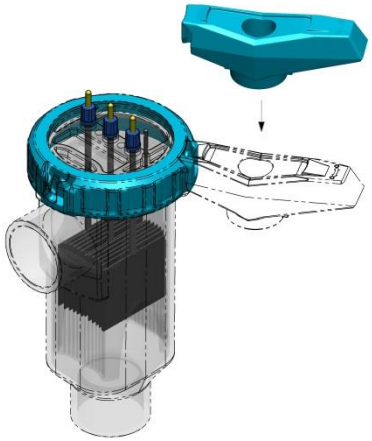
GEMAS pH CONTROLLED PURITRON

SALT WATER CHLORINATOR



INSTRUCTION MANUAL

1- Introduction

We thankfull for your trust in us with your purchase of a GEMAŞ Puritron Salt-Water Chlorinator. GSC chlorinators are manufactured following the strictest quality controls and using the most advanced technology regarding saltwater electrolysis. In addtion the R&D process was completed in may 2017 and pH measurement and dosing was added to the product.

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

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

The sections concerning installation require certain technical knowledge on the swimming pool. We advise you seek the aid of a professional.

Please pay special attention to the points marked with the symbol: ⚠.

Any damage caused to the chlorinator resulting from not complying with these precautions may lead to cancellation of the guarantee.

Any damage caused to the chlorinator resulting from unapproved executions except for the warnings may lead to out of warranty cover.

2- Salt Water Chlorinator Description

You will find the following elements in your GSC Device package:

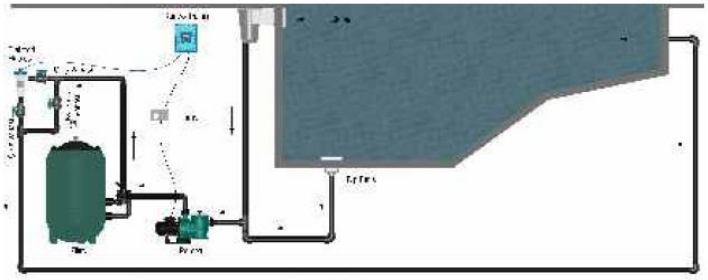
Power supply and control unit

a. LCD screen
b. Control Keys
c. DC cell cable

220 VAC power supply cable
Electrolytic cell (For chlorine production)
Electrolytic cell (For pH measurement)
Chlorine flow cell plug
pH electrode
pH 4,0 and pH 7,0 calibration liquid
Cell Housing
Thread (Compatible with Ø63mm Fitvalf Valve Handle)
2 pieces 8 mm, 20 mm threaded adapter connected to record

4 pieces 8 dowel and 4 pieces 5x40 wood screw
1 piece pH dosage pump electrical output socket
O'ring seal
Wall Bracket
PH Probe

3- Installation



Control Unit

Attach the control unit, using the brackets(7) in the back and the screws supplied, in a position providing easy access and reading. The control(1) unit will be placed at a maximum of 1.5 metres away from the electrolytic cell. Choose a place with good ventilation and protected from the rain and possible water leaks.

Connect the ground wire (yellow and green) of the 220 VAC power supply cable(2) to ground in the swimming pool switchboard. Connect phase (brown) and neutral (blue) to the output of the pump contactors in such a way that the chlorinator is powered only when the pump is working. Connect the chlorinator to free terminals. **Do not use terminals occupied by the wires of the pump.** This will avoid the chlorinator to be electrically connected to the pump after switching off the current, which could cause serious damage**.**

The chlorinator should be powered with 220 VAC and only when the pump is connected and the water is circulating through the cell. Please pay special attention if your installation is threephase (pump at 380 VAC).

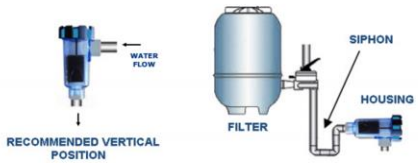
Cell housing(4)

The cell housing(4) will be installed in the return flow to the swimming pool and will be always after the last elements (filter, heater, etc) the water goes through. Use glue for rigid PVC and wait for it to **dry completely before inserting the cell**.

A by-pass installation with three valves will always be recommended. This layout allows the amount of water circulating in the cell to be adjusted and the swimming pool to work with the housing disassembled. At a pump with certain power, the by-pass is necessary to reduce the speed of water at its passage through the housing and to avoid damaging vibrations in the electrodes.

It can be used vertically or horizontally but we recommend vertical position . Vertical position allows for emptying the cell without water spills and provide enoung space to unscrew the thread and extract the cell once the housing has been installed. There is no recommendation of water flow.

If the cell is installed at a height below that of the output filter, the gases created in the housing, resulting from the electrolysis and could damage the filtration elements. Please see below diagram for avoid this circumstance.



Cell

The cell (3) needs to be in the housing making sure that the open outer zone coincides with the water inlet tube. Make sure the o'ring(6) is in its place and not to leak. Afterwards, connect the DC cable to the cell terminals.

NOTE: The cell connector is designed to ensure optimum electrical contact with the cell terminals and pressing slightly may be required for its placement. Before connecting this, please make sure the smallest orifice is aligned with the corresponding terminal.

If you use a sand filter, open it and add 2 to 3 cm of sand above the upper pipe.

The hose of the Ph dosing pump should be installed in the system in such a way that the water does not contact other equipment.

pH Flow Cell

The Ph reducer injection should be after the electrolysis cell. Otherwise, cell electrics will interfere with the acid and will be damaged by corrosion and will be out of warranty. Do not locate acid tanks where there is insufficient flow. Otherwise, electronic components can be exposed to corrosion due to acid effect. The location of the flow cell should be before the chlorine cell, otherwise high-density chlorine can damage the flow cell and cause the product to go out of warranty.

The sample is taken from the water and sent to the pH flow cell for measurement and returned to the system.

Suction Collector

The water from the suction collector is connected to the flow cell for measurement.

After measure water pH, measured water is injected to return line with a clamp settle.

The hose from the pH chemical tank is connected to the lower hose connection of the dosing pump.

The upper hose connection of the dosing pump is the connection to the pool. After this, the chemical is given to the pool water.

At the end of the hose discharge line carrying the chemical from the dosing pump, the water should be added with a clamp from a point where it will not come into contact with any equipment after that point. **If water containing dense chemicals comes in contact with any equipment, it may cause irreversibly damages.**

4- **Water Preparation**

Preferably use water from the urban network. If the water is sourced with a different resource, please analysed it and make sure there is no adverse factors such as a high concentration of metals or calcium for working of the system . Also check the water complies with the health standards.

Adjust the water before starting your chlorinator and add 1 Kg of chlorine stabiliser for each 25 m3 of water (20 to 30 ppm) (or according to the indications by the manufacturer)

Note: The stabiliser prevents the desintegration of chlorine due to UV. The absence of the stabiliser will force it to produce more chlorine, thus reducing the lifetime of the cell. On the other hand, too much stabiliser has an adverse affect on the desinfecting characteristic of chlorine.

The pool water needs to be presenting the below parameters:

Salt	5-6 kg/m^3
TAC	60 – 100 ppm
TH	15-20^0 French
Stabiliser	20-30 ppm (or according to the indications by the manufacturer)
Temperature	> 10^0C

5. Salt Addition

During this process, the system needs to be totally closed through the salt dissolves completely. The operating of the chlorinator with undissolved salt would irreversibly damage the cell. The damage is occured by this reason cause to cancellation of the guarantee.

Calculate the volume of the swimming pool and add 5 to 6 Kg of salt per cubic metre. Make sure the chlorinator is disconnected and do not operate the filtration system at least 24 hours.

Wait for four weeks before adding salt into a recently coating pool.

The salt dissolving process can be accelerated using the pool cleaner. Check the salt concentration is between 5 and 6kg/m3 using a measurement kit of any pool shop.

The operating of the chlorinator implies no salt consumption. However, the salt concentration may be reduced with the passage of time due to rain or other freshwater contributions. Whenever the salt needs to be added, pour the salt as near as possible to the return lines. **Strictly recommended, do not pour the salt in the skimmers or the drain inlet.**

6. Operating

The above screen appears when the salt chlorine generator is switched off. To switch on or off the chlorinator, press the MENU ON / OFF. For reach the setup menu press the same button for 3 seconds.

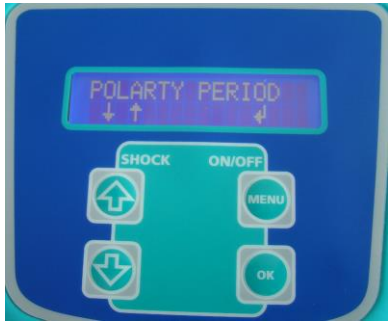
This display indicates the production level (CL = 100%), the measured pH, the availablity of the production of the existing salt level and the direction of polarization at the bottom left arrow. If the arrow indicating the polarization direction is moving, chlorine is produced, but if the arrow does not move, the chlorine production is stopped. The A mark on the display indicates that the dosing pump is in automatic mode, and the drop mark indicates that the dosing pump is running. Using the arrows on the main screen, a chlorine production rate of 0% (chlorine production stopped) to 100% (full efficiency) is selected as needed.

For back to the other setups pres the MENU button.

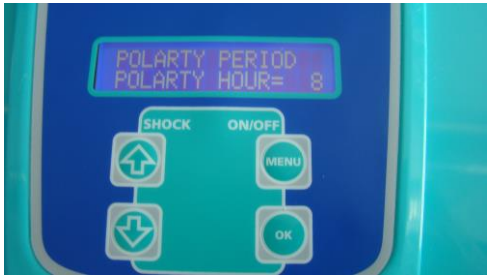
You need to make the setting according to your pool depending on the different conditions (number of swimmers, temperature, etc.). In general, we recommend setting the minimum production percentage that produces a crystal clear water in your pool.

Polarity Change Period

The polarity applied to the cell is periodically reversed to dislodge accumulations of lime. This period is determined 8 hours by the manufacturer. Depending on the condition of your pool it may be necessary to reduce this period up to 1 hour to increase the frequency of cleaning. The longer this period is, the longer the electrode cell duration will be. A period of less than 4 hours will reduce the length of the electrode. We recommend, therefore, to set this to the larger number of hours as possible while you don't see limescale on the cell.



When you enter the menu, press the OK key on the screen shown above and then use the OK button to set the desired time with the arrows on the following screen.



When a pole is changed, it switches to standby mode for 10 minutes and the screen shown below is displayed (the hourglass).

pH Settings

Use the arrows on the menu to select "PH SETTINGS" and press "OK" button.

1- pH Mode Setup

The pH option menu is the first option to oppose pH mode. This option is the menu associated with the operation of the dosing pump. When you enter the PH mode menu, the settings shown below and the definitions given below are made.

PH OFF: Turn off the PH dosage pump.

PH ON: Turn on the dosing pump until the PH dosing pump is switched to the automatic or off position via the menu.

Warning: It is recommended that this mode be used only when the dosing pump's air evacuated.

PH Auto: Measuring the pH dosing pump according to the supplied pH meter and adjusting the stopping value according to the measurement.

PH SET: The menu for making the pH settings of the pool water is from the PH SET submenu on the PH SETTINGS menu.

PH SET: After pressing the OK button on the PH SET submenu, the desired pH value is reached with the arrows and the adjustment is made by pressing the OK button again. The factory setting is 7.00 and the recommendation value is 7.20.

PH TOL. : The level of the pool water pH value is used to adjust the operation of the dosing pump after the value set in this menu is reached.

For example, in a salt chlorine generator set to PH SET value 7.0, if the pH TOL value is set to 00,10, the salt chlorine generator will run when the pH dosing pump reaches pH 7,10. This tolerance value is set using the arrow keys and the OK key.

PH BUF.SEC : This menu selects whether the dosing pump is connected to a pH-increaser or pH-reducer chemistry. In this case, the pH-increasing chemistry-dependent dosing pump is prevented from further increasing the already high pH.

ATTENTION : IT'S IMPORTANT THAT THE CHEMICAL AND THE SELECTION OF THE DOSAGE PUMP.

IF THE PH REDUCER IS CONNECTED, THE ABOVE OPTION SHOULD BE SELECTED. IF THE PH INCREASER OS CONNECTED, THE OPTION TO BE (+) IS A SUBMITTED (-) SIGN (+) SELECTED.

PH CALIBRATION: For the pH calibration, press the OK key in this option and then proceed as follows.

When the above text is displayed on the screen, put the electrode in the pH cell into the pH 4 liquid supplied with the product and press the OK button.

PH electrodu, waits for 1 minute in pH 4 liquid and performs the same treatment for pH 7 liquid behind. If there is an imbalance in the section that says INITIAL PH, the product automatically restarts the calibration.

The pH READ option allows the reading of the current pH value.

The language option allows you to change the menu language. Turkish language, English, French, Spanish and Bulgarian languages are available.

Fault Message

This screen is displayed when the sensor detects no water and the control system stops production. Check that there is water in the cell and that it goes to the top where the probe is. Low levels can result from operating the chlorinator without the pump operating. In this case turn off the device immediately. **THE CHLORINATOR SHOULD NEVER BE CONNECTED IF THE PUMP IS NOT WORKING OR THE WATER IS NOT FLOWING FREELY. THE POWER SUPPLY OF THE CHLORINATOR SHOULD DEPEND ON THE PUMP'S POWER SUPPLY.**

A low water level in the cell may also be due to a dirty filter, an obstructed circuit or insufficient pump power. As soon as the water level is restored the fault disappears.

This screen appears when the salt concentration in the water is too low to prevent cell damage. Add enough salt (5 or 6 kg / m3 ideally) and when it is completely dissolved press any button to reset the device. This screen can also appear if the water temperature is too low or if there is a bad connection in the cell cable.

Manuel Cell Cleaning

GSC chlorinator is provided with a self-cleaning polarity change system that almost eliminates maintenance work. But, when the calcium concentration is very high, this characteristic may not be enough to completely eliminate the lime residue. Visually inspect the cell regularly to detect the presence of lime and, clean the cell if it's necessary. Ideally, you should let the cell dry completely during one or more days for the lime residue to release themselves. You can help this by slightly hitting the cell. In this process please be careful that do not harm the electrodes delicate cover. Do not use any metallic or stabbing element to scratch the electrodes. You could also use water pression.

If you are able to remove the lime residue in this way, please proceed with the below instructions.

1- Turn off the pump and the chlorinator
2- Disconnect the DC cable for the cell, unscrew the thread and extract the cell
3- If the pressurized water does not completely eliminate the calcium deposits, submerge the cell in a 20% hydrochloric acid solution. Do not submerge the cover of the cell where the terminals are. The hydrochloric acid will react with the calcium producing gas.

4- Once clean, rinse the cell immediately with freshwater, dry the terminal area properly and reinstall it in the housing.

Do not leave the cell in the acid solution for longer than 5 min. Do not scratch the electrodes with metal objects. For safety reasons, always add the acid into the water!

2- Recommendations

The bipolar cells of GSC Salt-Water chlorinator are manufactured using an special technique with high quality standards, conferring them extraordinary duration and resistance. However, there are several factors that may reduce the best and longest performance of your chlorinator.

These are:

- Operating with lime residue on the surface of electrodes
- Excessive chlorine concentration (chlorine is corrosive above 3.0 ppm)
- pH too low or too high
- Absence or very high concentration of salt
- Water temperature below 10°C,
- Adding the salt when the chlorinator is working,
- pH corrector injection before the housing, in the skimmers or on the bottom drain inlet

We recommend you periodically check the cell terminals and oiling them for avoid sulphating.

Turn the equipment off whenever:

- No water circulates
- While cleaning the filter
- While the pool is being emptied
- The water is frozen
- While cleaning the cell

3- Technical Characteristics

Models	GSC 10	GSC 20	GSC 30
Maximum Flow	450 lt/min.	450 lt/min.	450 lt/min.
Maximum Pressure	320 kpa	320 kpa	320 kpa
Pressure Drop	5 kpa	5 kpa	5 kpa
Chlorine Production	10 gr/sa	20 gr/sa	30 gr/sa
Output Voltage (Max.)	24 VDC	24 VDC	24 VDC
Current	2,5 A	3,7 A	5,0 A
Cell Type	Bipolar	Bipolar	Bipolar
Recommended Salt Concentration	4-35 gr/l ppm	4-35 gr/l ppm	4-35 gr/l ppm
Cell Material	PMMA	PMMA	PMMA
Cell Lifetime	16.000 saat	16.000 saat	16.000 saat
Electrode Material	Titanium	Titanium	Titanium
Climate Type	Max. Pool Size	Max. Pool Size	Max. Pool Size
Temperate Climate	50 m^3	100 m^3	170 m^3
Tropical Climate	35 m^3	65 m^3	110 m^3
Power Supply	220 VAC	220 VAC	220 VAC
Consumption	100 Watt	190 Watt	300 Watt
Weight	3,0 kg	3,3 kg	3,5 kg

Warranty, After-Sales Service And Spare Parts

1. The electrolytic cell and the rectifier will be guaranteed for 2 years.
2. The Products are out of warraty cover in the below cases.

a. If the instructions in this manual are not followed

b. Errors in electrical connections

c. Accidental damage

d. Damage due to water in the rectifier

e. Pump over 1.5 V without installation of a “By-Pass” (according to assembly diagram on page 4)

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

g. Use of a tank of acid inside the purification housing and/or the machine chamber with insufficient ventilation.

h. Puritron; also including the pump, filter and multiway valves should not be in the same place with the cleaning equipments