



SaltronTM mini

Operating Instructions



INTRODUCTION

Saltron® MINI Spa Sanitation System produces a pure form of chlorine by electrolysis of salt (NaCl) in order to sanitize your spa water. After the salt is converted to chlorine and the bacteria are killed, the chlorine converts back to salt and this process is ongoing. The salt concentration used is very low (less than that in a human tear). Chlorine output can be easily adjusted by the timer on the power supply unit. The chlorine level in your spa can be checked by using a standard chlorine test kit. One Saltron™ MINI unit can treat up to 600 gallons (2,200L) of spa water (or up to 2000 gallons Swim Spa water).

IMPORTANT SAFETY INSTRUCTIONS

- WARNING: Risk of Electric Shock. Connect only to a grounding type receptacle protected by a groundfault-circuit-interrupter (GFCI). Contact a qualified electrician if you cannot verify that the receptacle is protected by a GFCI.
- WARNING: Make sure the power supply is unplugged from the wall outlet when using spa.
- WARNING: To reduce the risk of injury or electric shock, do not allow children to use this product.
- WARNING: Power supply should be installed in a shaded area to protect the transformer from direct sunlight.
- WARNING: Disconnect the power supply from the outlet when not in use.
- WARNING: Do not operate with a damaged cord or power supply.
- WARNING: To avoid risk of electrical shock, do not put the power supply in the water.
- WARNING: To reduce the risk of electric shock, do not use extension cords to connect unit to electric supply; if necessary, contact a qualified electrician to provide a properly located outlet.
- WARNING: Make sure the power supply is unplugged from the wall outlet when cleaning/servicing the cell assembly.

SPECIFICATIONS:

Saltron® MINI Power Supply:
Size: For Spas or Swim Spas up to 2000 gallons
INPUT : 100 - 240 VAC, 50/60 Hz, 0.2 Amp
OUTPUT: 5.0 VDC, 2.0 Amp (104°F/40°C)

Saltron® MINI Cell:
Normal output equivalent to 1.1 oz (32 grams) of free available chlorine per day.

Reverse Polarity Function:
The Reverse Polarity Function is designed to automatically clean the cell plates, maximizing the cell's ability to manufacture chlorine.

INSTALLATION AND OPERATION

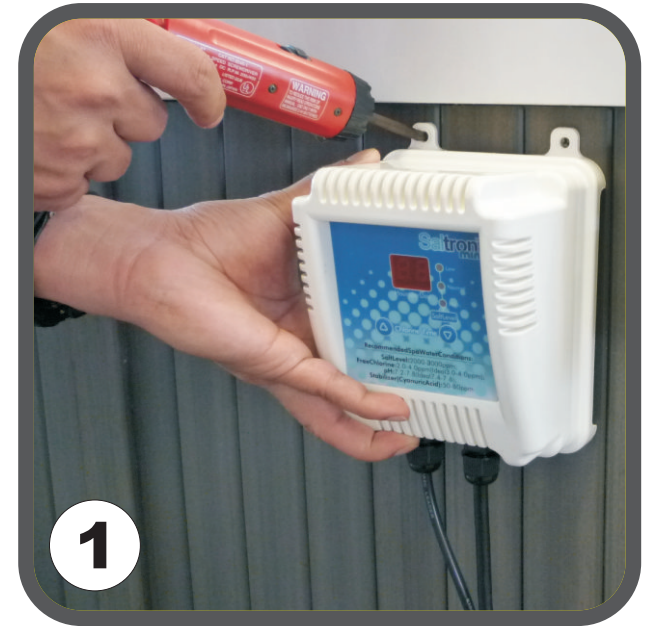
Installation of the Power Supply Unit:

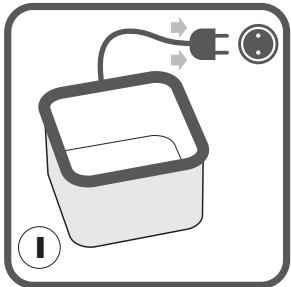
The power supply can be mounted to a wall next to the spa or directly on the spa wall. The wall needs to have easy access to a GFCI socket. In addition, install the Power Supply Unit to a wall that ensures the least amount of direct exposure to rain, garden sprinkler water, direct sunlight. When installing the power supply to the spa wall, please use the stainless steel screws provided, fasten the Power Supply Unit to the top of the spa skirt, just below the acrylic lip. Before tightening the screw, adjust the height of the Power Supply Unit to make sure that the waterproof connector is outside of the spa water. (See Fig. 1)

Installation of the Cell Holder

Use the adhesive tape provided to anchor the CELL HOLDER to the spa skirt. Another option is to directly attach it to the side of the Power Supply. (See Fig.2a-2c)

NOTE: The Saltron™ MINI over the wall cell should be removed whenever the spa is in use. After installing the CELL HOLDER, simply hang the cell outside the spa inside the CELL HOLDER during spa use.





Operation of the Saltron™ MINI

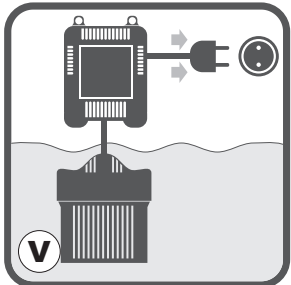
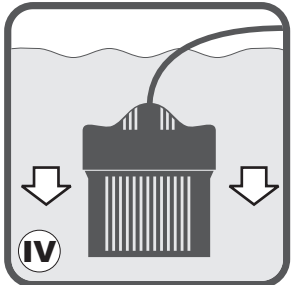
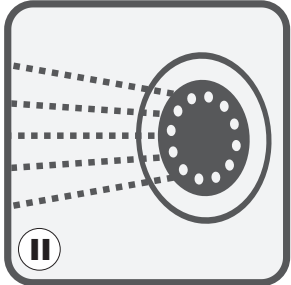
- I. Turn on the power to the spa equipment.
- II. Turn on main spa pump.
- III. Add required type and amount of salt to spa. Spread over the surface and allow salt to dissolve for at least 20 minutes.
- IV. Place the cell in the spa (anywhere below the waterline, preferably one foot under).
- V. Plug the Power Supply into an 110VAC/220 VAC GFCI protected outlet.

NOTE: Be sure to test the chlorine level for the next few days and properly adjust the chlorine output by adjusting the Hours Per Day on the power supply front panel.

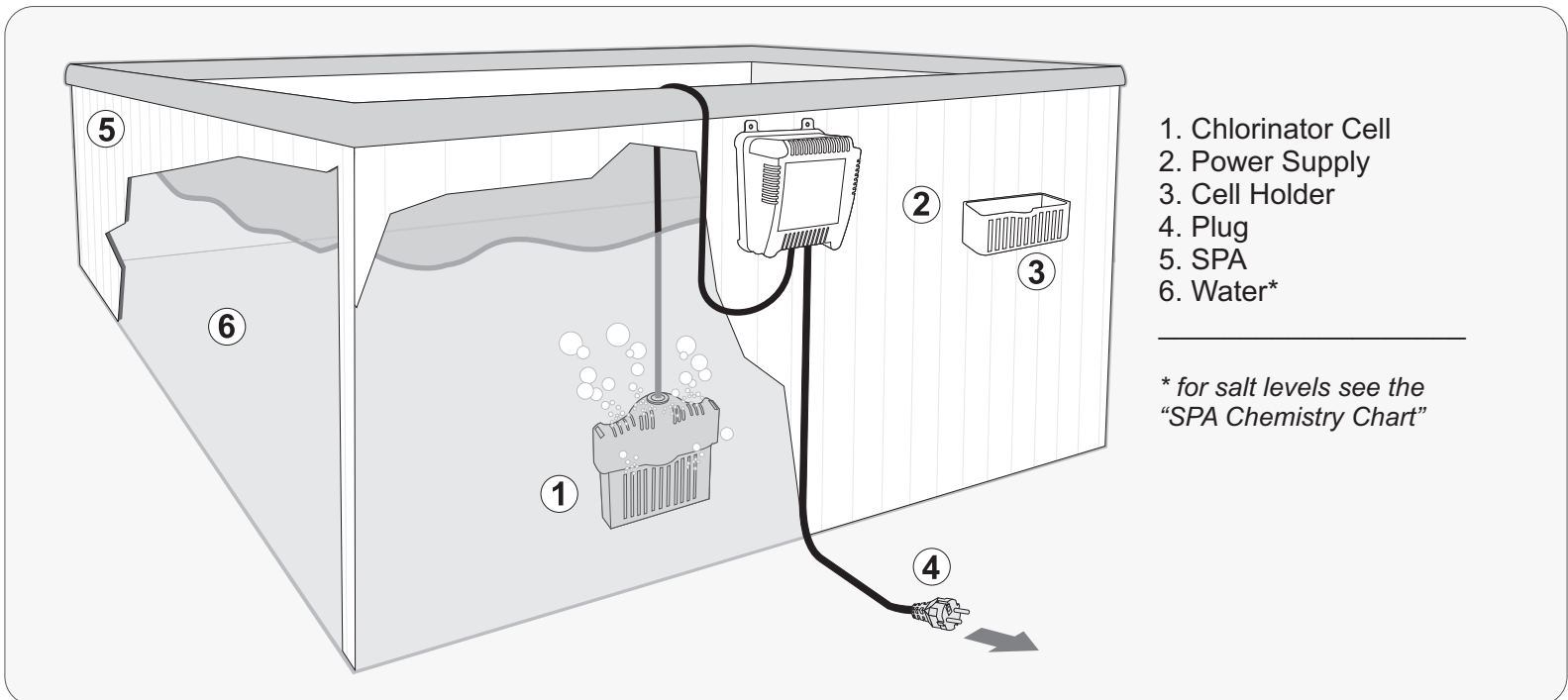
DO NOT EXCEED RECOMMENDED CHLORINE LEVELS!

Make the required adjustment and allow the spa to react to this change for a minimum of 2 days.

After 2 days, retest the spa water and make any further adjustments as required, until the Saltron™ MINI unit maintains an adequate Free Available Chlorine residual.



NOTE: The Saltron™ MINI system works based on a natural convection of water, not a forced convection as in in-line systems. This operation is independent of the main circulation pump. The cell must be submerged underwater for proper operation. As the cell is energized to generate chlorine, bubbles will appear and is normal. If the cell is removed from spa water, chlorine generation is automatically stopped.



POWER SUPPLY FUNCTION:

1. When the Power Supply is first plugged in:

All three LED lights and the display will be ON for approximately 3 seconds while the Saltron™ MINI unit self-tests.

2. Normal Operation:

If your Saltron™ MINI unit is operating properly, the Green LED light will display solid GREEN and the display will show the operation hours per day. This indicates that power is being delivered from the Saltron™ MINI unit to the cell and is producing sanitizer and your spa is being sanitized by Hypochlorous Acid (chlorine). NOTE: While sanitizer is being produced, bubbles can be seen coming from the cell!

3. Abnormal Conditions:

The LED lights will flash rapidly and/or the display will also flash to indicate a problem or failure. For further explanation of the abnormal conditions, please refer to the Troubleshooting Guide.

4. Chlorine Output Control

The chlorine output is controlled by the adjustment of the Timer of the power supply. The Timer regulates the hours per day of the amount of "ON" time the system requires to maintain the chlorine residuals as required.

The output is only regulated according to the chlorine Timer. It operates independently from your filter pump run time.

NOTE: Any interruption of power will cause the current memory cycle to reset itself when power is restored.

CHLORINE ADJUSTMENT

After everything is setup, the display will show you a default screen with the current hours of operation per day. You may change this setting anytime by holding down the ^ for 3 seconds straight. (See Fig.3) The display will flash indicating it is now ready for time setting changes. In order to determine the proper chlorine timer setting for your spa, measure the free chlorine level every couple of days during the first few weeks. Adjust the timer accordingly to achieve 3.0-4.0 PPM of Free Chlorine. It is advised to check the chlorine level at least once a week to make sure the spa is properly sanitized. Weather, bather load, and sunlight have a major influence on the chlorine demand of the spa water.

Note: If the spa has reached an undesirable amount of chlorine, it is recommended to unplug the Saltron™ MINI unit power supply from the GFCI socket. Check chlorine levels each day until the desired level is achieved. Plug the power supply back into the GFCI socket once the chlorine level is within the desired limit.



SALT REQUIREMENT

The best salt is a food-quality granulated salt, a 99.9% pure salt or solar salt. These types of salt should be purchased from a pool store and are designed for use with chlorine generators.

Do not use rock salt, iodized salt or salt with anti-caking additives. Do not use salt with more than 1% yellow prussiate of soda.

The optimum salt level is between 2000-2500 ppm. Use the chart below to determine the amount of salt for your spa. The column on the left is the amount of water in your pool. The column on the top is the current salt level measured in your pool. Always check your salt level before adding salt to the pool even if this is your first time.

Prior use of liquid chlorine and tablets could have caused an increase in salt levels. Salt should not be removed from the spa water unless the salinity exceeds 4000 ppm or the salinity of the water is undesirable. The only way to remove salt is by draining the water and adding fresh water.

NOTE: Turn Saltron™ MINI unit off before adding sodium chloride and other chemicals, and wait until complete dissolution before turning it on.

Salt Table I: Amount of salt needed to achieve 2500 ppm level in your spa.

Spa Size in Gallons/ (Liters)	Salinity (ppm) measured in SPA						
	0	500	1000	1500	2000	2500	3000
100 Gallons (378 Liters)	2.1 lbs/ (1.0 kg)	1.7 lbs/ (0.8 kg)	1.3 lbs/ (0.6 kg)	0.8 lbs/ (0.4 kg)	0.4 lbs/ (0.2 kg)	0	0
200 Gallons (757 Liters)	4.2 lbs/ (1.9 kg)	3.4 lbs/ (1.6 kg)	2.6 lbs/ (1.2 kg)	1.6 lbs/ (0.8 kg)	0.8 lbs/ (0.4 kg)	0	0
300 Gallons (1135 Liters)	6.3 lbs/ (2.8 kg)	5.0 lbs/ (2.3 kg)	3.8 lbs/ (1.7 kg)	2.5 lbs/ (1.1 kg)	1.3 lbs/ (0.6 kg)	0	0
400 Gallons (1514 Liters)	8.4 lbs/ (3.8 kg)	6.7 lbs/ (3.0 kg)	5.0 lbs/ (2.3 kg)	3.3 lbs/ (1.5 kg)	1.7 lbs/ (0.8 kg)	0	0
500 Gallons (1892 Liters)	10.4 lbs/ (4.7 kg)	8.4 lbs/ (3.8 kg)	6.3 lbs/ (2.8 kg)	4.2 lbs/ (1.9 kg)	2.1 lbs/ (0.9 kg)	0	0
600 Gallons (2271 Liters)	12.5 lbs/ (5.7 kg)	10.0 lbs/ (4.5 kg)	7.5 lbs/ (3.4 kg)	5.0 lbs/ (2.3 kg)	2.5 lbs/ (1.1 kg)	0	0

Salt Table II: Amount of salt needed to achieve 3000 ppm level in your Swim SPA.

Swim Spa Size in Gallons/ (Liters)	Salinity (ppm) measured in Swim SPA						
	0	500	1000	1500	2000	2500	3000
1000 Gallons (3780 Liters)	2.1 lbs/ (1.0 kg)	1.7 lbs/ (0.8 kg)	1.3 lbs/ (0.6 kg)	0.8 lbs/ (0.4 kg)	0.4 lbs/ (0.2 kg)	0	0
2000 Gallons (7570 Liters)	4.2 lbs/ (1.9 kg)	3.4 lbs/ (1.6 kg)	2.6 lbs/ (1.2 kg)	1.6 lbs/ (0.8 kg)	0.8 lbs/ (0.4 kg)	0	0
3000 Gallons (11350 Liters)	6.3 lbs/ (2.8 kg)	5.0 lbs/ (2.3 kg)	3.8 lbs/ (1.7 kg)	2.5 lbs/ (1.1 kg)	1.3 lbs/ (0.6 kg)	0	0

STABILIZER (CYANURIC ACID) LEVELS

Cyanuric Acid/Stabilizer/Conditioner (Required with uncovered outdoor spas only)

Cyanuric acid, CYA, (also known as stabilizer or conditioner) prevents rapid breakdown of chlorine by direct sunlight. Maintain CYA concentrations between 50-80 ppm by diluting with fresh water.

Regulations may exist regarding use of Cyanuric acid in spas; please consult with your spa professional.

Use the following chart to determine the amount of Cyanuric acid needed. Test water with a test kit that includes CYA testing, then use the table below to determine the amount to add. Note: Indoor spas do not require the addition of CYA.

Spa Size in Gallons/ (Liters)	CYA (ppm) Level Before Addition						
	0	15	30	45	60	75	80
100 Gallons (378 Liters)	1.0 oz/ (28 g)	0.8 oz/ (23 g)	0.6 oz/ (17 g)	0.4 oz/ (11 g)	0.2 oz/ (6 g)	0	0
200 Gallons (757 Liters)	2.0 oz/ (57 g)	1.6 oz/ (45 g)	1.2 oz/ (34 g)	0.8 oz/ (23 g)	0.4 oz/ (11 g)	0	0
300 Gallons (1135 Liters)	3.0 oz/ (85 g)	2.4 oz/ (68 g)	1.8 oz/ (51 g)	1.2 oz/ (34 g)	0.6 oz/ (17 g)	0	0
400 Gallons (1514 Liters)	4.0 oz/ (113 g)	3.2 oz/ (91 g)	2.4 oz/ (68 g)	1.6 oz/ (45 g)	0.8 oz/ (23 g)	0	0
500 Gallons (1892 Liters)	5.0 oz/ (142 g)	4.0 oz/ (113 g)	3.0 oz/ (85 g)	2.0 oz/ (57 g)	1.0 oz/ (28 g)	0	0
600 Gallons (2271 Liters)	6.0 oz/ (170 g)	4.8 oz/ (136 g)	3.6 oz/ (102 g)	2.4 oz/ (68 g)	1.2 oz/ (34 g)	0	0
Swim Spa Size:							
1000 Gallons (3780 Liters)	10 oz/ (280 g)	8 oz/ (230 g)	6 oz/ (170 g)	4 oz/ (110 g)	2 oz/ (60 g)	0	0
2000 Gallons (7570 Liters)	20 oz/ (570 g)	16 oz/ (450 g)	12 oz/ (340 g)	8 oz/ (230 g)	4 oz/ (110 g)	0	0
3000 Gallons (11350 Liters)	30 oz/ (850 g)	24 oz/ (680 g)	18 oz/ (510 g)	12 oz/ (340 g)	6 oz/ (170 g)	0	0

SPA SIZE CALCULATION

Use these three formulas to calculate the volume of water in the spa:

Rectangular:

Length(Ft) x Width(Ft) x Average Depth(Ft) x 7.5 = Total U.S. Gallons

Length(M) x Width(M) x Average Depth(M) x 1000 = Total Litres

Round:

3.14 x Radius(Ft) x Radius(Ft) x Average Depth(Ft) x 7.5 = Total U.S. Gallons

3.14 x Radius(M) x Radius(M) x Average Depth(M) x 1000 = Total Litres

Free Form:

Average Length(Ft) x Average Width(Ft) x Average Depth(Ft) x 7.5 = Total U.S. Gal.

Average Length(M) x Average Width(M) x Average Depth(M) x 1000 = Total Litres

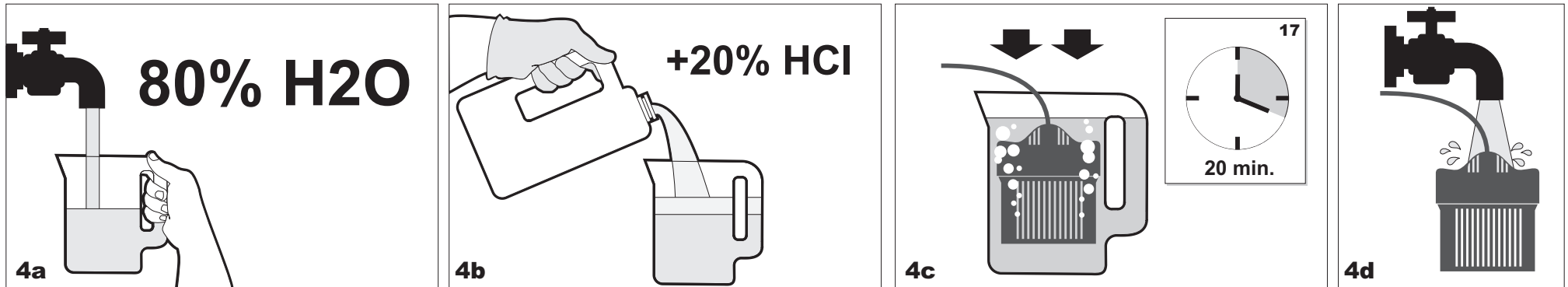
UNIT MAINTENANCE

Inspecting the Cell:

The cell should be inspected every 3 months. Unplug the Saltron MINI from the GFCI socket. Inspect the cell for scaling (white, sugar-like) deposit. If scaling exists, the cell should be cleaned.

Cleaning the cell:

To clean the cell, a bucket or a large cup should be used. The bucket should be filled with 80% water and 20% muriatic acid. NEVER ADD WATER TO ACID, only acid to water. It is recommended to wear safety goggles when handling the acid. Place the entire cell into the bucket for 20 minutes. Remove the cell and do the inspection again. If the scaling remains, repeat the process. After the scale is removed, rinse the cell with fresh water. (See Fig.4)



SPA CHEMISTRY CHART

The Saltron™ MINI system is designed to automatically generate the chlorine for your spa. It is very important to note that chlorine is just one component of your spa water chemistry. Please make sure your spa water meets the optimum chemistry levels in the following Spa Chemistry Chart.

FACTORS

- 1 Salt
- 2 PH
- 3 Free Chlorine
- 4 Cyanuric Acid

PREFERRED LEVELS

- 2000 – 2500 ppm (3000 ppm for Swim Spa)
- 7.4 – 7.6
- 3.0 – 4.0
- 50 - 80 ppm

OPERATION MODE AND TROUBLE SHOOTING

Saltron® MINI Operation Mode and Trouble Shooting

Symptom on Power				
	Supply		Possible Causes	Solution
	Display	LED		
1	no display	no lights	1 - power outage 2 - fuse burnt 3 - power supply failure	Make sure there is power to the unit. Check and change the fuse if it's burnt. Call customer service.
2	"_ _"	no lights	MINI in rest mode	No action is needed. If you want it to operate immediately, unplug/plug the power or adjust the timer. Both will start the operation right away.
3	"_ _" and Hours (05 by default) alternating	no lights	1 - chlorinator cell is outside water 2 - open circuit in chlorinator cell	Put it back into the water. Check the wire connections and make sure no cut or broken wire.
4	"LO" and Hours (05 by default) alternating	Yellow light	1 - salt level low 2 - water temperature low 3 - chlorinator cell at its life end	Add more salt to spa and allow time for it to dissolve. Don't use MINI if the water temperature is under 65 °F (or 15 °C). Call customer service for replacement.
5	Hours (05 by default)	Green light	normal operation mode	No action is needed.
6	"HI" and Hours (05 by default) alternating	Red light	1 - salt level high 2 - water temperature high	No action is needed. Stop adding salt to water if you are doing so. Using MINI for water temperature above 110 °F (or 45 °C) is not recommended.
7	"HI"	Red light blinking	1 - salt level too high 2 - water temperature too high 3 - short circuit in chlorinator cell	You will have to dilute your spa water with fresh water until the salt level is less than 3000 ppm. Stop using MINI until water cools down. Check to make sure there are no metal objects caught in between electrode plates.
8	"8 8" blinking	All lights blinking	Power supply failure	Unplug and plug in the power cord to reset the power supply. If the problem persists, call customer service.
Symptom in Spa Water				
9	chlorine level is low		Hours set too low	Adjust the hours setting to higher number (the maximum is 24 hours/day). Make sure cyanuric acid level in your spa is between 50-80 PPM.
10	chlorine level is too high		Hours set too high	Adjust the hours setting to lower number (the minimum is 0 hours/day).