

COLORADO SPAS
6208S. College Fort Collins
2 2 3 - 5 1 9 7
Bromine with Ozone Water Treatment

PROTECT PLUS

On initial fill add 4 ounce per 500 gallons, please allow one hour for the protect plus to work before adding any other chemicals, this only needs to be done when the spa is first filled. Then once per week, add 2 ounce per 500 gallons. PROTECT PLUS protects your spa and plumbing from staining and scaling. Protect Plus also has clarifier in it for removing microscopic debris too small to normally be filtered out. This product helps considerably in the overall clarity of the water, by removing any small particles from the water.

PH

Next, use your test strips to initially check the pH and alkalinity of the water once every couple days. You can then switch to once a week after you become familiar with how the water is reacting to your use. The pH should be kept between 7.2 and 8.0. Low pH can damage your spa! If the level drops below 7.2 add about a ¼ cup of Spa Up (Sodium bicarbonate) per 200 gallons. The exception to this rule is when the Total Alkalinity reaches 120ppm do not continue to use baking soda, change to soda ash (sodium carbonate). Soda ash raises just the pH and does not continue to raise the total alkalinity. Anytime a chemical is added to the water turn the jets on high to mix the chemical, and then test again in 4-8 hours. A high pH level isn't as much of a problem as low pH and will generally be lowered naturally through use and chemicals.

TOTAL ALKALINITY

Total alkalinity (TA) helps you control the pH, and should be maintained between 80 and 120 PPM. Like pH, total alkalinity is increased by adding Spa Up (sodium bicarbonate). Total Alkalinity governs how the pH reacts. Low TA allows pH swings, while high T.A. makes it harder to adjust the pH. When your alkalinity is correct your pH is easier to control.

CALCIUM

After the water is up to temperature add half cup of Liquid Hardness Increaser per 200 gallons. Run spa for 5 minutes on high speed to mix. Calcium is a buffer for the spa and is essential for complete water balance. This is a one-time treatment done after each water change.

Clean Water is FUN Water!!!

The average adult contributes a pint of body fluid every hour while using their hot tub at 104 degrees. This all goes into solution in the water as organic wastes. Once your sitting in a hot tub your body will start to release body oils and perspiration into the water. Any residual soap, shampoos, hairsprays, cosmetics, suntan lotions or hand lotions that are remaining on your skin are passed into the water at the same time. This organic waste will not filter out of the water, it has to be chemically burnt off or oxidized. So now, along with the bacteria we have organic waste being introduced into the hot tub water. By removing these contaminants we are keeping the hot tub water clean and save to use. To do this, your hot tub was delivered with a factory installed ozone and a chemical kit. The overview for clean water is; set the filtration time of the hot tub to compensate for the bather load. Since the ozone functions only during the filtration cycles, we are not only filtering the water but also introducing the ozone into the water where it can kill the bacteria and burn off the organic waste. Since the ozone is only effective while it is on, leaving no residual 20 minutes after the filtration cycle and ozone have shut off, we use bromine to help the ozone disinfect. Bromine is a superior sanitizer, but it doesn't do a very good job of burning off the organic waste. So we use a non chlorine shock (or oxidizer) to burn off the organic waste. The ozone does the majority of the work but it can't do it all, hence the bromine and the shock.

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OZONE

Ozone gas is powerful oxidizer, which will act as a sanitizer for your spa water without daily use of a sanitizer. Because ozone operates only with the preset filtering cycles, you must set your filtrations times a minimum of 8 to 10 hours per day for sufficient ozonation. If after about a week you find your water staying clear you can decrease the run time. If the water starts to cloud up, increase the run-time. Remember that the output of the OZONE unit itself is preset; the only way to increase the amount of OZONE introduced into the water is to increase the runtime of the filter cycle. At least once a month, confirm that the ozone unit is working correctly by checking that the ozone unit's light is on (underneath, in the equipment door). Then check for a slight suction where the clear tubing connects to the ozone unit in the equipment area. This is done when the spa is in the automatic filtration cycle. If both of these items appear to be good, then ozone should be making it to the water. If the water looks good and has no odor it SHOULD be good to use.

BROMINE

Bromine assists the ozone in killing bacteria. Ozone does a very good job of killing bacteria and burning off organic wastes, but it has limitations. Ozone only works when it is on and it only works on what it comes in contact with. Thus, bromine is used as an additional sanitizer. By adding a small amount of granular bromine, the water will have a slight, constant bromine level when the ozone is off and reach where the ozone cannot. Test this level on a weekly basis (more with heavy use) to stay between 1 - 5 parts per million on the test strips, 15 minutes after shocking. Do not be concerned if there is no reading prior to shocking, as long as after shocking you have an acceptable reading. Add additional granular bromine, as needed, to maintain a proper level. A good level of bromine will be 3ppm. If your level is below 1ppm, after shocking, add a slight amount of granular bromine, mix for 15 minutes and recheck the level. If your level is above 5ppm, DO NOT add additional bromine till the bromine level drops to 1ppm or below. Never add additional bromine without shocking first and checking the level of bromine.

OXIDIZER SHOCK

OXIDIZER SHOCK is used to remove the organic waste from the water. Bromine by nature is not a good oxidizer and allows the organic contaminants to build up the water, resulting in combined bromine. Combined bromine is still a good sanitizer, but no longer shows on the test strip. When this happens there is still bromine sanitizer in the water but it needs a OXIDIZER SHOCK to reactivate it into a "free bromine" which then registers on the test strip. Use two ounces, of oxidizer shock at least once a week. Add with the jets running and mix for 15 minutes, then re-test the bromine level and confirm a 1-5ppm level of bromine. After re-checking the Bromine level make sure that you run every jet in your hot tub. This is to ensure that all the plumbing has fresh brominated water in it on a weekly basis. Do not be concerned if you test the water at a later time and find a low bromine reading, as long as there was a satisfactory level 15 minutes mixing. In addition to your weekly shock, a good rule of thumb is to shock after 8 bodies have used the tub and after a particularly heavy use.

This is all dependent on the ozone working correctly.

Initial startup procedure

Connect the proper electrical supply to the spa.

Remove the basket covering the filter and fill the hot tub through the filter, to 2.5" above the top of the grey plastic filter ring.

After confirming that the tub has the proper electrical connection and filled to the correct level turn on the power to the tub.

There is no the on/off switch on the tub itself, this is typically the electrical disconnect located somewhere near the hot tub, usually mounted on the side of your house.

With proper water and electricity, turn on the tub's power with the electrical disconnect.

With no further interaction on your part the spa will heat to 100 degrees, filter and ozonate for 4 out of 24 hours a day. After the tub reaches the desired temperature, it's ready to use. Try not to have more that a week's period of time with 2 people a day pass before adding the chemicals. If there is immediate heavy use, add the chemicals the first day.

Amounts for the following are based on a 500 gallon spa, filled with municipal water anywhere in the northern in front Range. Try not to use water that has gone through a water softener or conditioner. Medium hard water is OK in a hot tub.

Add your chemicals in the following order: for 500 Gallons or 8'x8'

- ✓ 4 ounces of Rendezvous Protect Plus, wait one hour.
- ✓ 1-1/3 cup of the Leisure Time Calcium Hardness Increaser.
- ✓ 1/3 of a cup of Leisure Time spa up.
- ✓ 1 tablespoon of granular Bromine. Mix 15 minutes.

For a 400 Gallon or 7' x 7' Spa, use these amounts:

- ✓ 3 ounces of the Rendezvous Protect Plus wait one hour
- ✓ 1 cup of the Calcium Hardness
- ✓ ½ Cup of the Spa Up
- ✓ ¾ of a Tablespoon of the Bromine

After mixing 15 minutes check your bromine level with the test strips. You should have somewhere between 1 to 5ppm of Bromine in the water.

If below 1ppm for bromine level, add another tablespoon of granular Bromine mix an additional 15 minutes and recheck the bromine level.

After eight bodies have used the tub or seven days have passed, add 1/4 cup of the non chlorine shock, mix 15 minutes, and check for a 1 to 5ppm level of Bromine.

If it anytime, after adding the non chlorine shock (oxidizer), and mixing for 15 minutes the bromine level is below 1ppm, add 1 tablespoon of granular Bromine.

Do not add additional granular Bromine to your water without having shocked and tested the water first.

High bromine and/or low pH levels damage hot tubs and is not covered with the warranty

Weekly, check your pH and bromine levels, add two ounces of Protect Plus and check your water level.

Every other week, rinse the filter with a garden hose.

Every month soaked your filter for 4 hours, in 1 cup of Cascade dishwashing detergent mixed in five gallons of water, rinse well.

Every three to four months you will completely drain and refill the hot tub.

If you have a redwood cabinet it's recommended that you treat the wood with an oil based UV resistant stain, within 30 days.

Open the equipment access panel and inspect the area for any signs of leaks, and check the ozone for proper operation.

The cover should be cleaned monthly, sooner if really dirty, by rinsing off with your hose. Do not use Armor All. It attracts dirt and attacks the stitching. A mild hand dishwashing soap solution may be used, as well as saddle soap.

- Operate your spa for at least 8 to 10 hours per day on the filtration cycle. Longer with heavy use.
- Check pH at least once per week. Adjust to proper levels as necessary.
- Filtration is critical to proper ozone operation and water purity. Because ozone purifies the water so effectively, the filter gets dirty faster. Clean filters by spraying them off with your hose. At least every 3 months clean the filter with a good filter cleaning solution to remove body oils, lotions, etc. that will clog the filter. A good home made filter soaking solution can be made from: 1 Cup Cascade dishwasher detergent to 5 gallons of water. Soak 8-10 hours then rinse well, so that no soap or foaming occurs in the water.
- At least once a week, and after heavy use, shock by adding 2 oz of Oxidizer Shock to assist the bromine & ozone.
- Check the bromine regularly and only add as needed, (after shocking and a 45 minutes wait).
- Drain and clean your spa at least 3 times per year.
- Relax and enjoy your little piece of heaven