



The Hypochlorous Company

*Keep your Hot Tub/Spa Water Fresh, Clean and Sanitized
with a*

Hypochlorous Generator for Hot Tubs and Spas Owner's Manual

Version B: In-Line Activator



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Advantages of Your New Hypochlorous Generator

Congratulations on your purchase of your new Hypochlorous Generator for Hot Tubs and Spas!

This manual will provide you with the instructions that you need to install and operate your Hypochlorous Generator so that you can immediately enjoy the benefits of sanitizing your Hot Tub or Spa water with Hypochlorous. These benefits include:

- Powerful Germ Killer** - 80 times more effective than liquid chlorine.
- Safe & Healthy** - Hypoallergenic, soothes and improves the health of skin, eyes, and hair.
- Natural & Organic** - Generates the same molecule that is produced by our white blood cells to fight infection in our bodies. This same hypochlorous molecule is already present in our tears and saliva.
- Safe for the Planet** - uses no toxic or hazardous chemicals, proven safe for animals and plants.
- Saves Money Every Month** - Eliminates the need for routine addition of chlorine and chlorine stabilizers.

Brief Description of the Hypochlorous Generator Technology

The Hypochlorous Generator is a semi-automated hypochlorous acid generation system that is specifically designed for Hot Tubs and Spas containing up to 1,000 gallons of water. Even though the technical name is “hypochlorous acid,” the product that is generated has about the same acidity as a glass of milk and is pH neutral when produced in your Hot Tub or Spa.

The Hypochlorous Generator works by a process of electrolysis in which it converts water (H₂O) and purified salt (sodium chloride, NaCl) that has been dissolved in your Spa water to hypochlorous acid (HOCl). The concentration of hypochlorous acid that is created is very small, between 1 and 4 parts per million (ppm). Creating and



using this small amount of hypochlorous acid has been studied and approved by the U.S. EPA as safe and effective for sanitizing and disinfecting drinking water, pool water, and hot tub and spa water.

The amount of purified salt that is added is very small in relation to the volume of the water in the Spa. The concentration required for the Hypochlorous Generator to work is only about 5% of the salt level of ocean water. This low level of salt concentration 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.

The Hypochlorous Generator operates on a short three-hour cycle, maintaining the hypochlorous concentration in the water at between 1 and 3 ppm. The Hypochlorous Generator has an adjustable Power Level to accommodate the size of your Spa and the amount of usage that your Spa receives.

The Hypochlorous Generator creates the hypochlorous acid molecule, HOCl, from the salt and water. When the HOCl molecule encounters germs — such as bacteria, viruses, or mold — the HOCl breaks down the germ's cellular structure and eliminates the germs from the water. In the process of killing germs the HOCl returns to its original state of salt (NaCl) and water (H₂O). During its three hour generation cycle, the Hypochlorous Generator “recycles” this salt and water, turning it back into HOCl. Thus the cycle continues using only the original purified salt that was dissolved into the Spa water. This is why no additional sanitizing chemicals need to be added to the Spa water each week — it recycles and uses the same salt and water molecules over and over again.

The purified salt that dissolved into the fresh water when you first filled up the Spa remains in the water and will only gradually decrease when Spa water is splashed out of the Spa or from wet swimming suits carrying Spa water out of the Spa. Therefore very little if any



additional purified salt will need to be added to the Spa water until the next time the Spa water is drained and replaced with fresh water.

Safety First!

The Hypochlorous Generator is powered by electricity that comes from a standard 110 volt alternating current GFCI electrical outlet. That electricity is transformed into 5.5 volt direct current electricity that flows through the Activator at 3 amps. The Hypochlorous Generator has been certified to be safe when used in accordance with its instructions and design, but caution must be taken anytime electricity is used in the presence of water. For this reason it is important that you read, understand and follow these warning and safety instructions.

— IMPORTANT WARNING AND SAFETY INSTRUCTIONS —

READ AND FOLLOW ALL INSTRUCTIONS IN THIS MANUAL

SAVE THESE INSTRUCTIONS FOR CURRENT AND FUTURE REFERENCE

WARNINGS:

To reduce the risk of injury, do not permit children to use this product.

Use the Hypochlorous Generator only according to these instructions. Any modification or misuse of this product will void the warranty.

Install the Hypochlorous Generator in accordance with all national and local electrical, plumbing, safety, and other applicable codes.

Connect the Hypochlorous Generator to a GFCI (Ground Fault Circuit Interrupt) or GFI (Ground Fault Interrupt) protected VAC power source only.



Protect the power supply and outlet from exposure to the elements, i.e. direct sun, rain, snow, condensation, etc.

Cutting the cord from the power supply to the The Hypochlorous Generator Activator voids the warranty. Damage will occur if the connection is reversed.

DO NOT use with extension cord. Injury may result.

DO NOT operate the Hypochlorous Generator if damaged in any way.

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 roughly handle the Hypochlorous Generator components.

Disconnect, remove, and store the Hypochlorous Generator indoors when the Hot Tub or Spa has been winterized or drained.

Leave the Hot Tub or Spa cover open for at least 1 minute to allow trapped gases to escape prior to use.

Measure and monitor Hot Tub and Spa water quality parameters and adjust if necessary prior to each use.

The Hypochlorous Generator does not measure the hypochlorous acid concentration level and must be manually adjusted properly in order to not exceed 5 ppm concentration. A sustained concentration of over 5 ppm could lead to spa damage and unhealthy water conditions.

Remove the Activator from the Hot Tub or Spa when using the Hot Tub or Spa.



DO NOT hold or handle the Hypochlorous Generator Activator during hypochlorous generation, when visible bubbling is occurring. Slight discomfort may be felt in cuts, sores, or sensitive skin areas due to higher hypochlorous acid concentration near the Activator during the electrolysis process.

DO NOT insert objects into, or tamper with the Hypochlorous Generator Activator in any way. Inserting metal objects into the Activator may cause damage and will void the warranty.

DO NOT connect the Hypochlorous Generator Control Box or the Activator directly into the electrical outlet. Always use the provided low-voltage power supply.

Installation Instructions

Step 1: Safety First!

Read and follow the important safety instructions list in the **IMPORTANT WARNING AND SAFETY INSTRUCTIONS.**

Step 2: Confirm the size of your Hot Tub or Spa.

The amount of Purified Salt Additive (Additive) that you will be adding to your Hot Tub or Spa (Spa) will depend on how many gallons of water that your Spa holds. Read the Spa Operating Manual, or look up your Spa Specifications online, or estimate the number of gallons of water that your Spa holds.

Step 3: Calculate the amount of amount of Additive that you will need to add to your Spa.

You will need to add 1.5 pounds of Additive for every 100 gallons of water that your Spa holds. So if your Spa has a capacity of 300 gallons your calculations will be as follows:

300 gallons X 1.5 pounds Additive/100 gallons = 4.5 pounds Additive

Or for a larger, 800 gallon Spa:



800 gallons X 1.5 pounds Additive/100 gallons = 12 pounds Additive

The purpose of this calculation is to make sure that you have sufficient Additive on hand to be able to install and start up your Hypochlorous Generator.

The Hypochlorous Generator for Hot Tubs and Spas has the ability to sanitize the water in Spas with a capacity of up to 1,000 gallons. If your Spa has more than 1,000 gallons, you will need to use the larger Hypochlorous Generator for Swimming Pools which has the ability to sanitize the water in Spas or Pools with a capacity of up to 17,000 gallons.

Step 4: Drain and clean the Spa.

To ensure smooth, seamless operation of your Hypochlorous Generator, first drain and clean the Spa.

Step 5: Install the In-Line Activator in the Spa piping system.

The Hypochlorous Generator for Hot Tubs and Spas comes in two versions: Version A has an Activator that is draped over the side of the Spa; Version B has an Activator that is installed in-line in the internal piping of the Spa, which enables the Activator to be concealed within the Spa equipment. The Hypochlorous Generator that you have purchased is Version B, and these instructions are specific to only Version B of the Hypochlorous Generator for Hot Tubs and Spas.

Considerations in Configuring the Installation of your In-Line Activator

Before beginning installation of the In-Line Version B Activator in your Spa, open and study the configuration of the Spa piping. There are some important considerations to review before deciding the optimal location to place your in-line Activator, which are:

- The Activator needs to be inspected and cleaned from time to time. Identify a location that can be accessed relatively easily for inspection and cleaning of the Activator.

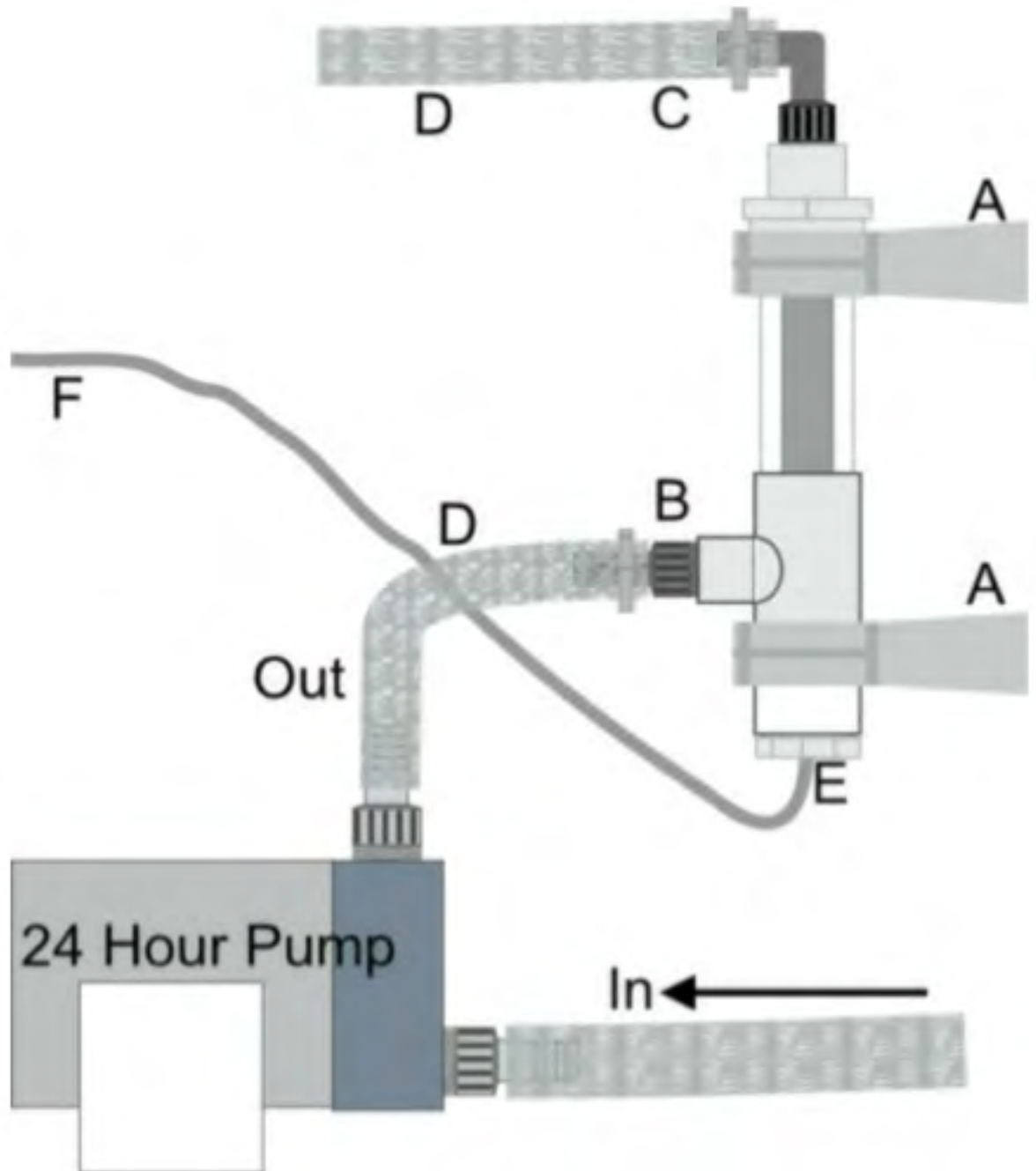


- The water flow through the In-Line Activator needs to be 5 gallons per minute or less, so installing bypass piping for the In-Line Activator highly recommended. Do not install the In-Line Activator in the main spa water piping.
- Many spas have a small pump that runs 24 hours per day, and this is the recommended installation, since it allows the generated hypochlorous to continuously 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 the run time would need to be increased, leading to higher energy costs. If the water circulation pump runs intermittently, the power supply to the Hypochlorous Generator will need to be controlled with the same voltage that turns on the circulation pump.
- Do not install the system such that the Hypochlorous Generator is generating Hypochlorous when there is no water flow because gases will accumulate in the plumbing.

After you have reviewed the piping in your Spa and have determined the optimal placement of your In-Line Activator that will satisfy these requirements, you are ready to proceed with installation of your In-Line Activator.

Instructions for Installing your In-Line Activator

1. Open the Spa's equipment panel, and turn off power to the Spa.
2. Locate the continuous (24-hour) circulating pump and the 3/4" piping or tubing connected to the pump. If the pump has different size piping or tubing, you will need adapters. The In-Line Activator cell uses 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 Activator cell should have no obstructions at the cable end of the cell. This is to allow for electrode removal, replacement, and cleaning.
5. Water shutoff valves (not included) may be installed at locations 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 3/4" barb fittings to the cell using teflon tape. 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 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 Control Box.
 10. Apply teflon tape to the Activator electrode and install the Activator electrode into the in-line Activator cell.
 11. When the Activator electrode is removed from the cell for cleaning or during installation, use the plug (E) to seal the hole.

Step 6: Identify a protected electrical outlet into which the Hypochlorous Generator Power Supply will be plugged in. If there is no nearby electrical outlet, a protected electrical outlet will need to be installed near the Spa.

The Hypochlorous Generator Control Box and Power Supply can be plugged into a standard GFCI protected 110 volt (alternating current) electrical outlet. The Power Supply converts this voltage to an output voltage of 5.5 volts (direct current). So the voltage that is applied to the Activator in the Spa water is less than the voltage available from a 9 volt smoke alarm battery.

The Control Box is supplied with a 15 foot electrical cord.

To prevent damage to the power system, the electrical outlet will need a weather-protective cover. If such a cover is not already on the identified electrical outlet, an appropriate cover can be purchased from a local hardware store and is easily installed.

Installing any Hypochlorous Generator equipment inside the Spa equipment compartment may void the Spa warranty or safety certification and is not recommended.



If there is no nearby electrical outlet, have a licensed electrician add a 110 VAC GFCI-protected outlet to the area near your Spa, following all applicable electrical codes and safety requirements.

Step 7: Mount the Control Box.

Remove the tie straps from the Hypochlorous Generator Control Box Power Supply Cable and route the cable to the outlet (without plugging it in).

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

- A. The Control Box needs to be installed vertically, with the two cables coming out of the bottom of the box.
- B. The Control Box should be out of direct sunlight and should be exposed to only minimal rain and moisture. Even though the Control Box is water resistant, reducing moisture exposure will minimize the chance of moisture getting inside the box.
- C. The Control Box should be mounted on a flat location on the Spa skirt that:
 - is close enough for the power supply cable to reach the outlet
 - keeps the power cable protected, such as on a post or wall near the Spa
 - is close enough to the Spa for the 10 foot Activator cable to reach, with the Activator placed in the deepest part of the Spa

The Control Box mounting flange has two large holes, allowing for installing the screws first.

- Install the two small screws 5 3/8 inches apart and 1 1/4 inches or more below the top edge of the shell part of the spa.
- Place the Control Box onto the screws and slide the box down.
- Tighten the screws to secure the Control Box to the surface.

Alternatively, there are also four corner holes that can be used to mount the Control Box to the surface.

The Hypochlorous Generator Kit includes two cable clips (3/16" with a #6 x 1/2" screw) that may be used to attach the Power Supply Cable to a solid surface.



Step 8: Change the filter, fill the Spa with fresh water and balance the Spa water.

Installation of a new filter is recommended, but not required unless Hydrogen Peroxide has recently been used to sanitize the Spa water.

If Hydrogen Peroxide has been recently used to sanitizer the Spa water, remove the filter and flush out all of the Spa piping with fresh water. Make sure that no residual hydrogen peroxide remains in the Spa. Then change the Spa filter.

After cleaning and preparing the Spa as directed, refill the Spa with fresh water. Balance the water using normal commercially available Pool and Spa chemicals to achieve the following levels:

pH =	7.2 - 7.6
Total Alkalinity =	80-120 ppm
Total Hardness =	250 - 400 ppm

Test strips are provided with your Hypochlorous Generator to assure that the water has been balanced to within the recommended ranges.

Note that consistent water hardness levels below 250 ppm may damage Spa equipment and lead to premature equipment failure. Make sure Total Hardness levels are within the recommended range.

Step 9: Add the Premeasured Amount of Additive to the Spa.

Unlike using chlorine or other chemicals or systems, for the Hypochlorous Generator system the Additive is only added once after each fresh water refill of the Spa. So adding the correct amount of Additive to the Spa is an important step in the process. Adding too little Additive will not enable the Hypochlorous Generator to operate efficiently in maintaining the proper water sanitization levels; adding too much Additive will overtax the Hypochlorous Generator and



cause the system to automatically shut down to protect the Activator and Control Panel.

The amount of Additive to be added to the Spa was calculated in Step 3. We are aiming for an Additive concentration of 1,500 ppm and this is the concentration that will be achieved when adding the amount of Additive calculated in Step 3.

Please note that If you have a water softener, your water may already have some salt in it, so in that case, before adding any Additive to your Spa, let the water get to temperature and then turn on the Hypochlorous Generator as instructed in Step 8, below. That way, you can check the pre-existing salt level and gradually add Additive to the water as needed.

If you are not sure of the volume of your Spa or the amount of salt in the water from your water softener, start by adding a lower amount of Additive than calculated in Step 3, because it is easier to add more Additive later than to remove it. Removing Additive requires draining spa water and adding fresh water.

In Step 10, below, the Hypochlorous Generator will measure the Additive level and will alert you if there is too little or too much Additive, and you can make adjustments to the Additive concentration at that time.

Gradually pour the calculated amount of Additive directly into the Spa water, and turn on the Spa water circulation pump to help it mix and dissolve. Depending upon the water temperature, it may take up to several hours to fully dissolve the Additive.

It is noted that Pool Salt may be used in place of the Additive. The major difference between Pool Salt and the Purified Salt Additive (Additive) recommended by the Hypochlorous Company is that the Hypochlorous Additive has far fewer impurities than typical Pool Salt. The higher level of impurities in typical Pool Salt, such as iron and calcium, will have the effect of decreasing the effectiveness of the



Hypochlorous Generator in sanitizing the water and may also decrease the life of your Hypochlorous Generator system.

Step 10: Plug in and turn on the Hypochlorous Generator.

Before plugging in and turning on the Hypochlorous Generator make sure that the Additive is fully dissolved in the water.

After the Additive has been fully dissolved, plug in the Hypochlorous Generator Control Box.

Because of the time it takes for the Additive to fully dissolve and circulate throughout the Spa water, it may take the Control Box a few hours to register the Additive level for the first time.

After three hours of circulating the water in the Spa, check the Control Box. If the correct amount of Additive has been added, the Control Box Additive OK light will be on. No further action is required.

If there is not enough Additive, the Additive Low Light will be on. In this case, slowly add more Additive to the water and give the additional Additive time to dissolve and disperse throughout the water. After an hour or so, check the Control Box and repeat this process until the Additive OK light is on.

If there is too much Additive in the water, the Additive High light will turn on. If there is way too much Additive in the water the Control Box will shut the entire system down and display the Green and Red (Additive High and Additive Low) lights at the same time. In this case drain out a portion of the Spa water and replace the drained Spa water with fresh water. After an hour or so, giving the time for the fresh water to be fully dispersed, check the Control Box and repeat this process until the Additive OK light is on.

Once the ten installation steps have been completed and the Additive OK light is on, the Hypochlorous Generator installation is complete. At this point you are ready to move to the instructions for Operating the Hypochlorous Generator.



Operation Instructions

Control Box Panel Overview

The Hypochlorous Generator Control Panel has three buttons and four lights which allow you to view and change the Power Level, switch hypochlorous generation modes and more.

The lights indicate the Additive Concentration Level and the Operating Mode: Hypochlorous Generation On or Hypochlorous Generation Standby.

Turning On the Power

To turn on the Hypochlorous Generator, plug the Power Supply Cable into the electrical outlet. As it turns on, it will flash the white and red Additive Low lights a number of times, indicating the software version. Then, the white, red, blue (Additive OK), and green (Additive High) lights will flash, in that order.

Hypochlorous Generation generation will start after a few seconds. Until then, the White light will flash every ten seconds to indicate that the Hypochlorous Generator is in Standby Mode.

Hypochlorous Generation Mode and the Additive Level Indicators

When generating Hypochlorous Solution, the Control Box will indicate with a solid light if the Additive Concentration Level is High, Low, or OK. You will also know that the system is generating Hypochlorous Solution because you will see visible bubbles coming up through the water from the Activator.

If the Control Box lights are on solid, the system is generating Hypochlorous Solution:

- Solid Green—Additive Level High
- Solid Blue—Additive Level OK
- Solid Red—Additive Level Low
- Solid Green & Red—Additive Level Very High - the Hypochlorous Generator has shut down to protect the power supply and the Activator.



If the Additive Level is High or Very High, drain out some water from the Spa and then top off the Spa with fresh water to dilute the Additive Concentration level. Then unplug and replug the unit to cycle power. Check the Additive Level lights and repeat as necessary until the blue Additive OK light is on.

Hypochlorous Generation Standby Mode

The Hypochlorous Generator works on a 3-hour cycle. In the first part of the cycle, the system generates hypochlorous solution 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 Hypochlorous Generator will be in Hypochlorous Generation Mode for 15 minutes and will then shift to Hypochlorous Generation Standby Mode for 2 hours and 45 minutes. Then this cycle repeats: generate for 15 minutes, standby for 2 hours and 45 minutes, and so on.

When the Hypochlorous Generator is in Standby Mode, the White light will flash every 10 seconds.

Setting the Hypochlorous Generator Power Levels

The Hypochlorous Generator for Hot Tubs and Spas has 10 Power Level settings, to accommodate the needs for a variety of Spa sizes and Spa usage levels.

The Power Level is adjustable to enable a higher or lower level of Hypochlorous Generation. The higher the Power Level, the longer the Hypochlorous Generator will be in Generation Mode during the three hour operating cycle. The lower the Power Level the longer the Hypochlorous Generator will be in Standby Mode during the three-hour operating cycle.

To view the current Power Level setting, press the Up or Down button once, holding until the white flashes start, and then count the number of flashes. Three white flashes means the Power Level is set at 3; 6 white flashes means the Power Level is set at 6, and so forth.



To adjust the power level, use the arrow buttons on the Control Box as follows:

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 (Additive 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 (Additive 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 setting the Power Level, do not press any buttons for three seconds. The white light will flash the new Power Level, confirming the setting change.

Selecting the Right Power Level for Your Spa

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 Power Level would be best for you and your spa. Some of the factors affecting the Power Level selection include:

- Frequency of Spa use
- Number of people in the Spa
- Volume of water in the Spa
- Spa covered or uncovered when not in use
- Spa temperature
- Phosphate levels
- Time of last water drain and refill

After a period of initial testing and selection of the optimal Power Level for your Spa, the Hypochlorous Generator will automatically keep your Spa water sanitized.

To determine which Power 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 Power Level selection may be very different, depending upon the factors previously listed.



<u>Gallons of Water</u>	<u>Power Level</u>
<200	1-3
200-300	4
300-400	5
400-500	6
>500	7

Here is how you can determine the right Power Level to use for your Spa:

- Day 1: Set the power level according to the size of your Spa, in accordance with the table above.
- Day 2: Measure the hypochlorous level at the end of a hypochlorous generation cycle using the Free Available Chlorine test strips. 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 Free Available Chlorine reading remains constant at the desired level for a couple of days.

Important Note: If the Free Available Chlorine level is 0 ppm (parts per million), even 24 hours after installation, check the Additive Level and make sure that the Additive Level shows Additive OK. If the Additive Level is low, add more Additive a little at a time until the Additive OK light is on.

If the Additive Level is correct, then the initial sanitizing demand on the Spa may be too great for the Hypochlorous Generator to “catch up” and produce a maintenance level of sanitization. In this case, manually add a concentrated Hypochlorous Solution or chlorine shock (according to the product label) to assist in the initial setup.

Using the Boost Button on the Control Panel

If the usage of your Spa has increased significantly over normal, average usage you can press the Boost Button to extend the the cycle of Hypochlorous Generation and thereby increase the sanitation power of the Hypochlorous Generator for the next cycle.

If the Boost button is pressed when the Hypochlorous Generator is in Standby Mode it will switch to producing Hypochlorous Solution on a



a cycle that is 3 times longer than normal for the given Power Level. After the Boost Cycle is completed, the Hypochlorous Generation cycle reverts to the standard cycle for the given power level.

If the Boost button is pressed when the Hypochlorous Generator is on Generation Mode, the Boost button will cancel the current cycle.

When pressing the Boost button, the green and blue (Additive High and Additive OK) lights will flash, acknowledging the button push.

Vacation Mode

If no buttons have been pushed on the Control Box for one week, the Hypochlorous Generator automatically switches to vacation mode, indicated by all lights flashing in Standby Mode, instead of just the white light. While in vacation mode, the Hypochlorous Generator decreases the Hypochlorous Generation time to make less hypochlorous solution to reduce the risk of over-sanitization with inactivity.

The amount the generation time is reduced while in Vacation Mode is:

- 1-2 weeks: 3/4 of Normal Time
- > 2 weeks: 1/2 of Normal Time

To exit vacation mode, press any button on the Control Panel and the system will resume normal operation.

What to Do If Spa Usage Drops

If spa usage drops due to vacation, winter, and etc, it is important to lower the Power Level. Otherwise, the Hypochlorous Generator will continue producing Hypochlorous Solution regardless of how much or how little sanitization demand is coming from the water. Excessive hypochlorous solution generation over a long period of time can cause corrosion and damage to your Spa's components if left unchecked.

Despite the Hypochlorous Generator automatically switching into Vacation Mode if no buttons are pressed for over a week, depending upon the Power Level selection, it is still recommended that you



preemptively lower the Power Level for an extra layer of protection for your Spa.

What to Do If Spa Usage Increases

If spa usage increases due to returning from vacation, summertime, and etc. make sure to preemptively raise the Power Level to keep your Spa water fully sanitized.

Cold Weather Operation

The Hypochlorous Generator power supply is not designed to operate in temperatures below -4°F. 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 from the cold. If installing in the spa equipment area, make sure to first verify where you can install the power supply without voiding your spa's warranty or safety certifications.

Maintenance Instructions

Maintenance of the Spa Water

The Hypochlorous Generator will do an excellent job in sanitizing the Spa water, and it will significantly reduce the amount of chemical usage required to maintain the correct balance of your Spa water, but it does not directly manage all aspects of the water chemistry of the Spa water. Keeping your Spa water balanced requires more than just maintaining sanitizing levels: you will also need to maintain the pH of the water, and monitor and balance the water alkalinity, hardness, and etc., depending on your water source. Monitoring, adjusting and maintaining the Spa water balance is important for the health and safety of the Spa users and also for the efficient operation and lifespan of the Hypochlorous Generator and of the Spa itself.

The generally accepted ideal water chemistry for spas is as follows:

Free Available Chlorine:	2-3 ppm
pH:	7.2-7.6
Total Alkalinity:	80-120 ppm



Total Hardness: 250-400 ppm

Note that when using chlorine or other chemicals for Spa water sanitization a stabilizer chemical, such as cyanuric acid, is often included with the chlorine chemicals or is added separately. When using the Hypochlorous Generator for water sanitization, no stabilizer chemical is required because of the constant regeneration of the hypochlorous solution by the Hypochlorous Generator. So if the Spa Water test strip shows a low or zero amount of Stabilizer present in the water, that is normal and is fine. No Stabilizer needs to be added to the Spa water.

If you choose to add a Stabilizer to the Spa water to help retain the amount of hypochlorous generated in the water for a longer period of time you may do so. If you do so, monitor the Stabilizer concentration to assure that it does not exceed 20 ppm. If the Stabilizer concentration exceeds 20 ppm you will need to drain the Spa water and refill with fresh water.

Note that consistent Free Available Chlorine levels above 5 ppm and/or consistent salt concentration levels above 5,000 ppm may lead to corrosion of metal components in the spa. 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.

Spa manufacturers recommend that Free Available 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.

About once a month, depending on Spa usage, 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 hypochlorous and reducing the life expectancy of the Hypochlorous Generator Activator.



If you have a sudden increase in spa usage (i.e. from friends visiting), you may need to temporarily increase the power level and manually turn on the hypochlorous generation using the Boost button. In the event of a very high organic load that has been added to the water through high Spa usage or the spillage of food, drink or other substances in the water, there may be a need to “shock” the water.

The water may be shocked with by dosing with a higher concentration Hypochlorous Solution, such as a 200 ppm or 500 ppm solution, or by dosing with a commercially available chlorine shock product to bring the Spa water back into balance. After shocking, allow the spa to circulate for several hours before retesting to ensure more accurate test results.

It is recommended to manually shock the spa after high usage (e.g. after a party with multiple users), or biweekly if used frequently.

You may monitor and manage the Spa water balance yourself using a Pool and Spa Water Test Kit and chemicals from your local pool supply store, or you could also take a water sample to your local pool and spa store so that they can analyze your water and give you more tailored advice.

Depending on the amount of usage the Spa water should be drained and refilled to remove accumulated contaminants in the water. The water should be drained and refilled a minimum of once per year but could be as often as every four months, depending on usage.

After draining, clean the Spa surfaces fully and refill with fresh water. Add fresh Additive as outlined in the Installation Instructions. Then allow the water to come up to temperature, over 95°F, and balance the water in accordance with these Maintenance Instructions.

Maintenance of the Hypochlorous Generator Activator

Occasionally inspect the Activator for buildup or discoloration on the electrode plates because water sources, such as water that has a



high concentration of calcium, can cause a buildup inside the Activator electrode, both on the plates and on the wires connected to those plates. This buildup will reduce the effectiveness of the Activator generation of hypochlorous solution. In cases of extreme buildup it could potentially even short the unit if left untreated for long periods of time.

If calcium or other buildup is observed on the Activator electrode, unplug the Hypochlorous Generator or turn off the power to the Hypochlorous Generator from the electrical circuit breaker panel. Shut off the spa water circulation. Remove the Activator electrode from the Spa and soak the Activator electrode for 30 minutes in vinegar. Then rinse the Activator electrode with fresh water. Repeat this process for 30 minute intervals until the buildup has been removed.

Activator Lifespan Indicator and Activator Replacement

The Hypochlorous Generator Control Panel tracks the amount of time the Activator has been actively producing hypochlorous solution. The typical lifespan of the Activator is 7,000 hours of hypochlorous generation. At a Power Level setting of 3, operating 365 days per year, the life of the Activator would be approximately 10 years. At higher Power Levels the life of the Activator would be lower and at lower Power Levels and/or operating less than 365 days per year would result in a longer life of the Activator.

To view the amount of lifespan that has been used on the Activator, press the Boost and Down buttons at the same time. The following lights will flash to indicate the percentage of the lifespan that has been used:

Green Light (Additive High) = 100% of the lifespan has been used.

Blue Light (Additive OK) = 10% of the lifespan has been used X the number of blue light flashes. For example, if the blue light flashes 6 times, then $10\% \times 6 = 60\%$ of the lifespan has been used.



Red Light (Additive Low) = 1% of the lifespan has been used X the number of red light flashes. For example, if the blue light flashes 6 times and the red light flashes 3 times, then , then 10% X 6 blue flashes + 1% X 3 red flashes = 63% of the Activator lifespan has been used.

When the Hypochlorous Generator is in Vacation Mode all of the lights will flash every 10 seconds. When the estimated Activator life has reached 90% (10% of the Activator life is remaining) the white light will flash twice every ten seconds instead of just once.

Depending on the Spa water maintenance, Activator Power Level setting, and overall care of the Activator, the Activator life may continue to work well, even beyond the 100% lifespan point. The purpose of the Activator Lifespan Indicator is to help the Operator to be aware of the 7,000 hour lifespan so that a replacement Activator can be ordered in advance in preparation for the time when the Activator is worn out and begins to produce less Hypochlorous Solution.

A replacement Activator may be ordered by calling The Hypochlorous Company at 800-732-7103 or may be ordered online at www.hypochlorouscompany.com.

To reset the indicator after replacing the Activator, 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 Owner's Manual, in case there were any steps missed along the way.

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

This indicates that the Additive concentration is too high. To protect the power supply and the Activator from damage, the Hypochlorous Generator has temporarily shut itself down. Even if you added the



correct amount of Additive and the Additive level showed OK, this indication is also dependent on water temperature and other minerals in the water.

To troubleshoot this problem, first take the Activator out of the water and press the Boost button. This action will turn on the hypochlorous generation process but in the absence of water. If the Green and Red lights remain on, then the problem is unrelated to the water.

If the green and red lights do turn off, then we know the problem to be an excessively high Additive concentration level.

To determine how much dilution is needed in the Spa, fill a five gallon bucket $\frac{2}{3}$ of the way with spa water and the other $\frac{1}{3}$ with fresh water. Turn off the Activator and place it in the bucket for about 5 minutes to allow it to adjust to temperature. Then turn on the hypochlorous generator and check to see if the light is blue (Additive OK) light comes on.

Repeat this test with varying amounts of Spa water and dilution water until the blue light is illuminated. If the Additive is High, try again with less Spa water; if the Additive is Low, try again with more Spa water. Once you have identified the proportion of Spa water and fresh water in the five gallon bucket that results in the blue Additive OK light being on, then drain the amount of Spa water out of the Spa proportional to the amount of Spa water identified in the bucket test.

For example, if the light turns blue in the bucket with $\frac{2}{3}$ spa water and $\frac{1}{3}$ fresh water, drain the Spa to about $\frac{2}{3}$ of the way full, and then refill with fresh water.

Buildup in the Activator, on the Electrode Plates or on the Electrode Wires

The Hypochlorous Generator uses electrolysis to generate hypochlorous solution. In the electrolysis process, if there is a high concentration of calcium in the Spa water, this calcium is attracted to the electrode plates and wires and may build up over time. The buildup of calcium on the plates and wires will reduce the efficiency



of the Hypochlorous Generator and, if left untreated, it could buildup enough to provide an electrical short in the unit.

To remove the calcium buildup from the Activator electrode plates and wires, disconnect the Hypochlorous Generator from power and then soak the Activator in vinegar 30 minutes and then rinse in clean water. Repeat as needed until the calcium is gone.

Red Light is On While Generating Hypochlorous Solution

This red Additive Low light indicates that the Additive concentration level is Low, so simply add more Additive.

Also, if the Hypochlorous Generator Activator lifespan is spent (see Activator Lifespan Indicator), the plates may be wearing out and the Activator may need to be replaced.

Consistently Low Free Available Chlorine Reading

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

Consistently High Free Available Chlorine Reading

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

We also recommend checking the Purified Additive salt level of your Spa water, both with the salt status lights and with a test strip specific for sodium chloride (NaCl). The sodium chloride test strip should return a reading of between 1,500-2,000 ppm.

If your Sodium Chloride level is above this concentration range, add fresh water to the Spa, to dilute the Additive Concentration level back into that range. This is particularly important if the sodium chloride concentration is over 5,000, which could damage your spa over time.

If you need to drain water in order to have enough room for the fresh water, perform the bucket test as described in the first entry in this



Troubleshooting Guide, which will help you estimate how much to drain.

Hypochlorous Generator is Off: Lights and/or Buttons Stopped Working

First, unplug the Hypochlorous Generator 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 Hypochlorous Generator.

Limited Warranty

Sani-TEST LLC warrants this Hypochlorous Generator system to be free of all defects in material and workmanship for one year from the owners original purchase date. The system includes the power supply unit, cable, electronics, and electrolytic activator 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. Damage to the system from improper water maintenance is not covered in this warranty.

In no event shall Sani-TEST LLC 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 Sani-TEST LLC 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, 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. The manufacturer and/or reseller hereby specifically disclaims any other representations or warranties, expressed or implied, including without limitation any warranties of merchantability or fitness for a particular purpose. In no event will manufacturer's and/or reseller'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 problems develop during the warranty period, contact Sani-TEST LLC or The Hypochlorous Company.

Contact The Hypochlorous Company

For questions, ordering Additive or parts, or warranty claims, please contact Technical Support at the Hypochlorous Company:

The Hypochlorous Company
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