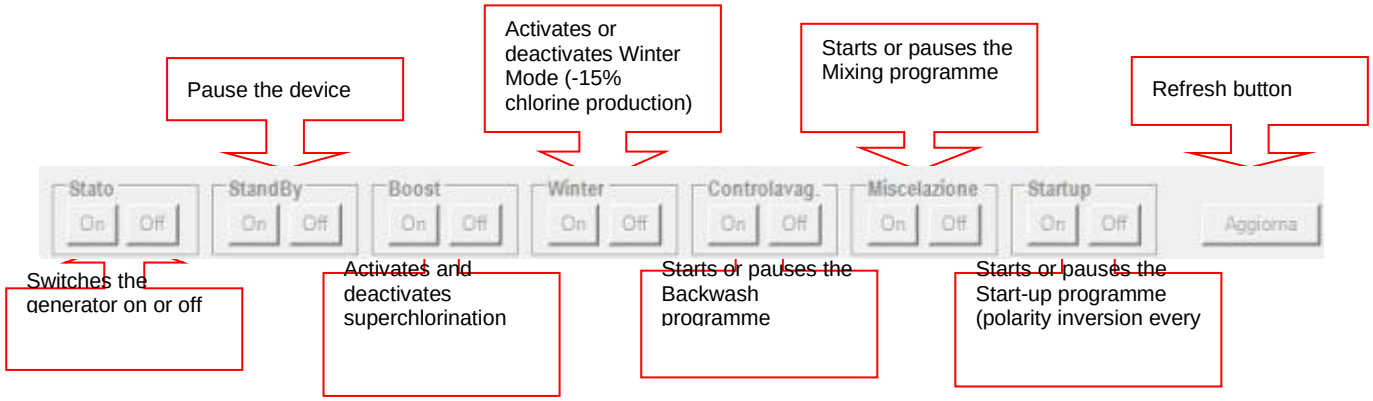
Saturation Index (SI) calculation
pH Indicates or sets the pH value to be used to calculate the Saturation Index (SI). This value can be automatically acquired by the pH probe, if supported.
Total Alkalinity - TAC (ppm) Sets the total alkalinity value of the pool water to be used to calculate the saturation index (SI)
Calcium hardness - TH (ppm) Sets the calcium hardness value of the pool water to be used to calculate the saturation index (SI)
Temperature Indicates or sets the temperature value to be used to calculate the Saturation Index (SI). The temperature probe will read this value automatically.
SI Press "SI calculation" to calculate the saturation Index (SI) derived from the values specified in the above-mentioned four fields. The value indicates if the water is in good conditions, corrosive or fouling.

✓ The **AUTOMATIC READINGS/GRAPHS** tabs make you read and visualize the values of the data collected, both in graphs or tables.

Automatic Readings Settings	Graph settings	Graph	Data
Range Indicates the time interval between the readings.	**Elements** The check boxes of this section make you select the values to be visualized in the graph, or to be exported in a .csv file.	Graphically visualizes the trend of the selected values over time.	Visualizes in a table the trend of the selected values over time.
Automatic readings state Indicates the state of the automatic readings (Active, Not active). To activate the automatic reading of the values, press 'Start'. To interrupt or pause the reading, press 'Stop'	**Period** The fields of this section specify the time lapse to examine the magnitudes that have to be visualized in the graph or exported in a .csv file.		

8.6 PROGRAMME KEYS

In the low part of the software window, you will find some keys that enable the quick start and pause of some functionalities or programmes.



9 Warranty

THE PRESENT DOCUMENT SHOULD NOT BE SENT.KEEP IT TOGETHER THE RECEIPT

WARRANTY RULES

VALIDITY
The warranty includes free repair or replacement of the component parts the of unit that are faulty due to manufacturing defects, with the exception of the assumptions enumerated in paragraph "Limitation of Liability".
Warranty claims will be proven by the original certificate and valid for tax purposes, from which are deduced, the product model and date of purchase. Maintenance under guarantee will be carried out only for customers who are in order with payments.

RESPONSIBILITY FOR AQUA
During the warranty period, Aqua is committed to correct the defects caused by manufacturing defect, without charge to the customer. If restoration is not possible through the repair and / or if the latter proves prohibitively expensive compared to the value of the product, determined at the discretion of the manufacturer, Aqua will replace the equipment at the customer end, **leaving unchanged the deadline and terms guarantee** referred to in the original contract and evidenced by tax document issued at the time of purchase. If the device is replaced, if it is not available for any reason the same model appliance replaced, Aqua reserves the right to change the device with another type of similar, but different model, although having the same functions and the same purpose.

LIMITATIONS OF LIABILITY
The defect is not attributable to Aqua, if the Technical staff found that as cause intervened conditions external to the operation of the product. Also excluded from the guarantee, the work carried out for the replacement of parts subject to wear and / or removable, unless their break and / or their failure is not due to defects in origin. Still, they are excluded from the warranty interventions carried out by persons other than those specific technical knowledge, or not authorized. It is understood that Aqua accepts no responsibility for the installation is not performed in a workmanlike manner, performed directly by the customer.
Aqua accepts no responsibility for any damage that may directly or indirectly to persons, things or animals resulting from the failure to observe all the instructions given in the instruction booklet and concerning use, operation and maintenance.

WORK OUT OF WARRANTY
After the expiration of the warranty period stipulated in the contract, the cost of any remedial measures will have to be borne by the customer. In this case, are not covered by the warranty labor and all the parts that may be defective due to negligence or careless use (failure to follow instructions for the operation of the unit), incorrect installation or lack of maintenance, maintenance carried out by non- authorized, shipping damage, or circumstances which, however, can not be traced to manufacturing defects of the device.

RULES AND RESPONSIBILITIES FOR REPAIRS. PERIOD OF WARRANTY

• For the warranty to be valid and operative, the customer must show documentation showing the date of purchase of the product, its specific identification and type. To meet this need will be sufficient to show, along with the original warranty for the product, a document valid for tax purposes (transport document, invoice, receipt) certifying the date of purchase, model and the purchase price.
• After the warranty period, the interventions will be charged.

LIMITATIONS OF LIABILITY

(Interventions in payment not covered by warranty)
As non-exhaustive examples, they are excluded from the guarantee interventions required by the Customer:
• Situations in which there are no requirements of effectiveness and enforceability of the guarantee (lack of fiscal document, etc.).
• Explanations about how the product operates, controls and periodic maintenance and all that, at the time of sale, had been brought to the attention of the customer or that it could not reasonably ignore.
• For malfunctions due to foreign bodies.
• Situations in which there has been no fault, as reported by the customer, or to alleged problems deriving from incorrect impression of the user.
• Situations where there is failure a flow of electrical insufficient or non-compliant.
• Situations where there is neglect, abuse, tampering, accidental breakage, damage during transport, improper handling, as well as improper use and maintenance by the customer.
• For incorrect installation. In any case, they are excluded from any guarantee work regarding the installation and connection to the power supply, as well as the necessary maintenance.
• Situations where lack of compliance as reported and recommended in the operating manual, including the incorrect maintenance of the product and the use or non-compliance with the provisions of the plant in the instruction manual of the product. The instruction manual is an integral part of the sales contract.
• If you discover damage to the equipment caused by adverse weather and natural (such as lightning, flood, fire, etc ...).

They are also not covered by the warranty, breakdowns caused by shock and accessories in general.
It also means paying any and all transportation required for the performance of operations related to the abovementioned cases.

IMPORTANT NOTE TO CUSTOMERS:

The guarantee is on the date of purchase, please keep all the documents needed to verify the warranty for the company. These will be used in the event that it is necessary to contact technical support.

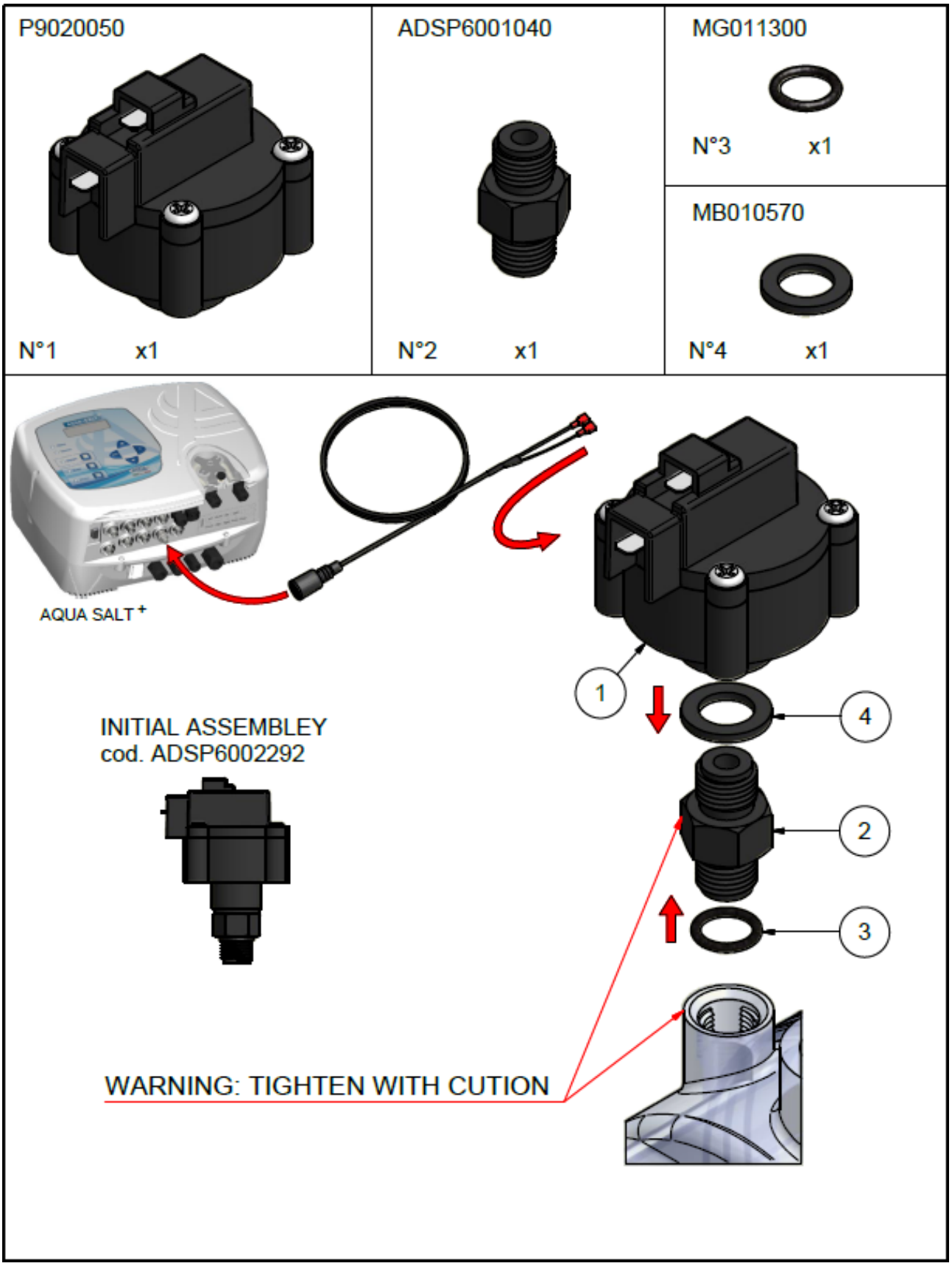
According to the art. 13 of the DL n ° 151 of 25/07/2005 (implementation of the directives 2002/95 / CE, 2002/96 / CE, 2003/108 / CE) it is communicated that:
Electrical and electronic devices must not be considered as domestic waste.
Consumers are required by law to return electrical and electronic devices at the end of their useful life to suitable recycling centers. The symbol of the crossed-out wheelie bin shown on the product, in the instruction manual or on the packaging indicates that the product is subject to the disposal rules provided for by the regulations. Unauthorized disposal of the product by the user involves the application of the administrative sanctions provided for by the DL n ° 151 of 25/07/2005. With the recycling and re-use of the material and other forms of use of obsolete devices an important contribution can be made to protecting the environment

10 Maintenance regestry

Registry of the verification and maintenance						
Number	**DESCRIPTION OF THE ACTIVITIES OF VERIFICATION AND MAINTENANCE**	**MAINTENANCE DATE**	**HOURS WORKED**	**NEXT MAINTENANCE DATE**	**NOTE**	**SIGNATURE**
1						
2						
3						
4						
5						
6						

Etichetta

11 Pressure switch assembly



SYSTEM ADJUSTMENT AFTER PRESSURE SWITCH ASSEMBLY

Figure 1

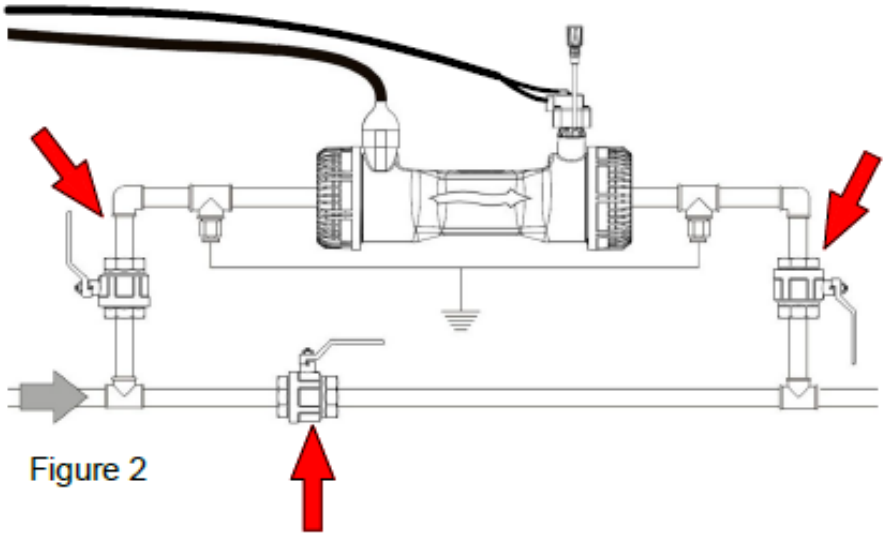


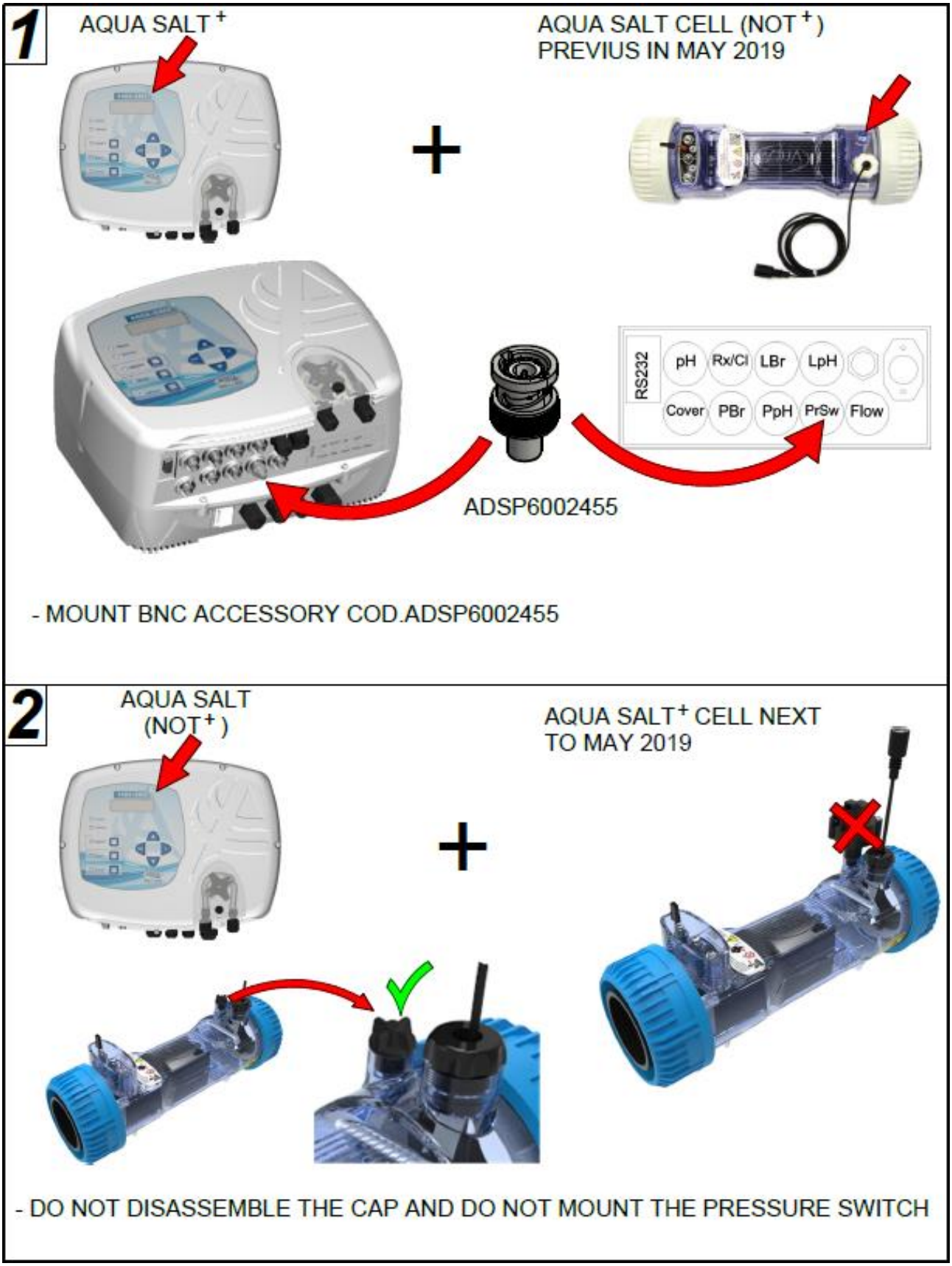
Figure 2

1 - Once the pressure switch is mounted on the cell (Figure 1), by following the attached instructions, it is necessary to proceed with the adjustment of the system.

2 - You should adjust, with bypass and gate valves (Figure 2), the pressure level inside the cell, which must be at least 0,5 bar with pump/s working.

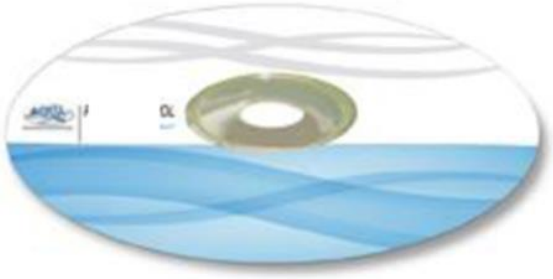
ATTENTION: IF YOU ARE NOT ABLE - DUE TO DESIGN AND SPECIFICATIONS OF THE PLANT- TO GUARANTEE THE ADEQUATE PRESSURE NEEDED FOR THE ACTION OF THE PRESSURE SWITCH, YOU CAN EXCLUDE IT - WITHOUT AFFECTING THE CORRECT FUNCTIONALITY OF THE CELL - INSTALLING THE CAP AND SHORTING THE WIRES OF PRESSURE SWITCH OR USING DEDICATED BNC CONNECTOR COD. ADSP6002455.

12 Connections with other versions



13 Download software

INSTRUCTIONS FOR DOWNLOADING "AQUA" SOFTWARE



AQUASALT software

http://aqua.quickris.com/aquasaltplus/

AQUA POOL CONTROL software

http://aqua.quickris.com/a-pool-system-ph-cl-connect/

For other languages please visit