

*MINI*CHLOR™



OPERATING INSTRUCTIONS

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Manual Version: 2/1/14 Made in the USA

INTRODUCTION

MiniChlor is a semi-automated, salt water chlorine generation system specifically designed for portable spas up to 600 Gallons. MiniChlor 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 MiniChlor to produce fresh, pure chlorine leaving your water clean and clear day after day.

IMPORTANT SAFETY INSTRUCTIONS READ & FOLLOW ALL INSTRUCTIONS SAVE THESE INSTRUCTIONS

When installing and using this electrical equipment, basic safety precautions should always be followed, including the following:

- WARNING:** To reduce the risk of injury, do not permit children to use this product unless they are closely supervised by at all times.
- WARNING:** Use MiniChlor only according to these instructions. Any modification or misuse of this product will void the warranty.
- WARNING:** Install MiniChlor in accordance with all national and local electrical, plumbing, safety, and other applicable codes.
- WARNING:** Connect MiniChlor to a GFCI (ground fault circuit interrupt) or GFI (ground fault interrupt) protected 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 use with extension cord. Injury may result.
- WARNING:** DO NOT insert objects into, or tamper with MiniChlor's body in any way. Inserting metal objects into the body may cause damage and void the warranty.
- WARNING:** DO NOT operate MiniChlor 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 MiniChlor.
- WARNING:** DO NOT handle the unit during chlorine production (visible bubbling). Slight discomfort may be felt in cuts, sores, or sensitive skin areas due to chlorine concentration and the electrolysis process. Stop chlorine production by either removing MiniChlor from the water by lifting the cord (do not grasp the housing), or by unplugging the power supply from the power source.
- WARNING:** Unit must be disconnected from power source before performing any maintenance or troubleshooting operations.
- WARNING:** Disconnect, remove, and store or MiniChlor indoors when spa has been winterized or drained.
- 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 MiniChlor.

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. MiniChlor 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 MiniChlor 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	300 to 400 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 each use. 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

MiniChlor 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 MiniChlor to operate effectively. **WARNING: SALT ONLY NEEDS TO BE ADDED ONCE AND BROUGHT TO THE APPROPRIATE SALT LEVEL (BLUE LIGHTS) PER SPA WATER CHANGE. DO NOT KEEP ADDING SALT (See Salt Level Indicator Section Below).**

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 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 MiniChlor on until all the salt has fully dissolved.

SALT LEVEL INDICATOR

MiniChlor will indicate if the salt level is within the recommended range listed above. MiniChlor will indicate proper salt levels by showing solid **BLUE** lights while producing chlorine.

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

Solid **GREEN** lights WHILE producing chlorine: **Salt Level On The High Side**

Solid **BLUE** lights WHILE producing chlorine: **Salt Level Within Normal Range**

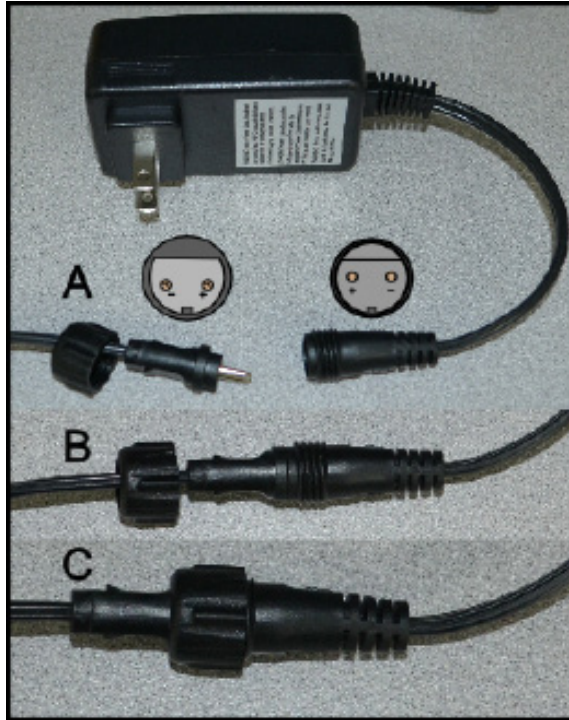
Solid **RED** lights WHILE producing chlorine: **Salt Level On The Low Side**

STANDBY MODE: Quick **GREEN** flash every 10 seconds when NOT producing chlorine (Very Normal)

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

1. Remove the tie straps from the product cable, unwind the cable, attach the cord's water tight black connector to the black power supply connector, and hand tighten the nut. **IMPORTANT: Do not reverse polarity of the cords connector to the power supply connector - doing so will void the product warranty. See the diagram below and make sure the ridge and groove at the bottom of each connector line up appropriately before securing the connection.**



2. Plug MiniChlor into a 110 VAC wall outlet. **WARNING: A 110 VAC GFCI or GFI protected outlet is required. A weather protective cover is required to house the power supply at the power source connection. Weather protective covers are available at most local hardware stores. If an outlet needs to be installed, have a licensed electrician add a 110 VAC GFI protected outlet. Do not use an extension cord.**

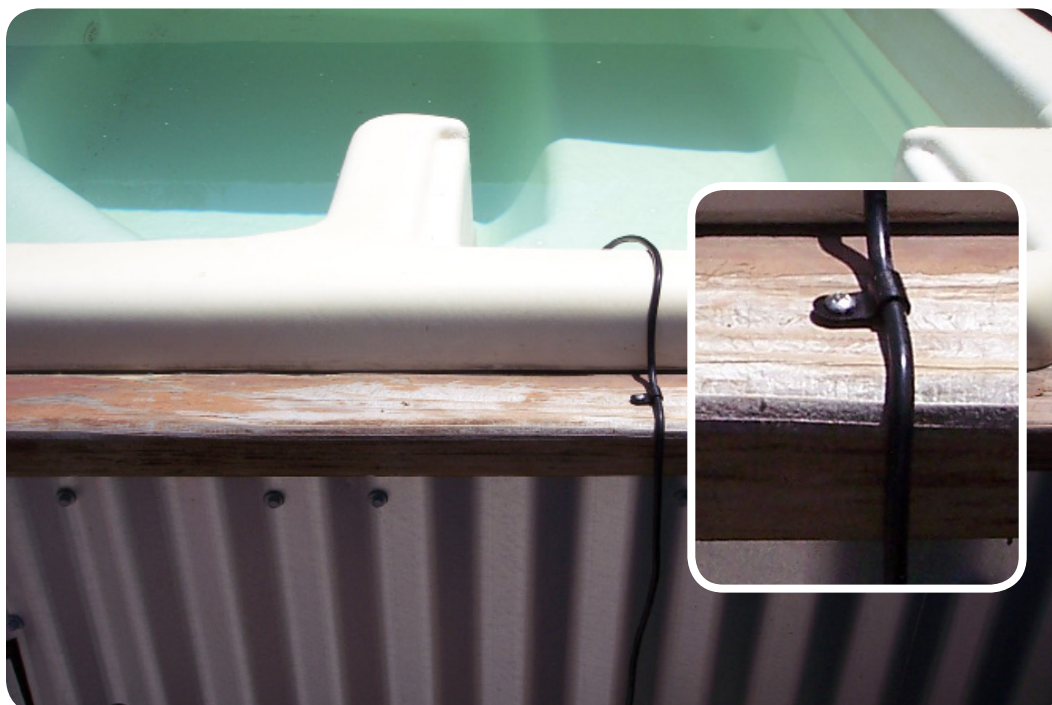


PRODUCT INSTALLATION CONTINUED

3. Make sure spa water is at the appropriate salt level (See "Salt Requirement" Section). Allow MiniChlor to drape over the side of the spa and immerse in the water and vertically rest at the deepest point in the spa. Plug Minichlor into the GFCI protected outlet, and after a brief pause, the unit will begin chlorine production.



4. Attach the supplied cable clip to the outside of the spa by first inserting the cable into the cable clip. Then use the wood screw to fasten the cable clip to any point near the spa's edge.



PRODUCT OPERATION

MiniChlor operates by simply turning the power off and on and then submerging MiniChlor in the water on the appropriate light color indicated in the chart below. Please review the operational features below.

1. **TURNING POWER OFF:** If plugged into a power source, simply pull MiniChlor out of the water to temporarily turn the power off (lights will be off). To turn power off longer term, simply unplug or shut down main power (breaker) at the power source (lights will be off).
2. **TURNING POWER ON:** Connect MiniChlor to power source and immediately submerge MiniChlor in the spa water. MiniChlor is pre-set by the manufacturer to power level 3 (1 **BLUE** Light) . MiniChlor will automatically begin chlorine production on power level 3.
3. **STANDBY MODE:** MiniChlor produces chlorine in 6-Hour increments and will be on for a period of that time and off for the rest of that time. The on and off times vary for each power level. Standby Mode is indicated by a quick **GREEN** flash every 10 seconds when it is not producing chlorine and is in an off portion of a 6-Hour production cycle. This is very normal operation.
4. **CHANGING POWER LEVELS:** Please use the following steps to change power levels;
 - A. Turn MiniChlor off by un-plugging the power supply from the power source.
 - B. Remove MiniChlor from the water and allow the water to drain from the cell for approximately one minute.
 - C. Keep MiniChlor out of the water while turning MiniChlor back on by reconnecting the power supply to the power source.
 - D. After turning MiniChlor on, the lights will indicate the current power level setting by referring to the table below followed by a pause (no lights on). Some versions of MiniChlor will perform a self test upon startup by quickly flashing **RED, GREEN, BLUE** and will then start the power level colors in the chart below.
 - E. After a brief pause (no lights on), the lights will cycle through the entire table below at a slow rate (approximately 5 seconds per light). When the lights are at the power level indicated by the appropriate light display, simply submerge MiniChlor to set the new power level. MiniChlor will then display the new power level and begin chlorine production.

Power Level	MiniChlor Power Level
	Light Indicators
1 (Low)	1 RED Light
2	2 RED Lights
3 (Medium)	1 BLUE Light
4	2 BLUE Lights
5	1 GREEN Light
6 (High)	2 GREEN Lights

EXAMPLE (Power Level 3 to Power Level 5): Unplug MiniChlor and remove from the water allowing it drain for a minute. Then plug MiniChlor back in while keeping the unit out of the water. It will display 1 **BLUE** Light for 5 seconds indicating that it is currently set to power level 3. Then a 5 second pause (no lights on) followed by 1 **RED**, then 2 **RED**, then 1 **BLUE**, then 2 **BLUE**, then 1 **GREEN**, then 2 **GREEN**, each lasting 5 seconds. When it displays 1 **GREEN** Light simply submerge the unit in the water to set it power level 5. (See Table Above).

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

Power Level	MiniChlor
	Spa (Gallons)
1	Less than 200
2	200 to 300
3	300 to 400
4	400 to 500
5 or 6	500 and above

Test the Chlorine Level with test strips after 1 to 2 days. 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 MiniChlor 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.

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
Solid Red Lights	Salt level very low	Add salt - use test strips
	Plates need cleaning	Soak the units plates in vinegar for 10 to 30 minutes
	Plates damaged	Unit needs to be replaced
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		
Solid Red & Green Lights	Salt Level Too High	Remove some of the spa water and replace with fresh 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. Reduce calcium level in water.

LIMITED WARRANTY

Models: This warranty applies to MiniChlor 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 install, re-install or 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.

***MINI*CHLORTM**

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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.
12659 Arbor Lane
Grass Valley, CA 95949

Or Register At www.ControlOMatic.com

Product Model: _____ Serial Number: _____