



ChlorMaker

Saltwater Chlorine Generator



Installation & Operation Manual

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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 **CAUTION**—ChlorMaker is compatible with all spas, when used as directed. We recommend consulting with your spa's manufacturer.
- 5 **WARNING**—Use ChlorMaker only according to these instructions. Any modification or misuse of this product will void the warranty.
- 6 **WARNING**—Install ChlorMaker in accordance with all national and local electrical, plumbing, safety, and other applicable codes.
- 7 **WARNING**—Connect ChlorMaker to a GFCI (Ground Fault Circuit Interrupt) or GFI (Ground Fault Interrupt) protected VAC power source only.
- 8 **WARNING**—Protect the power supply and outlet from exposure to the elements, i.e. direct sun, rain, snow, condensation, etc.
- 9 **WARNING**—Cutting the cord from the power supply to the ChlorMaker electrode voids the warranty. Damage will occur if the connection is reversed.
- 10 **WARNING**—DO NOT use with extension cord. Injury may result.
- 11 **WARNING**—DO NOT operate ChlorMaker if damaged in any way.
- 12 **WARNING**—DO NOT pull on the cord to disconnect the power supply from power source. Do not allow the cord to be walked on, or to rest on sharp edges or corners. Do not drop, throw, or otherwise rough handle ChlorMaker.
- 13 **WARNING**—Disconnect, remove, and store ChlorMaker indoors when spa has been winterized or drained.

IMPORTANT WARNING AND SAFETY INSTRUCTIONS

- 14 **CAUTION**—Leave spa cover open at least 1 minute to allow trapped gases to escape prior to use.
- 15 **CAUTION**—Measure water quality parameters and adjust if necessary prior to each spa use.
- 16 **CAUTION**—ChlorMaker does not measure the chlorine level and must be adjusted properly in order to not over-chlorinate your spa, leading to spa damage and unhealthy water conditions.
- 17 **WARNING**—Remove the ChlorMaker electrode from the spa when using the spa.
- 18 **WARNING**—DO NOT handle the ChlorMaker electrode during chlorine generation (visible bubbling). Slight discomfort may be felt in cuts, sores, or sensitive skin areas due to chlorine concentration and the electrolysis process.
- 19 **WARNING**—DO NOT insert objects into, or tamper with the ChlorMaker electrode in any way. Inserting metal objects into the electrode may cause damage and will void the warranty.
- 20 **WARNING**—DO NOT plug ChlorMaker control box directly into the VAC supply, as this will damage the ChlorMaker. Always use the provided low-voltage power supply.

ChlorMaker Overview

ChlorMaker is a semi-automated saltwater chlorine generation system, specifically designed for portable spas up to 2000 gallons (7500 liters). 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, which is below the level that most people can taste.

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. All it takes for ChlorMaker to keep your spa water fresh and clean is 2.5 cups of salt per 100 gallons (380 liters) of water.

ChlorMaker produces chlorine in its pure form using electrolysis in order to sanitize the spa water. The ChlorMaker operates on a short three-hour cycle, maintaining the chlorine level in the water.

Since the chlorine originates from the salt, the unused chlorine inherently converts back into that salt, allowing the ChlorMaker to reuse that salt to make new chlorine. Essentially, this means that the salt level will remain fairly steady, only gradually decreasing from things like splashing or people leaving the spa with salt water still inherently on them.

Water Preparation & Maintenance

To ensure proper operation, the spa should be prepared before installing the ChlorMaker, so it should be drained, rinsed, refilled with fresh water, and balanced to the recommended levels indicated in this section. We have included test strips to help you measure and verify the water chemistry in that last step.

In most cases, filter replacement is recommended but not required, with the exception being for hydrogen peroxide systems. The combination of hydrogen peroxide and chlorine may cause gum-like buildup, water discoloration, and skin irritation, so it is important in that case to make sure that there is no residual hydrogen peroxide in any part of the spa, particularly that filter.

ChlorMaker will significantly reduce the amount of spa maintenance required, but regular chemical checkups, including chlorine levels and pH, are recommended, for the sake of proper water maintenance and thus the health and safety of the spa users, not to mention also for the lifespan of the ChlorMaker unit and the spa. The table on the next page lists the generally accepted ideal water chemistry for 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, hardness, and salt levels should be checked at least once per month (see the table on the next page and Salt Requirements for recommended levels).

About once a month, use a phosphate remover (available at your local pool and spa supply store or online) to manage the phosphates in the spa water, to keep them from increasing the demand for chlorine and reducing the life expectancy of the ChlorMaker electrode.

It is also recommended to manually shock the spa after high usage (e.g. after a party with multiple users), or biweekly if used frequently. Make sure to leave the spa circulating for several hours before retesting, ensuring more accurate test results.

Water Preparation & Maintenance (cont.)

Recommended Levels

Parameter	Recommended Level
Free Chlorine	2.0-3.0 PPM
pH	7.2-7.6
Total Alkalinity	80-120 PPM
Total Hardness	250-400 PPM

Warning: Consistent chlorine levels above 5.0 PPM (parts per million) and/or consistent salt concentration levels above 5000 PPM may lead to corrosion of metal components in the spa.

Warning: Consistent hardness levels below 250 PPM may lead to spa equipment damage and failure. Make sure total hardness levels are within the recommended range above.

Salt Requirements

ChlorMaker will generate either chlorine or bromine depending on the type of salt used: use sodium chloride (NaCl) for chlorine or sodium bromide (NaBr) for bromine. For the sake of consistency in this manual, we will primarily use chlorine spas in our explanations and examples, but those will all still apply to bromine spas, with the only exception being the quantity of salt needed (see more details on the next page).

Warning: Salt only needs to be added once per spa water change, so adding unneeded salt may cause the salinity to increase too much, causing the ChlorMaker to shut down, to protect the power supply and the electrode from damage.

Chlorine Salt—Sodium Chloride (NaCl):

For chlorine spas, raise the salt level to 500-2000 PPM (parts per million). Pool salt is the most common salt used for saltwater chlorine generators (i.e. your ChlorMaker), but you can use any salt that is at least 99% pure sodium chloride and does not use any anti-caking agents. Essentially, when you check the ingredients list, sodium chloride should be the only one on the list.

Some mineral-enriched salts can also be used to help make the water even softer on the skin, but they will require higher quantities to achieve that sodium chloride salt level. Those extra minerals may increase your risk of having too much overall salt in the water, so make sure to monitor the salt lights as you add the salt. See more details on the next page, after the chart.

Bromine Salt—Sodium Bromide (NaBr):

For bromine spas, raise the salt level to 1000-3000 PPM (parts per million). Similar to sodium chloride (NaCl), you will need the sodium bromide (NaBr) to be at least 99% pure, which will most likely be easiest to find at a pool and spa store, locally or online.

If you are unsure about what would be best for your spa, your local pool and spa store can likely analyze a sample of your water to give you that more specific help.

Note for use in Canada: Sodium bromide products should not be used for this application in Canada.

Salt Requirements (cont.)

Estimated Salt per 100 Gallons (380 Liters) of Spa Water

Salt Type	Pounds	Kilograms	Cups	PPM
Sodium Chloride (NaCl)	1.5	0.7	2.5	500-2000
Sodium Bromide (NaBr)	2.5	1.1	4	1000-3000

Note for use in Canada: Sodium bromide products should not be used for this application in Canada.

The amount of salt to add depends on the size of the spa, which should be listed in your spa's manual. You can also estimate the size of your spa with an online spa volume calculator.

Here are some examples, using sodium chloride (NaCl):

- 350 gallons
 - $350 \div 100$ (gallons) is 3.5
 - 3.5×2.5 (cups per 100 gallons) is **8.75 cups**
- 1250 liters
 - $1250 \div 380$ (liters) is 3.3
 - 3.3×2.5 (cups per 380 liters) is **8.25 cups**

Simply pour the recommended amount of salt directly into the spa water to bring the concentration to the recommended level, and turn the spa jets on to help mix it in. If the water is cold, it may take several hours for the salt to fully dissolve.

Note: It may take the ChlorMaker a few hours to register the salt level the first time because of the salt still dissolving into the water, so we recommend waiting before turning on the ChlorMaker.

Note: If there is too much salt, the ChlorMaker will shut down and display **Green** and **Red (Salt High and Salt Low)** lights at the same time. When in doubt, start with less salt than you think you need, since it is much easier to add more salt than it is to remove it, since removing it requires draining spa water and adding fresh water. If you have a water softener, your water may already have some salt in it, so in that case, before adding any salt to your spa, let the water get to temperature and then turn the ChlorMaker on. That way, you can check the current level and gradually add salt in as needed.

Note: If you are trying to decide which salt you want to use, we typically recommend sodium chloride (NaCl), since it is often more inexpensive, all while still being effective. If you have sensitive skin and are outside of Canada, sodium bromide (NaBr) may be even more gentle than sodium chloride (NaCl) already is, so feel free to check with your dermatologist for which option would be best for you.

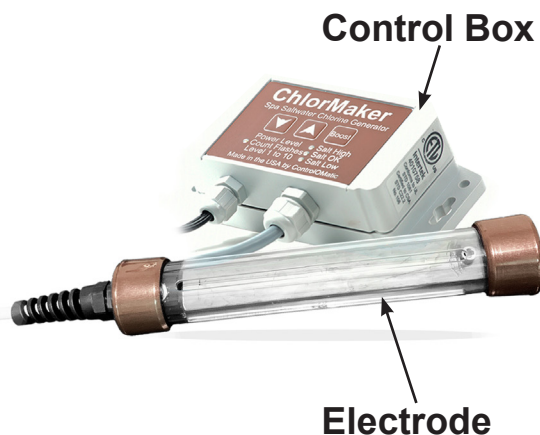
ChlorMaker Installation

Prepare the Spa

Drain and clean the spa, refill, and add salt. Then, allow the water to get to over 95°F (35°C), and balance the water.

Installation Steps

1. Add salt (see Prepare the Spa section).
2. Install a protected electrical outlet, if not already available near the spa, for the power supply.
3. Mount the control box (see Mount the Control Box section).
4. Drape the ChlorMaker electrode over the side of the spa, ensuring that it is hanging vertically.
5. Turn the ChlorMaker on.
6. Set the power level.



Power Supply

The power supply supports 100 to 240 VAC with an output voltage of 5.5 VDC, and it comes with a 15-foot cord spanning from the power supply to the ChlorMaker control box. To prevent damage to the power supply, you will need a weather-protective cover (readily available in hardware stores and online) to house the power supply at the outlet.

Please note that installing any equipment inside the spa equipment compartment may void the spa warranty or void the safety certification of the spa and is thus not recommended.

110 VAC Electrical Outlet

Locate a GFCI-protected outlet (**required** for fire and shock safety) near the spa. If the outlet needs to be installed, have a licensed electrician add a 110 VAC GFCI-protected outlet.

220 VAC Electrical Outlet

Since the power supply plug style is for 110 VAC, have a licensed electrician install a clearly labelled 220 VAC, GFCI-protected connection that will accept a 110 VAC-style plug. Please check your local electrical codes to ensure that the outlet is at least the minimum distance from the spa, along with verifying any other safety standards that apply to your overall spa area.

Power Supply Connector

Remove the tie straps from the ChlorMaker power supply cable and route the cable to the outlet (**without** plugging it in just yet). The cable should already be attached to the power supply, but if it gets disconnected, please note that the connector has two metal pins, one round and the other rectangular, allowing it to only install in one way, since reversing the connection would damage the ChlorMaker.

The ChlorMaker also includes two cable clips, so feel free to use one ($\frac{3}{16}$ " with a #6 x $\frac{1}{2}$ " screw) to attach the cable to a solid surface if needed.

Cold Weather Operation

The power supply is not designed to operate in temperatures below -4°F (-20°C). If you live in an area that can get that cold, 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. For the latter, make sure to first verify where you can install the power supply without voiding your spa's warranty or safety certifications.

ChlorMaker Installation (cont.)

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 (i.e. all the words are right side up)
2. Out of direct sunlight
3. Exposed to minimal rain and moisture
 - a. Even though the box is water resistant, reducing moisture exposure will minimize the chance of moisture getting inside the box
4. On a flat location on the spa skirt that:
 - a. is close enough for the power supply cable to reach the outlet
 - b. keeps the cable protected, e.g. on a post or wall near the spa
 - c. is close enough to the spa for the 8-foot electrode cable to reach, with the electrode hanging in the deepest part of the spa

The ChlorMaker box mounting flange has two large holes, allowing for installing the screws first. There are also four corner holes that can be used to mount the control box to the surface.

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

Drape the ChlorMaker Electrode

Lift the lid off the spa and drape the electrode over the side into the water. For best results:

1. Place the electrode in the deepest location in the spa. When generating chlorine, the bubbles will travel up and, if the electrode is in the deepest location in the spa, those bubbles will be in contact with the spa water for as much time as possible.
2. Keep in a vertical orientation. If it is horizontal, it will generate less chlorine, due to trapped bubbles reducing the available space on the plates inside.
3. The electrode 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 they otherwise would in a deeper location. Plus, when the pump is off, the filter door may close, trapping the chlorine in the filter area instead of in the overall spa.
4. The ChlorMaker includes two 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.

ChlorMaker-IL Installation

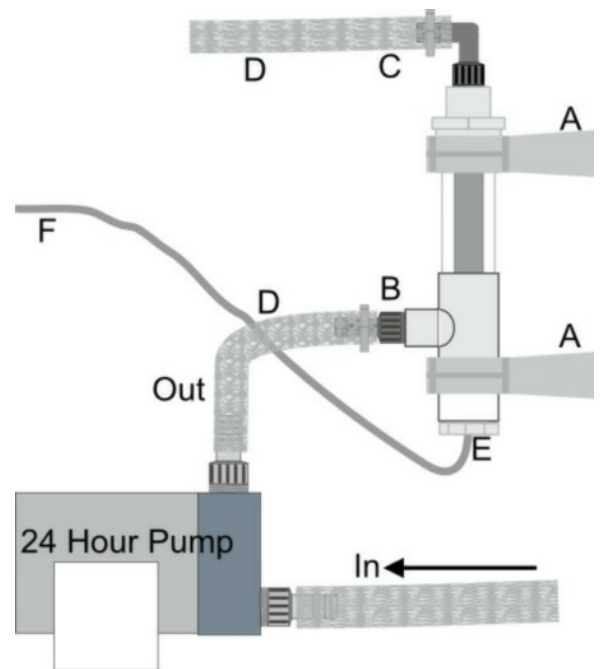
Overview

An in-line (IL) version allows for the electrode to be hidden in with the spa equipment. There are some considerations to review beforehand though:

- The electrode needs to be cleaned from time to time. If it is hidden with the spa equipment, it can be a challenge to monitor and to clean.
- The water flow needs to be 5 gallons per minute or less, so a bypass is highly recommended.
 - **Do not** install in the main spa water flow.
- Many spas have a small pump that runs 24 hours per day, and this is the recommended installation, since it allows the generated chlorine to properly circulate in the spa and not concentrate around the electrode.
 - Without a 24-hour pump, the main pump may not be on often enough and would need to be increased, leading to higher energy costs.
- The power supply will need to be controlled with the same voltage that turns on the circulation pump.
 - **Do not** have the ChlorMaker making chlorine when there is no water flow because gasses will accumulate in the plumbing.

In-Line Installation

1. Open the spa's equipment panel, and turn the spa off from there.
2. Locate the continuous (24-hour) circulating pump and the $\frac{3}{4}$ " tubing connected to the pump. If the pump has different size tubing, you will need adapters (the in-line cell uses $\frac{3}{4}$ " 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, and 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. This is to allow for electrode removal, replacement, and cleaning.
5. Water shutoff valves (not included) may be installed at **D** to aid in future maintenance and cleaning of the cell.
6. Install the two pipe brackets at **A** with the two screws. Make sure that the screws are attached to a proper mounting surface, e.g. do not attach them to insulation.
7. Install the two $\frac{3}{4}$ " barb fittings to the cell using thread sealant. Make sure that the cell is mounted so that chlorine gas can escape vertically, instead of getting trapped inside. Based on the location of the install, decide if the 90° barb fitting should go on the side or top (**B** and **C**).
8. Connect tubing to the cell: cut the existing tube and reconnect the ends to the two $\frac{3}{4}$ " barb fittings on the cell. Use the supplied clamps (**B** and **C**) to securely fasten the tube to the barbs. Some residual water may spill from the cut tube, even though the spa has been drained and/or shut off.
9. Route the cell cable (**F**) to the ChlorMaker box.
10. Apply thread sealant 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 plug to seal the hole.



ChlorMaker-IL Maintenance

At least once every two weeks, inspect the electrode:

- Open the spa's equipment panel, and turn the spa off at the circuit breaker panel.
- Locate the in-line cell and check the clear part of the tube body, visually inspecting the titanium plates.
- If there is any buildup, shut off the water (or use the plug to seal the cell) and remove the electrode for cleaning with a mild acid, e.g. vinegar or pH down. See the respective entry in the Troubleshooting Guide for more details on how to clean.
- Reinstall the newly cleaned electrode.

ChlorMaker Operation

The ChlorMaker has three buttons and four lights built into the overlay on the control box, allowing you to view and change the power level, switch chlorine generation modes (**Boost**), and more. The lights indicate the salt level and the current mode (chlorine generation or standby).

Power On

To turn on the ChlorMaker, plug the power supply into the outlet. As it turns on, it will flash the **White** and **Red (Salt Low)** lights a number of times, indicating the software version. Then, the **White**, **Red**, **Blue (Salt OK)**, and **Green (Salt High)** lights will flash, in that order.

Chlorine generation will start after a few seconds. Until then, the **White** light will flash every ten seconds to indicate standby mode.

Making Chlorine (Salt Level Indication)

When making chlorine, ChlorMaker will indicate with a solid light if the salt level is high, low, or normal, along with visible bubbles coming from the electrode.

This reading is actually a measure of how much electrical current is being drawn to the plates in the electrode, so if there are extra minerals in your water or salt sources (e.g. well water or Dead Sea Salt), they may add to the reading. Only the actual salt (NaCl) in the water will produce chlorine though.

This may cause the ChlorMaker to run with the **Green** light on, which is not a cause for concern and will not hurt the electrode. As described below, the **Green** light is just a warning to not add more salt, to avoid a shutdown.

We recommend starting with lower salt and seeing if that produces enough chlorine, since it is easier to add salt than it is to remove it. Plus, running with minimal salt will help your ChlorMaker electrode last longer.

If the lights are on solid, your ChlorMaker is generating chlorine:

- Solid **Green**—**Salt Level High**, current between 2.0 and 2.4 amps
- Solid **Blue**—**Salt Level Normal**, current between 1.0 and 2.0 amps
- Solid **Red**—**Salt Level Low**, current below 1.0 amps
- Solid **Green & Red**—current has exceeded the maximum of 2.4 amps and the ChlorMaker has shut down to protect the power supply and the electrode
 - Drain out some water and refill with fresh water to dilute the salt level
 - Then, cycle power or press the **Boost** button to have it check again

Note: If a chlorine cycle was started by pressing the **Boost** button (as opposed to automatically turning on), the above lights may flash instead of being solid.

ChlorMaker Operation (cont.)

Standby Mode (Not Making Chlorine)

The ChlorMaker works on a 3-hour cycle. In the first part of the cycle, the ChlorMaker generates chlorine for the time indicated by the power level, and then switches to standby mode for the rest of the 3-hour block. For example, at the default power level of 3, the ChlorMaker will generate chlorine for 15 minutes, standby for 2 hours and 45 minutes, generate for 15 minutes, standby for 2 hours and 45 minutes, etc. To indicate standby mode, the **White** light will flash every 10 seconds.

Note: If the ChlorMaker is in vacation mode (see Vacation Mode section), all the lights will flash every 10 seconds, instead of just the **White** one.

Note: When the estimated electrode life has reached 90% use (i.e. 10% of the life is left), the **White** light will rapidly flash twice every 10 seconds instead of just once. Depending on your water and salt sources, power level, and overall care of the electrode, it may continue to work well, even beyond the 100% point. So, our intention is that this reminder helps you look out for when your electrode starts producing less chlorine and to order a replacement electrode ahead of time, to have it ready for when you need it.

Power Levels

ChlorMaker includes 10 power level settings, to accommodate for a variety of spa sizes and needs. Since the power output to the electrode is constant for the entire generation process, the power level instead indicates how much time the ChlorMaker generates chlorine each time it turns on. The longer it runs, the more chlorine it adds to your spa. For example, the factory setting of 3 indicates that the ChlorMaker will run for 15 minutes per 3-hour cycle.

View the Current Power Level Setting

To view the power level, simply press the **Up** or **Down** button once, holding until the **White** flashes start, and then count the flashes. As a couple of examples, 3 **White** flashes means power level 3, and 7 **White** flashes means power level 7.

Changing the Power Level

To adjust the power level, use the arrow buttons on the control box:

1. Press both the **Up** button and the **Down** button at the same time. The **White** light will turn on solid (instead of flashing), indicating that it is in power change mode.
2. Press the **Up** button to increase power—the **Green (Salt High)** light will flash each time the **Up** button is pressed. Once you reach the maximum power level of 10, the **Green** light will be on solid.
3. Press the **Down** button to decrease power—the **Red (Salt Low)** light will flash each time the **Down** button is pressed. Once you reach the minimum power level of 1, the **Red** light will be on solid.
4. When you are finished, do not press any buttons for three seconds, and the **White** light will flash the new power level, confirming the setting change.

ChlorMaker Operation (cont.)

Selecting the Right Power Level

Selecting the right power level may require some testing, since every spa is different, and there are a variety of factors that can affect what level would be best for you and your spa. Here are some examples:

- Frequency of spa use
- Number of people
- Spa temperature
- Phosphate levels
- Time of last drain and refill
- Presence of an ozone generator

After this period of initial testing, your ChlorMaker will automatically keep your spa chlorinated. To determine which level to test first, see the chart below for the estimated power level for your spa size. This is only a starting point, and the final level may be very different, per the factors listed above.

Here is how you can test which level is right for your spa:

- Day 1: Set the power level according to the table below and the size of your spa.
- Day 2: Measure the chlorine level at the end of a chlorine generation cycle. If it is higher than you want, lower the power level by 1. If it is lower than you want, raise the power level by 1.
- Day 3: Repeat the Day 2 step until the chlorine remains constant at the desired level for a couple of days.

Note: If the chlorine level is 0 PPM (parts per million), even 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 setup. You also may need to add more salt, particularly if you are using a mineral-enhanced salt like Dead Sea Salt, since only the sodium chloride (NaCl) in the water will produce chlorine. We recommend only adding a little at a time since it may take a while for it to dissolve and to change the salt indicator lights, and going over can cause the ChlorMaker to shut down to protect the power supply.

Warning: If spa usage drops (vacation, winter, etc.), it is important to lower the power level: your ChlorMaker will continue producing, regardless of how much chlorine is used up, which can cause over-chlorination and damage to your spa's components if left unchecked. Your ChlorMaker does have a vacation mode for if no buttons are pressed for over a week, but we still recommend preemptively lowering the power level for that extra layer of protection for your spa.

Inversely, if spa usage increases (return from vacation, spring, etc.) make sure to raise the power level again to keep your spa fully chlorinated.

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

ChlorMaker Operation (cont.)

Boost Button & Power Level Times

To start or stop a chlorine generation cycle, press the **Boost** button. If the ChlorMaker was in standby mode, it will switch to producing chlorine with an extended cycle, generating for 3 times as long. If the ChlorMaker was already producing chlorine, this cancels that cycle.

When pressing the button, the **Green** and **Blue** (**Salt High** and **Salt OK**) lights will flash, acknowledging the button push.

Note: The ChlorMaker cannot make chlorine faster; the **Boost** button simply turns it on for a single extended cycle. If the spa chlorine has dropped to 0 PPM (parts per million) from heavy usage, chlorine may need to be added to help break past zero.

Note: If a chlorine cycle was started by pressing the **Boost** button (as opposed to automatically turning on when the chlorine is low), the salt status lights may flash instead of being solid.

Vacation Mode

After a week of no button pushes, the ChlorMaker automatically switches to vacation mode, indicated by all lights flashing in standby mode, instead of just the **White** one. While in vacation mode, the ChlorMaker decreases the generation time to make less chlorine, to reduce the risk of over-chlorination with inactivity. To exit vacation mode, simply press any button.

The amount the time is reduced accordingly:

- 1-2 weeks: $\frac{3}{4}$ of Normal Time
- > 2 weeks: $\frac{1}{2}$ of Normal Time

For example, a ChlorMaker at power level 3 would normally generate chlorine for 15 minutes per cycle, and would reduce to 11 minutes and 15 seconds after 1 week of inactivity, and then 7 minutes and 30 seconds after 2 weeks.

Power Level	Normal Time	Boost Time
1	2 min	6 min
2	7 min 30 sec	22 min 30 sec
3	15 min	45 min
4	30 min	1 hr 30 min
5	45 min	2 hr 15 min
6	1 hr	3 hr
7	1 hr 30 min	4 hr 30 min
8	2 hr	6 hr
9	2 hr 30 min	7 hr 30 min
10	3 hr	9 hr

ChlorMaker Operation (cont.)

Electrode Lifespan Indicator

This feature tracks the amount of time the ChlorMaker electrode has been actively producing chlorine. The typical lifespan of the electrode is 7000 hours of chlorine generation. To view the lifespan:

1. Press the **Boost** and **Down** buttons at the same time.
 - a. The following lights will flash to indicate the percentage used:
 - **Green (Salt High)** = 100
 - **Blue (Salt OK)** = 10
 - **Red (Salt Low)** = 1
 - b. Examples:
 - 5 **Blue** flashes means that 50% life has been used
 - 6 **Blue** flashes and 2 **Red** flashes means that 62% life has been used (38% life is left)
2. When the electrode life has reached 90%, the **White** light for standby mode will rapidly flash twice every ten seconds instead of just once. Depending on your water and salt sources, power level, and overall care of the electrode, it may continue to work well, even beyond the 100% point. So, our intention is that this reminder helps you look out for when your electrode starts producing less chlorine and to order a replacement electrode ahead of time, to have it ready for when you need it.

To reset the indicator (i.e. after replacing the electrode), press all three buttons on the control box at the same time.

Troubleshooting Guide

Before using this troubleshooting guide, please review the installation and operation instructions in this manual, in case there were any steps missed along the way.

Green (Salt High) and Red (Salt Low) Lights on at the Same Time

This is simply an indication of too much salt. To protect the power supply and the electrode from damage, your ChlorMaker has temporarily shut itself down. Even if you added the correct amount and the salt level measured **OK**, the indication is also dependent on water temperature and other minerals in the water. When in doubt, start off lower than expected and add more salt over the next couple of days as needed. It is much easier to add more salt than it is to take it out.

To fix the high salt level, first take the electrode out of the water and press **Boost**. This is to turn on chlorine generation outside of the water. If the **Green** and **Red** lights persist, then the problem is unrelated to the water.

If they do turn off, the next step is to use a 5-gallon (20-liter) bucket to determine how much you need to dilute your spa.

1. Fill the bucket about $\frac{2}{3}$ of the way with spa water and the other $\frac{1}{3}$ with fresh water.
2. Turn off the electrode and place it in the bucket for about 5 minutes to adjust to temperature.
3. Then turn it on and check to see if the light is **Blue (Salt OK)** when making chlorine. If needed, empty the bucket and repeat this test, using different amounts of spa versus fresh water until the light is **Blue**. If the salt is **High**, try again with less spa water, and if it is **Low**, try again with more spa water. The amount of the bucket that is spa water is the level to which you should drain your spa to then refill with fresh water. For example, if the light turns **Blue** in the bucket with $\frac{2}{3}$ spa water, drain your spa to about $\frac{2}{3}$ of the way full, and then refill with fresh water.

Troubleshooting Guide (cont.)

Buildup in the Electrode

The ChlorMaker electrode uses a process called electrolysis to generate chlorine, and calcium is a naturally occurring byproduct of that reaction—especially if your water source contains high levels of that calcium (hard water). If there is too much buildup, it will interfere with chlorine generation, potentially even shorting the unit if left untreated.

To clean, disconnect from power and then soak the electrode in a mild acid (e.g. vinegar or pH down) for 10-30 minutes and then rinse in clean water. Repeat as needed until the calcium is gone.

Red Light on While Generating Chlorine

This light indicates that the salt level is **Low**, so simply add salt. We recommend also measuring the salt level with a test strip before adding though, especially if you are still adjusting to your new ChlorMaker.

After a while, you may have white calcium buildup on or between the titanium plates in the electrode, interfering with chlorine generation. In that case, read the previous entry in this troubleshooting guide to learn how to clean this.

Also, if your ChlorMaker's electrode lifespan is spent (see Electrode Lifespan Indicator), the plates may be wearing out and needing to be replaced.

Consistently Low Chlorine

The power level is most likely too low, so simply raise the power level and check for improved results over the next couple of days (see the Operation section of this manual).

Consistently High Chlorine

The power level is most likely too high, so simply lower the power level (see Changing the Power Level) and check for improved results over the next couple of days.

We also recommend checking the salt level of your spa water, both with the salt status lights and with a test strip specific for sodium chloride (NaCl), which should say 500-2000 PPM. For bromine spas, test for sodium bromide (NaBr) and verify that the test strip says 1000-3000 PPM.

If your salt level is above its respective PPM range, feel free to add some fresh water to your spa, to dilute the salt level back into that range. This is particularly important if the PPM is over 5000, which could damage your spa over time. If you need to drain water in order to have enough room for the fresh water, see the bucket test in the first entry in this troubleshooting guide, which will help you estimate how much to drain.

ChlorMaker is Off: Lights and/or Buttons Stopped Working

First, unplug the ChlorMaker from the outlet, wait at least 10 seconds, and plug it back in. This will reboot the unit, which may be all that it needs, especially if it has been a while since its last reboot.

If the problem persists, check to make sure that there is no water near the control box, since that could be a sign that water got inside. If you do not see any moisture nearby, check to make sure that your power cord is securely connected to both the outlet and the ChlorMaker.

New to Saltwater Spas

Here are some guidelines and suggestions for if this is your first saltwater spa:

- Always start out with low salt since it is much easier to add salt than it is to remove it. The ChlorMaker measures the salt level with an electrical current, so water temperature, other minerals, and other factors can affect the measurement, in addition to the salt itself. If there is too much salt (i.e. when both the **Green** and **Red** lights are on), the ChlorMaker will pause chlorine generation so as not to draw too much current and damage itself.
- Keeping your spa balanced is more than just maintaining chlorine: you will also need to maintain the pH, along with possibly balancing alkalinity, hardness, etc., depending on your water source. To get more detailed help for your specific water, bring a sample to your local pool and spa store so that they can analyze your water and give you more tailored advice.
- If you have a sudden increase in spa usage (i.e. from friends visiting), you may need to temporarily increase the power level, manually turn on the chlorine generation (**Boost**), or even shock the water to rebalance after that higher chlorine usage.
- Make sure to occasionally inspect the electrode since some water sources (i.e. ones high in calcium) can cause buildup inside the electrode, both on the plates and on the wires connected to those plates. This buildup will prevent the electrode from generating chlorine, and could potentially even short the unit if left untreated for long periods of time.
 - The easy fix for the buildup is to unplug the ChlorMaker and let the electrode soak in a mild acid (e.g. vinegar) for 10-30 minute intervals until the buildup is gone.

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. Due to many conditions beyond our control, this warranty does not cover any loss or damage to the pool/spa, its components, users, or anything outside the system due to system failure. Since ControlOMatic has no control of the quality of components used in the manufacturing of purchaser’s pool/spa or maintenance, the purchaser assumes all responsibility for using the system. Just as improper use of chemicals can damage components, improper use of this system can also cause failure. It is recommended that proper water balance practices be implemented, especially regarding the total hardness. Since standard heating elements can easily be damaged by improper water balance, it is also recommended a titanium heating element be used instead.

This warranty does not apply to any costs, repairs, services, damages, claims or losses for all of the following: Service calls to install, reinstall 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:

<https://www.controlomatic.com/contact-us/>.