



ChlorMaker

Saltwater Chlorine Generator



Installation & Operation Manual

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Manuals also available at:

<https://www.controlomatic.com/documents>


Support and Service: support@controlomatic.com

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IMPORTANT WARNING AND SAFETY INSTRUCTIONS

- 1 READ AND FOLLOW ALL INSTRUCTIONS
- 2 SAVE THESE INSTRUCTIONS
- 3 **WARNING** – To reduce the risk of injury, do not permit children to use this product
- 4 **WARNING** – Use ChlorMaker only according to these instructions. Any modification or misuse of this product will void the warranty.
- 5 **WARNING** – Install ChlorMaker in accordance with all national and local electrical, plumbing, safety, and other applicable codes.
- 6 **WARNING** – Connect ChlorMaker to a GFCI (ground fault circuit interrupt) or GFI (ground fault interrupt) protected VAC power source only.
- 7 **WARNING** – Protect the power supply and outlet from exposure to the elements including direct sun, rain, snow, condensation, etc.
- 8 **WARNING** – Cutting the cord from the power supply to the ChlorMaker cell voids the warranty. Damage will occur if the connection is reversed.
- 9 **WARNING** – DO NOT use with extension cord. Injury may result.
- 10 **WARNING** – DO NOT operate ChlorMaker if damaged in any way.
- 11 **WARNING** – DO NOT pull on the cord to disconnect the Power Supply from power source. Do not allow the cord be walked on, or to rest on sharp edges or corners. Do not drop, throw, or otherwise rough handle ChlorMaker.
- 12 **WARNING** – Disconnect, remove and store ChlorMaker indoors when spa has been winterized or drained.
- 13 **CAUTION** – Leave spa cover open at least 1 minute to allow trapped gases to escape prior to use.
- 14 **CAUTION** – Measure water quality parameters and adjust if necessary prior to each spa use.

IMPORTANT WARNING AND SAFETY INSTRUCTIONS

- 15 **CAUTION** – ChlorMaker doesn't measure the chlorine level and must be adjusted properly in order to not over-chlorinate your spa. Over-chlorination can lead to spa damage and un-healthy water conditions.
- 16 **WARNING** – Remove the ChorMaker cell from the SPA when using the SPA.
- 17 **WARNING** – DO NOT handle the ChlorMaker cell 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.
- 18 **WARNING** – DO NOT insert objects into, or tamper with the ChlorMaker cell in any way. Inserting metal objects into the cell may cause damage and void the warranty.
- 19 **WARNING** – DO NOT plug ChlorMaker control box directly into the VAC supply, this will damage the ChlorMaker. Always use the low voltage power supply.
- 20  DO NOT throw away. Please visit www.controlomatic.com for recycling instructions.



ChlorMaker Overview

ChlorMaker is a semi-automated, salt water chlorine generation system specifically designed for portable spas up to 1,000 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. The concentration required for the ChlorMaker is only about 5% of the salt level of ocean water and below the typical taste level of most humans.

The small addition of salt also benefits spa 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 (379 liters) of water is all it takes for ChlorMaker to produce fresh, pure chlorine leaving your water clean and clear day after day.

ChlorMaker produces chlorine in its pure form using electrolysis in order to sanitize the spa water. The ChlorMaker operates on a 3 hour cycle. The chlorine in a spa will dissipate quickly due to the warmer temperatures of the water, so the ChlorMaker operates with a short 3 hour cycle time to ensure sanitizer levels are maintained. After the salt is converted to chlorine, the chlorine will later be converted back to salt, keeping the salt level steady. When you use the spa your body attracts some salt and when you get out the salt level will drop slightly.

Water Preparation & Maintenance

To ensure proper operation, the spa should be drained, rinsed, refilled with fresh water, and balanced to the recommended levels indicated in this section before installing the product. Use the included test strips to measure water chemistry and verify the water is properly balanced. 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 all users. Spas are unique in both size and usage patterns. ChlorMaker will significantly reduce the amount of spa maintenance required, but regular chemical checkups, including chlorine levels and pH, are recommended. Proper water maintenance will prolong the life of ChlorMaker and the spa. The following table describes generally accepted optimum water chemistry for portable spas.

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.

Parameter	Recommended Level
Free Chlorine	2.0 to 3.0
pH	7.2 to 7.6
Total Alkalinity	80 to 120 PPM
Calcium Hardness	200 to 400 PPM

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 (parts per million) 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 will generate either Chlorine or Bromine depending on the type of salt used. Sodium Chloride Salt provides Chlorine Generation and Sodium Bromide Salt provides Bromine. Please Note: Each salt requires a different level of salinity for the ChlorMaker to operate effectively. **WARNING: SALT ONLY NEEDS TO BE ADDED ONCE PER SPA WATER CHANGE. DO NOT KEEP ADDING SALT.**

CHLORINE SALT - SODIUM CHLORIDE (NaCl): Raise Salt Level to 1,500 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 1,500 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. NOTE: 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.

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.

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

Salt Type	Pounds	kg	Cups	Salt Level
99% Pure Sodium Chloride (NaCl)	1.5	0.681	2.5	1500-2000 PPM
99% Pure Sodium Bromide (NaBr) Fine Grain Salt	2.5	1.135	4	2500-3000 PPM

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 and multiply by 2.5 to get the amount to add in cups.
 $(350 / 100 * 2.5) = 3.5 \times 2.5 = 8.75$ Cups
 - For a 1250 liter Spa: Divide 1250 liters by 379 and multiply by 0.681 to get the amount to add in kg.
 $(1250 / 379 * 0.681) = 3.3 \times 0.681 = 2.25$ kg and for cups $(1250 / 379 = 3.3 \times 2.5 = 8.25$ 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. If the water is cold it may take several hours for the salt to fully dissolve, warmer water will help dissolve the salt faster.

NOTE: It may take the ChlorMaker a few hours to register the salt level the first time. Wait a couple of hours for the salt to dissolve, and then turn on the ChlorMaker.

NOTE: When putting salt in, do not add too much. The ChlorMaker will shut down and display **RED/GREEN** lights at the same time. It is always better to put less in, and then add a little more later if needed. If you have a water softener then your water source may already have some salt, in this case let the water get to temperature and turn the ChlorMaker on before adding any salt to check the current level.

NOTE: If you are trying to decide which salt you want to use, ControlOMatic recommends pool salt (NaCl). Sodium bromide (NABR) is around \$13 per pound and pool salt (NaCl) is around \$0.18 per pound. To use NaBr on a 400 gallon spa would cost around \$130 for the salt, and then you would have to buy it again when you drain your spa.

ChlorMaker Installation

When opening the package make sure all of the parts are included:

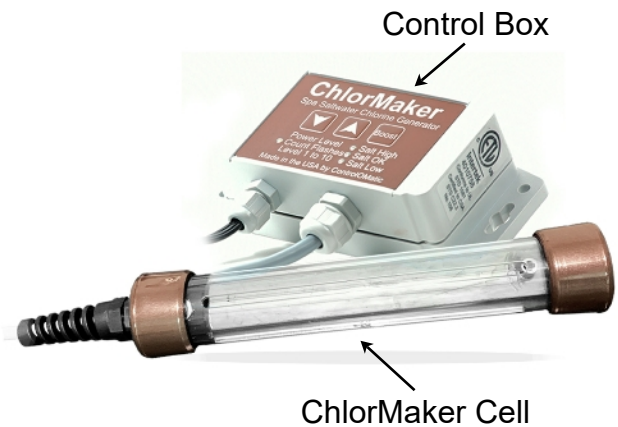
1	Cell	5	SS Screws: #6x1/2, #6x5/8 - (2 of each)
2	Power supply	6	LaMotte test strips, salt and general spa
3	Control box	7	Owners manual
4	Cable clips (2)		

Prepare the Spa

Drain and clean the spa, refill and add salt. Allow the water to get to over 95°F and balance the water.

Installation Steps

1. Install a protected electrical outlet, if not already available near the spa for the Power Supply.
2. Mount the control Box.
3. Drape the ChlorMaker cell over the side of the spa ensure it is hanging vertically.
4. Turn the ChlorMaker on.
5. Set the power level.



Power Supply

The power supply supports 100 to 240 VAC with an output voltage of 5.5 VDC. The supply cord from the Power Supply to the ChlorMaker control box is 15 feet. Installing any equipment inside the spa equipment compartment may void the spa warranty or void the safety certification of the spa and is not recommended.

110 VAC Electrical Outlet

Locate a GFCI protected outlet near the spa. **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.



220 VAC Electrical Outlet

The power supply plug style is for 110 VAC. Have a licensed electrician install a 220 VAC GFI protected connection near the spa that will accept a 110 VAC style plug. The outlet may need to be a minimum distance from the spa and the local electrical codes should be checked.

Power Supply Connector

Remove the tie straps from the ChlorMaker power supply cable and route the cable to the outlet, do not plug in yet. The cable should already be attached to the power supply, the connector has 2 metal pins, one is round and the other is rectangular and can only go in one way, reversing the connection will damage the ChlorMaker. The ChlorMaker includes 2 cable clips, use one (3/16" with a #6 x 1/2" screw) to attach the cable to a solid surface if necessary.

Cold Weather Operation

The power supply is not designed to operate in temperatures below -4°F or -20°C . If this can't be avoided store the power supply in a warm location when the temperature is low or install the power supply in the spa equipment area where there is some protection.

Mount the Control Box

Find a suitable location to mount the control box meeting the following requirements:

1. Vertical installation with the two cables coming out the bottom.
2. Out of direct sunlight.
3. A location that will minimize rain and moisture. Even though the box is resistant, minimizing moisture exposure will minimize the chance of moisture getting inside the box.
4. A flat location on the spa skirt that is close enough for the power supply cable to reach the electrical outlet and the cable can be protected or locate on a post or wall near the spa, close enough to the spa for the 10 foot cell cable to reach, with the cell hanging in the deepest part of the spa.

The ChlorMaker box mounting flange has two large holes allowing for installing the screws first.

1. Install the two small screws $5\frac{3}{8}$ " apart and $1\frac{1}{4}$ " or more below the edge of the shell part of the spa.
2. Place the box onto the screws and slide the box down.
3. Tighten the screws.



ChlorMaker Cell

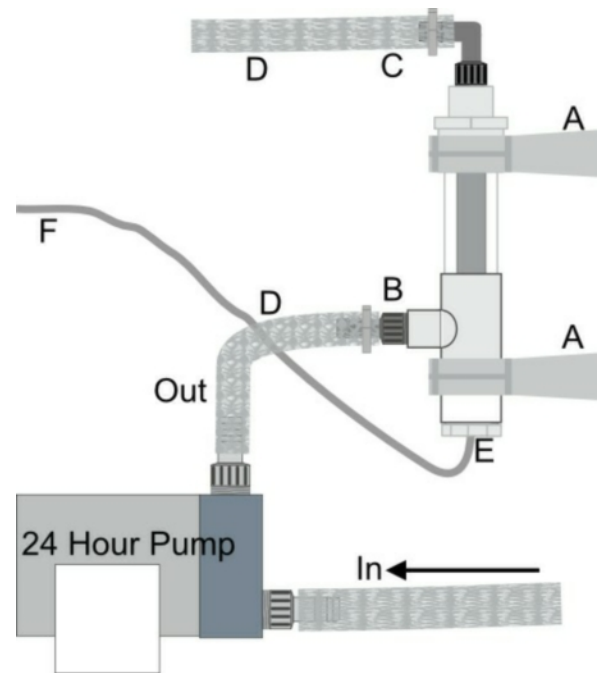
Lift the lid off the spa and drape the cell over the side into the water. Use the following guidelines for the placement of the cell:

1. For best results place the cell in the deepest location in the spa. When generating chlorine the bubbles will travel up and, if in the deepest location in the spa, will be in contact with the spa water longer.
2. The cell can be located in the filter area if it will fit - but this is not recommended, as the bubbles will not be in contact with the water as long as in a deeper location. When the pump is off the filter door closes and the chlorine level will be much higher in the filter area.
3. The ChlorMaker includes 2 cable clips. Use one of the clips ($\frac{1}{4}$ " clip and a #6 x $\frac{1}{2}$ " screw) to fasten the cable to the side of the spa if necessary.

In-Line Installation

An in-line version allows for the electrode to be hidden in with the spa equipment. This does bring up some considerations:

- The electrode does need to be cleaned from time to time. If hidden with the hot tub equipment it can be a challenge to clean.
- The water flow needs to be 5 gallons/minute or less so a bypass is highly recommended. Do not install in the main hot tub water flow.
- Many spas have a small pump that runs 24 hours per day and this is the recommended installation. These pumps are very small and usually have 3/4" vinyl tubing which makes installation easier.
- Without a 24 hour pump, the chlorine production will be unpredictable. The main pump is typically not on the same amount of time per day and the time may need to be increased.
- Without a 24 hour pump, the existing pump time may need to be increased to make the needed amount of chlorine, this will lead to higher energy costs.
- The power supply will need to be controlled with the same voltage that turns on the circulation pump. You do not want the ChlorMaker making chlorine when there is no water flow because gasses will accumulate in the plumbing.



In-Line Installation

1. Open the spas equipment panel. Turn the SPA off at the circuit breaker panel.
2. Locate the continuous (24 Hour) circulating pump and the 3/4" tubing connected to the pump. If the pump has a different size tubing, adapters will be needed. The cell has 3/4" NPT female threads.
3. Install the cell on the OUTPUT side of the pump. The tube will need to be cut and reconnected to the cell. Additional tubing may be needed if the existing tube is not long enough or is hard to access.
4. The location of the cell should have no obstructions at the cable end of the cell. This is to allow for cell removal, replacement and cleaning.
5. Water shut-off valves (not included) may be installed at (D) to aid in future maintenance and cleaning of the cell.
6. Install the two pipe brackets (A) with the 2 screws. A suitable location also includes an appropriate mounting surface for the screws. Do not install the brackets to insulation.

7. Install the two 3/4" barb fittings to the cell using Teflon tape. The cell should be mounted vertically to prevent chlorine gas from being trapped inside the cell. Based on the location of the install, decide if the 90 degree barb fitting should go on the side or the top (B and C).
8. Connect Tubing To Cell: Cut the existing tube and reconnect the ends to the two 3/4" barb fittings on the cell. Use the supplied clamps at (B and C) 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.
9. The cell cable (F) needs to be routed to the ChlorMaker box. Follow the instructions in CM-CELL-HIDE to remove the cable and install the cable grip.
10. Apply Teflon tape to the electrode and install the electrode into the in-line cell.
11. When the cell (E) is removed for cleaning or during installation, use the 1" plug to seal the hole.

In-Line Maintenance

Electrode Inspection: At least every other week inspect the electrode

- Open the spas equipment panel. Turn the SPA off at the circuit breaker panel.
- Locate the in-line cell and inspect the titanium plates visually through the clear part of the tube body
- If there is any white buildup that is calcium and the electrode needs to be cleaned
- To clean the electrode it needs to be removed from the holder. If valves were installed shut off the water to the electrode, otherwise remove the electrode and quickly install a PVC plug to keep the spa water from spilling out
- Clean the electrode with a mild acid and reinstall

ChlorMaker Operation

The ChlorMaker has **3** buttons and **4** lights built into the overlay on the control box. With the buttons you can check the power level, change the power level and put into boost mode. The lights indicate the salt level and the current mode (making chlorine or standby).

Power Up

To turn on the ChlorMaker plug in the power supply (wall transformer). When the ChlorMaker turns on it will flash the lights as follows:

1. **WHITE & RED** - Blinks three or more times, the number is the software version
2. **WHITE, RED, BLUE, GREEN** - will flash in that order
3. Chlorine production will start after a few seconds

Making Chlorine (Salt Level Indication)

ChlorMaker measures the current to the electrode and uses that as an indicator of the salt level. Water temperature and minerals in the water also impact the indication. If it is low that is OK, you could add more salt if you want, but not required. If the lights are on solid or blinking (at a one second rate if in boost mode) the ChlorMaker is producing chlorine:

- Solid **GREEN** - Current to the electrode is over 2.0 amps
- Solid **BLUE** - Current to the electrode between 1.0 and 2.0 amps
- Solid **RED** - Current to the electrode less than 1.0 amp
- Solid **RED / GREEN** at the same time - Current to the electrode is over 2.4 amps and the ChlorMaker has shut down to protect the power supply and the cell. Drain out some water and refill to dilute the salt level. Cycle power or press the boost button to have it check again. Perform the tests in the troubleshooting section.

Standby Mode (Not Making Chlorine)

The ChlorMaker works on a 3 hour cycle. The first part of the 3 hours is chlorine production mode where there will be visible bubbles coming out of the cell; the rest of the 3 hours is standby mode where the cell is not making chlorine. The standby mode is indicated by the **WHITE** light flashing every 10 seconds. This shows the ChlorMaker has power and is on, but waiting for the 3 hour period to end. When in vacation mode all lights flash at the 10 second rate.

Important - Electrode Life Indicator: When electrode life has reached **90%**, the **WHITE** light will flash (**2**) quick flashes every **10** seconds in standby instead of one flash. This is your reminder that the electrode is almost at end of life, so it is time to order a replacement electrode.

Power Levels

ChlorMaker includes 10 power level settings that are set based on water volume, usage and testing. The ChlorMaker factory setting is 3 (on 15 minutes and standby is 2 hours and 45 minutes). The output power to the cell is always the same. The power levels change the amount of time the cell is energized every three hours. At the start of the three hour period the cell will be energized and then, after the time indicated by the power level, the cell will go into standby mode and stop producing chlorine. At the start of the next 3 hour period, the cycle repeats. Follow the steps below to increase or decrease the power level.

View the Current Power Level Setting

Simply press the UP or 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.

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. Press the UP arrow to increase power - the **GREEN** light will flash each time the UP arrow is pressed. If set at the maximum power level of 10, the **GREEN** light will be on solid.
3. Press the DOWN arrow to decrease power - the **RED** light will flash each time the DOWN arrow is

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, phosphate level, etc. After the testing and adjustment period, ChlorMaker will take care of your sanitation needs day after day.

As a starting point, set the power level to the general recommendations shown in the chart below. This is only a starting point and the final level may be very different. Use the following procedure to find the power level for your spa.

Day 1: Set the power level according to the table and the size of your spa.

Day 2: Measure the chlorine level. If it is higher than you want lower the power level by 1. If it is lower than the level you want raise the power level by 1.

Day 3: Repeat the Day 2 step until the chlorine remains constant at the required level for a couple days.

NOTE: If the chlorine level is 0 PPM, 24 hours after installation, the initial chlorine demand on the spa may be above what ChlorMaker can produce in order 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 lower 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. It is best to lower the power level in these conditions but the ChlorMaker does have a vacation mode and will start to drop the on time after a week of no buttons being pressed.

WARNING: The ChlorMaker does not measure the sanitizer level and the power level needs to be properly adjusted. If the power level is higher than needed and the spa is left alone for a number of days without measuring the sanitizer, the levels may be too high and potentially damage spa components.

Power Level	Gallons	Liters
1 - 3	< 200	< 760
4	200 to 300	760 to 1150
5	300 to 400	1150 to 1500
6	400 to 500	1500 to 1900
7	> 500	> 1900

Boost Mode & Power Level Times

Activating Boost Mode will start a chlorine production cycle. To activate Boost Mode simply press the Boost Mode Button, the **GREEN** and **BLUE** led's will flash letting you know a production cycle will start. **IMPORTANT: The ChlorMaker can't make chlorine faster. The Boost Mode simply turns it on for a single, extended cycle. If the spa chlorine has dropped to 0 PPM from heavy usage, chlorine may need to be added.** If currently in a production cycle pressing the Boost button will terminate the production cycle and place the ChlorMaker in standby mode. The boost button is an easy way to start or stop a chlorine production cycle. When Boost Mode is active, **the salt level light will flash.**

Power Level	Normal Time	Boost Mode Time
1	00:02:00	00:06:00
2	00:07:30	00:22:30
3	00:15:00	00:45:00
4	00:30:00	01:00:00
5	00:45:00	01:30:00

Power Level	Normal Time	Boost Mode Time
6	01:00:00	03:00:00
7	01:30:00	04:30:00
8	02:00:00	06:00:00
9	02:30:00	07:30:00
10	03:00:00	09:00:00

Vacation Mode

When vacation mode is activated the ChlorMaker will decrease the on time to make less chlorine. **Vacation mode is automatically activated when no buttons are pressed for over a week.** When activated, the lights will flash all lights every 10 seconds in standby mode. To exit vacation mode press any button. The amount the time is decreased:

No button pressed for 1 to 2 weeks: On time * 0.75

No button pressed for over 2 weeks: On time * 0.5

Electrode Life Span Indicator

This feature tracks the amount of time the ChlorMaker electrode has been actively producing chlorine. The typical life span of the electrode is 7,000 hours of chlorine production. The life span indicator is displayed by a series of flashing lights that represent the percentage of electrode life used.

1. Current Percentage: Press the **Boost** and **Down** arrow at the same time.

The following lights will flash to indicate the percentage used:

GREEN = 100

BLUE = 10

RED = 1

Example: (5) **BLUE** flashes would mean 50% life has been used on the electrode.

2. When electrode life has reached **90%**, the **WHITE** light will flash (2) quick flashes every **10** seconds in standby instead of one flash. This is your reminder that the electrode is almost at end of life, so it is time to order a replacement electrode
3. Reset the indicator: Press all three buttons at the same time to zero out the indicator. This should be done when replacing the electrode.

Troubleshooting Guide

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.

Red and Green Light on at the Same Time

This is by far the most common problem and is an indication of too much salt. Even if you added the correct amount and the salt level measures OK, the indication is dependant on water temperature and other minerals in the water. It is always a good idea to start off low and add more salt after a couple days.

If you contact ControlOMatic with this problem you will be asked for the results of the following tests.

- **Easy First Test**

Take the electrode out of the water and turn it on (or press boost) so it starts making chlorine, if the lights still turn green/red then there is a problem and it isn't the water.

- **Second Test – The Bucket Test**

Fill a 5 gallon bucket 2/3 with spa water and 1/3 with fresh water. Turn the unit off and leave in the bucket for 5 minutes to adjust to the temperature. Turn it on and see if the lights are blue when making chlorine, if they are then remove 1/3 of the spa water and replace with fresh water. If not try again but fill the bucket 1/2 with spa water and 1/2 with fresh water and try again.

- **Power Supply Test**

There is a slight chance it is the power supply, if you have a voltmeter measure the DC voltage and it should be around 5.5 Vdc. If it is higher, like 8 then that would cause the problem and the supply is bad.

- **Disconnect Electrode Test**

The problem is either the circuit board or the electrode. Open the control box and disconnect one of the two wires to the electrode so the electrode is now disconnected. Turn the unit on and when it starts making chlorine if the problem goes away then it is the electrode, if the problem doesn't go away it is the circuit.

If after performing these tests the led's remain red and green, then there may be a short in your saltwater system so please contact us.

Plates Need Cleaning - White Calcium Deposits

- If there is a white calcium buildup between the titanium plates, this will interfere with the chlorine production. Disconnect the power before cleaning. Soak the cell in a mild acid (white vinegar or pH down) for 10 to 30 minutes and rinse in clean water. Repeat until the white deposits are gone

RED Lights While Making Chlorine

- Salt level low: Add salt. Before adding salt it is a good idea to measure the salt level first
- Check the cell for white calcium buildup and if present clean the plates
- Plates damaged: Unit needs to be replaced. The plates will last 7000 to 10000 hours of chlorine production and the ChlorMaker may be at the end of its life. Note: The lower the power level you can operate on, the longer the ChlorMaker will last.

Consistently Low Chlorine

- Power level too low: Increase the power level
- Low salt level: Adjust the salt level as necessary. The ChlorMaker will make less chlorine with a lower salt level
- Plates need cleaning: See above
- High bather load: Additional chlorine or shock may be needed
- Very high salt level: The **RED** and **GREEN** lights may be on indicating a very high salt level. When this happens the ChlorMaker shuts down and will stop making chlorine to protect the power supply. Drain out some of the water and refill with fresh water to lower the salt level. Cycle power or press the boost button to start a production cycle to test again.
- Just doesn't keep up:
 - Remove organic material such as leaves and clean the filter
 - Make sure the cell is at the deepest point in the spa and in a **VERTICAL ORIENTATION!**
 - Remove the phosphates: Phosphates are food for algae and consume chlorine. The ChlorMaker makes chlorine slowly and removing the phosphates will help lower the spas chlorine consumption demand
 - Shock the water: You can use either a chlorine based shock or chlorine free

Consistently High Chlorine

- Power level too high: Lower the power level
- Lower the salt level by adding some water

The ChlorMaker is off, No Lights

- Check if in the standby part of the cycle, watch and see if the **WHITE** light flashes every 10 seconds
- The GFCI circuit breaker has tripped. Verify that there is input VAC.
- The power supply has been damaged. The rain cover didn't prevent moisture from the power supply, was subjected to freezing weather or the cord has been cut.

Replacement Parts & Accessories

Item	Part Number	Type	Description
1	TCPS	Power Supply	Replacement power supply for ChlorMaker & SmarterSpa
2	CM-Electrode	Electrode	ChlorMaker replacement electrode
3	CM-IL-Electrode	In-Line Electrode	ChlorMaker-IL replacement electrode
4	Insta-Test-4	Test Kit	Insta-Test 4 Spa Test Strips, Chlorine, pH, Hardness & Alkalinity
5	Insta-Test-Salt	Test Kit	Insta-Test Salt Pool and Spa Test Strips Sodium Chloride
6	CELL-HIDE	Kits	Includes 2 cable grips to conceal the electrode in the spa filter compartment
7	PS-HIDE	Kits	Includes a 2 foot pigtail and 1 cable grip to connect the control box to the spa pack
8	104PS2	Kits	Saddle clamp install zinc sacrificial anode for 2" pipe

The titanium plates of any saltwater chlorine generator will eventually wear out and need replacing. Visit www.controlomatic.com and select Shop which will take you to our store.

NOTE: Installing the ChlorMaker inline may void the spas warranty and UL safety certification as you will be adding to the existing equipment of the spa. We can provide the conversion kit CMSCIL-KIT or you can find the required parts at your local hardware store. If you install it inline we recommend spas with a 24 hour continuously running pump that has 3/4" tubing.

New to the Hot Tub Experience

Some guidelines and suggestions if this is your first hot tub:

- **IMPORTANT:** Always start out with low salt. The unit measures current so water temperature, other minerals and salt all play a part in the light color when making chlorine
- If you want to take some water in to be tested be very careful that you do not leave the testing location with lots of chemicals
- All you should need for additional chemicals is white vinegar/ph-down in addition to the salt system and a little salt
- If the hot tub is used multiple times per day the salt system may not be able to keep up. In that case a shock treatment may be helpful
- If the system isn't able to break away from a zero chlorine level, phosphate remover may be helpful to lower the chlorine demand of the water
- If you think you need to purchase other chemicals to get the water in balance feel free to contact Controlomatic - support@controlomatic.com. If you didn't register your unit please include your address information and the serial number of your system
- Type of salt: You can use a special mineral based salt but we recommend pool salt for the easiest setup and chlorine production
- Measurements: The most important measurements are pH and the chlorine level. Measure the pH at least once per week and adjust to keep at 7.5. If the pH is high you can use white vinegar to lower it, additionally, if your fill water has a low pH just adding some water may do it
- White buildup on the electrode plates: This is calcium and needs to be removed before shorting out the electrode

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 owners 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 (proof of purchase may be necessary). Damage to the system from improper water maintenance is not covered in this warranty.

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. Since ControlOMatic has no control of the use of this system the purchaser assumes 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.

Should any problem develop during the warranty period contact ControlOMatic, www.controlomatic.com.

Product Registration

Register your ChlorMaker online at www.controlomatic.com/support

Or - Email your information to support@controlomatic.com

Or - Fill out the registration form and mail it to:

ControlOMatic, Inc.

12659 Arbor Lane, Grass Valley, CA 95949