

CHLORMAKER™



OPERATING INSTRUCTIONS

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Manual Version: 9/1/11 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
Himalayan 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**

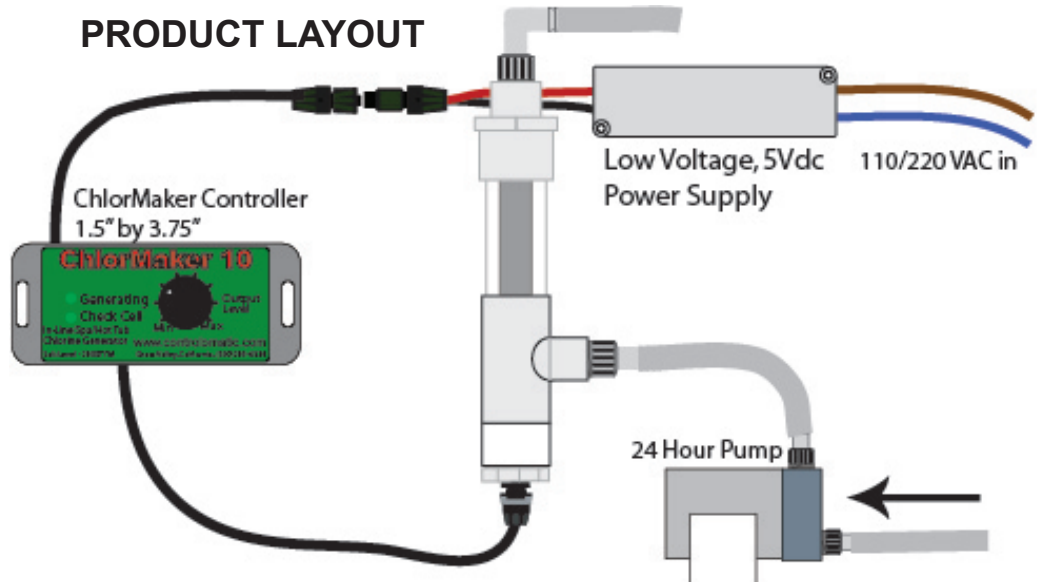
Check Cell Light On (Not Flashing): **Salt Level Too Low**

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

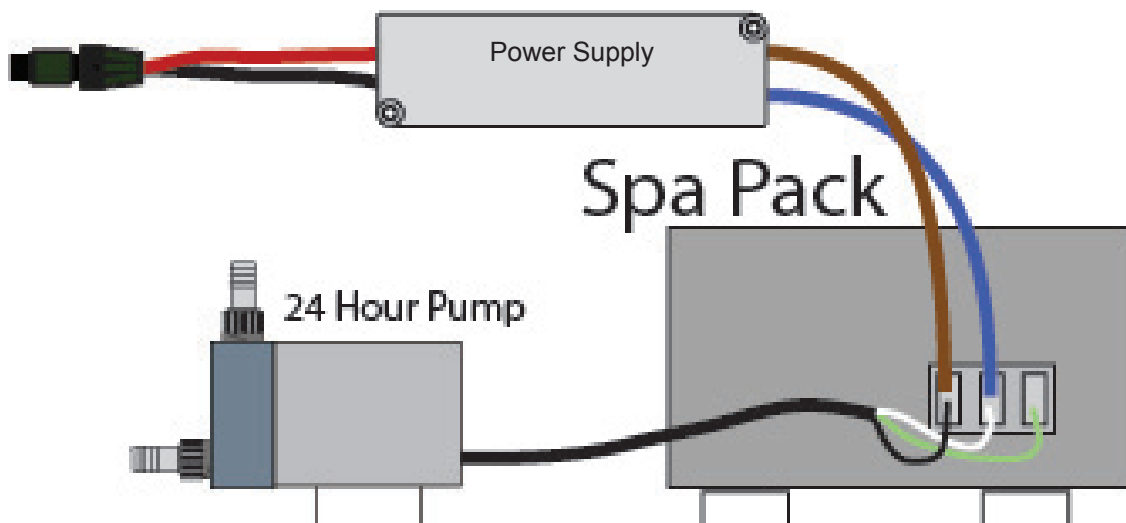
ChlorMaker is equipped with a 110/220 VAC Auto-Sensing Power Supply allowing ChlorMaker to be installed on almost any spa with a 24 Hour Circulation Pump. **Spa Dealers or Licensed Electricians are required to install this product as they are familiar with the electrical codes in your area. ChlorMaker 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 the general product layout below.**

PRODUCT LAYOUT

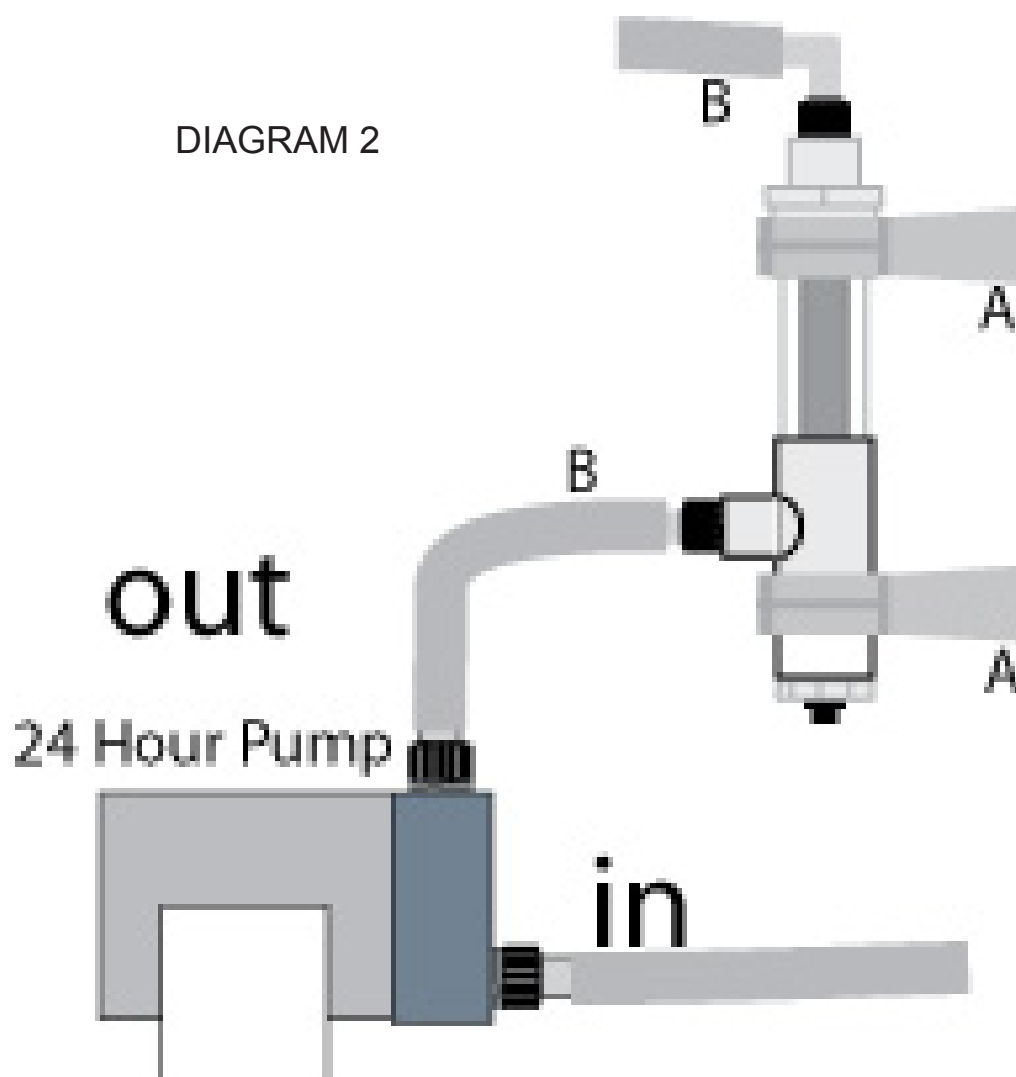


- 1. Prepare Spa For Installation:** Shut down main power to spa and drain water completely. Open access panel to the spa exposing the spas plumbing and spa pack. Open the access panel to the spa pack.
- 2. Find Power Supply Location:** ChlorMaker's power supply needs be fastened to a cool dry location 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.

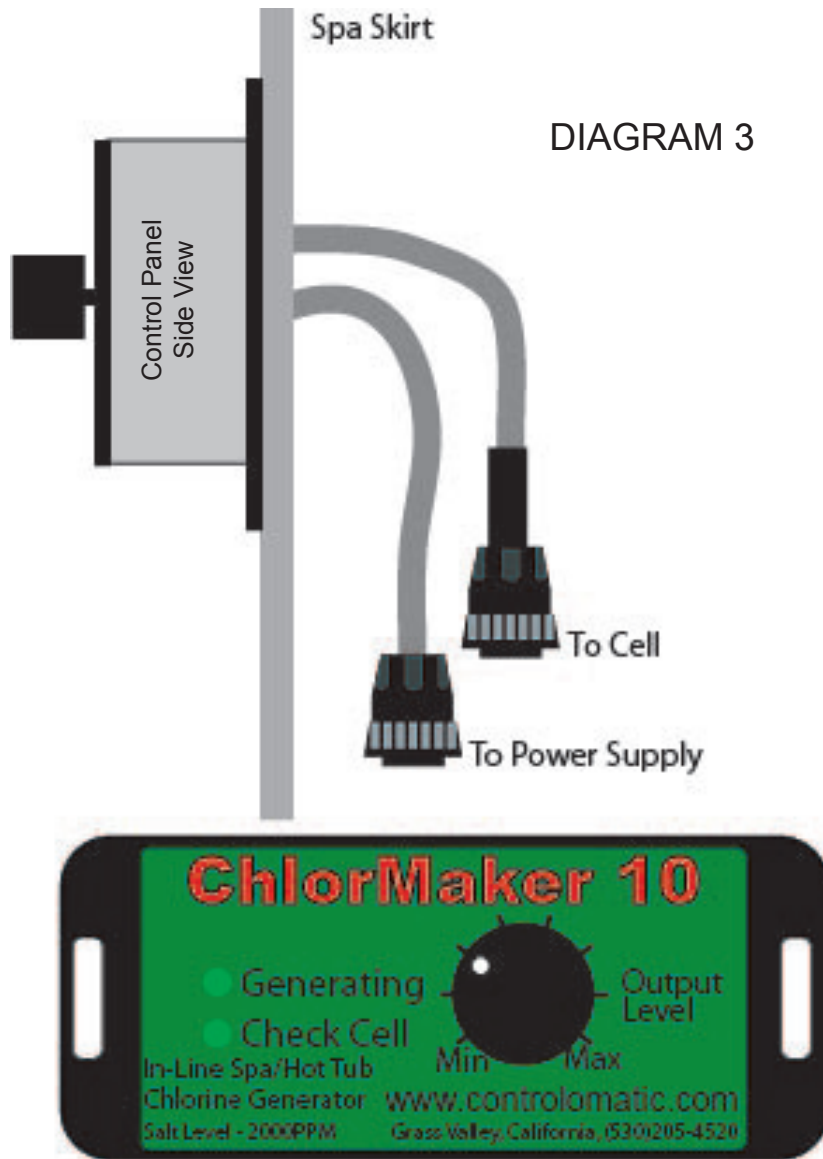
DIAGRAM 1



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, TechniChlor will take care of your sanitation needs day after day. As a starting point, please program TechniChlor and set the power level to the general recommendations shown in the chart below.

Power Level	TechniChlor
	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 TechniChlor with a double tap to initiate chlorine production at the beginning of a power level cycle. 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 TechniChlor can produce to break away from zero. In this case, manually add chlorine or shock (according to the 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.

CLEANING & REVERSE POLARITY

ChlorMaker is uniquely designed with reverse polarity which is a self cleaning feature built in to every unit. However, there may be water conditions (very hard water) where the self cleaning design may not be able to keep up. If this water condition exists in your area, a white buildup will be visible on the titanium plates. Periodically inspect the plates by looking through the clear inspection pipe in the cell. If a build up exists, please follow the steps below.

1. Disconnect the control panel cell cable from cell and set the cable where it will not get wet.
2. Using two wrenches, place one on the cell "T" fitting and the other on the cell cap where the cell cable connector is. Carefully unscrew the cap making sure that the plates don't get stuck as you unscrew the cap. You should be able to see the plates turn as you unscrew the cap.
3. Pull the cap and plates out and set aside. **Note: Water will be draining out at this point so quickly install the spare cap included in the package to keep water from leaking.** Do not tighten this cap.
4. Submerge the titanium plates in a cup of pure white vinegar (or mild acid) for approximately 15 to 30 minutes. Rinse the plates off with fresh water. A small piece of wood can be used to carefully scrape off any buildup prior to placing the plates in the mild acid.
5. Remove the temporary cap and insert and tighten the cap with the plates. Reconnect the control panel cell cable to the cell.

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.	

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 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.

CHLORMAKERTM

Go To

www.ControlOMatic.com

**For More Product
Information**

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.

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

Product Model: _____ Serial Number: _____