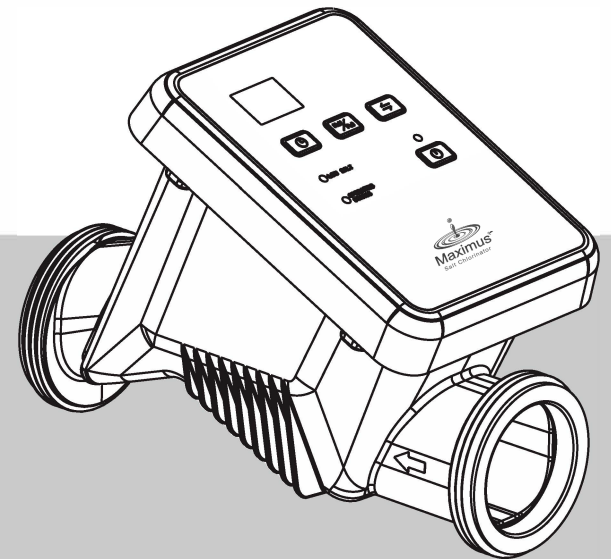


SALT CHLORINATOR MS SERIES

INSTALLATION AND USER MANUAL

MS050
MS075
MS100



Please Read The Manual Carefully Before Use.

IMPORTANT WARNING

First of all, thank you for choosing salt chlorinator SR series read . For your best experience of the product, prevent the occurrence of accidents, please read carefully the whole content of this manual before installing and using this product. Please strictly follow the manual for your own safety and operation of the salt chlorinator. Neglecting the safety warning may cause serious consequences such as: grievous injury, property loss and may even cause life safety threatening consequences.

IMPORTANT NOTICE

1. The installation and maintenance must be done by a licensed electrician. Or else there would be risk of electrocution, grievous injury, property loss and may even case life safety threatening consequences.
 2. Before any maintenance or operation, ensure that the salt chlorinator is power unplugged, all machinery are turned off and power source is turned off.
 3. Installation personnel must carefull read this manual before installation. If any improper or mistaken operation occurs, please contact the nearest authorized dealer or contact technical support department.
 4. When parts are damaged, please prioritize the purchase of the replacement part at the manufacture or authorized dealer.
 5. To ensure the smooth operation of the salt chlorine generator, the electrolysis cell should be checked every three months or after cleaning the filter, whichever comes first.
- (1) Before removing the electrolysis cell, the salt chlorinator must be closed for 5-10 minutes, and the inlet and outlet valves must be closed.
- (2) After removal the electrolysis cell, check if there are flake-like sediments, debris, light colored layering in the inner surface. Wash with clean water.

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- (3) If there are white calcified substance on the titanium plate, please soak the titanium plate in kitchen vinegar for an hour or more to remove the calcification material.
- (4) If flushing with water does not remove the deposits, use a plastic brush to clean the surface. Do not use a metal brush.
6. This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.
7. This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.
8. If a stationary appliance is not fitted with a supply cord and a plug, or with other means for disconnection from the supply mains having a contact separation in all poles that provide full disconnection under overvoltage category III conditions, the instructions shall state that means for disconnection must be incorporated in the fixed wiring in accordance with the wiring rules.
9. The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped.
10. Salt chlorine generator should be installed in a well ventilated area, to help the chlorinator to cool down. Do not install in an area where the electronic component of the chlorinator could be damaged by moisture and rain.

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1 PRODUCT SUMMARY

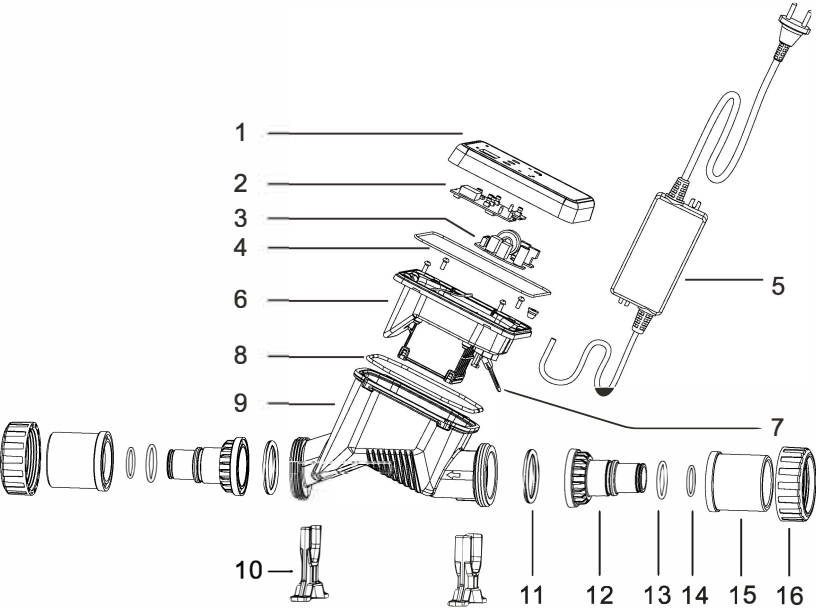
Salt chlorinator uses the most advanced microcomputer technology. It is both multi-functional and easy to operate. It contains functions such as self- cleaning and malfunction alarm. You can set the chlorine production to match your need, to achieve the goal of efficiency and environmental friendliness.

Feature

1. Controller and the chlorinator are integrated for easier installation and more space-saving.
2. Water inlet and output are designed on the same axis to decrease the need for pipe arrangement.
3. Designed with removable titanium plate movable structure for easy clean, installation and maintenance.
4. With water flow protection function, it can effectively prolong the service lifetime.
5. Flow detection function, only when the water flow reaches the requirement, it is allowed to work, saving energy.
6. Low salt alarm, when the salinity is too low, it will alarm to ensure the effective disinfection.
7. When powered-on automatically initiates the last work setting from system memory.
Automatic power on means when power shortage occurs during operation, and when power recovers the system automatically turns on.
Memorizing the setting from last operation means the condition before a power shortage, or the system setting before the system failure.
8. Water temperature monitoring function, when the water temperature exceeds the range of 10°C-45°C, it will alarm and effectively prolonging the service lifetime.
9. Self-clean function of the titanium plate effectively prolongs the service life of the cell.
10. Operation time setting function, the user can set the operating time of the salt chlorinator according to the actual situation of the pool water to save energy.
11. One-key restore default setting function.
12. Voltage and current monitoring function, when the set value is exceeded, it will alarm.
13. Electrode abnormality monitoring function, when the circuit board failure occurs, it will alarm.
14. After the power is turned off and then on, reversing the polarity function is forced to start, to ensure and prolong the service lifetime of the titanium plate.

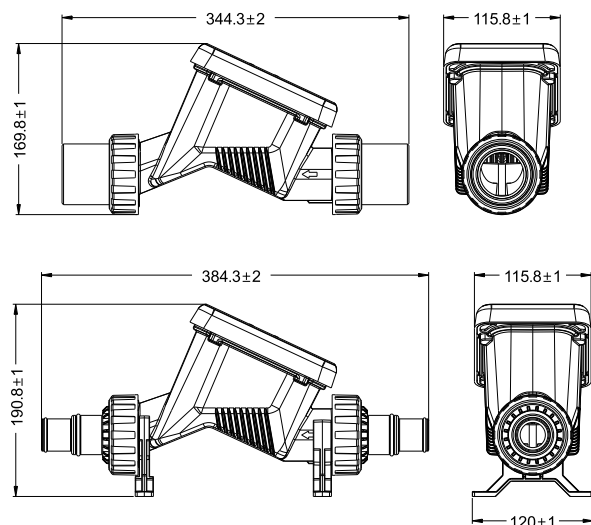
Model	Power input	Power output	Chlorine output	Ideal salinity	Recommended pool volume (m³)
MS050	AC100-240V 50Hz/60Hz	DC24V	5g/h	2700-4500PPM	11-22m³
MS075	AC100-240V 50Hz/60Hz	DC24V	7.5g/h		17-34m³
MS100	AC100-240V 50Hz/60Hz	DC24V	10g/h		23-45m³

2 STRUCTURE DIAGRAM

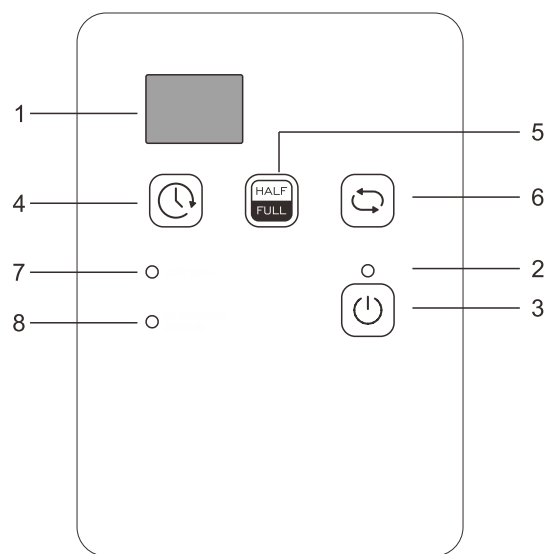


Item	Description	Item	Description
1	face cover	9	cell house
2	control board	10	base support
3	electrical circuit board	11	1.5" o'ring
4	o'ring for face cover	12	32/38 connector
5	adaptor	13	38 o'ring
6	titanium plate	14	32 o'ring
7	water flow switch	15	1.5" connector
8	o'ring for cell	16	nut

3 DIMENSION



4 CONTROL PANEL INTRODUCTION



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1. LED display :displays the water temperature under normal operation, displays the corresponding error code when error occurs.
2. Power indicator:red light on when power off,green light on when start,and the unit is ready for operation when green light on.
3. ON/OFF key: start or pause the unit.
4. Operation time setting:total are five settings:4 hours,6 hours,8 hours,12 hours and 24 hours.
5. Chlorine output setting:can set the chlorine output.Total are two settings:HALF and FULL.
6. Self-clean cycle time setting:4 hours,8 hours and 12 hours.
7. Low salt alarm: The salinity is normal when green light on. When the red light flashes , it indicates that the salinity is low, and salt needs to be added to the pool water.
8. Operating status indicator: The unit is running normally when green light on,when the red light flashes, it indicates that there is a fault, please check the error code and follow the instructions to solve the fault.

5 INSTALLATION INSTRUCTION

1. Before use, please ensure that the pipe used for installation is the same size with the salt chlorinator.The unit equipped with two kinds connections. One connection is for pipe 50mm and 1.5",the other connection is for flexible hose with inner diameter 32mm or 38mm.
2. Before use, please ensure that the valves of the pipe connecting to the chlorinator are turned off.
3. Before installation, please clean any clutter or oil off of the pipes and the connection joint.
4. The salt chlorinator should be installed on the pipeline before returning to the pool in the water treatment process, and should be installed on the bypass pipeline. An adjustable valve must be installed on the main pipeline.(as shown on Diagram 1).
5. Before installing the salt chlorinator, please ensure that the water flow matches the direction on the chlorinator indicating,otherwise,the unit will not work.
6. When connecting the pipes to the chlorinator, please use glue specialized for PVC,when connecting flexible hose to the chlorinator,special locking hoop is required to connect the hose, no glue is required.
7. The chlorinator should be installed in a well ventilated area, which is conducive to the heat dissipation of the electrical controls.
8. The external power adapter of the chlorinator must be installed to a power source that contains a leakage switch protection(100-240V ~ 50/60Hz) ,the power source should be the same for the pump. The external power adapter must be fixed on the wall with screws.

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9. There are two ways to install the salt chlorinator, as shown in Diagram 1 for horizontal installation. When installed horizontally, it is suggested .As shown in Diagram2 for flexible hose installation.

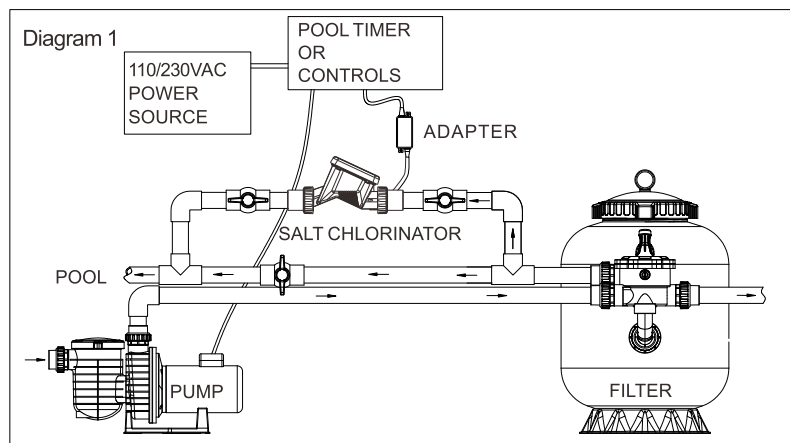
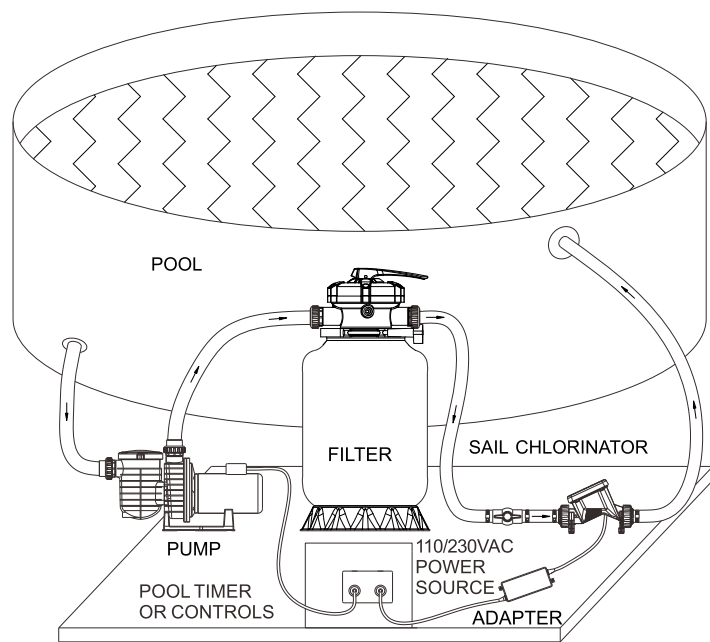
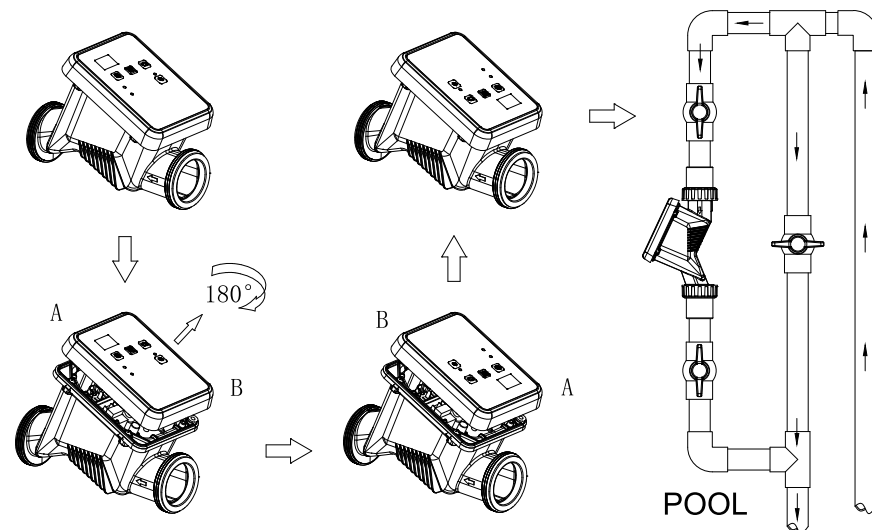


Diagram 2



10. If vertical installation is required (not recommended), it is recommended to refit the control panel first, as shown in Diagram 3: open the panel, rotate 180 degrees, and reinstall it in its original position (pay attention to the rubber ring and wires not falling off). After the salt chlorinator is refitted, install the pipeline as shown in Diagram 3.

Diagram 3



6 OPERATING INSTRUCTION

Preparation before use and start-up

1. Make sure that the salt concentration of pool water is in the normal operating range (2700-4500PPM) .Please refer to the mixture and maintenance of water and salt in this manual to make adjustment on salt concentration.
2. When the unit is installed and connected, open the valve connecting the salt chlorinator and close the valve on the main pipeline. Turn on the leakage protection switch.
3. Start the pump, make sure that there is water flow pass through the salt chlorinator, and there is no water leakage at each connection, and the water flow switch is closed. (The water flow must meet the following conditions: $2\text{m}^3/\text{h} \leq \text{water flow} \leq 15\text{m}^3/\text{h}$)
4. The adaptor of the unit is connected to the power source, power is on.
5. Press  ON/OFF button, the power indicator show red first, then the unit will start automatically, power indicator turn green, the unit already under normal operation. Press  to stop working if needed.

Operation status setting (operation time,chlorine output,self-clean cycle time)

6. Operation time setting

(1) about setting value

The unit have 5 operation time settings:4 hours,6 hours,8 hours,12 hours and 24 hours.

The operation time will be 4 hours/6 hours/8 hours/12 hours/24 hours per day.

Setting 04,it means that from the set time, the unit runs for 4 hours, stops for 20 hours, and then runs for 4 hours,stops for 20 hours and repeat.

Setting 06,it means that from the set time, the unit runs for 6 hours, stops for 18 hours, and then runs for 6 hours,stops for 18 hours and repeat.

Setting 08,it means that from the set time, the unit runs for 8 hours, stops for 16 hours, and then runs for 8 hours,stops for 16 hours and repeat.

Setting 12,it means that from the set time, the unit runs for 12 hours, stops for 12 hours, and then runs for 12 hours,stops for 12 hours and repeat.

Setting 24,it will run continuously from the time of setting.The factory default setting is 24.

(2) operation instruction

Press  button,it will show current setting of the operation time,can press  to make adjustment on the operation time setting,the display will show 04,06,08,12,24 in order. (the display will show next operation time setting on each press)

After fixing the operation time value,the display will flash with showing current setting value for 5 seconds,then save current setting automatically. If there is no setting 10 seconds after press  button ,it will show water temperature again.

7. Chlorine output setting

(1) about setting value

The unit have two chlorine output settings:HALF and FULL

HALF(HA) means that the salt chlorinator will produce chlorine under 50% production capacity , that is, for the chlorinator with chlorine output 5g、 7.5g、 10g, under setting HALF (HA) ,the corresponding chlorine output is 2.5、 3.75、 5g/h . HA setting is suitable for swimming pools smaller than the pool volume suggested, or when the pool is not used and the salt chlorinator needs to be in economical working condition.

FULL(FU)means that the salt chlorinator will produce chlorine under 100% production capacity, that is, for the chlorinator with chlorine output 5g, 7.5g, 10g , under setting FULL(FU),the corresponding chlorine output is 5, 7.5, 10g,the default setting of chlorine output is FU.

(2) operation instruction

Press ,it will show the current setting of chlorine output(FU or HA),press once again to make adjustment on the chlorine output.After fix the chlorine output setting value,stop pressing ,then save current setting automatically. If there is no setting 10 seconds after press  button ,it will show water temperature again.

8. self-clean cycle time

(1) about setting value

Self-clean function can prevents calcium from accumulating on the electrode, make the electrode in good condition.

Self-clean cycle time have 3 settings:4h,8h and 12h.it will reverse polarity every 4h/8h/12h.

The display shows “—” when it is under polarity reverse status.

The default setting for self-clean time is 4h.

(2) operation instruction

Press ,it will show current setting for self-clean cycle time(default setting is 04), press  to change the setting,the display will show 04,08 and 12 in order.After fix the self-clean cycle time setting value,the display will flash with showing current setting value for 5 seconds,then save current setting automatically. If there is no setting 10 seconds after press  button ,it will show water temperature again.

PARAMETER CHECKING

9. Version number:long press  for 3 seconds,it will show version number.

10.Working voltage:Long press  for 3 seconds,it will show working voltage.

Abnormal work status,error code and simple handling

11. Low salt alarm:Green light on when the salt concentration is normal.when the salt concentration is low,red light on and flashes,the unit stop operation,accompany with beep warning and E5 error code.
12. Operating status indicator:When the unit is connected with power,it get into standby status(the unit is not working),red light on .Green light on when the unit is under normally working condition.when there is a fault,red light flashes,accompany with beep warning,then it will need to check the error code and settle the fault.
13. Reminder 1: When the unit stops working due to the power supply in the working state, the unit will automatically save the settings before the power failure. When the power supply is restored, if it was in the startup state before the power failure, the system will automatically resume the startup . If it was in the shutdown state (manually press to stop) before the power failure, the system will automatically resume the shutdown state. At this time, you can press the button  and the unit will operate according to last setting.

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14. Reminder 2: The operation time of the pump should be the same as the operation time of salt chlorinator, or slightly longer than the operation time of salt chlorinator.

15. Reminder 3: When there is beep warning, please check the error code and settle the fault according to the instructions.

7 ERROR CODE AND CORRESPONDING SOLUTIONS

Error code	Cause	Remark	Solution
E2	The water temperature is beyond the normal range	The normal range of operating temperature is 10~45 °C	◆ First check if E7 error code is presence, if it is , check if the temperature sensor is attached. If it is, please change the sensor; ◆ If E7 error code is not presence. Please make sure that the water is temperature within the normal range of operating
E3	Water flow switch malfunction	Water flow switch is closed when there is enough flow, will disconnected when there is no flow	Make sure the water flow $\geq 2\text{m}^3/\text{h}$, otherwise, the water flow switch is damaged, please replace the water flow switch
E5	The salt concentration is too low	Normal salt concentration range is 2700-4500ppm	First use a salinity meter to check the salt concentration in the pool. if the salt concentration level in the pool is below 2700ppm, add salt to the pool. When the salt concentration of the pool reaches the normal operation range press  for 3 seconds, the alarm should disappear, and back to operation automatically.
E7	The water temperature sensor malfunction	The malfunction must be removed manually	Power off then check if the corresponding temperature sensor is attached, if it is please replace the sensor.
E8	The input voltage is too high or too low	The malfunction must be removed manually	Please change the hardware of the power supply.
E9	The output current is too large	The malfunction must be removed manually	Please contact supplier for the repair or replace.

Error code	Cause	Remark	Solution
EA	Electrode malfunction	The malfunction must be removed manually	Make sure the salt concentration is more than 1000ppm, close the water pump, shut down the salt chlorinator, and close the valves at both side of the salt chlorinator. 1. Check whether the titanium plate has obvious white scale, take out the titanium plate, submerge the titanium plate in hydrochloric acid until the scale is completely dissolved, rinse it with clean water. 2. Please check whether the electrode connectors are loose or fall off. If so, please re-insert them to ensure tight connected 3. Check whether the titanium plate is corroded, if so, replace the titanium plate. 4. If the above check is normal, please contact the supplier.
EC	The system detection circuit malfunctioned	malfunction must be removed manually	Power off and reboot, if the error does not occur again the chlorinator should turn on normally; if this occurs multiple times, please contact supplier for the repair or the change of the controller.

THE OPERATING CONDITION AND MAINTENANCE OF THE SALT CHLORINATOR.

1. The calculation of the amount of water: Knowing the capacity of the pool is the first step in adding salt to the pool.

Rectangular pool: length (meter) x width(meter) x average depth (meter) = pool water capacity (cubic meter).

Circular pool: diameter(meter) x diameter(meter) x average depth(meter) x 0.785 = pool water capacity (cubic meter).

Ellipse pool: length (meter) x width(meter) x average depth(meter) x 0.893 = pool water capacity (cubic meter).

Beveled pool : pool volume (cubic meter) x 0.85 = pool water capacity (cubic meter).

2. The type of salt

The purer the salt, the more the advantageous of the salt chlorinator would operate. This will also extend the service life of the chlorinator. The Sodium Chloride (NaCl) in the salt should be at least 99.6%. Best if the salt is dehydrated granular food grade sea salt.

- (1) Please do not use rock salt, its impurity may shorten the service life of the chlorinator.
- (2) Do not use Calcium Chloride as salt, only sodium chloride can be used.
- (3) Avoid using anti-blocking agent (sodium cyanide, aka YPS, is poisonous and corrosive) salt, this kind of salt may change the color of the pool equipments.
- (4) Can use water treatment salt pills, but it make take very long time to melt in the water.

3. Adding the right amount of salt

Most pools contains certain amount of salt, the concentration of the salt in water will vary depending on the water source and the sterilizing agent used. Users can use hand-held NaCl tester or salinity pen to test the current salt concentration of the pool.

The best operating salt concentration level of the salt chlorinator SR series is 3500ppm (3.5kg of salt per cubic meter).

When operating the salt chlorinator MS series for the first time. Add salt to the pool following the steps below:

- (1) Use a salinity meter to check the original salt concentration in the pool.
- (2) Add appropriate amount of salt , ensure that for each cubic meter water add 3.5kg of salt

The concentration of salt (ppm value) can be seen as the gram of salt within 1 ton of water. If the current salt concentration of a 100 m³ pool is 850ppm (can be taken as 850g in 1 ton of water), how much salt is needed for the chlorinator to normally operate ?

◆ Salt need to be added(unit: gram) = water in the pool(unit:m³) x (normal operation salt concentration – the current pool salt concentration) = 100 x (3500-850) = 265000 gram. This is 265kg of salt.

4. The correct way of adding salt

- (1) Turn on the circulation pump of the pool, and let the water circulation begin.
- (2) Turn off the salt chlorinator.
- (3) Test the current salt concentration of the pool
- (4) Calculate the amount of salt needed to add to the pool according to the corresponding chart.
- (5) Add salt to the pool around the side of the pool, so that it can quickly and evenly dilute into the water. Do not let salt accumulate on the bottom of the pool. Stir the water on the bottom of the pool if needed so the salt can completely dissolve.

5. Decrease the concentration of salt

The only way to decrease the concentration of salt is to drain a part of the pool's water and replacing it with fresh water.