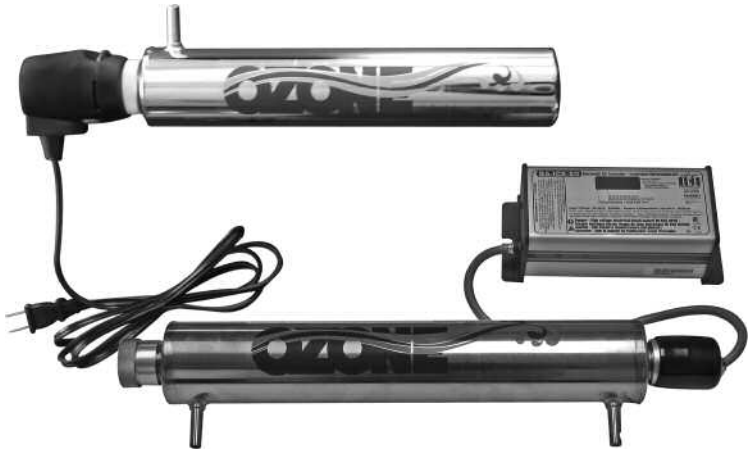
OZONE by Sterilight®

Installation, Operation and Maintenance

Owner's Manual



SC-OZ, SC-OZ/2,
S2Q-OZ, S2Q-OZ/2, S8Q-OZ, S8Q-OZ/2

Note: These instructions apply to the installation in a swimming pool and/or spa. Although these instructions do not cover typical water treatment applications, it should be noted that this equipment can be used in this type of application.

Please contact factory for installation assistance.

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TABLE OF CONTENTS:

SYMBOLS:

Caution

Protective Ground

Electrical Warning

Fragile

Eye Protection

WEEE (waste electrical or electronic eauipment)*

** This symbol indicates that you should not discard wasted electrical or electronic equipment (WEEE) in the trash. For proper disposal, contact your local recycling/reuse or hazardous waste center.*

Introduction to Ozone:

Ozone is nature's natural purifier. This naturally occurring product is produced during lightning and electrical storms as well as when solar ultraviolet rays strike the earth's upper atmosphere. It is this Ozone layer which protects us from the harmful UV radiation produced by the sun.

Ozone is generated when an oxygen molecule (0_2) is exposed to high energy, ultraviolet (UV) light and is converted to an Ozone (0_3) molecule. This extra oxygen atom is what makes Ozone a highly "energetic" oxidizer.

Ozone's effects come when this "extra" oxygen atom is released and allowed to oxidize and destroy bacteria, viruses, as well as other organic matter in the pool or spa. Ozone can also break down harmful chemicals and act as a flocculant to coagulate various insoluble particles which can then be easily removed by the filtration system.

Ozone's powerful oxidizing abilities work in conjunction with your sanitizing agent to provide a healthier, cleaner bathing experience. As an oxidizer, Ozone eliminates objectionable chemical by-products such as chloramine or bromamine -- the result, a totally environmentally safe product.

System Features:

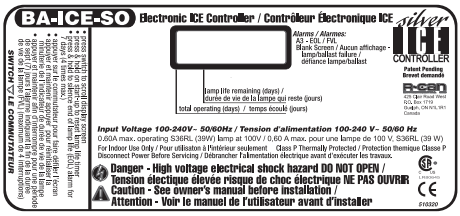
- All models include an LED indicator light to indicate that the lamp is operating. The S2Q-OZ and S8Q-OZ models also have an audible lamp out alarm, will sound if the lamp fails to start.

- The UV lamp is contained inside of a sealed stainless steel Ozone generator cell which protects the electrical components and outer case from the oxidizing effects of Ozone.

- 185nm ultraviolet lamps can be replaced or cleaned by simply loosening the aluminum nuts from the ends of the stainless steel Ozone generating cell, removing the old lamp and re-installing or installing a new UV lamp.

BA-ICE-SO Controller Features:

Applies to S2Q-OZ, S2Q-OZ/2, S8Q-OZ, and S8Q-OZ/2 only.



1. ***Lamp life remaining (days):***

The controller tracks the number of days of operation of the lamp and the controller. The default screen will display the total lamp life remaining (in days). The controller will count down the number of days remaining until the lamp requires changing (365 days to 1 day). At "0" days, the controller will display on the display and supply an intermittent audible chirp (1 second on, 5 seconds off), indicating the need to change the lamp.

DEFERRAL - Once the "A3" or end of lamp life message is shown on the LED screen, the audible alarm can be deferred up to 4 separate times. This can be done by simply depressing the push-button "RESET" switch, which is located on the left side of the controller. Each time the reset switch is pressed the controller alarm is deferred seven days. Once the final 7 day deferral has been reached the alarm can only be silenced by changing the UV lamp and manually resetting the controller timer. To do this please follow the step by step instructions below:

1. disconnect power supply from controller
2. remove expired lamp from the reactor chamber
3. install new UV lamp and connect it to lamp connector
4. replace lamp connector
5. hold down the "RESET" switch while reapplying power to the controller
6. 5 second delay will occur until you hear an audible tone & LED display will read 

once again

Once you hear the tone, let go of the switch and the counter will be reset. The delay switch is designed to allow you time to address the alarm while you obtain a new UV lamp. Even though the alarm on the system can be deferred for a period of time, it is important to address each and every alarm condition as they are indicating that there is a potential problem with the system and should be remedied.

2. ***Total days of operation:***

The controller also displays the total running time of the controller. To obtain this reading, press the push-button SWITCH once. The total running time of the controller will be numerically displayed in days. This information will remain displayed for ten seconds and will then revert back to the lamp life remaining default screen. It should be noted that this value cannot be reset.

3. ***Lamp failure (blank screen):***

When the system recognizes LAMP FAILURE (no current running through the lamp), the 4-segment display will be blank (no default LAMP LIFE REMAINING screen) and the system will supply an intermittent audible tone (1 second on, 1 second off). The system will remain in this state, until this condition is remedied.

Installing Your Ozone Generator:

- Both models SC-OZ and S2Q-OZ will generate sufficient Ozone for most spa and hot tub applications subject to the wide variations that occur depending on operating conditions, chemical control and bather load.

- Model S8Q-OZ is sufficient for smaller pools and can be used in parallel for larger applications. Sizing will also be dependent on a wide range of variations including operating conditions, chemical control and bather load.

- Choose a location for your generator that is accessible to an approved electrical outlet and where the indicator light is visible.

Note: Electrical outlets within 10 feet of the tub must have ground fault protection.

- Leave enough space to allow for removal of the UV lamp for lamp maintenance.

- As UV lamps can be damaged in shipping and handling, check the lamp before installing your Ozone generator by plugging it into an electrical outlet for a moment. A bluish light should be evident at the ports and the LED indictor light on the SC-OZ, S2Q-OZ, and S8Q-OZ should also glow.

WARNING - DO NOT LOOK DIRECTLY INTO THE PORTS. ULTRAVIOLET LIGHT EMITTED BY THE LAMP CAN CAUSE BURNS TO UNPROTECTED EYES.

Your Ozone generator should be located in a dry area that is accessible for servicing and at least two feet above the water level. If the unit can not be mounted at least two feet above the water level, the tubing connecting the generator to the inlet of the spa or pool must either be installed with a loop to raise it two feet above the water level or be fitted with a check valve approved for ozone service to prevent water back flow into the generator. When using an optional venturi system to provide increased air flow, a check valve must be used to prevent back flow into the generator in case the outlet line is blocked.

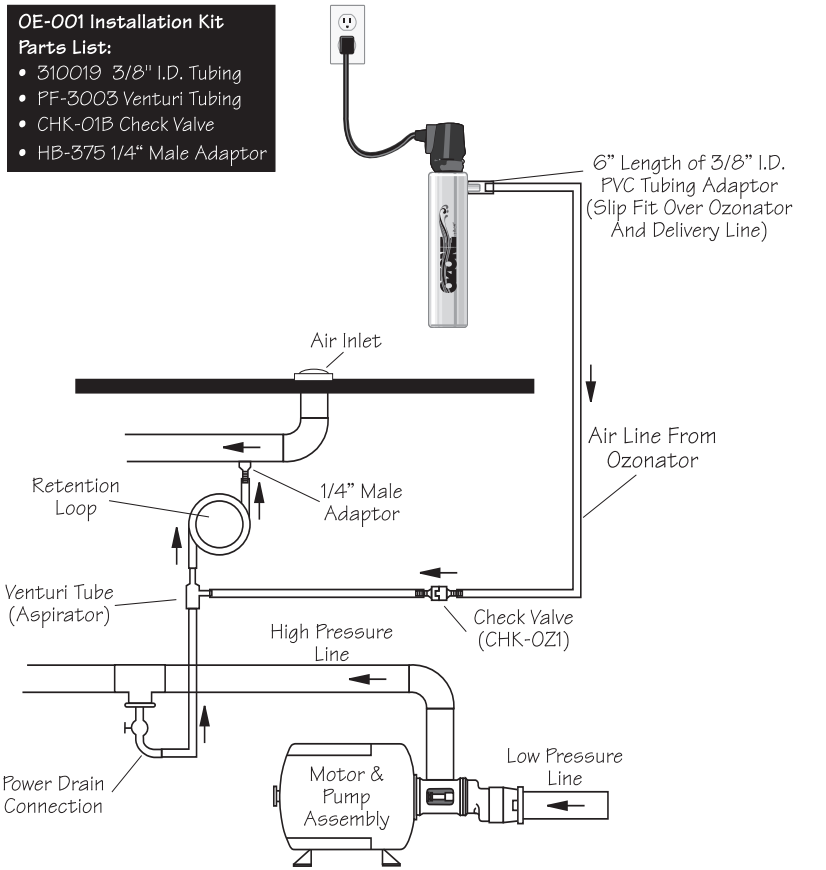
Select a location two feet above the water level and with access to a properly grounded electrical outlet. The unit can be mounted vertically or horizontally with the connection ports facing down. Mount the chamber to the wall using the cell clamp and mounting screws included with your system. If mounting the unit to drywall, use a plug or an expansion butterfly nut to secure the unit.

Some typical installation procedures are described in the following pages.

INSTALLATION INSTRUCTIONS:

1. PRESSURE DIFFERENTIAL SYSTEM for OZONE EDUCTION SYSTEM
PART NUMBER OE-001

Recommended for most spa installations. This simple pre-assembled system utilizes a combination of pressure differential, venturi and the spas existing air induction piping, offering the most efficient and economical Ozone mixing and distribution, virtually eliminating any gas off. Please note in the illustration below that water from the high pressure side of the pump is forced through an aspirator or venturi which causes air suction. This air suction pulls Ozone in from the Ozone Generator thereby mixing the Ozone and water at the aspirator where injection takes place. Then the mixed Ozone and water travels through a 3/8" tube to the spas air induction line. On the way back to the air line the Ozone and water is retained in a loop in the 3/8" line to cause thorough mixing and Ozone absorption in the water prior to injection into the spas air line. Reduce the water level until it is below the air induction line (if necessary) to avoid water leakage when making the connections. NOTE: Ozone may cause rubber seals in the system to degenerate. These parts should be replaced with "Viton" or other material resistant to Ozone.

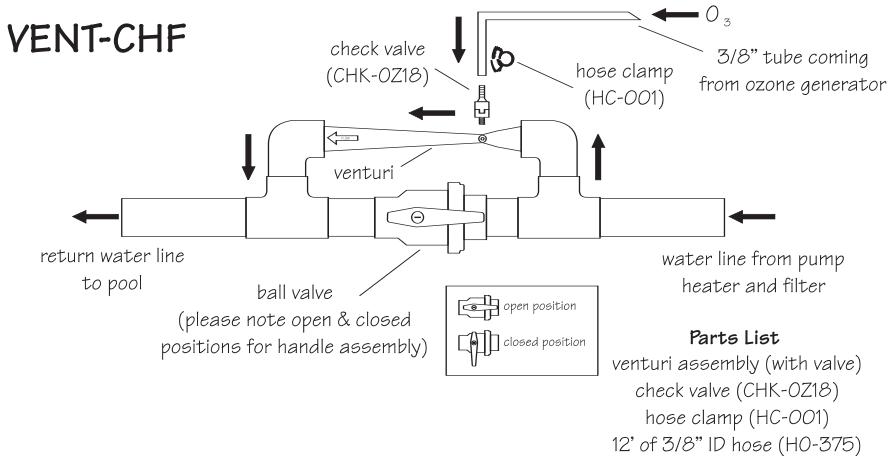


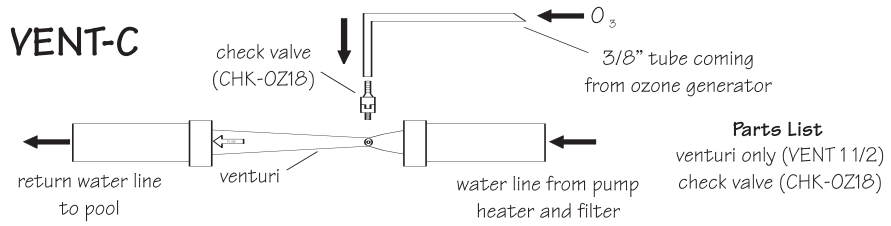
Your spa may have come equipped with a 1/4" NPT threaded inlet on the air line, if not you may be required to drill and tap a 1/4" NPT hole to install the 1/4"NPT to barbed adaptor that comes with the OE-001 kit. The location for the Ozone injection point will be decided by where you choose to place the adapter. Normally the placement of the adaptor will allow the Ozone to flow through only one side of the tub. If possible, choose the air line with the most attached jets to take full advantage of the injection points. If drilling, place the adaptor downstream of the air vent controls. Your spa may have also come supplied with a garden hose threaded tap on the HIGH PRESSURE SIDE of the pump, which is commonly referred to as a power drain. If your spa has no power drain, then the optional saddle clamp must be installed on the HIGH PRESSURE side of the pump as close to the pump as possible. If you are not sure which is the high pressure side, be sure to contact your dealer to avoid any irreversible drilling. After you have located or installed the barbed adaptor on the air line and the adaptor on the water line, simply hook up the eduction system as the diagram illustrates. Make sure all the connections are sealed so no leaking will occur.

After all the water connections have been made you must choose a location for your Ozonator. If you are locating the Ozonator below the water level an approved check valve (model #CHK-0--1B) must be used on the Ozone induction air line from the Ozonator and the unit be hooked into an approved ground fault protected electrical supply. After the system is totally installed, re-fill the tub. When tub level is correct, thoroughly inspect the system for leaks. If your spa was equipped with a power drain, remember you must turn on the tap to allow water to pump through the system. If no leaks are found turn the power on to the tub and open the jet that has the Ozonated water connected to it and re-check for leaks. When the unit is on high speed you should be able to detect suction at the inlet on the Ozonator. If it can't be detected, take the air line off at the venturi to check the air draw into the venturi at high speed. At low speed the air draw will be dramatically reduced, don't be alarmed, there should only be a slight air draw at low speed. The retention loop has been incorporated to keep the Ozone in contact with the water prior to induction into the spa. This will cause excellent Ozone absorption and mixing. If you have a dominant Ozone smell on high speed you simply need to increase the number of loops with an optional connector until the Ozone smell is almost eliminated. You should smell a slight hint of Ozone at the jet that is introducing the Ozone. If you have no smell at all, simply cut the loop number back until you do smell a hint of Ozone at high speed. Ozone has a distinct fresh or pungent odour.

2. WATER VENTURI SYSTEM for POOLS and SOME LARGE SPAS

A venturi draws air by forcing a set amount (or flow rate) of water through a pipe that gradually reduces in size and at the smallest point in the pipe the venturi action (or air suction) is created. A venturi or venturi system (see diagrams) must be selected to match the pump flow. Install the venturi on the discharge side of the pump and after the filter. On large systems, the venturi may create an unacceptable pressure drop, if so, a by-pass ball valve or spring loaded check valve can be installed. To increase the draw with a venturi system that incorporates a ball valve, simply adjust, or slowly close the ball valve. This will create a back pressure in the bottom pipe (see diagram) which will force water up to and through the venturi, thereby increasing draw (or suction). A spring loaded by-pass check valve is suggested for two speed pump systems (usually used on spas) to provide an automatic flow adjustment. The optional one inch venturi has a flow rating of 20 gpm and the 1.5 inch venturi is rated for 60 gpm with a 5 psi pressure drop. A ball valve by-pass is required for flows over the rated flow of the venturi. A ball valve by-pass venturi system (see diagram) is recommended for any pool installation, to offer a full range of adjustability.





Operating & Maintenance Instructions:

A. Regularly inspect your Ozone Generator unit to ensure that the lamp is still working.

B. The ultraviolet output of the UV lamp gradually reduces with usage. However, there is a wide variation in the actual amount of Ozone required because of differences in the volume of water and the number of people using the hot tub or spa. The condition of the water is a reasonable indicator to tell when a new lamp or maintenance is needed. A large increase in the amount of treatment chemical or a change in the water colour or scum on the inside of the tub are all indications that more Ozone is required. As dust on the lamp will also reduce output, the lamp should be cleaned first to verify that the lamp needs to be replaced. (see para. D for cleaning instructions). As a general guide, lamp replacement is suggested after 12 to 18 months of continuous operation.

C. The Ozone Generator should be on whenever the pump is operating. Ozone generation requires a continuous air supply through the cell. The air suction can be produced in various ways, as discussed earlier in the installation section. Although the UV lamp may be left on without the pump operating, there would be no appreciable Ozone generation since there would be no air flow in the cell. If the pump is to be off for an extended period of time, the Ozone Generator should also be shut off. Unlike filters where the amount of water passed through determines the life expectancy, UV Ozone Generators are effected by the number of hours the lamp burns. Frequent switching off and on can also reduce lamp and ballast life. If your spa experiences heavy bather loads the Ozonator jets should be left on high speed for 2 to 5 minutes after use with the spa cover closed, this will increase the amount of injected with the spa cover closed, this will increase the amount of injected Ozone thereby reducing the organic load. However, if the water gets very cloudy the organic load may be past the Ozonators threshold and you may need to shock after use with a concentrated chemical. If a concentrated shock is even necessary, one treatment will normally suffice.

D. Ozone Lamp Cleaning/Replacement:

To remove or replace the UV lamp, **FIRST DISCONNECT THE OZONE UNIT POWER CORD FROM THE ELECTRICAL OUTLET.**

SC-OZ, SC-OZ/2; Loosen the gland nut which secures the UV lamp into the stainless steel reactor chamber by turning the knurled nut just below the rubber lamp connector. Turn counter-clockwise approximately 1 turn. Pull retaining ring out from rubber lamp connector and carefully slide the UV lamp from the stainless steel reactor chamber

S2Q-OZ, S2Q-OZ/2, S8Q-OZ, S8Q-OZ/2; Remove the cable tie from the rubber boot which secures the UV lamp into the stainless steel reactor chamber. Carefully pull the rubber boot back from the gland nut to expose the UV lamp electrical connection. Disconnect the lamp connector from the UV lamp. Loosen and remove the gland nut which secures the UV lamp into the stainless steel reactor chamber by turning the knurled nut counter-clockwise. Carefully remove the o-ring from the end of the lamp (note that it may be stuck to the lamp) and carefully remove the UV lamp from the stainless steel reactor chamber.

Lamp Cleaning
Carefully clean the lamp with a clean, lint free wiper dampened with vinegar. New lamps should also be wiped clean to remove dust. Do not handle the UV lamp with bare hands to avoid leaving oil and grease contaminants on the lamp.

Installing UV lamp, SC-OZ, SC-OZ/2; Connect UV lamp to ballast assy/lamp connector. Carefully insert the lamp into the reactor chamber (gland nut must not be tight to allow lamp to fit through o-ring). The UV lamp needs to sit in the centering retainer at the far end of the cell. When the UV lamp is fully inserted, lock the lamp connector onto the aluminum retainer nut by pressing retainer ring into place. Tighten the gland nut to secure the UV lamp by turning the knurled gland nut clock wise until tight. Do not over tighten.
Installing UV lamp, S2Q-OZ, S2Q-OZ/2, S8Q-OZ, S8Q-OZ/2; Carefully insert the lamp into the reactor chamber. Install the o-rings onto the UV lamp. Wet o-ring first if necessary to help it slide onto the UV lamp. Install the gland nuts onto the reactor chamber and tighten the gland nut to secure the UV lamp by turning clock wise until tight. Do not over tighten. Connect the Lamp connector to the UV lamp. Apply power briefly to ensure UV lamp illuminates. Slide rubber boot over lamp connector and secure in place with cable tie.
Lamp Start Up; Plug the ballast power cable into the electrical outlet to check for proper operation. A blue light will be evident at the ports and the lamp on indicator LED on the ballast should glow. DO NOT LOOK DIRECTLY INTO THE PORTS.

E. Water Chemistry:

Although your Ozone Generator is a very effective oxidizer, proper water chemistry must still be maintained. For optimum results drain spa and start with fresh water prior to the installation of the Ozone Generator.

- **TOTAL ALKALINITY** should be maintained between 80-120 ppm. TA is an important factor in stabilizing pH and should therefore be adjusted prior to adjusting pH.
- **pH** of 7.4 - 7.6 should be maintained in the pool/spa water. Ozone is pH neutral and will not cause the pH value of the water to fluctuate; however bather load probably has the most effect on

the pH balance, therefore pH should be checked regularly. If pH needs to be adjusted, it is recommended to adjust it slowly. Contact your dealer for their recommendations.

- **CALCIUM HARDNESS** in the range of 200 -250 ppm is ideal and in most cases will be determined by local water conditions.

F. Since Ozone is such a powerful oxidizer, proper maintenance of the filtration equipment is essential. The filter cartridges will become "dirty" much more rapidly than the same system operating without an Ozone Generator. It is a good idea to have an extra filter cartridge on hand so that one may thoroughly clean the "dirty" cartridge. We recommend using TSP (trisodium phosphate) in conjunction with cold water and allowing the cartridge to soak overnight. Thoroughly rinse the cartridge and reinstall so that all seals or gaskets are seated properly.

G. To monitor the lamp life, record the date for each lamp replacement.

Replacement Parts:

SC-OZ, SC-OZ/2

S330ROL..... UV lamp
BA-C1..... electronic ballast (100-130V/50-60 Hz.)
410716..... o-ring

S2Q-OZ, S2Q-OZ/2

S415ROL..... UV lamp
BA-ICE-SO ..... controller (100-240V/50-60 Hz.)
RN-001..... aluminum gland nut
OR-315..... o-ring

S8Q-OZ, S8Q-OZ/2

S8ROL4P..... UV lamp
BA-ICE-SO..... controller (100-240V/50-60 Hz.)
RN-001..... aluminum gland nut
OR-315..... o-ring

Manufacturer's Warranty:

Manufacturer warrants the UV ozone generator system hardware and electrical systems to be free from defects in material and workmanship for a period of five (5) years from the date of purchase by the original owner (consumer) on a pro-rated basis.
Manufacturer warrants the ultraviolet lamps to be free from defects in material and workmanship for a period of one (1) year and the reactor chamber for a period of seven (7) years. The warrantor will at its option and expense, either repair or replace such units subject to the following conditions, exceptions, and exclusions.

Conditions, Exceptions, and Exclusions

The foregoing limited Warranty is subject to the following terms and conditions:

1. This limited Warranty shall not apply to any unit which has been repaired or altered by anyone other than the Warrantor or by a person authorized by the Warrantor, nor to any units which have been subject to misuse, neglect, or accident.
2. This limited Warranty runs exclusively to the original Consumer and with respect to the original installation only.
3. WARRANTOR SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES.
4. This limited Warranty excludes the cost of labour in removing any defective unit or installing any replacement unit. This limited Warranty applies only to a unit when returned to the Warrantor at the owner's expense and in accordance with shipping instructions received from the Warrantor.

TROUBLESHOOTING GUIDE:

PROBLEM	POSSIBLE CAUSES	SOLUTION
MECHANICAL		
1. Ozone lamp is not lit	• no power to unit	• check power source
	• defective lamp	• replace lamp
	• improper lamp connection	• check lamp connection
	• defective ballast	• replace ballast
2. Ozone lamp is lit, no evidence of ozone in the pool/spa	• incorrect venturi alignment	• make sure water flows in the direction of the arrow located on venturi
	• defective/plugged venturi	• replace/clear debris from venturi
	• cracked/plugged tubing	• repair/replace any defective tubing
	• incorrect check valve positioning	• check to see if air flows away from generator
	• no suction to unit	• repair/replace check valve • clean/replace filter cartridge
	• lamp is beyond its effective life	• replace lamp
	• lamp is dirty	• clean ozone lamp
3. Strong ozone smell in immediate area of generator	• retaining nuts not sealing properly	• check o-ring for debris or abrasions and re-install
	• incorrect tubing connection on outlet side of generator	• ensure proper connection is made
4. Alarm is sounding (audible alarm units only)	• ozone lamp is spent	• replace lamp
	• improper lamp connections	• ensure proper power connection is made
	• defective ballast or circuit board	• please contact authorized distributor
WATER CHEMISTRY		
5. Cloudy water	• total dissolved solids and particulates level is too high	• clean or replace filter, drain and replace water
	• incorrect pH levels	• adjust pH to be between 7.4 - 7.6
6. "Green" water	• excessive algae build-up	• shock water