

RESIDENTIAL SPA

Natural Spa Water Treatment

PZ1, PZ3, PZ6V - Residential Spas up to 800 Gallons
Ozone Generator Systems

*INSTALLATION GUIDE and
OPERATION MANUAL*

IMPORTANT SAFETY INSTRUCTIONS

Read and Follow All Safety Instructions

1. Read and be familiar with this manual before installing or operating your new Prozone unit.
2. All applicable electrical codes must be followed during and after installation. All connections to be made by a qualified electrician.
3. Disconnect all power at the main breaker before installing the Prozone unit.
4. Voltage must be determined before unit is installed.
5. Replace damaged cord immediately
6. Do not bury cord.
7. Connect only to a properly grounded, grounding type receptacle.
8. Wear safety glasses when drilling and tapping holes for installation of unit.
9. A wire connector is provided on the unit to connect a minimum No.8 AWG solid copper conductor between this unit and any metal equipment, metal enclosures of electrical equipment, metal water pipes, or conduit within 5 feet of the unit.

WARNING: Short term inhalation of high concentrations of ozone and long term inhalation of low concentrations of ozone can cause serious harmful physiological effects. Do not inhale ozone gas produced by this device.



WARNING: Disconnect all power to pool equipment prior to installation, maintenance, or removal of the Prozone unit.



WARNING: Do not permit children to operate this product



WARNING: To avoid risk of electric shock, fire, or injury, service should only be performed by a qualified pool service professional.



WARNING: Installation must be performed in accordance with the National Electric Code and any applicable local or state installation codes.



WARNING: When mixing acid with water, ALWAYS ADD ACID TO WATER, NEVER WATER TO ACID.

SAVE THESE INSTRUCTIONS

INTRODUCTION TO OZONE

Ozone (O₃) is generated by irradiating air or oxygen (O₂) with ultraviolet radiation. Ozone is a molecule of oxygen that is formed when three atoms of oxygen are bound together instead of the normal two atoms. The extra oxygen atom makes ozone the most powerful oxidizer and sanitizer readily available.

Since ozone is unstable and quickly decomposes to normal oxygen under normal conditions, it cannot be shipped or stored. Therefore, it must be manufactured on site for immediate use. In normal air it lasts about an hour. In normal spa water, it lasts just long enough to purify the water - less than 1 second.

Although ozone is mainly thought of as a sanitizer, it acts primarily as an oxidizer in the spa environment. In a typical spa run on chlorine only, up to 90 percent of the chlorine may be used up in reactions unrelated to disinfection. The by-products of these reactions are combined chlorines. Combined chlorines are the cause of eye irritation, odor, and the other unpleasant side effects of chlorination. When ozone is used, it oxidizes a large portion of the contaminants (usually referred to as bather load) which result in the formation of combined chlorines. The result is that more chlorine is available for disinfection and less chlorine is required to maintain the spa. Ozone also provides some disinfection, but an ozone residual cannot be established, so the use of chlorine or bromine is always recommended.

PREPARING FOR INSTALLATION

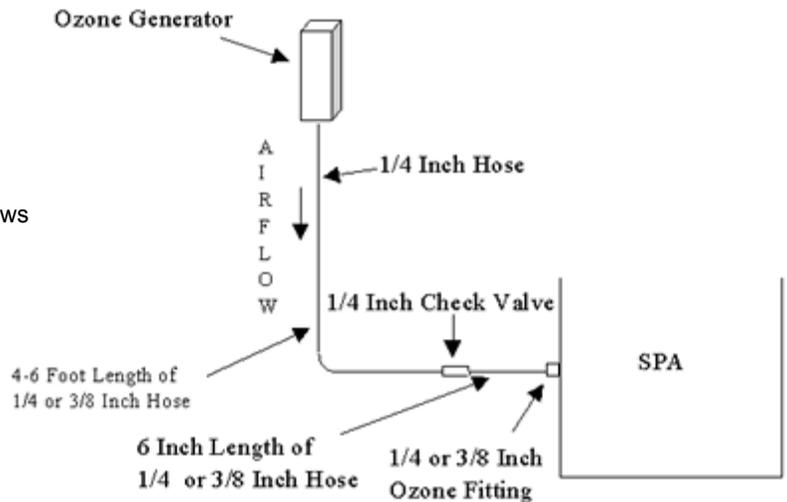
1. Check electrical system; 240VAC double switched per N.E.C standards recommended; 120VAC single switched.
2. Check for and correct all leaks in plumbing.
3. For best results, drain spa and fill with fresh water.
4. Balance the pH.
5. Check the filters; clean or replace.
6. Shock the spa. The use of Calcium Hypochlorite is recommended, or hydrogen peroxide if Baquacil is used.

INSTALLATION PZ1, PZ3 & PZ6V SERIES FOR OZONE-READY SPAS

NOTE: The instructions in this document provide general installation guides. Consult your dealer for specific installation instructions. Additional information is available at www.prozoneint.com. Check system for any visible shipping damage. If damage has occurred, contact the delivery company and your dealer immediately.

Tools Needed: Screw Driver, Pliers, Knife

Install the Prozone Ozone Generator unit under the skirt of the spa or immediately next to it. The unit should be mounted on a solid surface with wood or sheet metal screws. Make sure screws do not penetrate the exterior of the spa skirt.



Spas with 1/4 Inch or 3/8 Inch Ozone Fitting

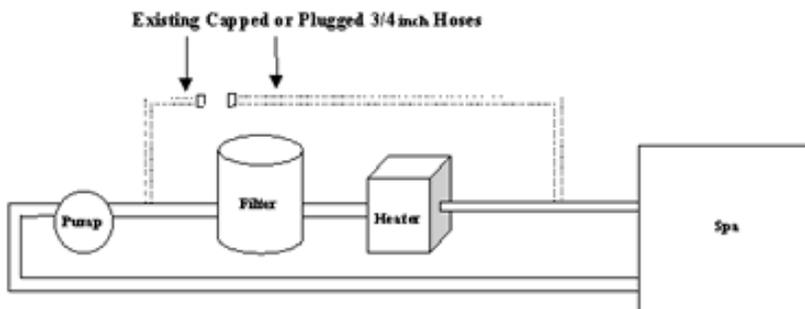
1. Cut six (6) inches (15cm) (plus or minus 1 inch) off one end of the 1/4 inch or 3/8 inch hose.
2. Attach one end of the 6 inch length of 1/4 inch or 3/8 inch hose to the ozone fitting or hose provided on the spa.
NOTE: Virtually all spas manufactured today come with this ozone fitting or hose. If you are unable to locate it, attach the ozone feed line to one of the spa return lines nearest to the footwell using suitable plumbing fittings. This type installation may require adjustment of the air control for proper operation. Some spas may be configured for a bypass venturi injector type installation. See following section for suggested bypass venturi injector installation.
3. Attach the other end of the 6 inch length of 1/4 inch or 3/8 inch hose to the check valve with flow towards the spa and secure with a clamp.
4. Attach one end of the remaining 5 foot 6 inch (1.7m) length of 1/4 inch hose to the 1/4 inch ozone output fitting on the Prozone ozone generator and secure with a clamp.
5. Make a loop in the hose and secure it above the water level of the spa. You may need to tie the hose up to keep it in place.
6. Attach the remaining end of the hose to the inlet side of the check valve; secure with a clamp.
7. (Optional) Some ozone generators have a small hole to accommodate a fiber optic (FO) cable which may be bought separately. One end of the FO is the indicator. On the other end strip approximately 3/4 inch insulation. Decide where you want to locate the indicator (usually some place on the spa control panel). Drill a 3/16 inch hole; insert FO cable through this hole until it stops. Route the cable under the skirt to the ozone generator and carefully insert it 3 to 5 inches into the hole next to the nipple located on the ballast end of ozone generator (PZ3). The PZ1 ozone generator has a small hole in the end plate or on side of case. Once the cable has been installed, apply a small amount of silicon cement under the indicator to secure it in place.
8. System is 120 or 240 VAC, 50/60 HZ. Wire Prozone ozone generator system to the low speed side of the circulation pump switch or timer. Prozone system and circulation pump should be started simultaneously. Use N.E.C. or local code grounding and installation procedures for spa equipment.

CAUTION: Make sure the voltage is the same as prescribed on the side of the Prozone ozone generator. Overvoltage will void customer warranty. The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped.

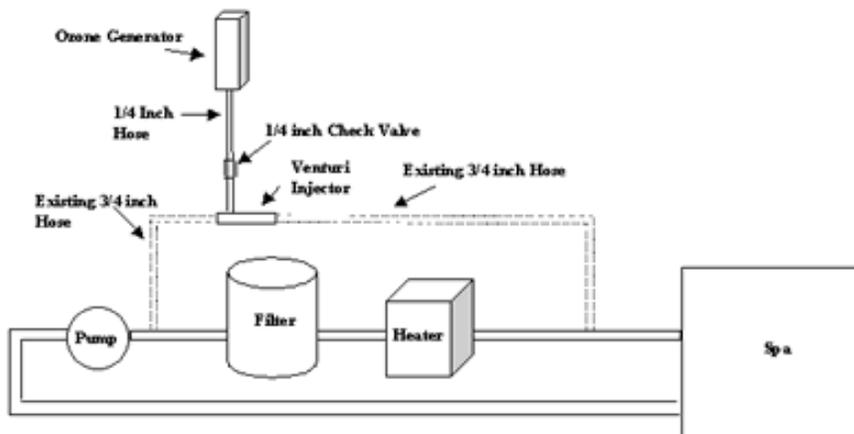
INSTALLATION PZ1, PZ3 & PZ6V WITH BYPASS VENTURI INJECTOR

Tools Needed: Pliers, Screwdriver, Knife

SPA PLUMBED FOR BYPASS VENTURI INJECTOR (BEFORE)



INSTALLATION WITH BYPASS VENTURI INJECTOR (AFTER)



Note: This installation is for spas which have been plumbed for a bypass venturi injector type installation.

1. Install the Prozone Ozone Generator unit under the skirt of the spa or immediately next to it. The unit should be mounted on a solid surface with wood or sheet metal screws. Make sure screws do not penetrate the exterior of the spa skirt.
2. Locate the two capped or plugged 3/4 inch hoses and unplug them.
3. Install the Venturi Injector between the two hoses, making sure INPUT side is toward pump and secure with metal clamps.
4. Cut a 6" length of 1/4" Polybraid Hose and connect one end to the open ozone port (Marked #1) on the Venturi Injector and the other end to the OUTLET side of the Check Valve, (Make sure you can blow air through the Check Valve towards the Injector port). Secure both ends with black plastic clamps.
5. Attach one end of the remaining length (approximately 6 feet) of 1/4" Polybraid Hose to the ozone output fitting on the Ozone Generator; make a loop and secure it above the water level of the spa; attach the other end to the input side of the Check Valve (flow away from Ozone Generator); secure with clamps.
6. Electrical Installation: System is 120 or 240 VAC, 50/60 HZ. Wire Prozone Ozone Generator system to circulation pump switch or timer. Prozone system and circulation pump should be started simultaneously. Use N.E.C. or local code grounding and installation procedures for spa equipment.

CAUTION: Make sure the voltage is the same as prescribed on the side of the Prozone ozone generator. Overvoltage will void customer warranty. The supply cord cannot be replaced. If the cord is damaged the appliance should be scrapped.

OPERATION

The Prozone system produces ozone when air is drawn across a special high-energy vacuum ultraviolet (VUV) lamp, converting some air to ozone. The ozone is introduced into the water either by direct diffusion (sparging) or with a bypass venturi system. With direct diffusion, air/ozone is forced through a porous metal disk which creates extremely fine bubbles. As the bubbles rise, the ozone is absorbed into the water where it reacts. The ozone is introduced via the "ozone-ready" air venturi inherent in virtually all spas manufactured today. The ozonation process will occur only when the spa pump is running. This is the only time that suction is created to draw the ozone from the ozone generator into the spa water. The longer the spa pump runs in filtration cycle, the more ozone the spa water receives.

The bypass venturi system takes water directly after the circulation pump (highest pressure point), bypasses part of the water flow past filters, heater, etc. through a venturi injector, through contact tubing and then returns the water back to the pool return line.

A check valve is employed to prevent water backup in the event of system failure.

Ideal daily operating time will vary between spas because of variables such as bather load, spa size, and application. As a minimum, the ozone generator should be run at least 6 hours per day.

WATER CHEMISTRY

- **pH** - 7.2 to 7.6. Ozone is pH neutral and will not cause the pH value of the water to fluctuate.
- **Sanitizers** - A chlorine level of .5 ppm to 1 ppm is recommended.
- **Shock** - Non-lithium -based material such as Calcium Hypochlorite or Sodium Hypochlorite, etc.

The use of other chemicals is not usually required and they could cloud the spa water.

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
No light from Prozone unit	Power not connected	Check all wiring connections, voltage compatibility
	No power to unit	Check power source
	Defective lamp or other internal component	Return unit to dealer
No bubbles from injector or no evidence of ozone in spa	Air control leaks	Tighten air control
	No suction to unit	Size jet orifices properly
	Filter not working	Clean or replace filter
Cloudy water; foamy water; scum	Ozone Generator operation time too short	Increase operation time
	Water chemistry out of balance	Check readings and balance accordingly
	Total Dissolved Solids (TDS) level too high	Refer to dealer for proper water testing
	Filter not working	Clean or replace filter

NOTE: Cloudy water may occur when the ozone generator is started. Filter and backwash as necessary.