

**OWNER'S MANUAL AND INSTALLATION
INSTRUCTION FOR:**



***The GENESIS
Device™***



**AUTOMATIC BROMINE GENERATOR
FOR RESIDENTIAL SPAS**

GENESIS Usage and General Information

IMPORTANT SAFEGUARDS

WHEN INSTALLING AND USING THIS ELECTRICAL APPLIANCE, BASIC SAFETY PRECAUTIONS MUST ALWAYS BE ADHERED TO. IT IS STRONGLY ADVISED THAT A QUALIFIED ELECTRICAL TECHNICIAN PERFORM INSTALLATION OF THIS DEVICE.

WARNING

- READ AND FOLLOW ALL INSTRUCTIONS CONTAINED IN THIS MANUAL.
- TO REDUCE THE RISK OF INJURY, DO NOT PERMIT CHILDREN TO USE THE APPLIANCE UNLESS THEY ARE CLOSELY SUPERVISED AT ALL TIMES.
- WARNING...RISK OF ELECTRICAL SHOCK. CONNECT ONLY TO A GROUNDING TYPE RECEPTACLE PROTECTED BY A GROUND-FAULT CIRCUIT INTERRUPTER (GFCI) OR A DEDICATED CIRCUIT. CONTACT A CERTIFIED ELECTRICIAN IF YOU CANNOT VERIFY THAT THE RECEPTACLE IS PROTECTED BY A GFCI.
- REPLACE ANY DAMAGED ELECTRICAL CORD IMMEDIATELY.
- SHOULD THIS APPLIANCE BECOME INOPERATIVE, DO NOT TRY TO CORRECT THE PROBLEM BY YOURSELF. THERE ARE NO USER-SERVICEABLE PARTS INSIDE. TURN OFF, UNPLUG THE POWER CORD, AND CONTACT YOUR DEALER.

GLOSSARY

“ + ” or “ - ” - The system switches polarity at the electrode approximately every 4 minutes (cleaning cycle).

Bromine – is the chemical that is the active sanitizer. **GENESIS** converts Sodium Bromide into Bromine.

Bromine Test Kit – Use Bromine test kit to check Bromine level. Bromine is the active sanitizer that the Genesis products. Do not test after using your spa. Test before using your spa or wait 24 hours. Use designated liquid or paper test kits to test for Bromine (available at any pool or spa store).

Electrode - The electrode cell is the active part of The Genesis Device where NaBr is converted into Bromine. It is fitted into a PVC T located underneath the spas skirt.

Flashing Dots- The TDS is too high or there are metals in the water or both.

Genesis Control Head - Control unit that adjusts the power setting from the off position to a power setting of 1-10. If the unit is properly installed the system should only register power if the spa is circulating on low speed.

PHOSPHATES – A contaminant that promotes algae growth and inhibits Bromine production. Phosphates are introduced to your spa through several sources (fertilizers, hygiene products such as soaps shampoos and lotions). Some spa chemicals such as spa filter cleaners contain Phosphates and should not be used.

Sodium Bromide Test Kit - This tests for the amount of TRU BLU or sodium bromide salts in the water. This is a completely different test than bromine. (available at any pool or spa store).

Solid Dots - system has excessive TDS and GENESIS is not sending power to the electrode cell.

TDS - Total Dissolved Solids in the water; varies depending upon water.

Trouble Water - water that is high in TDS, metals, usually from well water, lake water, or river water and occasionally municipal water (always seek dealer assistance if your water comes from other than a municipal resource).

TRU BLU - Sodium Bromide salt is converted into Bromine by THE GENESIS Device. Sodium Bromide is not Bromine. The spa needs one 11lb bottle of TRU-BLU for each 100 gallons or 1500 to 1900 ppm on the sodium Bromide test strip

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

Dear Valued Customer;

Congratulations on selecting the “***The GENESIS Device***”! You have found the smart, easy, cost-effective way to keep your spa sparkling and always inviting.

There is nothing more relaxing or enjoyable than the soothing environment that only a hot tub can provide – especially when it has the added benefit of a state-of-the-art, automatic bromine generator. You will be able to spend more time enjoying your spa and less time maintaining it!

Hot tubs maintained by ***The GENESIS Device*** are virtually maintenance free, and greatly reduce cost and aggravation of purchasing bromine tablets and other chemicals.

The GENESIS Device, while taking years to develop, is easy to understand and easy to use.

This shipment was inspected during packaging and was sent in good order. Inspect all components when received. In the event that your GENESIS is received in damaged condition, please contact the location where your GENESIS was purchased.

For technical support call the GENESIS Technical Support Helpline

1-877-569-4377 or www.spapurification.com

For replacement parts or to order more TRU-BLU:

Call your local spa or pool dealer

TABLE OF CONTENTS

IMPORTANT SAFE GUARDS.....2

VALUED CUSTOMER3

THE TECHNOLOGY.....5

SYSTEM DIAGRAM / COMPONENTS.....5

ELECTRICAL CONNECTIONS.....6

PLUMBING AND PLACEMENT.....6

PROPER WATER CHEMISTRY PRIOR TO START-UP8

START-UP INSTRUCTIONS.....8

ADJUSTING BROMINE LEVEL.....10

MAINTAINING THE GENESIS DEVICE.....10

SODIUM BROMIDE LEVEL.....11

ADJUSTING WATER CHEMISTRY.....12

KNOW YOUR WATER CHEMISTRY.....16

TROUBLE SHOOTING GUIDE.....17

WARRANTY20

WARRANTY REGISTRATION.....21

GLOSSARY.....23

REGISTER ON LINE AT www.spapurification.com

Or mail to:

Pioneer H2O Technologies, Inc.

3265 South Wadsworth Blvd. Unit "I"

Lakewood, Colorado 80227 USA

1-877-569-4377

THE GENESIS DEVICE
Warranty Registration Card
(Return Within 30 Days of Purchase)

Owners Name: _____

Street Address: _____

City: _____ State/Prov: _____ Zip/Postal: _____

Phone: _____

Date of Purchase: _____ Supplier: _____

Serial Number _____

LIMITED WARRANTY

PIONEER H2O TECHNOLOGY, Inc.

Believing
THE GENESIS DEVICE

To be of exceptional quality, hereby warranties said equipment to the original purchaser only against defective parts and workmanship for a period as stated:

5-year warranty – electronic controller

5-year warranty – electrodes

This warranty begins at the time the equipment is installed and is contingent upon the return of signed owner registration card to the manufacturer.

This systems warranty is only valid if purchased and installed by a pool or spa professional. Any system installed or purchased though the internet voids manufacture warranty.

This warranty does not require replacement of the entire unit. Manufacturer will repair or replace (at its option) any part that proves to be defective in material and/or workmanship during the warranty period under normal use and service. If the equipment does not perform properly, refer to your owners manual and water chemistry before requesting service from the dealer that sold you the system.

This warranty does not cover labor charges and does not cover installation, removal, reinstallation, transportation, or any other claims or torts including but not limited to damage caused by abuse, neglect, freezing, fire, lightening, staining, vandalism, failure to maintain proper water chemistry or other abnormal conditions beyond the company's control.

This warranty gives you specific legal rights and you may have other rights that vary from state to state or province to province. You also have implied warranty rights. This warranty is void if equipment is not installed and operated according to the owner's manual including, but not limited to, maintaining proper water chemistry level at installation and thereafter. Service provided by technicians other than **PIONEER H2O TECHNOLOGY, Inc.** or other authorized agents may void this warranty.

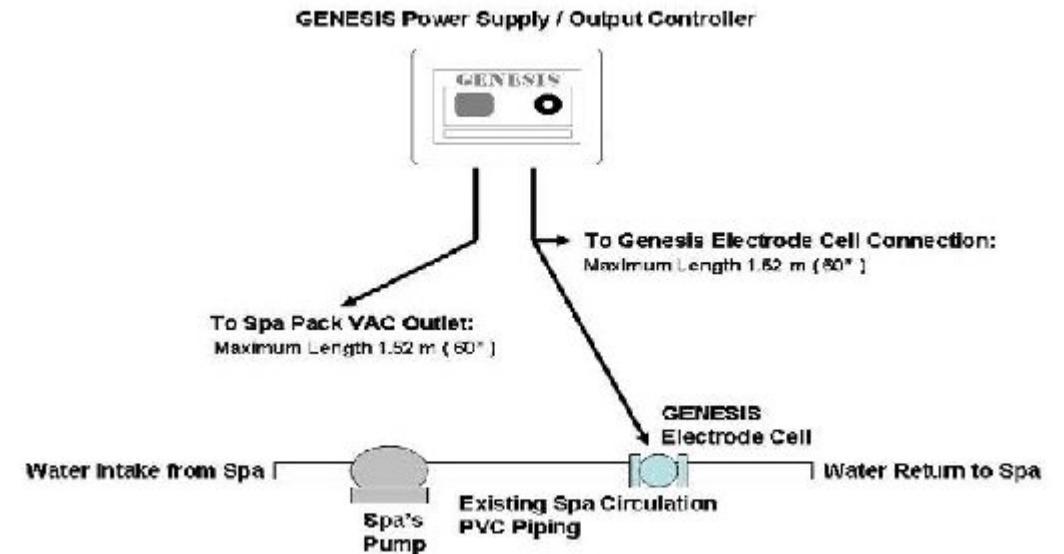
CORPORATE OFFICE:

3265 South Wadsworth Blvd., Lakewood Unit I, CO 80227.

THE TECHNOLOGY

TRU BLU is a chemical that is 98% pure sodium bromide. Sodium bromide - "*NaBr*" - is the kissing cousin of sodium chloride - "*NaCl*" - otherwise known as table salt). TRU BLU dissolves when added to your spa's water. When your spa is circulating, the TRU BLU circulates through the **GENESIS Device** electrode cell and is converted to free bromine before reverting back to sodium bromide - thus completing the perpetual cycle. Bromine is the recommended sanitizer for all hot tubs and spas. (visit www.spapurification.com to see a multimedia presentation of *The GENESIS Device*).

SYSTEM DIAGRAM / COMPONENTS



C 3045191 US

The GENESIS Device is Tested and Listed to:

ANSI/UL - Std. 1081 5th e. CAN/CSA Std. C22.2 No .0

Health Canada – PMRA Registered Spa Sanitation System. Registration Number 27890

ELECTRICAL CONNECTIONS / LOAD SIDE PLUG INS

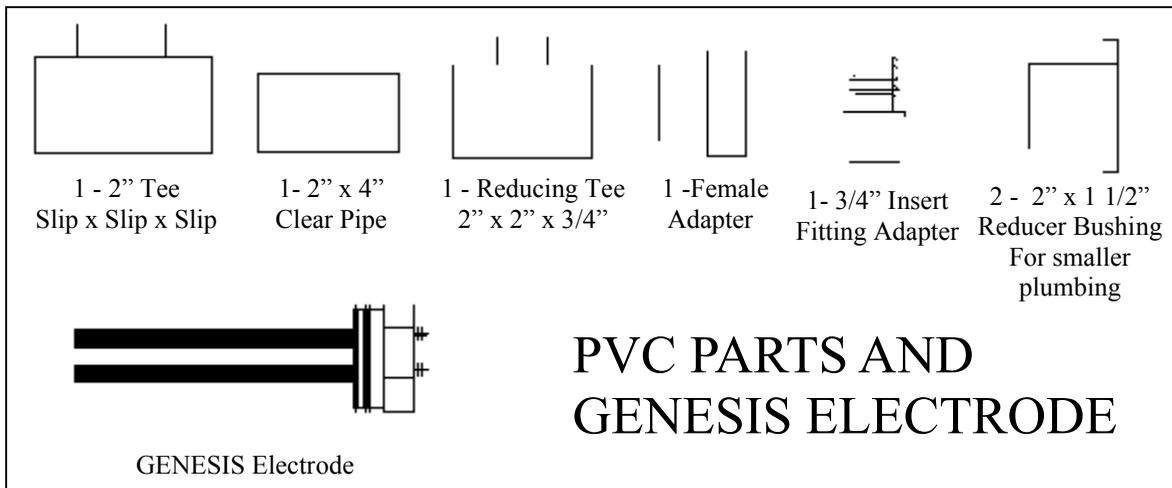
Warning: DO NOT operate *The Genesis Device* without the spa pump running. If water is not flowing through the cell, it will cause a buildup of flammable gases which can result in fire or explosion.

Never attempt to make wired electrical connections yourself. A licensed spa professional should provide this service. (see “IMPORTANT SAFEGUARDS” at the beginning of this manual)

1. Determine input voltage: 120V or 240 V AC. Set the switch located on back of circuit board to the proper input position (note all units are shipped with a factory preset of 240 VAC).
CAUTION: Improper voltage will damage the controller!
2. Securely mount the controller to a **vertical surface**. Make sure there is sufficient cable to accommodate wire connections between the controller, the bromine production cell and the AC power source.
3. The controller must be wired to the load side of the pump or pump timer. This is extremely **IMPORTANT: The GENESIS Device** was designed to operate and produce bromine only while your pump is circulating water. *Failure to observe usage directions may result in equipment damage.*
4. Use liquid tight flexible conduit between the AC power source and the controller.

PLUMBING AND PLACEMENT INSTALLATION DIAGRAM

NOTE: ASSEMBLE THE “T” FITTING PARTS PRIOR TO INSTALLATION TO AVOID LEAKAGE. USE ONLY ONE WRAP OF TEFLON TAPE ON THE THREADS OF THE ELECTRODE CAP. CAUTION: DO NOT OVERTIGHTEN CAP!



PROBLEM:

1.) Low or No Bromine Reading:

You will always have low or no bromine after using the spa. You might need to wait up to 24 hours for bromine to build up before a valid test can be performed.

- CAUSE:**
- A.) Using old or wrong test kits
 - B.) The controller is set to low
 - C.) The circulation run time is low
 - D.) Heavy bather load
 - E.) Low Tru-Blu Level
 - F.) High Tru-Blu level; TDS above MAX limit (2400 PPM)
 - G.) Phosphate contamination
 - H.) Filter clogged

SOLUTION:

- A.) We recommend using liquid OTO test kits for the most accurate results
- B.) Increase the POWER SETTING on the controller 1 number at a time until desired bromine reading is reached.
- C.) Increase filtration cycles by 2 hours up to 8 hrs max in a 24 hr period.
- D.) Use a NON CLORINE SHOCK after heavy use of the spa.
- E.) Test the Sodium Bromide level (TRU-BLU) add Sodium Bromide 1 cap full (2 oz.) at a time until desired level is met 7.4 ppm to 8.0 ppm’s.
- F.) Partially drain the spa and refill with fresh water to reduce the TDS/ Sodium Bromide levels. Sodium Bromide levels should be 7.4-8.0 ppm’s TDS should be between 2300 to 2700 ppm’s.
- G.) Have the spa water tested for **PHOSPHATE contamination** by a local spa dealer. Phosphates should never exceed 100 ppb.
- H.) Clean the filter with bleach water or a filter cleaner. Rinse thou roughly with cold water.

2.) Flashing or Solid Decimals on Digital Display:

- A.) High TDS – means no power to electrodes
- B.) Debris build up in bromine generating cell
- A.) Follow steps in “G” – above
- B.) Requires cell removal and cleaning

3.) White Flakes in Water and or Water Line Scale

- A.) High calcium or mineral content in water
- B.) Chemical water imbalance
- A.) use a dealer directed scale inhibitor/ metal remover (phosphate free)
- B.) Insure pH and Total Alk. are correct

Note: Well water or any non-municipal resource may be the cause of any of the above listed problems

THE WHEN, WHY AND HOW TO SHOCK YOUR SPA:

Although spas utilizing **The GENESIS Device** do not require “SCHEDULED weekly” shocking, they may from time to time (bather load dependent) require a supplemental chemical shock.

Is the Phosphate Level High? A contaminant that promotes algae growth and inhibits Bromine production. Phosphates can be introduced to your spa in many ways (via domestic water sources, fertilizers, hygiene products such as soaps shampoos and lotions). Some spa chemicals (including some spa filter cleaners and some metal sequestering agents) contain phosphates and should not be used. Phosphate test strips are available that can determine if level exceeds the maximum acceptable level of 100 ppb. Treatment with a phosphate remover (Phos Out, Phos Free etc) for 4-5 days with a follow-up filter cleaning is recommended to remedy this problem.

Do you have a Broken/Cracked Electrode? If the GENESIS is not producing desired bromine level and a black coloring is visible in the filter or at the water line, there could be a cracked or broken electrode. Call the Manufacturer's Helpline at 1-877-569-4377 for assistance.

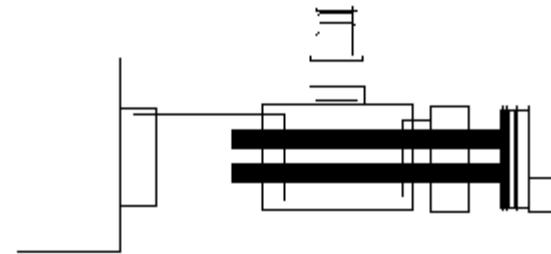
NON-USE of Spa: If spa will not be in use for an extended period of time, turn down the power setting to 1/2 the normal maintenance setting to prevent elevated bromine residual.

GENESIS only creates bromine when the water is circulating past the electrodes.

GENESIS Controller's display numbers are only "ON" during low speed circulation on a two-speed system but they will be on continually with a 24 hour circulation system

GENESIS is only capable of creating bromine not chlorine.

GENESIS ELECTRODE ASSEMBLY



Order of Assembly

1. Glue 2" Tee into plumbing
2. Glue clear pipe into the branch of the Tee
3. Glue Reducer Tee with 3/4" branch positioned vertical to the ground.
4. Glue threaded female adapter to reducer Tee
5. Glue 3/4" insert fitting into the Reducing Tee
6. Use one turn of Teflon tape cap threads and screw in electrode with minimal torque.

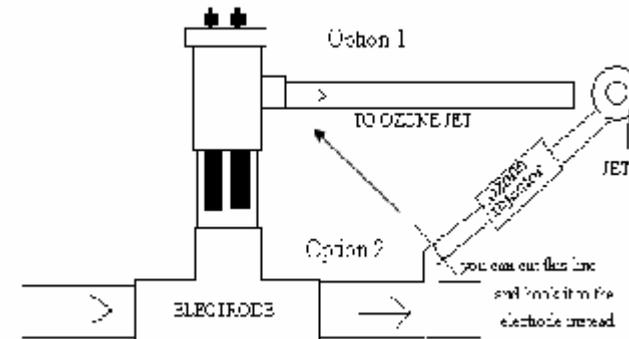
IMPORTANT: MOUNT ELECTRODE HORIZONTAL TO THE GROUND

CRITICAL: AS PICTURED ABOVE THE ELECTRODE CHAMBER MUST BE POSITIONED SLIGHTLY BELOW HORIZONTAL TO THE GROUND OR AT THE THREE O'CLOCK POSITION. THE REDUCER TEE WITH THE INSERT FITTING MUST BE VERTICAL TO THE GROUND OR AT THE TWELVE O'CLOCK POSITION. THESE TWO POSITIONS ARE CRITICAL FACTORS IN ALLOWING 100% OF THE BROMINE TO FLOW BACK INTO YOUR SPA.

Electrode assembly must be properly glued with PVC glue.

Electrode assembly must be installed after Pump and heater.

3/4" fitting must have PVC, flex pipe or hose connected to one of the return lines delivering water back into the spa. See below, option 1, 2, or 3. It might be necessary to install a tee in the line.



Option 1

If there an ozone unit; install a Tee before the venturi valve and attach your 3/4" hose from that Tee to the electrode Tee.

Option 2

Install a 3/4" Tee on any of the spa jets lines and attach the 3/4" hose from that Tee to the electrode Tee

Option 3

Install a 3/4" tee in the drain line before the drain valve and attach the 3/4" line from that Tee to the electrode Tee.

For Illustration:

Do Not Mount Electrode in a Vertical Position

CAUTION: THE BROMINE PRODUCTION CELL PRODUCES CONCENTRATED BROMINE. TO AVOID DAMAGE, THE CELL SHOULD ALWAYS BE INSTALLED AFTER THE HEATER! **DANGER:** THE GENESIS DEVICE SHOULD NEVER RUN OR PROVIDE POWER TO THE PRODUCTION CELL UNLESS THE PUMP IS RUNNING. THIS CAN CREATE A BUILD UP OF DANGEROUS GASES AND MAY CAUSE DAMAGE TO HEATERS.

PROPER WATER CHEMISTRY PRIOR START-UP

ATTENTION INSTALLER: PRIOR TO INSTALLATION OF THE GENESIS DEVICE, IT IS ESSENTIAL THAT THE FOLLOWING WATER CHEMISTRY PARAMETERS HAVE BEEN ESTABLISHED AND VERIFIED!

TDS (TOTAL DISSOLVED SOLIDS) must be less than 500 PPM (ideal range 50-300 PPM) prior to adding TRU-BLU (sodium bromide) to the tub's water. A pre-filter is recommended when filling your spa with water from a non municipal water source such as well or river water.

Balance Spa Water to the recommended levels: (PPM is parts per million)

Calcium hardness 150 ppm - 300 ppm

pH: must be between 7.2 and 7.8 with 7.4 to 7.6 being optimum.

Total Alkalinity: should be between 80 ppm and 120 ppm

Phosphate level: Less than 100 ppb

****Refer to page 12 for tips on balancing your water.**

START - UP OPERATING INSTRUCTIONS

NOTE: If water is not within recommended range skip to Adjusting Water Chemistry prior to starting up the GENESIS.

Caution: It is important that you read and understand the GENESIS START UP procedures before you proceed to the step-by-step instructions below:

1. Make sure the "DECREASE / INCREASE" dial on the face of the GENESIS unit is turned to the "OFF" position.
2. Fill your spa to the recommended level and note how many gallons your spa holds. Most manufacturers round up in gallons so that your 400 gallon spa might actually hold only 375 gallons.
3. Verify that your water chemistry is correct and if not, refer to "adjusting water chemistry" in this manual. If you are on well water, a metal remover or Carbon Block spa pre-filter should be used to reduce TDS and metals. **DO NOT FILL spa with water from a "SALT WATER SOFTENER".**
4. Determine if your spa is equipped with a 24 hour circulating pump or a 2 speed pump. For spas that have a 24 hour circulating pump, add 1 lb of TRU BLU sodium bromide for every 100 gallons of water. For Spas that have a 2 speed pump, add 1 1/2 lbs. of TRU BLU for every 100 gallons of spa water. EG. A spa that is 400 gallons that has a 2 speed pump would need 6 lbs of sodium bromide.

TROUBLE SHOOTING GUIDE

Low or No Bromine Reading:

Is the Power On and the Unit Connected? Double Check the GENESIS Device to make sure that the digital display lights up when the spa is circulating on low speed. If not, check to make certain the lead wires to your electrodes are connected. Is your power setting on the same setting as when the bromine production was OK? Verify that the cap to the electrode assembly is either horizontal or below. At the three o'clock position or slightly below)

Is the spa set for sufficient Circulation Time? Two Speed Systems: Check to see if timer is set to circulate up to 8 hours per day. The 24 hour circulation pump will produce bromine 24 hour each day. Above average bather load or adverse water conditions could require shocking or increased circulation time.

Appropriate Amount of Tru Blu? Using the GENESIS *Sodium Bromide Test Strips*, make sure your **Tru Blu** reading is between 1,500 –1,900PPM or (7.8 - 8.0 on the Genesis Test strips). Spas that have 24 hour circulation pumps should use 1lbs of TRU BLU for every 100 gallons. If Salt reading is greater than 8.4 adjust by a partial drain of the spa (drain 4 to 8 inches and then refilling the water back up to the Spa's water line should be adequate in most circumstances).

Is your spa water in balance? Ensure that your water chemistry is correct. The pH needs to be between 7.2 – 7.8. The Alkalinity needs to be 80 – 120. Calcium Hardness needs to be 150 – 200 PPM. If it is out of the acceptable range, check with your spa dealer for corrective measures.

Is your Filter Clean? When is the last time you cleaned and or back washed the filter? This should be done according to the Spa manufacturers manual; usually once weekly depending on usage. Never use soap to clean the filter because soap contains phosphates and that will reduce bromine production.

Are you Shocking your water? Oxidizing or "shocking" could be required weekly, and in some cases daily due to oxidize waste, reduce demand on bromine and restore spa water's sparkle and clarity.

Does the GENESIS have Solid Dots or Flashing Dots on the Controller? Flashing dots indicate TDS is approaching shut off due to high TDS. Solid Dots indicate that TDS is out of range and the GENESIS has shut off. The power to the electrodes will be disabled and the system is no longer producing bromine. The TDS must be lowered. Check the TDS to determine just how far out of range it is. If you spa is between 2500 to 3000, you might be able to drain 1/2 your water and refill without adding any Tru Blu. If you are having other problems beside TDS, it might be necessary to start over with a complete drain.

NOTES ABOUT TDS: TDS (Total Dissolved Solids) is a combination of metals, minerals and other organic material. GENESIS requires that the TDS from the fill water be in the low range of 0-500 PPM. Municipal water sources in most cases are typically in the acceptable range. Well water is typically higher in TDS (over 500 to 1500 PPM). **Before filling from a high-TDS source, a carbon block pre-filter is highly recommended.** A metal remover might be necessary to reduce TDS sufficiently. **NOTE: Do not fill spa with water from a salt water softener!**

KNOW YOUR WATER CHEMISTRY!

Check your Water Chemistry at least twice each month and adjust if necessary to keep the Genesis bromine generation at its optimum. Keep a record of the information below. Some of these values will never change and don't require retesting. After a month of monitoring you will probably need to only run test 1,2,3 & 4.

Date of test _____

1. The bromine level should be between 2 & 5PPM
My bromine level is _____
2. The pH should be between 7.2 & 7.8
My pH is _____
3. The alkalinity should be between 80 & 120 ppm
My alkalinity is: _____
4. The calcium hardness should be between 150 & 300 ppm
My calcium hardness is: _____
5. The sodium bromide should be 1500 to 1900 ppm
My sodium bromine level is _____
6. The TDS before adding the Sodium Bromide should be 50 to 300 ppm
My TDS is: _____
7. The power setting should be between 2 to 3 on a 24 hour circulation system.
My power setting should be between 5 to 7 on a 2 speed system
My power setting is _____
8. The timer should be set to circulate a minimum of 4 hours based bromine demand.
My timer is set on _____ hours per day.

5. Shake each bottle of TRU BLU vigorously to break up any lumps prior to adding the appropriate dosage of sodium bromide. Turn on the high speed pump and gradually sprinkle the sodium bromide over the top of the spa water. Let the jets circulate for about 15 minutes to allow the TRU BLU to totally dissolve. *NOTE: never add more TRU BLU than recommended. It is easier to add a little more TRU BLU than to adjust for adding too much. After the TRU BLU dissolves, you should get a reading of between 1500 ppm and 1900 ppm of sodium bromide using GENESIS test strips. Adding more TRU BLU than is recommended will reduce the efficiency of the GENESIS and decrease electrode life.

6. Turn the "DECREASE / INCREASE" dial clockwise until the LED display (to the left of the dial) reads "6". The two-speed pump system requires a circulation time of 6 hours per day. (NOTE* GENESIS only produces Bromine during low speed circulation. The indicator lights on the GENESIS Controller will only appear when it is in the low speed circulation mode. The indicator lights will stay on with the 24 hour circulation pump until you switch to the high speed pump when you are using your spa.

*NOTE: The controller will have a "+" or "-" sign to the left of the power setting (1-10) and will reverse every 4 – 6 minutes. This is normal and indicates that the electrode is reversing polarity during its self-cleansing process.

7. Let the spa circulate for 24 hours and then check to see if your bromine level reaches 5 ppm. It might be necessary to adjust the power setting up or down based on your bromine demand. If it is either too high, or too low, adjust up or down one notch at a time and wait 24 hrs and then retest until your "maintenance" setting is achieved. *Adjust the dial one setting at a time after the first adjustment to prevent overshooting your goal.*

- The appropriate setting for The **GENESIS** Device will depend on how often you use your spa. A spa with a higher-than-average bather load will require a higher setting on the **GENESIS** unit. This simply means that **GENESIS** needs to produce more bromine to maintain the level between 3PPM and 5PPM. It is good spa management to test the bromine level in spa water weekly and always before spa use or 24 hours after spa use.

*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 "shocking" the water with a non-chlorine shock.*

****NOTE: NEVER USE CHEMICALS OR CLEANSERS THAT CONTAIN PHOSPHOROUS ACID WHEN CLEANING YOUR FILTER OR OTHER SPA COMPONENTS.**

ADJUSTING BROMINE LEVEL

The desired bromine levels vary between spas, mainly due to different bather loads and circulation time. You will quickly determine the right level for your particular spa. You can increase or decrease bromine production by turning up the “DECREASE / INCREASE” dial on the face of The GENESIS Device. Make the adjustments one notch at a time until you have the desired results particular to the number of persons and frequency of your spa usage. The bromine level will then gradually stabilize over a week to the production rate required to suit your needs.

MAINTAINING THE GENESIS DEVICE

The GENESIS Device could require up to 8 hours of circulation per day to produce the required bromine for your spa. This figure could change depending on the frequency of usage and the number of persons in the spa. If the spa is not circulating, your GENESIS is not generating Bromine.

It is important to always keep your spa water in balance. Maintaining the pH and the Alkalinity and Calcium Hardness is part of being a spa owner. After you achieve 1500 to 1900 PPM of Sodium Bromide/ NaBr on start up, it shouldn't be necessary to test for Sodium Bromide/ NaBr until you need to add water to your spa. Testing your water for bromine should be done weekly depending on the frequency of spa usage. Testing for bromine after using your spa will not typically show any bromine available because you have added demand to the water. The Genesis will regenerate the Bromine during the circulation process converting the sodium bromide back to free bromine.

The GENESIS Device requires you to determine your power setting based upon your spa size, circulation time and your spa usage. Test for bromine with a Bromine test kit that can be purchased from your local pool or spa store. Based on your usage will determine what the power setting should be set at. Remember that the GENESIS is only generating Bromine when the tub is circulating on low speed. The GENESIS Device requires approximately 8 hours of circulation per day to produce the required bromine. This figure would vary based upon spa size and frequency of use and the bather load in the spa. If the spa is not circulating your GENESIS should not be generating Bromine.

With the GENESIS device you can go up to 12 months before a drain and fill is required, unlike non equipped spas that require it every three months. The reason is because Genesis does not add unwanted chemical Bi-products like traditional chemicals do.

It is best to shower before entering your spa to minimize contaminants such as soap, lotions, oils, deodorant, hair products which can contribute to phosphates entering your spa. The Genesis must work overtime to sanitize all that is foreign to your spa water that consumes the free bromine. In fact, you will not typically have a bromine reading after relaxing in your spa due to this sanitizing process. It can take up to 24 hours before the Genesis brings the bromine level back to acceptable levels. Shocking your tub will speed up the sanitizing process and is recommended after heavy bather load.

TOTAL DISSOLVED SOLIDS

Ideal range prior to adding TRU-BLU: 50-500 ppm

After addition of TRU-BLU at a rate of 1 to 1 1/2 lbs of Tru Blu for every 100 gallons: 1,500 ppm to 1,900 ppm

Never exceed 2100ppm!

If your spa has been filled with well water or with water from a non-municipal source, ancillary chemicals to remove metals and or chemical contaminants will more than likely be required. Ask your dealer for advice!

PHOSPHATES

PHOSPHATES– A contaminant that promotes algae growth and inhibits Bromine production. Phosphates are introduced to your spa through several sources (fertilizers, hygiene products such as soaps shampoos and lotions). Some spa chemicals such as spa filter cleaners contain Phosphates and should not be used.

ALWAYS CLEAN YOUR FILTER FIRST, AND TEST AGAIN 24 HOURS LATER. IF THAT DOESN'T SOLVE THE PROBLEM, THEN CHECK FOR PHOSPHATES.

**If you are unable to maintain a Bromine reading, test for phosphates by taking a water sample to your spa product supplier.

- **Phosphate level should be less than 100ppb**

Test for phosphates by using paper test strip available at your spa store or by taking a water sample to your spa store. If phosphates exceed 100ppb, your water needs to be treated with a phosphate remover (Phos Out, Phos Free). It is recommended that you treat the spa for 4-5 days and clean the filter daily until the phosphates are reduced to an acceptable level.

ADJUSTING pH TO 7.2 WITH MURIATIC ACID

pH reading prior to chemical addition:	Muriatic Acid to add (500 gallon spa):
7.8- 8.0 PPM	4.0 TSP.
8.0- 8.2 PPM	1.5 TBSP.
8.4 + PPM	3.0 TBSP.

The pH value must be tested at 2 hour intervals until acceptable pH is achieved. Repeat process if required. pH is closely affected by your spa's total alkalinity. Test you spa for pH value every two weeks.

TOTAL ALKALINITY (Ideal range 80- 120 ppm)

Total Alkalinity is a test done monthly to determine the amount of alkaline material in the water. It also measures the water's ability to neutralize acid and acts as a buffer against sudden pH changes.

**if Total Alkalinity is high. ...add small amounts of sodium bisulfate* or muriatic acid* over a period of 3 days. Follow the label instructions based on your tub size.*

CALCIUM HARDNESS (Ideal range 150-300 PPM)

Calcium hardness is a test done yearly to determine the total amount of calcium that is in solution in the spa water. If the level is too low it can lead to surface damage to the tub and a fluctuating pH. If the level is too high it can lead to scale, calcium deposits, cloudy water and difficulty in controlling pH. Well water contain contaminates such as metals that should be removed. Ask your dealer for advice.

**if Calcium is too high. ...partially drain the tub and refill with fresh water*

**if Calcium is too low. ... add calcium chloride following label directions*

SODIUM BROMIDE LEVEL

TRU BLU sodium bromide is 98.9% pure.

TRU BLU is 98.9% technical grade Sodium Bromide (NaBr). This is the dead sea salt that is added to your spas water that gets converted from sodium bromide to bromine. When dissolved sodium bromide is circulated through the GENESIS electrode chamber, it converts sodium bromide to bromine. The sanitizing process of bromine causes a reaction and converts it back to sodium bromide.

There is a very good chance that your dealer will offer you a Sodium Bromide (NaBr) product other than **TRU BLU**. Sodium bromide comes under many different labels and brand names and it is sold for many different uses. Make sure the NaBr/ Sodium Bromide products are 98.9% pure like GENESIS **TRU BLU**.

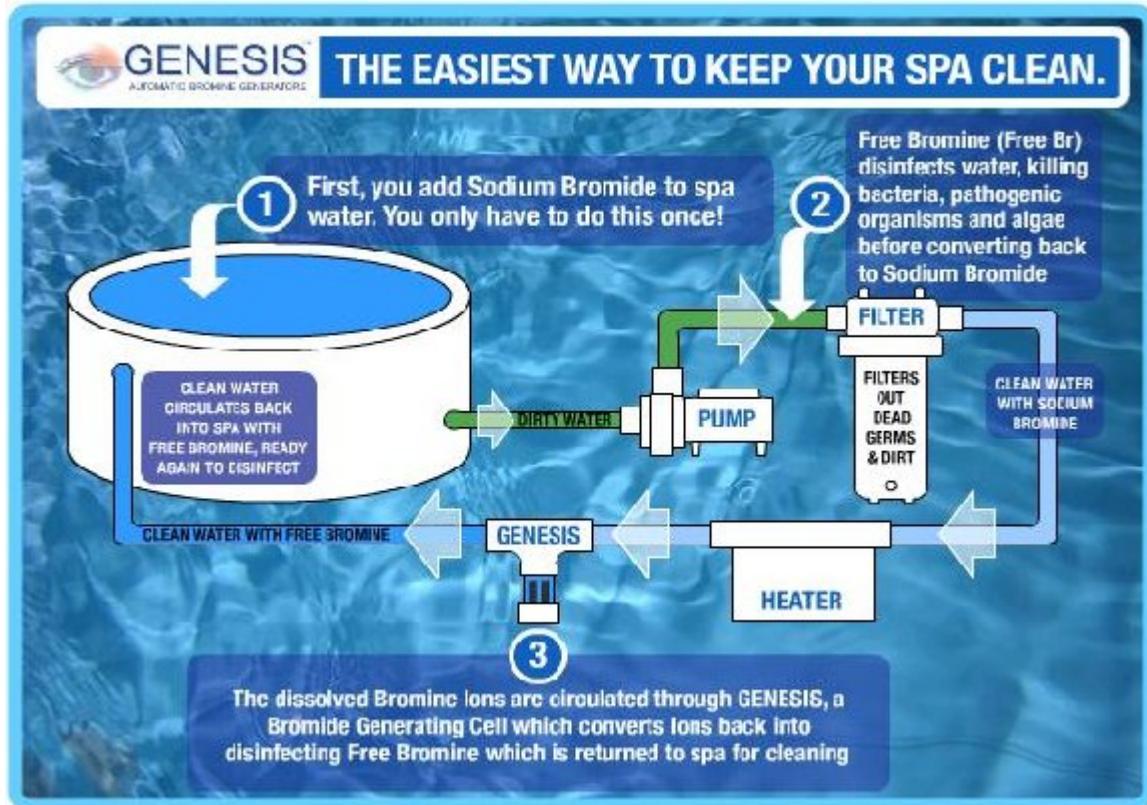
When adding TRU -BLU to your water it is important to add the correct dosage. **The spa must be dosed with 1500-1900 PPM** of Sodium Bromide. Sodium bromide needs to be added at a rate of 1 lb per 100 gallons of spa water for the 24 hour circulation systems and 1½ lbs. per 100 gallons for a spa with a 2 speed circulation pump. It is recommended add less than more Sodium Bromide to your spas water when starting up for the first time to ensure that you do not overdose and exceed the correct dosage (1500-1900 PPM). Most spa manufactures round up a bit so your spa might be a little less in gallons than its advertised capacity.

You will lose water from evaporation, but the evaporation will not reduce the sodium bromide. It is normal to splash out a little water while enjoying your spa and there is a loss of some sodium bromide that must be replaced from time to time. It is necessary to determine your sodium bromide level after adding water to the tub. GENESIS sodium bromide test strips are available through all authorized GENESIS Device dealers. Use of these strips will help you determine how much **TRU BLU** to add. (NOTE: These test strips have a limited shelf life– they come 10 to a bottle – so make sure you don't purchase more than one bottle at a time).

The correct level of TRU BLU is between 1,500-1,900 PPM and should not exceed this amount.

To top off the TRU BLU level, only add 1/2 of a cap each time. This should be about 3 oz. and should increase the PPM by about 80 PPM for a 400 gallon spa. It is better to add a little at a time than to over dose. Too much TRU BLU does not make it better and creates a problem!

****NOTE: TRU BLU-“SODIUM BROMIDE” IS NOT BROMINE. THE GENESIS CONVERTS SODIUM BROMIDE SALT INTO BROMINE THE ACTIVE SANITIZER. Use bromine test kits provided by your spa store to test your water for bromine.**



ADJUSTING WATER CHEMISTRY

pH (Ideal range 7.2 – 7.8)

pH stands for hydrogen power. This test determines the acid or the alkali content of your spa water. As the pH rises above 7.6 there is a reduction in the capacity to produce bromine and sanitize your spa. This test should be done weekly and adjusted accordingly.

REMEMBER: ALWAYS ADD CHEMICALS TO WATER, NEVER WATER TO CHEMICALS.

** if pH is above 7.6. ...lower through use of muriatic acid* or sodium bisulfate**

** if pH is below 7.2. ...raise by using a base (baking soda or soda ash*)*

Complications: if the pH raises above the acceptable range of 7.8

Filling the spa with rain water or tap water might change your pH.

Producing too much bromine will cause a raise in your pH. If your power setting is too high for your particular usage, (6 to 10) it will cause over bromination. If your bromine level exceeds 5PPM the pH will rise and will cause the following complications:

- INABILITY FOR SANITIZER TO KILL ALGAE AND BACTERIA
- SOLIDS MAY COME OUT OF SOLUTION
- WATER MAY GET CLOUDY
- CALCIUM MAY COME OUT OF SOLUTION AND CAUSE SCALE .EYE IRRITATION

Complications: which may occur from LOW pH

- WATER BECOMES ACIDIC; EYE IRRITATION
- DAMAGE TO SPA SURFACES AND SPA EQUIPMENT

ADJUSTING PH TO 7.2 WITH SODIUM BISULFATE

pH reading prior to chemical addition:

Sodium Bisulfate to add (500 gallon spa):

7.8- 8.0 PPM

1.0 OZ.

8.0- 8.2 PPM

1.5 OZ.

8.4 + PPM

1.75 OZ

RETEST spa's pH value after allowing 2 hours to pass and repeat above steps if required. pH is closely affected by your spa's total alkalinity. Test your spa's pH value at least twice every month. The correct range for pH is 7.2 -7.8 PPM. The lower the pH value, the more effective bromine is in spa water sanitation. **CAUTION:** if the water becomes acidic (pH below 7.2) damage to spa surfaces and equipment may occur. If water becomes basic (alkaline - pH above 7.8) this may cause scale buildup on the bromine producing electrode cell and to spa surfaces, and can damage other spa equipment.

pH HAS A DIRECT EFFECT ON BROMINE'S EFFECTIVENESS AT SANITIZING YOUR SPA'S WATER!! pH HAS A DIRECT EFFECT ON BATHER COMFORT. IMBALANCE CAN RESULT IN EYE IRRITATION.