



MP920  
SALT CHLORINATOR

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### **IMPORTANT WARNING**

Do not use chloridric / muriatic acid to lower the pH. The ventilation system sucks air into the equipment, so it is important to keep the pH solution tank as far away from the equipment as possible, to prevent corrosion inside the machine.

# 1 Safety Instructions

This product is a combination of an electronic controller and the respective accessories. It has been assembled and tested according to the safety measures applied to electronic devices in the EC. It has been cleared by the quality department within the factory. To preserve status and guarantee operation safety, the following instructions must be observed.

Only licensed personnel must execute product installation.

Electrical installation must be done according to local electrical safety regulations.

Product connection to the power line must allow for total isolation (phase, neutral and earth) to ensure safe repair and maintenance operations. A differential switch with a maximal earth fault current of 30mA should shield all circuitry.

Before turning on the controller it is recommended to verify its physical conditions as well as the circuitries. In case of installation in a warmer place than origin leave the controller's door open to stabilize temperature and avoid condensation of the electronic components.

When the controller is turned on remember to let the capacitors discharge before handling them to avoid electric shock.

## 1.1 Warnings



### Risk of Electrocutation

The controller's components carrying electrical tension, which might lead to electrocution, are signaled with the following symbol:

The performance of any electrical operation by unauthorized personnel is entirely forbidden. The equipment must be turned off before any maintenance operation.



### Risk of human failure

Product operation should follow adequate training to all personnel handling the equipment. Special attention must be paid to electrical and chemical safety measures before using the equipment.

## 2 EC Conformity

The manufacturer declares, that the electronic equipment for pool water treatment of its production are in compliance with the technical requirements:

- EN 50274:2002
- IEC 60335-1:2006
- IEC 60947-1:2007
- IEC 62026-1:2007

and the EC directives:

- Low Voltage Equipment Directive 2006/95/CE
- Electromagnetic Compatibility Directive 2004/108/CE.



## 3 System Contents

This equipment is supplied with the electronic controller and electrolysis cell

## 4 Installation

This controller includes a front display, a central control key and a side button.

The controller must be set up vertically, on a plane surface, keeping at least 15cm from the wall and from other components to ensure proper ventilation.

Make sure that all the hydraulic circuits are shut and that the power supply is isolated before beginning installation.

### 4.1 Hydraulic Installation

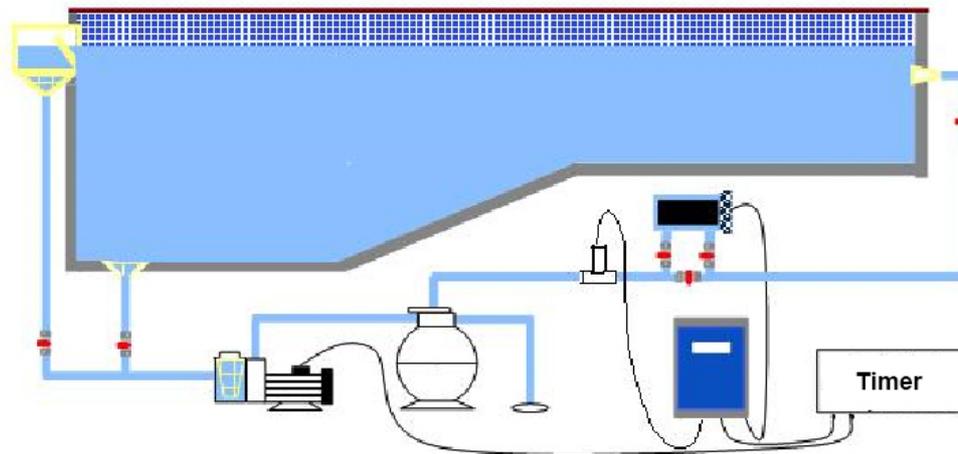


Fig 3-

Hydraulic System Scheme

#### 4.1.1 Electrolysis Cell

The electrolysis cell can be installed horizontally or vertically. In the vertical installation the electrical wires must be faced upwards, to allow for the buildup of gases originated from the electrolysis process on the top of the cell if there is a water circulation failure (Fig.3).



Fig 2 - Electrolysis Cell

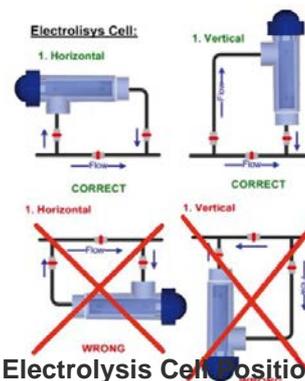


Fig 3- Electrolysis Cell Position

The cell entry must be connected after the sand filter as shown in Fig 1. When possible, it is recommended to screw the cell tubing to a wall or a strong panel to prevent it from disruption due to the mechanical effort caused by the cell's body.

## 4.2 Electrical Installation

### 4.2.1 Electrolysis Cell

The electrolysis cell needs two 4 to 10 mm<sup>2</sup> electrical wires (depending on cell power) and two 0,75 mm<sup>2</sup> wires, both provided with the equipment. The wires are crimped with ring tongue terminals and should be connected as shown in Fig 5.



Fig 5 – Electrolysis Cell Connection Terminals

### 4.2.2 Temperature Sensor

The temperature probe must be connected to the equipment on terminals of the power board (check connections diagram supplied with the equipment).

### 4.2.3 External Controller (optional)

If you choose to install an external controller, you should connect a free potential signal to the terminals of the power board (check connections diagram supplied with the equipment).

### 4.2.4 Cover Detector (optional)

If the pool has an electrical cover system, you can connect it to the model, in order to automatically detect when the cover is closed and immediately reduce sanitation.

The connection is done through a free potential signal on the terminals of power board (check connections diagram supplied with the equipment).

Attention: the cover button is also connected to this terminal (for non-electrical covers) you can maintain both connections or inhibit the button by removing the respective connection.

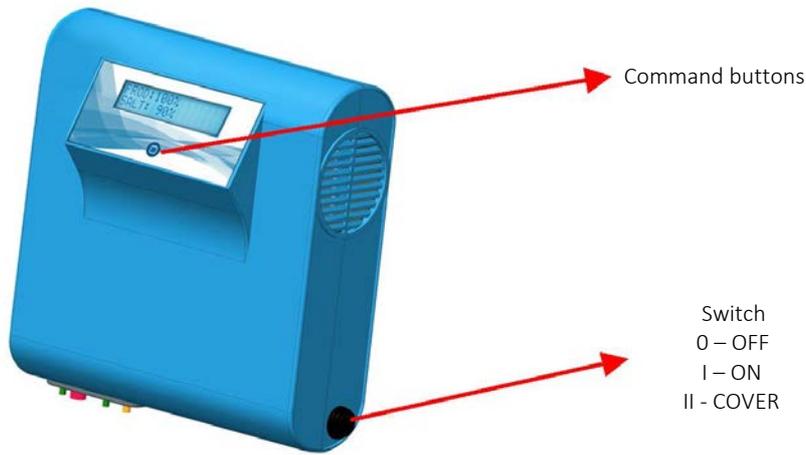
## 5 Operation

Always start the circulation pump before turning on the controller.

The control mode of chlorine sets the electrolysis process. The adequate setup will depend of the pool where the system is installed.

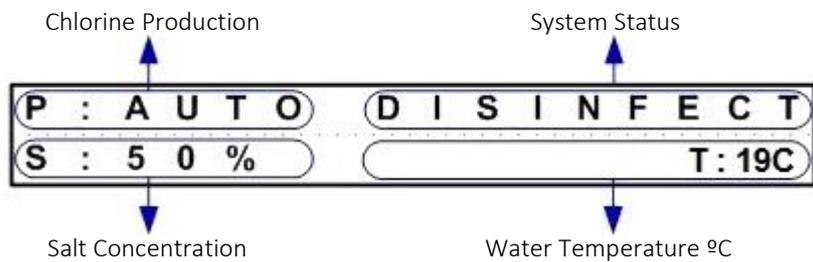
This mode of operation will only work when the circulation pump is connected, by manually choosing a period for electrolysis (as a percentage of the filtration time), or automatically according to the water temperature.

The equipment also has an input potential-free connection to an external controller that will act on the system to connect or disconnect the electrolysis as a function of the pre-programmed chlorine concentrations. It is not recommended to connect and disconnect electrolysis very often, as it shortens the life time of the cell.



**Figura 6 – Command Buttons**

The display allows viewing the system status and obtains information about active alarms.



**Fig 8 – Display Information**

### 5.1 Control of Chlorine Production

Use comand button  to change the level of chlorine production. Each time you press the button, you will see the percentage of chlorine ("P: \_\_%") changing on the screen.

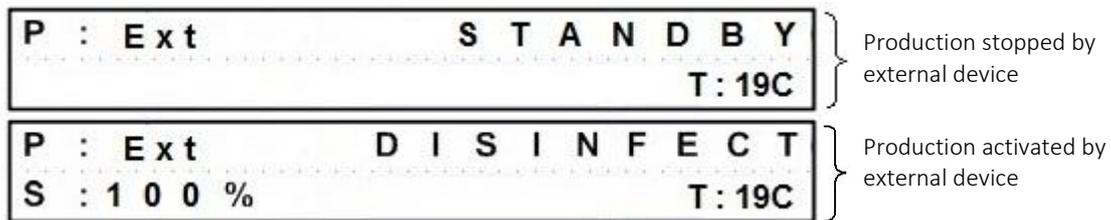
This information appears in the upper left of the screen and can take the values: 0% to 100% gradient at 5%, Ext, or Auto

If the pool has a cover connected to the equipment, chlorine production is automatically reduced to 10% when the cover is closed and the screen will show "P: 10% C".



**Fig 9 – Menu Indicating Chlorine Production**

It is possible to connect an external device to control the production of chlorine. To activate the external controller, shift production to "EXT" mode.



**Fig 10 – System Menu Controlled by External Equipment**

## 5.2 Automatic Mode

In this operating mode the system calculates the chlorine production percentage needed according to the water temperature, as listed below:

| Temperature     | Chlorine Production (%) |
|-----------------|-------------------------|
| T > 15°C        | 100%                    |
| 12°C < T < 15°C | 50%                     |
| T < 12°C        | 0%                      |

**Table 3 – Chlorine vs Temperature**

## 5.3 Manual Mode

In the manual mode the user can specify the chlorine production as a percentage of the filtering time, from 0% to 100%.

## 5.4 External Mode

The external mode applies if you want to connect the Chlorinator to an external controller. In this way, the production of electrolysis is subject to the external equipment setup.

Bright Blue is not responsible for errors or failures of the external equipment that have direct effect on the quality and disinfection of pool water.

## 5.5 Recommendations for Disinfection

It is recommended that the disinfection is carried out overnight. Indeed, the ultraviolet radiation acting on the free chlorine produced by the electrolysis cell, catalyses the regeneration of salt (this is why the

use of salt is insignificant). If the disinfection takes place over night, the chlorine concentration increases rapidly and the disinfectant effect is more effective.

It is also advisable to maintain the concentration of isocyanuric acid (chlorine stabilizer) around 35ppm, ie 35 g/cbm of water. This concentration, although minimal, allows minimizing the diurnal losses of chlorine through the effect of ultraviolet radiation.

## 5.6 Low Temperature Operation

When the water temperature is less than 12°C, electrolysis production must be turned off to avoid cell damage.

Failure to comply with this procedure will invalidate any warranty of the equipment and the cell.

## 5.7 Operation with Pool Coverage

The production of chlorine when the pool is covered should be lower than when it is uncovered. If the cover has an electrical control unit, it is possible to automate the process (see section 4.2.4). If the cover is manual, the side switch should be in position "II" whenever the covered.

The cover detector reduces the electrolysis period for 10% of the filtering time.

# 6 Alarms

## 6.1 Alarm 1 – Low Flow

This alarm (ALARM 1) is triggered when the water flow entering the electrolysis cell is too low. The system will automatically switch to standby mode to safeguard its integrity.

Check if:

- all valves are in the correct position
- there is water leakage in hydraulics
- the filter is in the filtering position
- the electrical switches are all connected

The alarm deactivates automatically once the problem is solved.

## 6.2 Alarme 2A – Hight Salt

This alarm (ALARM 2A) is released when the electrolysis reaches the maximum threshold of 130%. This indicates that the salt concentration in the pool is above the maximum desirable to preserve the cell. The amount of salt should be inferred by the water volume of the pool and reduced accordingly. In alternative, the current can be adjusted to the new salt concentration (see 5.5.1).

Check if:

- salt concentration is between 4 and 5 g/l
- the salt is completely diluted in water
- all valves are in the correct position
- the power supply is well regulated
- the equipment is correctly calibrated

Once the problem is corrected, reboot the equipment to deactivate the alarm.

### 6.3 Alarme 2B – Low Salt

This alarm (ALARM 2B) is released when the electrolysis reaches the minimum threshold of 66%. The system continues to operate, but the production of electrolysis is reduced and may be insufficient for a good disinfection of the water. This alarm indicates that the salt concentration in the pool is below the minimum desirable, or that there is an anomaly in the electrolysis cell. The amount of salt should be inferred by the water volume of the pool and increased accordingly.

Check if:

- salt concentration is between 4 and 5 g/l
- the salt is completely diluted in water
- all valves are in the correct position
- the power supply is well regulated
- the equipment is correctly calibrated
- the cell plates have mineral\* deposits, e.g. "white electrodes"

(\*) – In this case introduce the electrodes in a solution of 10% hydrochloric acid until the "bubbling" disappears, typically after 10 minutes. Manual cleaning reduces the lifetime of the cell so it should only be made if the deposition is well visible.

The alarm deactivates automatically once the problem is solved.

### 6.4 Alarm 3 – Low Temperature

This alarm (ALARM 3) is triggered when the water temperatures is less than 5°C as a warning of possible water pipe freezing. In this case, it is advisable to program a 10 minutes circulation period every hour to prevent water from freezing within the tubing. Once the temperature rises the alarm turns off automatically.

If the water temperature is not less than 5°C service should be consulted.

### 6.5 Alarm 4 – Aged Cell

This alarm (ALARM 4) is released if the electrolysis cell is producing below 30% of its nominal value ("S: 29%" or less). This indicates that the cell is near the end of its useful life and should be replaced shortly, or the salinity of the water is too low. The production of chlorine is reduced and the filtration time will be significantly increased for the system to achieve the level of chlorine required for disinfecting.

Check if:

- salt concentration is between 4 and 5 g/L
- the salt is completely diluted in water
- all valves are in the correct position
- the power supply is well regulated
- the equipment is correctly calibrated
- the cell plates have mineral\* deposits, e.g. "white electrodes"

The alarm deactivates automatically once the problem is solved.

## 7 Electrolysis Counter

This model is equipped with an electrolysis counter, that is, a clock that monitors the use and lifetime of the electrolysis cell. The device counts the hours the cell is actually operating, discarding the hours the system is on but not producing chlorine. To see the total time of electrolysis press the button for 5 sec until the information appears on the screen.

## **8 WARRANTY:**

These instruments are warranted from all defects in materials and manufacturing for a period of two years from the date of purchase. The electrode is warranted for a period of 6 months.

If during this period, the repair or replacement of parts is required, where the damage is not due to negligence or erroneous operation by the user, please return the parts to either dealer or our office and the repair will be effected free of charge.

Note: We reserve the right to modify the design, construction and appearance of our products without advance notice.