

## Water Quality Terms and Definitions

The following chemical terms are used in this section. Understanding their meaning will help you to better understand clear water maintenance. Words in bold type are defined in this table.

<b>Bromine/Bromamines</b> (Brominating Tablet or Bromine Granules)	<p>Bromine is an efficient sanitizer chemical for spas. When used as a <b>sanitizer</b>, bromine forms compounds called bromamines. Bromine can be added to the spa or automatically generated.</p> <p>Bromamines are compounds formed when bromine combines with nitrogen from body oils, perspiration, etc. Unlike chloramines, bromamines have no pungent odour and are effective sanitizers.</p>
<b>Chlorine/ Chloramines</b> (Spa Tabs or Chlor-Aid)	<p>Chlorine is an efficient sanitizing chemical for spas. We recommend using sodium dichlor-type granulated chlorine (Chlor-Aid) because it is totally soluble and nearly <b>pH</b> neutral. When used as a <b>sanitizer</b>, chlorine forms compounds called chloramines.</p> <p>Chloramines are compounds formed when chlorine combines with nitrogen from body oils, perspiration, etc. Chloramines can cause eye irritation as well as having a strong odour. Unlike <b>bromamines</b>, chloramines are weaker, slower <b>sanitizers</b>. To remove chloramines, see description of <b>shock</b> below.</p>
<b>Calcium Hardness</b>	<p>Abbreviated as CH. Calcium hardness is a measure of the total amount of dissolved calcium in the water. Calcium helps control the <b>corrosive</b> nature of the spa's water and why soft water is not recommended. The low CH level can cause corrosion.</p>
<b>Corrosion</b>	<p>The gradual wearing away of metal spa parts, usually caused by chemical action. Generally, corrosion is caused by low <b>pH</b> or by water with levels of <b>TA, CH, pH</b> or sanitizer which are outside the recommended ranges.</p>
<b>Monopersulphate or MPS</b> (Spa Shock)	<p>Frequently used when <b>shocking the water</b>. An effective non-chlorine based powdered <b>oxidizer</b> that works well with both <b>chlorine</b> and <b>bromine</b>. It works by oxidizing waste product in the water such as <b>bromamines</b> and <b>chloramines</b> and causing them to burn off.</p>
<b>Oxidizer</b>	<p><b>Shocking the water</b> with an oxidizing chemical prevents the buildup of contaminants, maximizes <b>sanitizer</b> efficiency, minimizes combined <b>chlorine</b> and improves water clarity.</p>

<b>Ozone</b>	Ozone is a powerful oxidizing agent which is produced in nature and artificially. Ozone forms no by-products of <b>chloramines</b> (ozone oxidizes chloramines) and will not alter the water's <b>pH</b> .
<b>pH</b>	The PH level is the measure of the balance between acidity and alkalinity. Low pH causes the water to be too acidic, which will cause <b>corrosion</b> , whereas high <b>pH</b> causes the water to be too alkaline, which will cause <b>scaling</b> and render the <b>sanitizer</b> useless.
<b>Ppm</b>	The abbreviation of “parts per million”, the standard measurement of chemical concentration in water. Identical to mg/l (milligrams per liter).
<b>Sanitizer</b>	Sanitizer is a chemical added to the water to kill bacteria and viruses and keep the water clean. The two sanitizers that are recommended are <b>chlorine</b> and <b>bromine</b> .
<b>Scale</b>	Rough calcium-bearing deposits that can coat spa surfaces, heaters, plumbing lines and clog filters. Generally, scaling is caused by mineral content combined with high <b>pH</b> . Additionally, scale forms more readily at higher water temperatures.
<b>Shock</b>	Also called shocking the water, shock treatment, or super chlorination. Shocking the water is adding significant dose of <b>dichlor</b> or <b>MPS</b> to <b>oxidize</b> non-filterable organic waste and to remove <b>chloramines</b> and <b>bromamines</b> . Shock treatment breaks down organic waste contaminants which cause odour and cloudy water.
<b>Total Alkalinity</b>	Abbreviated as TA. Total Alkalinity is the measure of the total levels of carbonates, bicarbonates, hydroxides, and other alkaline substances in the water. TA is important for <b>pH</b> control. If the TA is too low, the <b>pH</b> will fluctuate out of control, and if it is too high, the <b>pH</b> , becomes difficult to stabilize.
<b>Trichlor</b>	Used as a POOL SANITIZER. <b>NEVER USE TRICHLOR IN A SPA.</b> Trichlor is extremely acidic and will lower the <b>pH</b> , causing corrosion to equipment. Using Trichlor with void your warranty.

## Water Testing Methods

Test Strips: Test strips are a convenient testing method commonly used by spa owners.

**Capo 6 Way:** Measures Total Hardness, Total Chlorine, Total Bromine, Free Chlorine, pH, TA

**Capo 4 Way:** Measures Free Chlorine, Bromine, pH, TA

**AquaChek Bromine 4-in-1:** Measures Total Bromine, Total Hardness, pH, TA

**AquaChek Chlorine 4-in-1:** Measures Free Chlorine, pH, TA, Stabilizer



## Adding Chemicals to Spa Water

**IMPORTANT:** All spa water chemicals, including shock, sanitizer, pH booster or reducer, alkalinity increaser, calcium hardness increaser, liquid stain or scale inhibitor, and liquid de-foamer must always be added directly into or in front of the filter compartment while a jet pump is running, and after each adjustment it must run for a minimum of twenty (20) minutes.

- 1) Fold back the cover
- 2) Press the Jets or Jets 1 button
- 3) Carefully measure the recommended amount of chemical and slowly pour into the spa near filter area. Use care not to splash chemicals on your hands, in your eyes, on the spa surface, or on the siding.
- 4) Run spa for minimum 20 minutes.
- 5) Add in next chemical adjustment
- 6) Once finished adding in chemical adjustments and the last 20 minutes has been run, Close the spa cover.

**WARNING:** High sanitizer levels can cause discomfort to the user's eyes, lungs and skin. Always allow the sanitizer level to fall to the recommended range before using the spa.

**IMPORTANT NOTE REGARDING SHOCK TREATMENT:** After administering shock to your spa, leave the cover open for a minimum of 20 minutes to allow the oxidizer gas to vent. A high concentration of trapped oxidizer gas which may exist because of the shock treatment may eventually cause discolouration or vinyl degradation to the bottom of the cover. This type of damage is considered chemical abuse and is not covered under the terms of a warranty.

## Balancing the Water Chemistry Level

Maintaining spa water chemistry can be tricky, especially since there are many methods of keeping your water clear and clean.

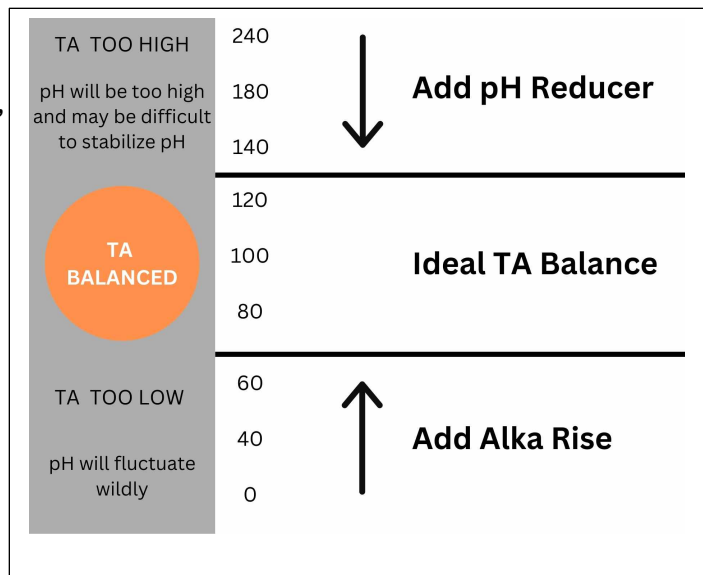
Chemicals should be added to spa in the following order:

**ALKALINITY > PH > HARDNESS > SANITIZER**

## Balancing the Total Alkalinity (TA)

Total Alkalinity is a measure of the total levels of carbonates, bicarbonates, hydroxides, and other alkaline substances in the water. TA is referred to as the water's "pH buffer". In other words, it's a measure of the ability of the water to resist changes in pH level.

If the TA is too low, the pH level will fluctuate widely from high to low. Fluctuations in pH can cause corrosion or scaling of the spa components. Low TA can be corrected by adding Alka Rise.



If the Total Alkalinity is too high, the pH level will tend to be high and may be difficult to bring down. The TA can be lowered by using pH Reducer.

Once the TA is balanced, it normally remains stable, although the addition of more water with a high or low alkaline will raise or lower the TA reading of the water.

When the TA is within the recommended range, proceed to the next step.

## Balancing the pH

The pH level is the measure of acidity and alkalinity. Values above 7.8 are alkaline; those below 7.2 are acidic. Maintaining the proper pH level is extremely important for optimizing the effectiveness of the sanitizer, maintaining water that is comfortable for the user, and preventing equipment deterioration.

If the spa water's pH level is too low, The following may result:

- Sanitizer will dissipate rapidly
- Water may become irritating to users
- Spa's equipment may corrode

If the pH is too low, it can be increased by adding pH Booster to the spa water.

If the pH level is too high the following may result:

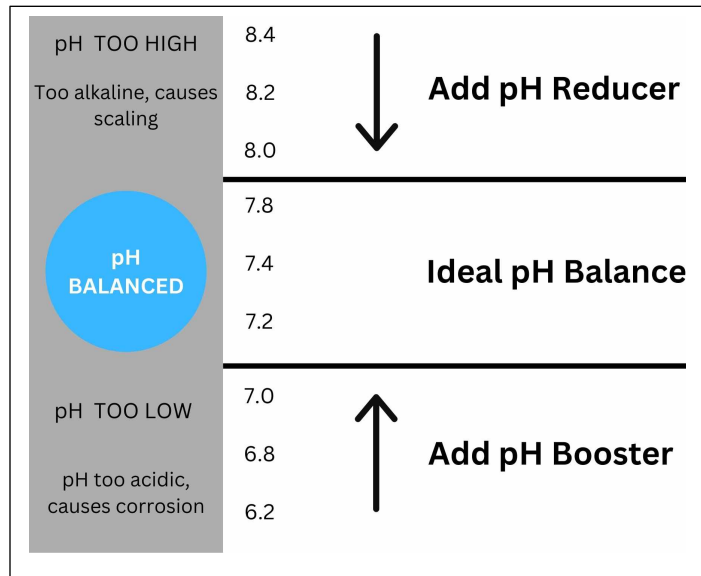
- Sanitizer is less effective and useless
- Scale will form on the spa shell surface and equipment
- Water may become cloudy
- Filter cartridge pores may become obstructed

If the pH is too high, it can be decreased by adding pH Reducer to the spa water.

**NOTE: after adding pH Booster or pH Reducer, wait two (2) hours before testing the water for pH. Measurements taken too soon may not be accurate.**

It is important to check the pH on a regular (weekly) basis. The pH will be affected by the bather load, the addition of new water, the addition or various chemicals, and the type of sanitizer used.

When the pH is within the recommended range, proceed to next step.



## Balancing the Calcium Hardness (CH)

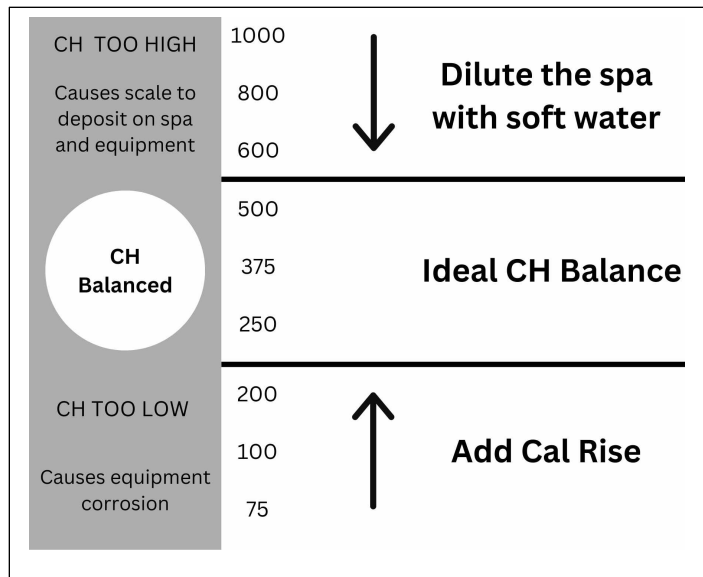
Calcium Hardness is a measure of the total amount of dissolved calcium in the water. Calcium helps control the corrosive nature of the spa's water. That's why calcium-low water (commonly known as "soft" water) is not recommended. It is very corrosive to the equipment, and can cause staining of the spa shell.

If the CH is too high (commonly known as "hard water"), formation of scale on the spa's shell surface and equipment can result. You can use a generic calcium remover to remove hardness from water however CH can also be decreased by dilution – a mixture of 75% hard and 25% soft water will usually yield a reading within the correct range. If soft water is not available or practical for you, a stain and scale inhibitor should be added to spa water, according to product label instructions.

If the CH is too low add Cal-Rise.

Once the CH is balanced, it normally remains stable, although the addition of more water with a high or low calcium content will raise or lower the CH reading of the water.

When the CH is within the recommended range, proceed to the next step.

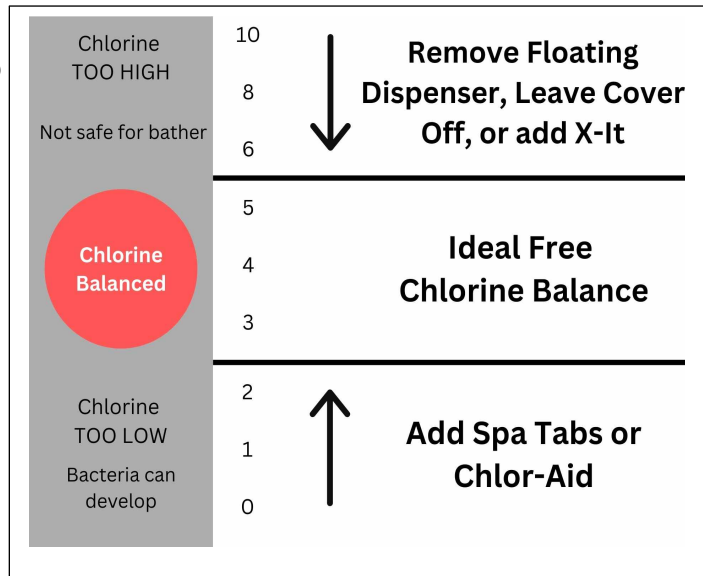


## Sanitization and Shock

Sanitizers kill bacteria and other organic waste by breaking them down to non-harmful levels which are filtered out. Before you fill your spa, you need to decide which chemical sanitizer you wish to use.

We recommend either Bromine or Chlorine as your sanitizer. Both work well when maintained regularly.

**NOTE: DO NOT use Trichlor. Trichlor is very acidic and the hot temperature of the spa causes it to dissolve too quickly. It will cause damage to your spa and will void your warranty.**

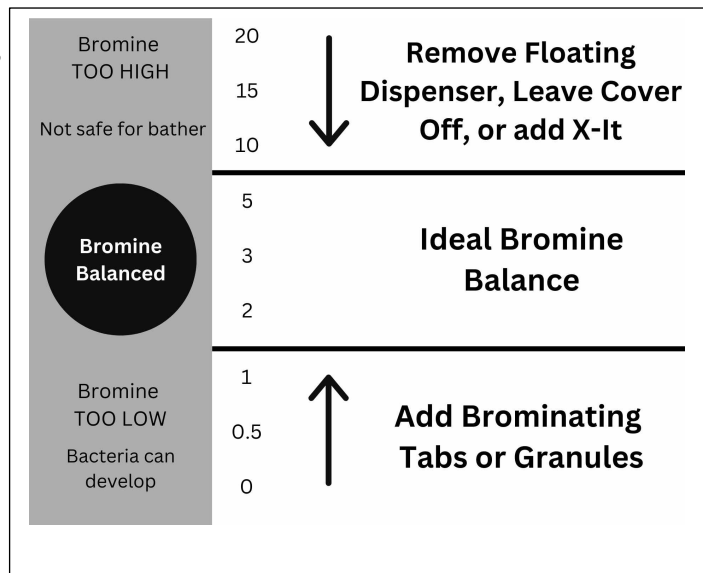


Whichever plan you decide on, follow it completely and don't take shortcuts. It will provide you with clean, safe, clear spa water with a minimum effort. Spa owners with an ozonator will still need to use a chemical sanitizer.

Whenever you test your chemical levels, your test strip will likely have a test for chlorine or bromine. Make sure your sanitizer falls within the range shown on this page.

Sanitizing your spa with chlorine or bromine is very similar. Each sanitizer has its advantages and disadvantages.

**BROMINE:** Whereas chlorine can sometimes cause offensive odours and skin irritation, bromine is less likely to do so. Additionally, unlike chlorine, when bromine combines with bather waste and other contaminants in the water it remains a very effective sanitizer. Bromine is also far less pH dependent than chlorine. **Always remember that bromine by itself is not a sanitizer, and it needs to be activated by shock to be effective.**



**CHLORINE:** The most recognized sanitizer is chlorine. However, the effectiveness of chlorine depends heavily on the pH level of the spa water. To get the most effective and economical benefit of chlorine, you must maintain a consistent pH level between 7.2 to 7.6. A disadvantage of using chlorine is when chlorine combines with bather waste and other contaminants in the water, not only does it lose its sanitizing ability, but it can also cause odours and irritate eyes and skin.

After choosing a sanitizer, you will need to establish a baseline and maintain it regularly.

After bather use occurs, shock is added to the spa to help rid the spa of organic contaminants (you). Shocking the spa can clear up cloudy water, remove nasty compounds, kill bacteria, remove chlorines and bromines, as well as reactivating bromides. Shock helps your regular sanitizer do their job and not get overwhelmed from bacteria maintenance.

## Balancing the Water Chemistry Levels

AFTER EACH USE: Shock the water

ONCE A WEEK: Check the filter well and inside filter pipe for leaves and foreign matter.

Test the spa water and adjust chemical levels as necessary.

Shock the water.

If your water source is high in calcium, add stain and scale preventer.

EVERY 2-4 WEEKS: Rinse the filter with garden hose

EVERY 3-4 MONTHS: Clean and purge the spa water.

Deep clean the filters

Clean and wipe down surface of spa

Refill Spa

EACH TIME YOU REFILL THE SPA: Refill spa through the filter hole to prevent airlocks from occurring.

## Generic Names for Chemicals

COMMON NAME	COMMON BRAND NAMES
pH Up	pH Increaser, pH Booster, pH Plus, pH Up
pH Down	pH Decreaser, pH Reducer, pH Down, pH Minus
Alkalinity Increaser	Alka Plus, Alka Rise, Alka Increaser
Calcium Increaser	CalRise, Calcium Up, Calcium Plus, Hardness Increaser
Calcium Decreaser	N/A to decrease hardness, drain several gallons of water from spa and refill using a mixture of 75% hard water and 25% soft water or use a stain and scale inhibitor (PREVENT II)



## Cleaning the Spa

Your hot tub is great at keeping itself clean. Whether you use a chlorine, bromine, or ozone system to purify your spa, you'll enjoy pristine water, free of contamination, for months on end. With every system, you'll need to change the spa water now and then. Changing of your spa water should occur every three to four months.

You'll need:

- 1) Whirlpool rinse product to clean out the plumbing lines
- 2) A garden hose long enough to reach from your hot tub to a drain (if you're the type who always like to have the perfect tool, invest in a submersible pump)
- 3) Clean & Perfect spray or an organic all-purpose cleaner to clean the interior once drained
- 4) Microfiber cloths

### **To drain using the spa drain spigot:**

- Turn the power to the spa off at the circuit breaker. You don't want the pumps or jets to run while there isn't any water in the spa.
- Next, find your drainage spigot and following the instructions on how to attach a hose within your spa manual
- Run the other end of the hose downhill or on level ground out to your drain. It's best to transport the water to an existing drain, to avoid damage to your lawn or patio.

### **To drain using a submersible pump:**

- Turn the power to the spa off at the circuit breaker.
- Place the pump inside the spa.
- If your pump's outflow hose isn't long enough to reach a drain, connect it to a garden hose.
- Turn the pump on and let the spa drain.
- When the hot tub is empty, turn off the pump, remove it from the spa, detach the hose, and return it to storage.

Each time you drain your spa, before you refill it you should clean your spa shell with a clean and perfect product and use a microfiber cloth to wipe down as to not damage the acrylic finish.

## Cleaning the Filter

In addition to spraying the filter **weekly** to remove surface debris, your filter should be deep cleaned periodically to dissolve scale and particles that get lodged deep within the filter fibers and impede the filtration process. Even if the filter looks clean, scale and particles can clog the fibers and prevent water from flowing through the filter resulting in the most common spa problem – no heat, caused by a dirty filter.

We recommend you deep clean your filter every 4 months and replace it once a year.

If you are using the Bullfrog Spas Simplicity Filters for your M, Swim or A series Spa (2023), these filters are designed to be disposed of and replaced with a new one every 2 months.

Cleaning the Filter:

1. Remove the filter by unscrewing it and pulling it up and out
2. Place the dirty filter into a bucket of water deep enough to cover the filter. Follow instructions for the amount to add in of the Filter/Cartridge cleaner product to the water.

NOTE: it is a good idea to keep a spare filter to use in the spa while the dirty one is being deep cleaned. This way, you can rotate the filters, and both will last longer.

3. Soak the filter as directed on back of filter cleaner product.
4. Spray the filter with a water hose. Spray each pleat carefully.
5. Reinstall the filter. Do not over-tighten.

## Vacation Care

You may leave your spa unattended for up to two weeks by:

- 1) Always lock your cover using the cover locks and keys if you plan to be away from home and the spa is filled with water.
- 2) Select a lower temperature between 85-95
- 3) Adjust the pH
- 4) Increase the sanitizer by a tablet
- 5) Shock the water
- 6) Upon return immediately check the water and adjust

## Chemical Brands We Offer and Their Uses

NAME	USE
ALKA-RISE	pH Stabilizer, raises Total Alkalinity of spa
AQUA FINESSE FILTER CLEANER	2 pack or 10pack Tablets that deep cleans the filters
AQUA FINESSE SPA CLEAN	Cleans the spa
AQUACHEK RED – BROMINE 4-in-1	Test strips for testing Total Bromine, Total Hardness, pH, and Total Alkalinity
AQUACHEK YELLOW – CHLORINE 4-in-1	Test strips for testing Free Chlorine, pH, Total Alkalinity and Stabilizer
BROMINATING GRANULES	Bromine sanitizer in granular form. Quick dissolving treatment.
BROMINATING TABS	Bromine sanitizer tablets
CAL-RISE	Raises the Calcium Hardness of spa water
CAPO 4-WAY TEST STRIPS	Test strips for testing Free Chlorine, Bromine, pH and Total Alkalinity
CAPO 6-WAY TEST STRIPS	Test strips for testing Total Hardness, Total Chlorine, Total Bromine, Free Chlorine, pH, and Total Alkalinity
CARTRIDGE CLEANER	Liquid cleaner that removes grease, oils and scale from filters. Filter cleaner.
CHLOR-AID	Chlorine sanitizer in granular form. Quick dissolving treatment. Contains stabilizer (cyanuric acid) which will accumulate.
CLEAN AND PERFECT	Used to spray and clean interior of spa
DEFOAMER	Decrease foam from inside spa.
NO PHOS	Removes phosphates from spa
pH BOOSTER	Raises the pH of the spa
pH REDUCER	Lowers the pH of the spa, Lowers Alkalinity when high
PREVENT II	Eliminates stain and scale formation, best used upon filling the spa with cold water. Can also be used as weekly treatment.
SPA BALL	Floats in spa and absorbs oils and scum
SPA CLEAR	Spa Clarifier - liquid
SPA PERFECT	Stain and Scale preventor, weekly additive
SPA PLUS	Shock, buffer, clarifier, stain and scale preventor
SPA SHOCK	After use of spa. Destroys organic contaminants. Restores water clarity.
SPA TABS	Chlorine sanitizer tablets.
ULTRA SPA	Water conditioner and clarifier

WHIRLPOOL RINSE	Liquid that cleans out plumbing of spa. Use prior to draining spa.
X-IT	Eliminates chlorine or bromine residual. Will reduce bromine or chlorine level built up in water. Can be used when switching between sanitizers.
ZORBIE	Reduces odours, foaming and absorbs body and suntan oils in spa.

## Spa 101

**THIS SPA HOLDS:** \_\_\_\_\_ **L**

### **Filling & Starting Spa:**

- 1) DO NOT fill with soft water
- 2) Fill spa down through filter area
- 3) Filling of spa can take approximately 2-3 hours depending on water pressure.
- 4) Add in \_\_\_\_\_ ml of PREVENT II as spa is filling.
- 5) Fill spa to approximately 1" above top jet, or fill line indicated on spa. Remove hose.
- 6) Turn spa on and follow instructions on how to prime jets in the owner's manual.
- 7) Close cover and let heat to desired temperature.
- 8) Open spa and insert test strip and hold for 5-10 seconds in spa.
- 9) Compare colours on strips to back of bottle.
- 10) Adjust Alkalinity first. Run jets. Wait 20 minutes with the cover off if adjusted. If not needed to be adjusted move on to next chemical.
- 11) Adjust pH. Run jets. Wait 20 minutes with the cover off if adjusted. If not needed to be adjusted move on to next chemical.
- 12) Adjust Calcium Hardness. Run jets. Wait 20 minutes with the cover off if adjusted. If not needed to be adjusted move on to next chemical.
- 13) Add AquaFinesse if using. (optional)
- 14) Add sanitizer.
  - a. If your spa is under 900L use granules only. Add in 1 capful of the product at a time.
  - b. If your spa is above 900L use a tablet dispenser. Set dispenser to \_\_\_\_\_ put in \_\_\_\_\_ tablets.
- 15) Wait 20 minutes with the cover off then enjoy.

NOTE: Always read the directions on the chemical bottles before use and double check the number of liters in your spa.

### **After using spa:**

Your spa runs on the core four measurements “Alkalinity, pH, Hardness, Sanitization”. By adding a bather we’ve now contaminated the water. Spa Shock is added to help eliminate the bather. Add 100gms of Spa Shock per 1,500 L of water after each use or when the spa water is cloudy. Keep your cover open and run spa for 20 minutes before closing the cover and locking the spa.

We understand that “each use” could be excessive, so let’s talk bather load. If one – two bathers are in the spa, morning & evening, then 50 grams at the end of the last bathe. If three or more bathers are in the spa, morning & evening, than 100 grams at the end of the last bathe. If entertaining bathers for a full day of usage, add 25 grams per bather.

### **Weekly Maintenance:**

- Check chemical levels and balance
- Ensure the floating dispenser always has the correct number of tablets. If some tablets are disintegrated, replace them with new ones while leaving the disintegrated ones in the dispenser.
- Add \_\_\_\_\_ ml of Aqua Finesse (if continue using)
- Add \_\_\_\_\_ ml of Spa Perfect
- Rinse filters.

### **3-4 Month Spa Purge & Clean:**

- 1) Remove cover.
- 2) Open all jets and diverter valves.
- 3) Pour approximately half a bottle of Whirlpool Rinse into spa.
- 4) Run spa on HIGH (all jets & pumps) for two hours. Set a timer as jets only run on 20-minute intervals. Spa will foam A LOT.
- 5) After two hours, disconnect spa from power.
- 6) Drain spa.
- 7) Remove filter(s) and deep clean in Cartridge Cleaner. Considering purchasing extra set of filters to swap out during cleanings.
- 8) Spray interior of spa with Clean & Perfect and wipe down using microfiber cloth.
- 9) Follow instructions on “Filling & Starting Spa”
- 10) Put Filter back in prior to connecting spa to power.

## Spa Safety

- To avoid possible health hazard to bathers, NEVER heat spa water above 104 degrees. The spa should be limited to 20-minute intervals to avoid nausea.
- Do not enter spa under the influence of alcohol or medication that could cause drowsiness. If you are on medication consult with a doctor before using spa.
- Because of high water temperatures, pregnant women, and small children should use caution.
- DO NOT USE electricity near the water.
- Hot water is an ideal medium for spreading an infection. Bathers with open wounds should not use the spa.
- Always enter and exit the spa with caution.

## Troubleshooting Water Issues

### Cloudy and/or Smelly Water

Cause:

- Excessive contaminants
- Water out-of-balance
- Clogged or worn-out filter
- Low sanitizer level
- *Activities* of children

Solution:

- Shock spa
- Test and adjust pH level
- Clean or replace filter
- Check and/or adjust sanitizer level
- Change water
- Encourage children to use restroom and shower prior to entering the spa

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### Excessive Foaming

Cause:

- High contaminants and/or soap residue

Solution:

- Add defoamer
- Use Zorbie scum absorber

- Test and adjust pH level
  - Check Sanitizer level
  - Clean or replace filter
- 

### **Skin Irritation, Rashes, Strong Fumes, Burning Eye Sensation**

Cause:

- Incorrect pH Level
- Incorrect Sanitizer level
- Excessive chorlamines
- Water out-of-balance
- Buildup of gasses under spa cover
- Overdose of non-chlorine shock
- Biofilm contamination
- Pseudomonas bacteria

Solution:

- Test and adjust pH level
  - Test and adjust sanitizer level
  - Shock with Spa Shock
  - Open Spa Cover, run jets on HIGH and allow spa to aerate for 10 minutes prior to use.
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### **Scum & Oil Film, Tub Ring**

Cause:

- Body oils, make-up, lotion residues, detergents
- Clogged or worn-out filter

Solution:

- Add stain and scale Preventor
  - Use Zorbie oil scum absorber
  - Clean or replace Filters
- 

### **Discoloured Water**

Cause:

- Low pH
- Low Hardness level



Solution:

- Test and adjust pH levels
  - Test and adjust Hardness level
- 

### **Foul, Sour, or Musty Odour**

Cause:

- Low sanitizer level
- Excessive contaminates

Solution:

- Test and adjust sanitizer level
  - Shock treat water with Spa Plus
  - Use Whirlpool Rinse and change water
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### **Excessive pH Fluctuation**

Cause:

- Improper Total Alkalinity level
- Higher bather load

Solution:

- Test and adjust Total Alkalinity