

ChlorMaker DO™

DO - DRAPE OVER



OPERATING INSTRUCTIONS

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Manual Version: 1/1/13 Made in the USA

Compliments of www.spasandstuff.com

INTRODUCTION

ChlorMaker DO is a semi-automated, salt water chlorine generation system specifically designed for portable spas up to 1,000 Gallons. ChlorMaker DO 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 95% 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 DO to produce fresh, pure chlorine leaving your water clean and clear day after day.

IMPORTANT SAFETY INSTRUCTION

- WARNING:** Use ChlorMaker DO only according to these instructions. Any modification or misuse of this product will void the warranty.
- WARNING:** Install ChlorMaker DO in accordance with all national and local electrical, plumbing, safety, and other applicable codes.
- WARNING:** Connect ChlorMaker DO 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 DO unless under adult supervision.
- WARNING:** DO NOT insert objects into, or tamper with ChlorMaker DO's body in any way. Inserting metal objects into the body may cause damage and void the warranty.
- WARNING:** DO NOT operate ChlorMaker DO 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 DO.
- 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 DO.



**ChlorMaker DO
Drape Over Spa Saltwater System**

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. ChlorMaker DO 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 ChlorMaker DO 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 DO 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 DO to operate effectively.

CHLORINE SALT - SODIUM CHLORIDE (NaCl): Raise Salt Level to 1,500 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. 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 2,500 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 Salt, Water Softener & Other Coarse Grain Salts	1.5	2.5
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 DO on until all the salt has fully dissolved.

SALT LEVEL INDICATOR

ChlorMaker DO will indicate if the salt level is within the recommended range listed above. ChlorMaker DO will indicate proper salt levels by showing a solid **BLUE** light on the control panel while producing chlorine.

Solid **RED & GREEN** lights: **Salt Level Excessive (Product Shuts Off To Protect Cell) - Dilute Salt**

Solid **GREEN** light while producing chlorine: **Salt Level On The High Side**

Solid **BLUE** light while producing chlorine: **Salt Level Within Normal Range**

Solid **RED** light while producing chlorine: **Salt Level On The Low Side**

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.

PRODUCT INSTALLATION

ChlorMaker DO is equipped with a 110/220 VAC Auto-Sensing Power Supply allowing ChlorMaker DO to be installed on almost any spa with a 24 Hour Circulation Pump. Please follow the installation instructions below.

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 area.
2. **Find Power Supply Location & Route Power Supply Cable (DO NOT FASTEN POWER SUPPLY TO THE CABLE OR TO POWER SOURCE AT THIS POINT):** Find the power source location and rout the power supply cable from the control panel to the power source. The black cable clips can be used to secure the cable in place. **IMPORTANT:** Make sure the power source is GFI Protected and is protected by a weather protective cover. Single Gang and Double Gang weather protective covers can be purchased at any local hardware store. Please see weather protective cover example in the picture below.



3. **Find Skirting Location For Control Panel:** Find a convenient location on the skirting just below the fiberglass lip of the spa. See Picture Below. Rout the Cell Cable from the control panel to the point where the cell will drape into the spa. The black cable clips can be used to secure the cable in place.

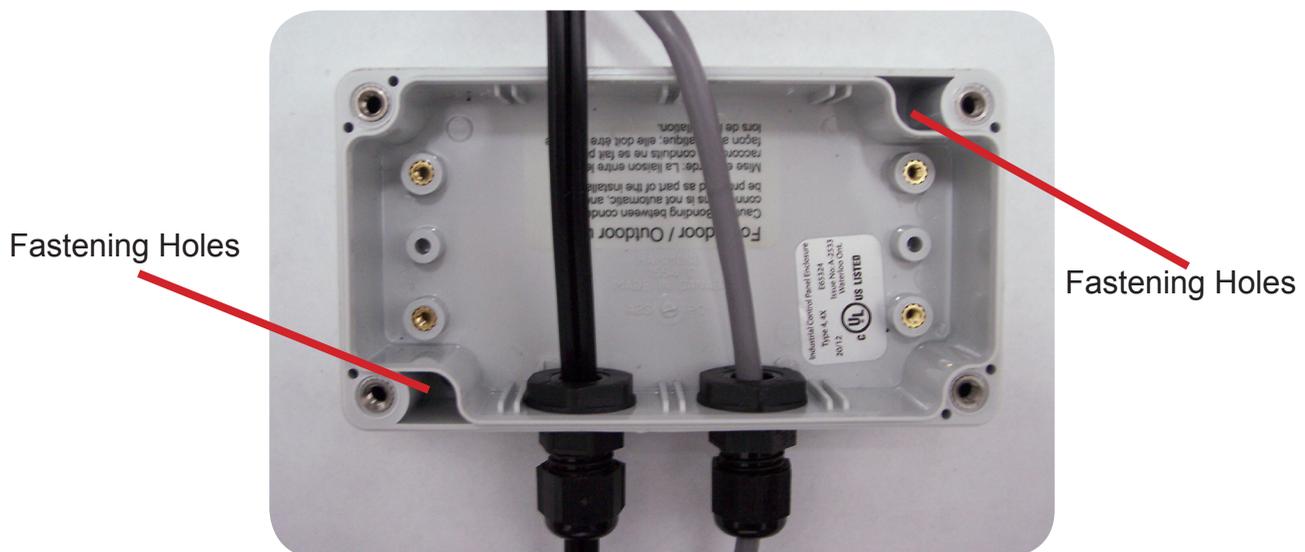


PRODUCT INSTALLATION CONTINUED

4. **Remove Top Cover To Control Panel & Loosen Water Tight Cable Grips:** **IMPORTANT:** First make sure power supply is unplugged from power source. Then remove the top cover of the control panel by unfastening the 4 screws as shown in the picture below and loosen the watertight cable grips at bottom of the control panel allowing the top cover to freely separate from the bottom section of the control panel.



5. **Fasten Bottom Section Of Control Panel To Skirting:** Locate the two fastening holes as shown in the picture below. Use the supplied screws to securely fasten the bottom section of the control panel to the skirting.



6. **Fasten Top Cover of Control Panel & Tighten Watertight Cable Grips:** Replace the top cover of the control panel and securely tighten the 4 panel cover screws. Tighten the watertight cable grips at the bottom of the control panel. **WARNING:** Do not remove power cable or cell cable from the connectors inside the control panel. Should cables become disconnected, make sure they are reconnected with the correct polarity. Reversing will damage the control panel.

PRODUCT INSTALLATION CONTINUED

7. **Place Generating Cell In Spa:** The cell can be placed in the spa's main body of water or in the filter compartment. **IMPORTANT: The cell must be fully submerged in the water.** The deeper the cell rests in the water provides better dispersion of chlorine throughout the water. If placing the cell in the filter compartment, the cell must rest loosely and comfortably in the bottom of the filter compartment.
8. **Refill Spa, Balance Water & Add Salt:** Refill the spa with water, balance the 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.
9. **Fasten Power Supply to Power Supply Cable:** Attach the cord's watertight connector to the black power supply and make sure the watertight connector is turned clockwise and the nut is hand tight.
10. **Fasten Power Supply to Power Source:** Plug the black power supply into the 110VAC or 220VAC power source. ChlorMaker DO will begin the chlorine generation process.

CHANGING POWER LEVELS

ChlorMaker DO is designed with 10 power level settings. ChlorMaker DO is set to power level 3 straight from the factory. Please follow the steps below to increase or decrease the power from the factory default power level 3.

VIEW THE CURRENT POWER LEVEL SETTING

1. Simply press the DOWN arrow button once and count the white flashes. Each flash represents a power level. For example: 3 white flashes = power level 3, 7 white flashes = power level 7, and so on.

CHANGE POWER LEVELS

1. Press both the UP arrow and the DOWN arrow at the same time. The White Light will turn on solid indicating that it is in power change mode.
2. Then press UP arrow to increase power. The GREEN light will flash each time the UP arrow is pressed. Or press the DOWN arrow to decrease power. The RED light will flash each time the DOWN arrow is pressed.
3. When finished do not press any buttons for 3 seconds. The White light will flash (count the flashes) confirming the new power level setting.

STANDBY MODE

ChlorMaker DO operates in 3 hour cycles. Which means it will be generating chlorine for a period of time in that 3 hour cycle depending on the power level setting. When ChlorMaker DO is not generating chlorine (off) it is in Standby Mode. Standby Mode is indicated by a quick GREEN flash every 10 seconds. ChlorMaker DO will remain in Standby Mode until it engages its next 3 hour cycle. To start chlorine production when in Standby, simply press the Boost button and ChlorMaker will resume chlorine production.



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

Power Level	ChlorMaker DO
	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 DO by simply pressing the up or down arrow. 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 DO 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 DO out of regular production mode or standby mode and re-start the production of chlorine according to the following table. To activate Boost Mode simply press the Boost Mode Button. The Salt Light will begin flashing indicating that ChlorMaker DO is engaged in Boost Mode.

Power Level	Normal Time (Minutes)	Boost Mode Time (Minutes)
1	2	8
2	7.5	30
3	15	60
4	30	120
5	45	180
6	60	180
7	90	180
8	120	180
9	150	180
10	180	180

TROUBLE SHOOTING

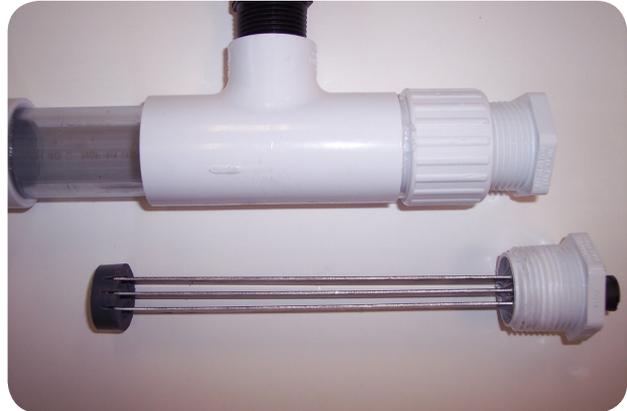
It is always a good idea to revisit the user manual to make sure installation or maintenance steps were not overlooked before referring to the trouble shooting section.

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	
Clean the filter		
Remove Phosphates		
		Shock the water
Consistently High Chlorine	Power level too high	Lower the power level
No Chlorine (Solid Green & Red Lights)	Salt level may be too high and engaged the automatic shut down feature.	Dilute the spa water by draining some of the spa water and refilling with fresh water.
Plates Are Dirty With White Or Scale Build Up	Hard water, high calcium and minerals in water.	Soak the cell in vinegar or diluted acid for 30 minutes. Reduce calcium level in water.

DISASSEMBLY & MAINTENANCE

ChlorMaker DO is designed with an automatic self cleaning feature. However, there are some spa water conditions that are well beyond the control of ChlorMaker DO'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 un-plug ChlorMaker's black power supply from the power source.
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 DO to prevent additional water from draining.



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). Turn main spa power back on and plug the black power supply into the power source to complete the cleaning process.

LIMITED WARRANTY

Models: This warranty applies to ChlorMaker DO 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.

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: _____