

# COMMERCIAL POOL

## Natural Pool Water Treatment

**PZ2-4 Thru PZ2-16** - Commercial and Residential Pools  
*Ozone Generator Systems*

*INSTALLATION GUIDE and  
OPERATION MANUAL*



**T-O<sub>3</sub> NATURAL TECHNOLOGY**

Reduces Chemical Usage,  
Improves Sanitation  
Produces Crystal Clear Water

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# PZ2-4 Thru PZ2-16

## IMPORTANT SAFETY INSTRUCTIONS

### Read and Follow All Safety Instructions

- Read and be familiar with this manual before installing, operating, or performing maintenance on the PZ2.
- Voltage must be determined before unit is installed.
- Replace damaged cord immediately.
- Do not bury cord.
- Connect only to a properly grounded, grounding type receptacle.
- Install at least 5 feet from the inside wall of the pool using non-metallic plumbing. The ozone generator is to be located one foot above the maximum water level to prevent water from contacting electrical equipment. Install to provide drainage of compartment for electrical components.
- A pressure wire connector is provided in the control box inside the unit to permit connection of a minimum No. 8 AWG solid copper bonding conductor between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet of the unit as needed to comply with local requirements.
- Wear safety glasses when drilling and tapping holes for installation of 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 PZ2.



**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 (O<sub>3</sub>) is generated by irradiating air or oxygen (O<sub>2</sub>) 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 pool 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 pool environment. In a typical pool run on chlorine only, up to 90 percent of the chlorine may be used up in reactions unrelated to disinfection. The byproducts 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 pool. 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. Install your PZ2 Ozonator so that dust, sand, debris, chemicals, or other foreign objects are not sucked into the compressor's intake fan or hose (if equipped with Noise Attenuator).
2. Check electrical system: 240VAC double switched per N.E.C. standards; 120VAC single switched.
3. Check for Suction Line Check Valve. Equipment may draw if no check valve is present.
4. Balance the pH.
5. Backwash the filter.
6. Shock the pool with a non-lithium-based material. The use of Calcium Hypochlorite or Sodium Hypochlorite is recommended.

The Table below summarizes the levels that are recommended by The Association of Pool and Spa Professionals (APSP). It is important to maintain these levels in order to prevent corrosion or scaling and to ensure maximum enjoyment of the pool. Test your water periodically. Take a water sample in to be professionally tested by a Pool and Spa Professional at least once a month. See our web site for more information on Basic Pool Water Chemistry.

pH	7.2 – 7.6
Alkalinity	80 – 120 ppm
TDS	< 1,000
Cyanuric Acid	30 – 70 ppm
Free Chlorine	0.5 – 1.5 ppm
Calcium Hardness	60 – 400 ppm
Metals	0 ppm
Nitrates / Phosphates	< 30 ppm

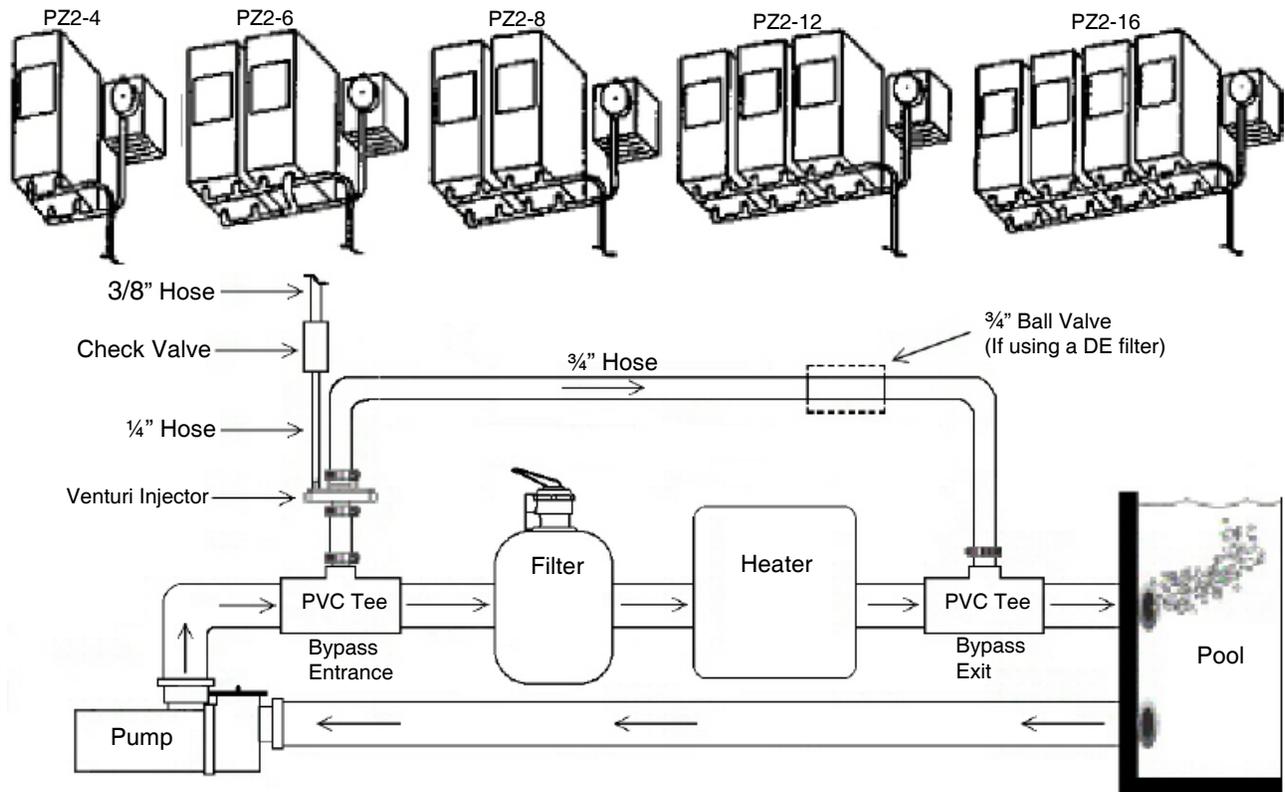
## INSTALLATION

**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](http://www.prozoneint.com). Check system for any visible shipping damage. If damage has occurred, contact the delivery company and your dealer immediately. Before beginning installation, please turn to the Installation Kit Inventory Section and verify that all listed parts are on hand.

**Tools Needed:** Cordless Power Drill, Screw Driver, Adjustable Wrench, Pliers, Wall Mount Screw Anchors, Knife

# PZ2-4 Thru PZ2-16

Bypass / Venturi Injection Installation



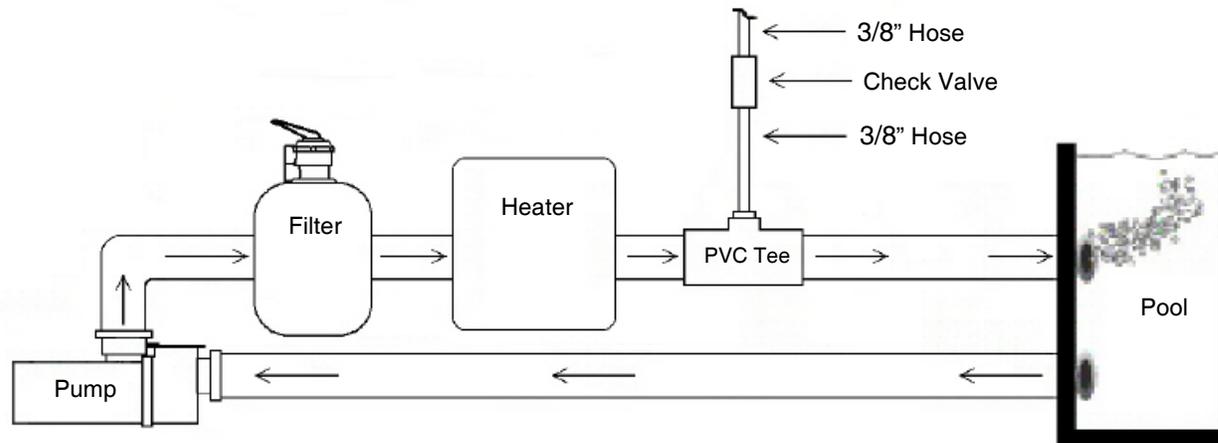
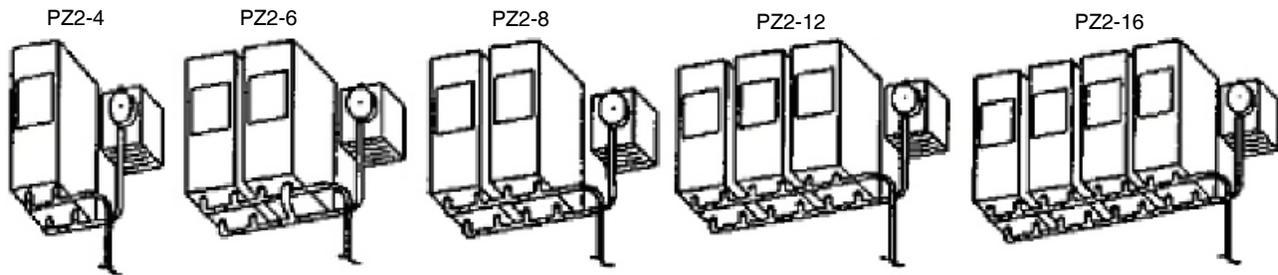
1. Turn pump OFF.
2. Locate section of plumbing in which you choose to install the ENTRANCE leg of the bypass. Location should be in any accessible area after the pump, but before the filter.
3. Install a PVC Tee that has  $\frac{3}{4}$  FPT, with the threaded portion of the Tee facing upward, or an alternate method is to drill and tap your existing plumbing for a  $\frac{3}{4}$  FPT.
4. Locate section of plumbing in which you choose to install the EXIT leg of the bypass. Location should be in any accessible area after the filter, and heater (if equipped).
5. Install a PVC Tee that has  $\frac{3}{4}$  FPT, with the threaded portion of the Tee facing upward, or an alternate method is to drill and tap your existing plumbing for a  $\frac{3}{4}$  FPT.
6. Apply Teflon tape to the threads of the (2)  $\frac{3}{4}$ " MPT x  $\frac{3}{4}$ " HB fittings, part number 20678, and screw the fittings into the (2) PVC Tees you just installed, (or the pipe you drilled and tapped in steps 3 and 5).
7. Cut a 6" length of  $\frac{3}{4}$ " hose and connect one end to the fitting on the entrance side of the bypass, (after the pump, before the filter), and secure with a metal clamp.
8. Connect the other end of the 6" hose to the INLET side of the Venturi Injector and secure with a metal clamp.
9. Attach one end of the remaining  $\frac{3}{4}$ " hose to the OUTLET side of the Venturi Injector and secure with a metal clamp.
10. Attach other end of  $\frac{3}{4}$ " hose to the fitting on the exit side of the bypass, (after the filter/heater), and secure with a metal clamp.
11. Mount the PZ2 Ozone Generator(s) vertically on a wall with the compressor unit next to the Ozone Generator(s). Place system at or above water level. If unit must be mounted below water level, loop the hose so that at some point it is above water level (a solenoid control valve may be necessary).
12. Apply Teflon tape to the threads of the  $\frac{1}{2}$ " MPT x  $\frac{3}{8}$ " HB fitting, part number 20231, and screw it into the end of the Check Valve that has the spring in it, (This is the INLET side of the Check Valve). Mark this end as "INLET".
13. Apply Teflon tape to the threads of the  $\frac{1}{2}$ " MPT x  $\frac{1}{4}$ " HB fitting, part number 20230, and screw it into the opposite end of the Check Valve. (This is the OUTLET side of the Check Valve). Mark the end as "OUTLET".
14. Cut a 6 inch length of  $\frac{1}{4}$ " hose and connect one end to the OUTLET side of the Check Valve (with the  $\frac{1}{4}$ " hose barb fitting) and the other end to the open ozone port on the Venturi Injector (Marked #1). Secure with plastic clamps.
15. Cut a length of  $\frac{3}{8}$ " braided hose long enough to reach between the Ozone Generator(s) and Check Valve.
16. Attach one end of the  $\frac{3}{8}$ " braided hose to the Ozone Generator(s) and the other end to the INLET side of the Check Valve and secure ends with plastic clamps.
17. Cut a length of  $\frac{3}{8}$ " braided hose long enough to reach between the Ozone Generator(s) and compressor unit.
18. Attach this length of hose from the compressor unit to the Ozone Generator(s) and secure with plastic clamps.
19. Electrical Installation: System is either 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 swimming pool equipment.

Note: If using a Diatomaceous Earth filter, install a  $\frac{3}{4}$ " ball valve in the  $\frac{3}{4}$ " hose line to the output side of the Venturi, as shown.

**CAUTION:** Make sure the voltage is the same as prescribed on the side of the Prozone ozone generator. Overvoltage will void customer warranty.

# PZ2-4 Thru PZ2-16

Direct Injection Installation



NOTE: There must be at least four feet of return line between the point where the ozone bubbles are injected and the pool. If there is not four feet of return available, a flexible loop can be added to the return line.

1. Turn pump OFF.
2. Locate section of plumbing in which you choose to install the Direct Injection Fitting. Location should be in any accessible area after the pump, filter, and heater, (if equipped).
3. Install a PVC Tee that has  $\frac{3}{4}$  FPT, with the threaded portion of the Tee facing upward, or an alternate method is to drill and tap your existing plumbing for a  $\frac{3}{4}$  FPT, (Or  $\frac{1}{2}$  FPT and eliminate the PVC adapter fitting, part number 20303).
4. Apply Teflon tape to the threads of a  $\frac{1}{2}$ " MPT x  $\frac{3}{8}$ " HB fitting, part number 20231, and screw the fitting into the PVC adapter fitting,  $\frac{3}{4}$ " MPT x  $\frac{1}{2}$ " FPT, part number 20303.
5. Apply Teflon tape to the threads of the  $\frac{3}{4}$ " MPT x  $\frac{1}{2}$ " FPT fitting, part number 20303, and screw the fitting into the PVC Tee you just installed, (or the pipe you drilled and tapped in step 3).
6. Mount the PZ2 Ozone Generator(s) vertically on a wall with the compressor unit next to the Ozone Generator(s). Place system at or above water level. If unit must be mounted below water level, loop the hose so that at some point it is above water level (a solenoid control valve may be necessary).
7. Apply Teflon tape to the threads of a  $\frac{1}{2}$ " MPT x  $\frac{3}{8}$ " HB fitting, part number 20231, and screw it into the end of the Check Valve that has the spring in it, (This is the INLET side of the Check Valve). Mark this end as "INLET".
8. Apply Teflon tape to the threads of a  $\frac{1}{2}$ " MPT x  $\frac{3}{8}$ " HB fitting, part number 20231, and screw it into the opposite end of the Check Valve, (This is the OUTLET side of the Check Valve). Mark this end as "OUTLET".
9. Cut a 6 inch length of  $\frac{3}{8}$ " braided hose and connect one end to the OUTLET side of the Check Valve and the other end to the  $\frac{3}{8}$ " HB fitting you installed in your plumbing. Secure with plastic clamps.
10. Cut a length of  $\frac{3}{8}$ " braided hose long enough to reach between the Ozone Generator(s) and Check Valve.
11. Attach one end of the  $\frac{3}{8}$ " braided hose to the Ozone Generator(s) and the other end to the INLET side of the Check Valve and secure ends with plastic clamps.
12. Cut a length of  $\frac{3}{8}$ " braided hose long enough to reach between the Ozone Generator(s) and compressor unit.
13. Attach this length of hose from the compressor unit to the Ozone Generator(s) and secure with plastic clamps.
14. Electrical Installation: System is either 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 swimming pool equipment.

**CAUTION:** Make sure the voltage is the same as prescribed on the side of the Prozone Ozone Generator. Overvoltage will void customer warranty.

# PZ2-4 Thru PZ2-16

## PZ2 SERIES OZONE GENERATOR OPERATION

The Prozone system works when air is drawn across a high-energy vacuum ultraviolet (VUV) lamp, converting some air to ozone. The ozone is introduced into the water either by direct injection or through a bypass venturi system. For direct injection, the venturi injector is inserted directly into the return line of the pool creating a suction (vacuum) that draws the ozone into the venturi as the water returns to the pool. 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. The system should be run 6-8 hours per day for best effect. Run time may vary depending on usage.

## INSTALLATION KIT INVENTORY

### P13 Installation Kit PZ2-4 Thru PZ2-162 Series with Bypass / Venturi Injector

Description	Part Number	Quantity
884 Venturi Injector	600212	1
Plastic Clamp 1/2"	20185	2
Metal Clamp 1 1/4"	20067	4
Plastic Clamp ? "	20186	18
Polybraid Hose 1/4"	20260	12"
Polybraid Hose ? "	20261	240"
Clear Hose 3/4"	20264	120"
Fitting 1/2" MPT x ? " HB	20231	1
Fitting 1/2" MPT x 1/4" HB	20230	1
Check Valve 1/2"	20215	1
Fitting 3/4" MPT x 3/4" HB	20678	2

### D12 Installation Kit PZ2-4 Thru PZ2-16 Series with Direct Injection

Description	Part Number	Quantity
? " Plastic Clamp	20186	20
? " Polybraid Hose	20261	240"
Fitting 1/2" MPT x ? " HB	20231	3
Check Valve 1/2"	20215	1
Fitting 3/4" MPT x 1/2" FPT	20303	1

Note: For pools using a Diatomaceous Earth filter and Bypass / Venturi Injector installation, add (1) 3/4" Ball Valve, (2) 3/4" MPT x HB fittings, and (2) 1 1/4" metal clamps.

## TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
No light from Prozone unit	Loose wiring	Check all wiring connections
	No power to unit	Check voltage compatibility Check power source
	Defective lamp or other internal component	Return unit to dealer
No bubbles from injector or no evidence of ozone in pool	Excessive back pressure	Check for kinks or clogs in hose or plumbing
	Leak in fitting	Replace fitting
	Filter not working	Check filter
Water in Ozone Generator	Check Valve failure	Verify Check Valve in Venturi is operating properly
Cloudy water; foamy water; scum	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.