

**O Z O N E with C H L O R I N E S T A R T U P**

**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 kit or 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 7.8. 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 120 ppm 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, then test again in 4-8 hours. With chlorine, the pH becomes more of an issue. It is important, to try and maintain the pH between 7.4 and 7.6.

**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. than makes it harder to change 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 during every fill.

**OZONE**

Ozone gas is powerful oxidizer, which will act as a sanitizer for your spa water without daily use of a traditional sanitizer. Because ozone operates on the low speed of your pump (heating and filtering cycle), your pump must run a minimum of 8 to 10 hours per day for sufficient ozonation. If 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 set; 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 bubbles from the ozone jet in the foot well of the tub. 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.

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**CHLORINE**

Though ozone does a very good job killing bacteria and burning off organic wastes it needs help with body oils, shampoos, hairsprays, lotions and soaps. Also, ozone has 2 drawbacks; **it only works when it is on and it only works on what it comes in contact with.** Thus, Chlorine is used to help the ozone out. Using chlorine will allow you to maintain a slight residual of a disinfectant, while also allowing this residual **free** Chlorine level to reach inside the plumbing where the ozone cannot. Because of the ozone, the residual Chlorine levels do not need to be maintained at the normal 3-5 ppm levels at all times. Since the ozone is set to run with the Filtration cycle (automatically) we can significantly lower the amount of chlorine that normally would be used. Without ozone, you should run a 3-5ppm level of **free** chlorine; with ozone you can safely achieve a 1-3 ppm level of **free** Chlorine once or twice a week, then allowing the chlorine level to drop off during the rest of the week. One must make sure that these levels of chlorine are the **free** not **combined** or **total** Chlorine levels. The test kit that you use (or strips) must indicate free levels of Chlorine. Combined Chlorine is the Chlorine that has already done its work. This is the undesirable chlorine that we try to eliminate from the spa water. Some test kits test for total Chlorine. Make sure you know the difference. Total Chlorine is the sum of free and combined Chlorine. At least once a week, you should add enough granular Chlorine to achieve a 1 - 3 ppm level of free Chlorine, after mixing 15 to 20 minutes. Once you have confirmed that you have a 1 - 3 ppm level of free chlorine, make sure you run every jet in the tub, to allow the fresh Chlorine to move through all the plumbing. Do not be concerned if you check cure Chlorine level days later and find the Chlorine level has dropped to 0. With ozone, you do not need to maintain a consistent level of Chlorine in the water.

**OXIDIZER SHOCK**

OXIDIZER SHOCK is used to remove the organic waste from the water, this includes combined chlorine. When Oxidizer shock is added to the water it burns off be organic wastes, which include: soaps, shampoos, hair sprays, body oils, sweat and cosmetics. With these contaminants removed there is less interference for the Chlorine, allowing it to go to work on the bacteria. A good rule of thumb is to use two ounces of oxidizer shock at least once a week and after a total of eight people have used the tub. Using the shock prior to adding Chlorine works well by removing the organic waste that would normally tie the Chlorine up. This results in using less Chlorine product and lowering the offensive Chlorine odor. Shock can also be used to lower the combined Chlorine levels by burning off the organic wastes that are combining with the Chlorine.

**This is all dependent on the ozone working correctly.**

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**ROUTINE SPA MAINTENANCE WITH CHLORINE AND OZONE**

- Operate your spa for at least 8 to 10 hours per day on the filtration cycle. Longer with heavy use.
- Check the water and especially the pH at least once per week. Adjust to proper levels as necessary.
- To use Chlorine correctly in any pool or spa, you should use the test kit or strip, which tells you the difference between free and combined Chlorine levels.
- 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 homemade filter soaking solution can be made from: 1 part Cascade dishwasher detergent to 5 gallons of water. Soak 8-10 hours then rinse well so no soap makes it back in the water.
- At least once a week and after heavy use, at enough Chlorine to reach a 1 - 3 ppm level of free Chlorine after mixing for 15 to 20 minutes.
- Drain and clean your spa at least 3 times per year.
- Relax and enjoy your little piece of heaven