

# ***GENESIS***

## **Automatic Bromine Generator**

For Spa Sanitizing

### **QUICK REFERENCE GUIDE**

#### **PRECAUTION**

**WARNING:** THIS IS A QUICK REFERENCE GUIDE **ONLY** AND **DOES NOT** REPLACE THE MANUFACTURER'S INSTALLATION/OPERATION MANUAL WHICH IS INCLUDED WITH THE PRODUCT. **IT IS ESSENTIAL TO READ THE MANUFACTURER'S "INSTALLATION/OPERATION MANUAL" BEFORE PROCEEDING WITH INSTALLATION OR USE OF THIS PRODUCT.**

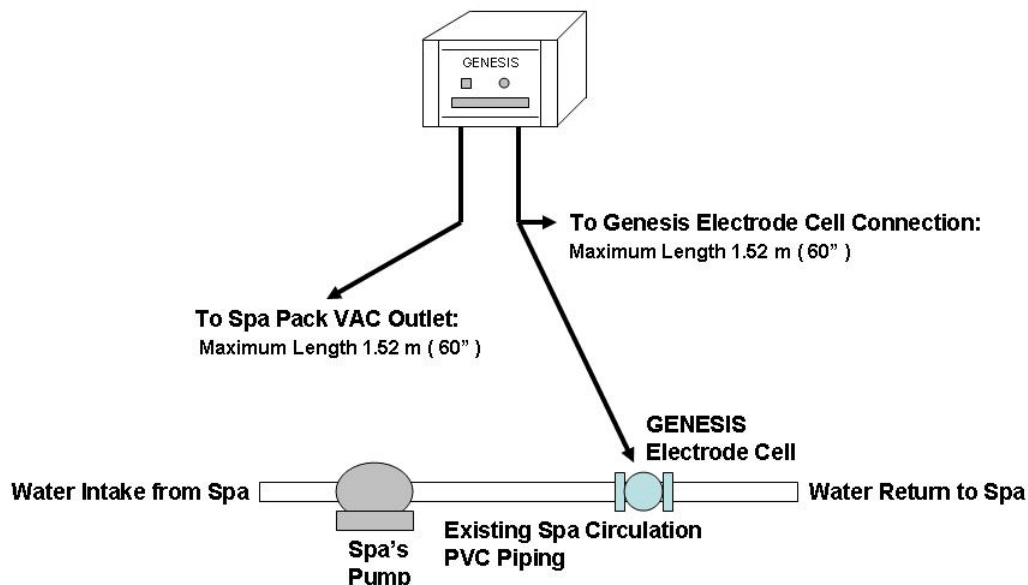
#### **MANUFACTURER CONTACT INFORMATION**

**Pioneer H2O Technologies, Inc.**  
3265 South Wadsworth Blvd. Unit "I"  
Lakewood, Colorado 80227 USA

Customer Help Desk 1-877-569-4377  
<http://www.spapurification.com>

# SYSTEM DIAGRAM/COMPONENTS

## GENESIS Power Supply / Output Controller



## GENESIS Automatic Bromine Generator - Complete System Includes:

- 1 - Power Supply / Outlet "Controller"
- 1 - Electrode Cell.
- 1 - 2" Tee Pipe and Reducer.

# INSTALLATION

**\*\*\*INSTALLATION SHOULD BE PERFORMED BY A QUALIFIED SERVICE PERSON\*\*\***

## INSTALLING THE CONTROLLER:

1. Most spas are set to run at an input voltage of 240VAC. Your **GENESIS** unit has been preset to operate at the same voltage. If, however, the spa is wired for 120vac, set the switch located on the back of circuit board (inside the Controller) to 120VAC). **CAUTION: Improper voltage will damage the controller!** MAKE SURE THE BREAKER IS OFF BEFORE PROCEEDING.
2. Securely mount the controller to a vertical surface. Make sure there is sufficient cable to accommodate wire connections between the Controller, the Tee Pipe and the AC power source.
3. The Controller must then be wired to the load side of the pump or pump timer. This is extremely IMPORTANT: the **GENESIS** was designed to operate and produce bromine *only while your pump is circulating water*. Use liquid tight flexible conduit between the AC power source and the controller.

## INSTALLING THE ELECTRODE CELL AND TEE PIPE:

1. Install the Tee Pipe HORIZONTALLY on the return line **AFTER THE HEATER AND FILTER**, ensuring all connections are glued to avoid leakage.
2. Wrap Teflon tape on the threads of the Electrode Cell and insert it Tee Pipe. Tighten securely, being careful to avoid cross-threading.

## CONNECTING THE CONTROLLER AND TEE PIPE:

1. The Electrode Cell must now be connected to the Controller. This is done by attaching the lead wire found on the Electrode Cell to the corresponding lead wire found on the Controller. *It is important not to over tighten the lead connections to prevent damage to the interior of the Electrode Cell.*

## HOW THE *GENESIS* WORKS

Once the *GENESIS* is connected, **sodium bromide** is added to spa water while the pump is on high speed. As it dissolves, the sodium bromide circulates through the plumbing to reach the *GENESIS* Electrode Cell. There it is converted into **free bromine** (*free bromine* is the compound that does the sanitizing work in your spa). As each molecule of free bromine works at eliminating harmful bacteria, it eventually breaks down leaving a residual in the water - - And that residual is actually **sodium bromide**! Thus, it creates a perpetual cycle of sanitizer production. (Additional sodium bromide is only added when water level declines due to splash out, or when tub is drained/filled).

## OPERATING THE *GENESIS*

**It is important that you follow the hot tub manufacturer's instructions on starting up your spa. Then you can proceed to the step-by-step *GENESIS* instructions below:**

1. Make sure the "DECREASE/INCREASE" dial on the faceplate of the Controller is turned to the "OFF" position.
2. Fill your tub with water, up to the level recommended by the hot tub manufacturer.
3. Balance the spa water to the recommended levels:
  - o pH: 7.2 - 7.8
  - o Total alkalinity: 100 - 120 ppm
  - o Calcium hardness: 150 - 200 ppm
4. Test that the **phosphate** level in your spa water is within acceptable parameters using a paper test strip or by taking a water sample to your spa product supplier.

At the same time, the water must be tested for its "**TDS**" (*Total Dissolved Solid- various organic and inorganic matter present in your water*) content. Again, this can be done by the spa product supplier or with purchased test strips. The ideal range for your start-up TDS count is between 50 and 300 ppm (if your starting TDS is above 500, you should speak to your spa product supplier to discuss corrective measures).

5. Make sure that the hot tub's pump is set to high speed.
6. Now you are ready to add the sodium bromide to the water. It is added at a rate of **one litre per 40 Imperial gallons (50 US gal)** of spa water. Example: If your spa has a volume of **360 Imperial gallons**, at start-up you will require **9 litres of sodium bromide** in your water (360 divided by 40 = 9). Pour the contents of the bottles evenly over the surface of the water.

Once the sodium bromide has been added, your TDS count will increase by approximately 2,200 ppm. For example, if your start-up TDS was 300 and you added 7 litres of sodium bromide, your TDS count will now be 2,500 (2,200 plus 300). You can verify this with the appropriate paper test strip if desired, but it is not required. Important to note is that sodium bromide is only one contributor to the TDS count in your water. Over time, the TDS count in your water will rise (from such things as residuals from other chemicals, minerals, and unfilterable material). It is advisable for you to test the TDS every few months to make certain it stays in check. **Regardless of what water testing facilities suggest, when utilizing an Genesis system, draining your water is not required prior to water reaching a TDS count of 3,500 ppm.**

7. Turn the "DECREASE/INCREASE" dial to the right until the LED display (to the left of the dial) reads "10". This will initiate the buildup of a bromine bank.
8. Monitor the bromine level, using bromine test strips, until it is between 3 and 5 ppm (This may take a few days, depending on the quality of water used on the initial fill – see \*NOTE below). Once this level has been achieved, turn the

“INCREASE/DECREASE” dial down, one setting at a time, until a maintenance setting is achieved. Finding your maintenance setting may also take a few days. Test the bromine level in your water daily and always before using your spa. With monitoring of your spa use, and adjustment of the output level of your *GENESIS*, you will be able to determine your maintenance setting. You will have arrived at your maintenance setting when, after a period of normal use of your spa, you no longer have to adjust the output level on your *GENESIS* to **keep your bromine level between 3 and 5 ppm.**

The appropriate setting for your *GENESIS* unit will depend on how often you use your tub. A tub with a higher-than-average bather load will require a higher setting on the *GENESIS* unit. This simply means that the *GENESIS* needs to produce more bromine to maintain the level between 3 and 5 ppm.”

**\*NOTE:** It can take several days for the bromine level to stabilize because the water that you put into your spa contains impurities that need to be neutralized, thereby using up the initial bromine that is generated. You can expedite this process by adding 57 grams (2 oz) regular household bleach to the spa water.

## DETERMINING SODIUM BROMIDE LEVEL

It is important to be able to maintain the appropriate amount of sodium bromide in your spa's water. By following the step-by-step instructions found earlier in this manual, you will be off to a good start.

There are several other factors to consider, though. You will find that over the weeks and months that you are enjoying the use of your tub, the water level will decrease for a number of reasons. One is evaporation. The other is a result of water “removal” (splashing, exiting bathers, etc). The first cause of water loss – evaporation – will not reduce the sodium bromide that is available in your tub, because it does not evaporate. The second cause – water removal – will, however, result in loss of some sodium bromide.

Since it is impossible to know how much water loss results from evaporation, and how much from removal, it is necessary to determine your sodium bromide level when adding water to the tub. The sodium bromide test strips are available from your *GENESIS* dealer. Use of these strips will help you determine how much sodium bromide to add.

The formula for adding sodium bromide to existing spa water (to replace splash-out) is:

**Add 1 gram of pure sodium bromide per litre of water to increase the total “sodium bromide ppm” by 1000.**

### Examples:

To raise the total sodium bromide ppm in a 1000 litre spa by 500 ppm, you would add 500 grams of sodium bromide

To raise the total sodium bromide ppm in a 1400 litre spa by 1000 ppm, you would add 1.4 kgs of sodium bromide

To raise the total sodium bromide ppm in a 1200 litre spa by 200 ppm, you would add 240 grams of sodium bromide

**NOTE: The desired “sodium bromide ppm” is in the range 2000-2200 ppm**

## FAQ'S

Q: Will the *GENESIS* save me money on chemicals?

A: On average, spa owners spend \$168/yr on chemicals. *GENESIS* owners can easily spend LESS THAN \$130/YR (sodium bromide, pH up/down, alkalinity, test kit = \$130).

Q: What other advantages are there to equipping my tub with the *GENESIS*?

A: **Metered water users** – save \$\$ by changing water annually instead of quarterly.

**Electrical savings** – don't have to heat cold water during quarterly changeovers.

**Your time!** – no trips to the store for chemicals; only empty/fill once a year; daily maintenance time cut down significantly.

Q: Why use bromine and not chlorine for spa sanitizing?

A: Chlorine is an extremely corrosive chemical and may cause damage to equipment; chlorine readily evaporates at about 97 degrees (most tubs are heated to 104 degrees).

**Q:** *Is ozone effective as a spa sanitizer? Do I still need a bromine generator if I have an ozonator?*

**A:** Ozone can be an effective oxidizer, but is **not** recognized as a "sanitizer"! Yes - all hot tubs and spas are required to use a sanitizer - with or without ozone. Yes - the **GENESIS** can be used in a spa where an ozone system is in operation.

**Q:** *Why won't I have to drain my spa every three months like I've done in the past?*

**A:** No more buildup of by-products (glues/binders from bromine tablets). **GENESIS** converts salt into bromine and back into salt again, leaving the spa free of by-product buildup.

**Q:** *How many hours a day will I have to operate my spa's pump once I install GENESIS?*

**A:** Most **GENESIS**-equipped spas operate at 4 hours of water circulation per day, but if you find that your INCREASE/DECREASE" dial is at a high setting, but your bromine level is lower than desired; you might want to run the pump for up to 8 hours per day.

**Q:** *How long has GENESIS been available?*

**A:** Available to the public in the USA since March, 2001, it received registration for sale in Canada December 2004. The technology was several years in R&D prior to its release!

**Q:** *After my GENESIS is installed, do I still have to check my hot tub's chemistry?*

**A:** Yes. When it comes to water quality, chemistry is KEY! Monitor your bromine level and maintain proper pH and total alkalinity (pH has a direct relationship to the effectiveness of bromine to sanitize water). You also want to occasionally have your water tested for phosphates, sodium bromide levels and TDS (total dissolved solids).

**Q:** *How can I be absolutely sure that my GENESIS is working?*

**A:** A bromine test strip or a standard liquid reagent (both available at your dealer) will show the actual bromine level in the spa's water, assuring a safe, clean environment. Bromine is recognized by industry professionals and government regulators as a chemical sanitation agent. **GENESIS** produces bromine thru a bromide salt conversion process. The bromine created by **GENESIS** is the same as bromine introduced via tablets – and it is free of the impurities found in the tablets!!

**Q:** *There is less or no bromine odor with the GENESIS??*

**A:** Right. The electronic field around the bromine-generating cell destroys "bromamines". Bromamines are the culprits when it comes to the strong objectionable odor, not the bromine itself. **GENESIS manufactures 100% bromine.**

**Q:** *Why does the display go to a minus (-) every few minutes?*

**A:** This indicator informs you that the polarity of the electrodes is changing every four minutes. This process is for the cleaning of the electrode cell to prevent any "scale" buildup.

**Q:** *My GENESIS lights up but I can't get a bromine reading...*

**A:** There are several reasons why you might not get a reading:

- It can take several days for the bromine level to stabilize because the water you put into your spa contains impurities that need to be neutralized, thereby using up the initial bromine that is generated.
- "TDS" (Total Dissolved Solids) count might be too high – bromine production will be impaired when the TDS count exceeds 3500 ppm.
- Phosphate level might be too high - bromine production can be impaired when the phosphate level exceeds 125 ppb.

**Q:** *The water I put in my spa has high metal/mineral content. I get build up of calcium, etc. Now that I have GENESIS, is it OK for me to treat the water with metal removers and scale inhibitors like I have in the past?*

**A:** It is fine to use metal removers and/or scale inhibitors – just make certain that they do not contain PHOSPHATES.