

# *CHLORMAKER*<sup>TM</sup>



## *OPERATING INSTRUCTIONS*

ControlOMatic, Inc. 13433 Lime Kiln Road, Grass Valley, CA 95949  
www.ControlOMatic.com Support@ControlOMatic.com 530-205-4520  
Manual Version: 4/1/12 Made in the USA

## INTRODUCTION

ChlorMaker is a semi-automated, salt water chlorine generation system specifically designed for portable spas up to 1,250 Gallons. ChlorMaker generates chlorine from a small amount of ordinary salt (Sodium Chloride, NaCl) dissolved in the spa water. The amount of salt added is very small in relation to the volume of the water in the spa. It's about 90% less concentration than ocean water and below the typical taste level of most humans.

The small addition of salt also benefits users by providing a softening effect on the water, leaving hair and skin feeling smoother and healthier than with traditional sanitizing products. Only 2.5 cups of salt per 100 gallons of water is all it takes for ChlorMaker to produce fresh, pure chlorine leaving your water clean and clear day after day.

## IMPORTANT SAFETY INSTRUCTION

- WARNING:** Use ChlorMaker only according to these instructions. Any modification or misuse of this product will void the warranty.
- WARNING:** Install ChlorMaker in accordance with all national and local electrical, plumbing, safety, and other applicable codes.
- WARNING:** Connect ChlorMaker to a GFCI (ground fault circuit interrupt) or GFI (ground fault interrupt) protected 110 or 220 VAC power source only.
- WARNING:** Protect the power supply and outlet from exposure to the elements including direct sun, rain, snow, condensation, etc.
- WARNING:** DO NOT allow children to operate ChlorMaker unless under adult supervision.
- WARNING:** DO NOT insert objects into, or tamper with ChlorMaker's body in any way. Inserting metal objects into the body may cause damage and void the warranty.
- WARNING:** DO NOT operate ChlorMaker if damaged in any way.
- WARNING:** DO NOT pull on the cord to disconnect the Power Supply from power source. Do not allow the cord to rest on sharp edges or corners or to be walked upon. Do not drop, throw, or otherwise rough handle ChlorMaker.
- WARNING:** Unit must be disconnected from power source before performing any maintenance or troubleshooting operations.
- CAUTION:** Leave spa cover open at least 30 seconds to allow trapped gases to escape prior to use.
- CAUTION:** If unit is not working properly, or has been damaged in any way, contact technical support immediately at 1-530-205-4520.
- CAUTION:** Measure water quality parameters and adjust if necessary prior to each spa use.
- CAUTION:** Make sure all spa electrical components and power cords have been thoroughly inspected by a licensed electrician prior to using ChlorMaker.



## WATER PREPARATION & MAINTENANCE

To ensure proper operation, the spa must be drained, rinsed, refilled with fresh water, and balanced to the recommended levels indicated in this section before installing the product. Use the test strips to measure water chemistry and verify that the water has been balanced properly. Replacing the filter is recommended but not required unless the spa was previously sanitized with a hydrogen peroxide system. The combination of hydrogen peroxide and chlorine may cause gum-like build up, water discoloration, and skin irritation.

It is important to properly maintain your spa for the health and safety of its users. Spas are unique in both size and usage patterns. TechniChlor will significantly reduce the amount of spa maintenance required, but chemical check-ups including chlorine levels and PH are recommended before each use. Proper water maintenance will prolong the life of TechniChlor and the spa. The following table describes generally accepted optimum water chemistry for portable spas.

PARAMETER	RECOMMENDED LEVEL
Free Chlorine	3.0 to 5.0 PPM
PH Balance	7.2 to 7.6
Total Alkalinity	80 to 120 PPM
Calcium Hardness	150 to 300 PPM

It is recommended that chlorine and PH levels are checked before each use, or at least once per week when not in use. Alkalinity, Calcium Hardness, and Salt Concentration should be checked at least once per month. It is recommended that the spa is manually shocked after high usage (example: after a party with multiple users), or biweekly if used frequently. Always remember to leave the spa circulating for several hours before retesting. Phosphates in the spa water will increase the demand for chlorine and will reduce the life expectancy of the generator. Remove Phosphates upon start up and each month thereafter. Phosphate Remover can be purchased at any local Pool & Spa supply store.

**WARNING:** Consistent chlorine levels above 5.0 PPM or consistent salt concentration levels above 5,000 PPM may lead to corrosion of metal components in the spa.

**WARNING:** Consistently low Calcium Hardness levels below 150 PPM may lead to spa equipment damage and failure. Make sure Calcium Hardness levels are within the recommended range above.

# SALT REQUIREMENT

ChlorMaker can generate both Chlorine or Bromine. It all depends on which sanitizer the user prefers. Use Sodium Chloride Salt if you prefer Chlorine Generation and Sodium Bromide Salt if you prefer Bromine. Please Note: Each salt requires a different level of salinity for ChlorMaker to operate effectively.

**CHLORINE SALT - SODIUM CHLORIDE (NaCl): Raise Salt Level to 2,000 PPM (Parts Per Million).** Approved salts include "pool salt" made for salt water chlorine generating systems, canning and pickling salt from your local market, and some water softener salts that are 99% pure sodium chloride or better. Some high-end, mineral enriched salts can be used but require higher quantities to achieve 2,000 PPM sodium chloride salt level. These approved salts are generally available at pool & spa supply stores, home improvement centers and On-Line stores in a variety of sizes. *Never use rock salt or salts that have more than 1% "anti-caking agents", "yellow prussiate of soda", or "sodium ferrocyanide". These compounds may cause surface staining.* Please use chart below.

**BROMINE SALT - SODIUM BROMIDE (NaBr): Raise Salt Level to 3,000 PPM (Parts Per Million).** There are several manufacturers of Sodium Bromide Salt to choose from. Please make sure the Sodium Bromide you purchase is 99% pure or better. Ask your local pool and spa dealer for assistance. Please use chart below.

## Chart is Based on 100 Gallons or 379 Liters of Spa Water

SALT TYPE	POUNDS	CUPS
99% Pure Sodium Chloride (NaCl) - Pool, Pickling, Canning & Other Fine Grain Salts	1.4	2.3
99% Pure Sodium Chloride (NaCl) - Water Softener & Other Coarse Grain Salts	1.5	2.5
Hymalayan Salt Fine Grain Salt (Mineral Enriched)	1.8	2.9
Dead Sea Salt Coarse Grain Salt (Mineral Enriched)	2.5	5.0
99% Pure Sodium Bromide (NaBr) Fine Grain Salt	2.5	4.0

The amount of salt to add and dissolve is dependent upon the size of the spa. Determine the volume of water in gallons or liters by checking the spa owner's manual or use any internet volume calculator.

99% Pure Sodium Chloride (NaCl) Coarse Grain Example For a 350 Gallon Spa: Divide 350 Gal by 100 Gallons then multiply answer by 2.5 Cups. ( $350 / 100 = 3.5 \times 2.5 = 8.75$  Cups)

99% Pure Sodium Bromide (NaBr) Fine Grain Example For a 1,326 Liter Spa: Divide 1,326 Liters by 379 Liters then multiply answer by 4.0 Cups. ( $1,326 / 379 = 3.5 \times 4.0 = 14$  Cups)

Simply pour the recommended amount of salt directly into the spa water to bring the concentration to the recommended level. Turn the spa jets on to help dissolve the salt. Warmer water will aid in dissolving the salt faster. If the water is cold it may take several hours for the salt to fully dissolve.

**WARNING: Do not turn ChlorMaker on until all the salt has fully dissolved.**

# SALT LEVEL INDICATOR

ChlorMaker will indicate if the salt level is within the recommended range listed above. When the "Generating" LED light is on, the "Check Cell" LED light should be off if the salt is at the recommended level. Please see below.

Check Cell Light Flashing: **Salt Level Too High**

Check Cell Light Off: **Salt Level Within Normal Range**

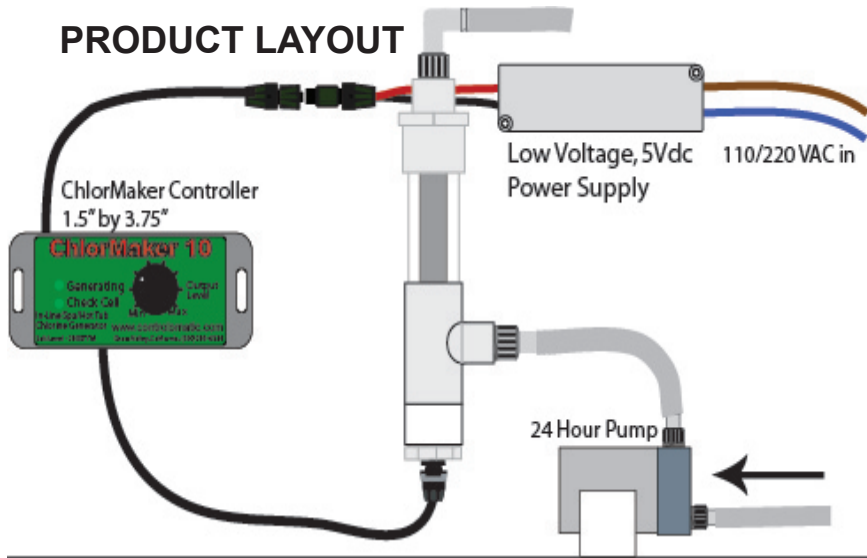
Check Cell Light On (Not Flashing): **Salt Level Too Low**

**IMPORTANT: It is important to occasionally check that the lights are indicating proper salt level. Always use Salt Test Strips to check the salt level and adjust the water according to the Test Strips. If Test Strips Show Too High: remove some water from the spa and replace with fresh water. Re-test and adjust as necessary. If Test Strips Show Too Low: Add salt. Re-Test and adjust as necessary.**

# PRODUCT INSTALLATION

ChlorMaker is equipped with a 110/220 VAC Auto-Sensing Power Supply allowing ChlorMaker to be installed on almost any spa with a 24 Hour Circulation Pump. **Spa Dealers or Licensed Electricians are required to install this product as they are familiar with the electrical codes in your area. ChlorMaker needs to be wired to a power source that turns on & off when the spas continuous 24 hour circulating pump turns on & off. ChlorMaker should only operate when water is circulating through the cell. Make sure the SPA is protected with a GFI protected circuit. Please see product layout and wiring diagram below.**

## PRODUCT LAYOUT



## Wiring Diagram

Power Supply VAC Input Connections  
Brown & Blue Wire to 110 or 220 (3 & 4 Wire) Spa Power

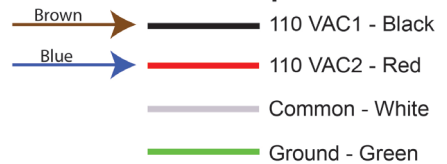
### 110 VAC Spa Power



### 3-Wire 220 VAC Spa Power

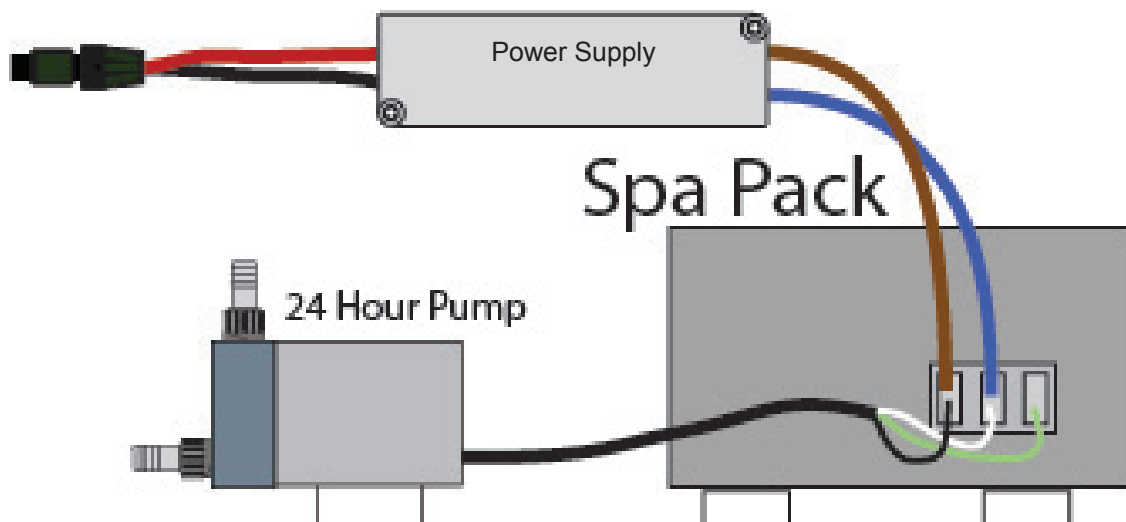


### 4-Wire 220 VAC Spa Power

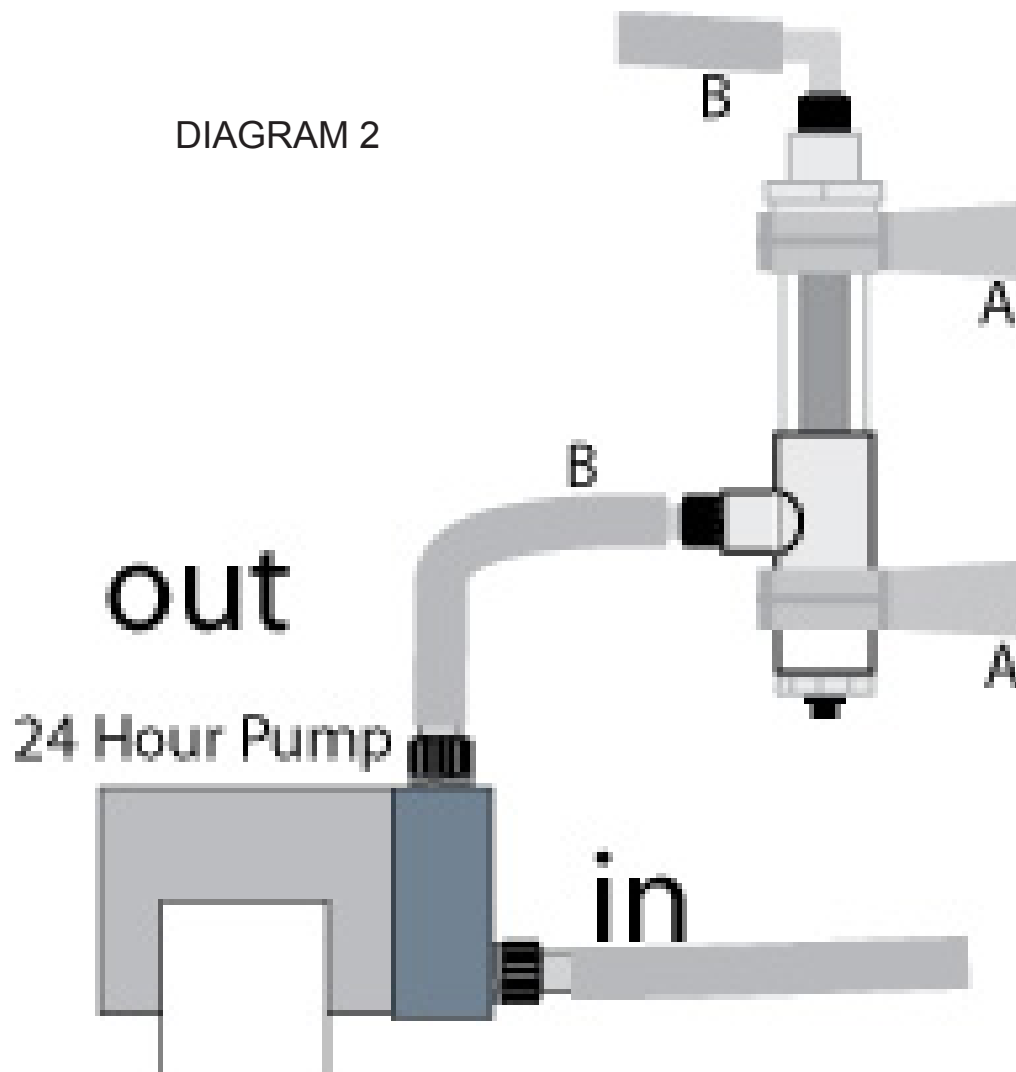


- 1. Prepare Spa For Installation:** Shut down main power to spa and drain water completely. Open access panel to the spa exposing the spas plumbing and spa pack. Open the access panel to the spa pack.
- 2. Find Power Supply Location:** ChlorMaker's power supply needs be fastened to a cool dry location where water will not splash on it. Use the supplied screws to fasten power supply to spa compartment.
- 3. Find Pump Connection:** Locate the spas pump connection inside the spas power pack. Many spa packs have special connectors. It may be necessary to cut and splice ChlorMaker's power supply cable to make the connection. When routing the wires make sure they are protected from sharp edges in the spa cavity or spa pack. Refer to Diagram 1 for wiring layout.

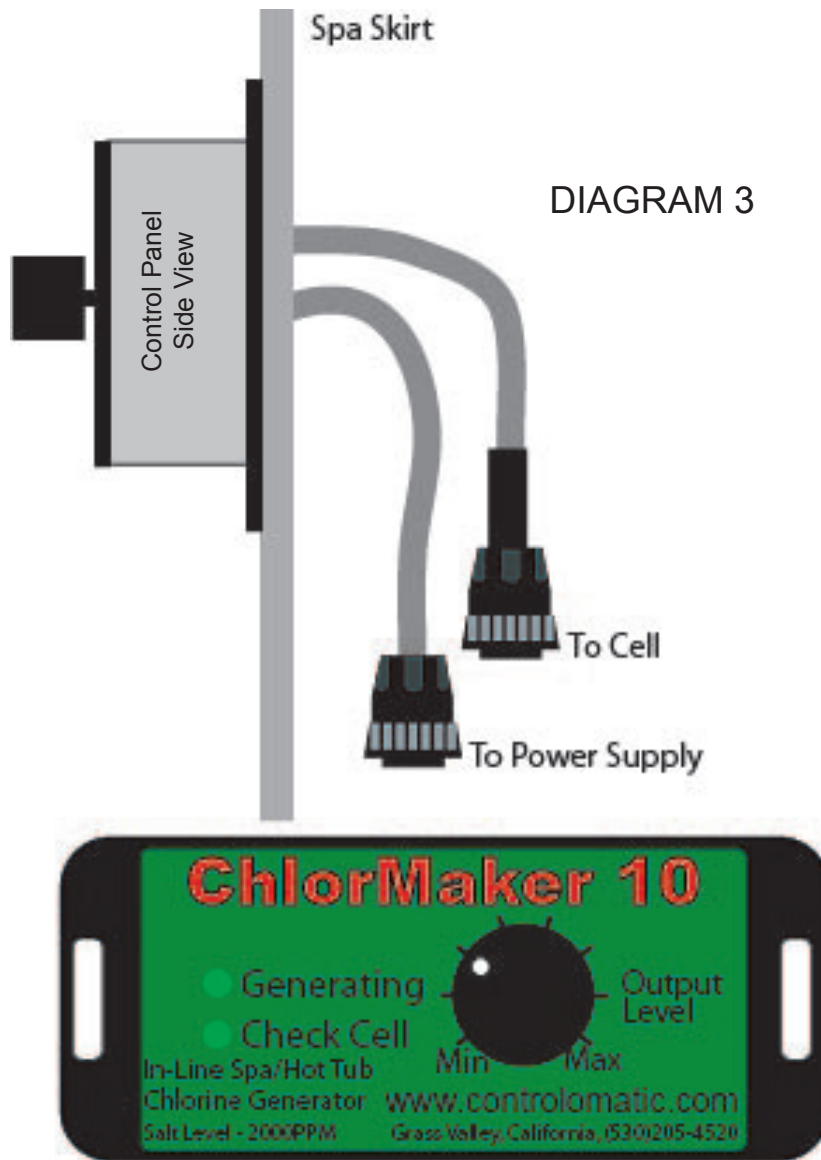
DIAGRAM 1



4. **Find 24 Circulation Plumbing:** Locate the continuous (24 Hour) circulating pump and the 3/4 inch tubing connected to the pump. The ChlorMaker cell should be installed on the OUTPUT side of the pump. The tube will need to be cut and reconnected to the ChlorMaker cell. Refer to DIAGRAM 2 Item (B). Additional tubing may be needed if the existing tube is not long enough or is hard to access. Additional tubing is available at most hardware stores. The location of the cell should have no obstructions at the cable end of the cell to allow for cell removal, replacement and cleaning.
5. **Fasten ChlorMaker Cell:** Find a location near the OUTPUT side of the continuous (24 Hour) circulating pump where the tube can be cut and reconnected to the cell. The location should be visible to allow for inspection of the titanium plates through the clear part of the cell. The location should also have no obstructions at the cable end of the cell to allow for removal of the cell plates if plate cleaning is needed. Mount the cell using the two supplied brackets shown in DIAGRAM 2 Item (A).  
**Cell Orientation: The cell must be mounted vertically to prevent chlorine gas from being trapped in the cell.**
6. **Connect Tubing To Cell:** Cut the existing tube and reconnect the ends to the two 3/4 inch barb fittings on the cell. Use the supplied clamps at (B) to securely fasten the tube to the barbs on the cell. Note that some water will spill from the cut tube even though the spa has been drained or shut-off.



7. **Mounting The Control Panel:** Find a location in the spa skirting that will give easy access to the spa cabinet & spa pack. Drill a 3/4" Hole to allow the Control Panel cables to run through. Use silicone caulking to seal the hole once the cables are run through. Use the provided mounting screws to securely fasten the control panel to the spa skirting making sure the control panel completely covers the 3/4 inch hole.
8. **Control Panel Connections:** Connect the control panel cell cable to the ChlorMaker Cell. This cable will be identified with black tape near the connection end. Connect the control panel power supply cable to the black power supply. **CAUTION: Do not turn spa power on until the spa has been refilled with water and salt has fully dissolved.** Refer to DIAGRAM 3.



9. **Refill Spa & Add Salt:** Recheck all plumbing connections to make sure all are tight. Refill spa with water and pour/dissolve the recommended amount of salt in the water (See "Salt Requirement Section"). Please make sure the salt is fully dissolved before proceeding to the next step.
10. **Turn Spa Power ON:** When ChlorMaker is turned on, the LED Lights will alternate flashing 11 times indicating the unit has power and is getting ready to make chlorine. After the 11th flash, ChlorMaker will be off in stand-by for 11 seconds. After the 11 second pause, ChlorMaker will begin the chlorine generation process.

## SELECTING THE RIGHT POWER LEVEL

Selecting the right power level requires some testing and adjustment. There are many factors that affect the sanitizing needs of a spa such as: Frequency of spa use, number of people, if there is an Ozone Generator, spa temperature, last drain and refill, etc. However, after the testing and adjustment period, ChlorMaker will take care of your sanitation needs day after day. As a starting point, please program ChlorMaker and set the power level to the general recommendations shown in the chart below.

Power Level	ChlorMaker
	Spa (Gallons)
1 to 3	Less than 200
4	200 to 300
5	300 to 400
6	400 to 500
7 to 10	500 and above

Test the Chlorine Level with test strips after 1 to 2 days. When testing, the best readings are always done about an hour after restarting ChlorMaker by simply turning the dial up 1 power level, wait a few seconds, then turn the dial back down to its original setting. If the chlorine level is LOW, increase the power level by one level. If the chlorine level is HIGH decrease the power level by one level. Wait a day or so after this initial adjustment, re-test and repeat as necessary until a consistent chlorine residual has been achieved. If the chlorine level is VERY high or VERY low, adjust by 2 levels, as needed.

**IMPORTANT NOTE: If the chlorine level is zero 24 hours after installation, the initial chlorine demand on the spa may be above what ChlorMaker can produce to break away from zero. In this case, manually add chlorine or shock (according to the company product label) to assist in the initial set-up.**

If spa usage drops (vacation, winter, etc), it is important to re-set the power level down several levels. If usage significantly increases, (return from vacation, etc) it is important to adjust the power level up accordingly. Always retest and adjust the power level as needed.

## BOOST MODE

Boost Mode is designed to replenish chlorine that was just used during the last spa use. Activating Boost Mode will take ChlorMaker out of stand-by and re-start the production of chlorine at the power level it is currently set at. To activate Boost Mode simply turn the dial up 1 power level, wait a few seconds, then turn the dial back down to its original setting. After a few brief moments, ChlorMaker will re-start the chlorine production process at the original power level.



# TROUBLE SHOOTING

It is always a good idea to revisit the user manual to make sure installation or maintenance steps were not overlooked before referring to the trouble shooting section.

Problem	Possible Causes	Corrective Action	
Consistently Low Chlorine	Power level too low	Increase the power level	
	Plates need cleaning	Soak the unit in Vinegar for 30 minutes	
	Low salt level	Adjust the salt level as necessary - use test strips	
	Large bather load	Additional chlorine or shock may be needed	
	Just doesn't keep up		Remove organic material, such as leaves, etc.
			Make sure the unit is at the lowest point in the spa
Clean the filter			
Remove Phosphates			
		Shock the water	
Consistently High Chlorine	Power level too high	Lower the power level	
Plates Are Dirty With White Or Scale Build Up	Hard water, high calcium and minerals in water.	Unplug power supply and reconnect to manually reverse polarity. If still dirty, soak the unit in vinegar for 30 minutes. Also reduce calcium level in water.	

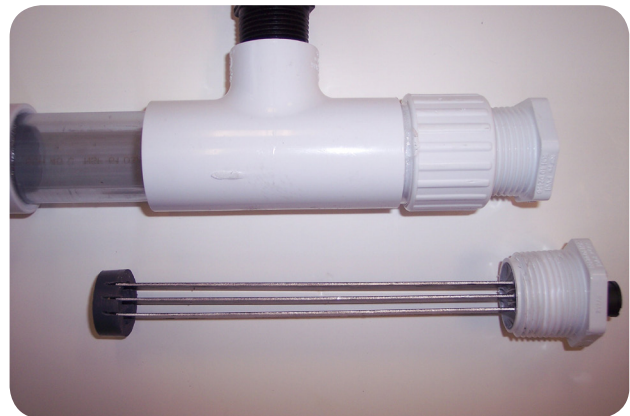
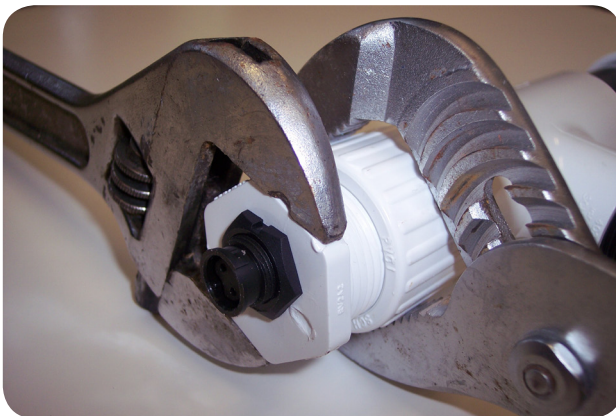
## DISASSEMBLY & MAINTENANCE

ChlorMaker is designed with an automatic self cleaning feature. However, there are some spa water conditions that are well beyond the control of ChlorMaker's reverse polarity and self cleaning design. If a visible white or scaly substance builds up on the plates, please follow the simple disassembly and cleaning instructions below.

1. Turn main power off to spa and disconnect the water tight connector from the cell housing as shown in the picture below. Turn the black twist-lock identified in picture below counter-clockwise. Then unplug wire from the cell housing.



2. Caution: Some water will drain out of the cell housing during this step. Firmly hold cell housing with a pair of large pliers or channel locks and turn the large Hex Nut at top of cell housing counter-clockwise with a large wrench as shown in picture below. The cell plates will turn with the Hex Nut. Loosen the Hex Nut to a point that can be turned by hand. Loosen all the way and gently pull the cell plates out of the cell housing. Immediately replace with the spare cap that is provided with ChlorMaker to prevent additional water from draining. Note: The grey spacer at the end of the cell plates may come lose during this procedure. If so, simply and firmly reinstall the grey spacer as needed.



3. Place the cell plates in a glass of white vinegar for about 30 minutes to remove any and all scale build up. Do not scrap plates with any foreign objects. Rinse plates clean with fresh water.
4. Reverse the steps above: Reinstall cell plates, tighten Hex Nut (Use Teflon Tape on threads to create a water tight seal), Plug water tight black connect into cell housing and turn main spa power back on to complete the cleaning process.

# LIMITED WARRANTY

**Models:** This warranty applies to ChlorMaker models referenced as "System".

ControlOMatic, Inc. Warrants the system to be free of all defects in material and workmanship for one (1) year from the original purchase date. The system includes the power supply unit, cable, electronics, and electrolytic generator for residential use only. The product must be installed properly and used in accordance with this manual and all applicable local codes and regulations. This warranty is not transferable.

In no event shall ControlOMatic, Inc. be liable for consequential damages for breach of this warranty. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply. The warranty does not cover any loss or damage to the product due to improper installation, product abuse, misuse, negligence, or improper maintenance of the system, pool or spa. The warranty does not cover any loss or damage to the spa, spa components, users, or anything outside the system due to system failure. Purchaser assume all responsibility for using the system.

This warranty does not apply to any costs, repairs, services, damages, claims or losses for all of the following: Service calls to correct the installation of the product, or to explain the usage of the system to the buyer, repairs necessitated by use other than normal home use, damage resulting from misuse, unintended use, unforeseen use, non pool or spa use, abuse, accidents, alterations, improper installation, or corrective work necessitated by repairs made by anyone other than an authorized service technician.

**THE FOREGOING WARRANTIES ARE CONTINGENT ON THE PROPER USE OF THE SYSTEM IN ACCORDANCE WITH THESE INSTRUCTIONS AND SPECIFICATIONS AND SHALL NOT APPLY TO ANY SYSTEM THAT HAS BEEN REPAIRED OR MODIFIED BY PERSONS OTHER THAN THE MANUFACTURER.**

**THE EXPRESS WARRANTIES SET FORTH IN THIS AGREEMENT ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. MANUFACTURER HEREBY SPECIFICALLY DISCLAIMS ANY OTHER REPRESENTATIONS OR WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WITHOUT LIMITATION ANY WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

**IN NO EVENT WILL MANUFACTURER'S LIABILITY FOR ANY CLAIM, WHETHER IN CONTRACT, TORT OR UNDER ANY OTHER THEORY OF LIABILITY, EXCEED THE AMOUNT NECESSARY TO REPAIR OR REPLACE THE COVERED SYSTEM.**

Damage to the system from improper water maintenance is not covered in this warranty.

Should any problem develop during the warranty period, go to: [www.controlomatic.com](http://www.controlomatic.com) to obtain the proper technical support phone number. You will need the serial number visible in the clear part of the system body. You may be required to return the defective component, and if necessary, the component will either be repaired or replaced.

# PRODUCT REGISTRATION

Please fill out the information below and send to ControlOMatic to properly register your product. Or register your product on line at [www.ControlOMatic.com](http://www.ControlOMatic.com).

First Name: \_\_\_\_\_

Last Name: \_\_\_\_\_

Address: \_\_\_\_\_

City: \_\_\_\_\_ State / Province: \_\_\_\_\_ Postal Code: \_\_\_\_\_

Phone: \_\_\_\_\_ E-Mail: \_\_\_\_\_

**Please copy this section and forward a copy to**

ControlOMatic, Inc.  
13433 Lime Kiln Road  
Grass Valley, CA 95949

**Or Register At [www.ControlOMatic.com](http://www.ControlOMatic.com)**

Product Model: \_\_\_\_\_ Serial Number: \_\_\_\_\_