

PZ2 Series Manual

PROZONE INTERNATIONAL, Inc. Ozone Water Purification Systems

INSTALLATION GUIDE and OPERATION MANUAL

Prozone PZ2 Series

Ozone Generator Systems

SAFETY

READ AND FOLLOW ALL INSTRUCTIONS.

IMPORTANT SAFETY INSTRUCTIONS

1. All applicable electrical codes must be followed during and after installation. All connections to be made by a qualified electrician.
2. Disconnect all power at the main circuit breaker before installing the PROZONE unit.
3. **WARNING** - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
4. **DANGER** - Risk of electric shock.
5. Replace damaged cord immediately.
6. Do not bury cord.
7. Connect only to a properly grounded, grounding type receptacle.
8. 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.
9. A pressure wire connector is provided in the control box inside the unit to permit connection of a minimum No. 8 AWG (8.4 mm²) solid copper bonding conductor between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipe, or conduit within 5 feet (1.5 m) of the unit as needed to comply with local requirements.
10. Wear safety glasses when drilling and tapping holes for installation of unit.
11. **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.
12. Turn off power at source breaker before servicing the unit.
13. **SAVE THESE INSTRUCTIONS.**

TABLE OF CONTENTS

- [Safety Instructions](#)
- [Introduction to Ozone](#)
- [Preparing for Installation](#)
- [Installation of PZ2 Series Ozonators](#)
- [Operation of PROZONE](#)
- [Prozone Operation](#)
- [Water Chemistry](#)
- [Troubleshooting Guide](#)
- [Installation Kit Inventory](#)

INTRODUCTION TO OZONE

Ozone (O_3) is generated by irradiating air or oxygen (O_2) 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

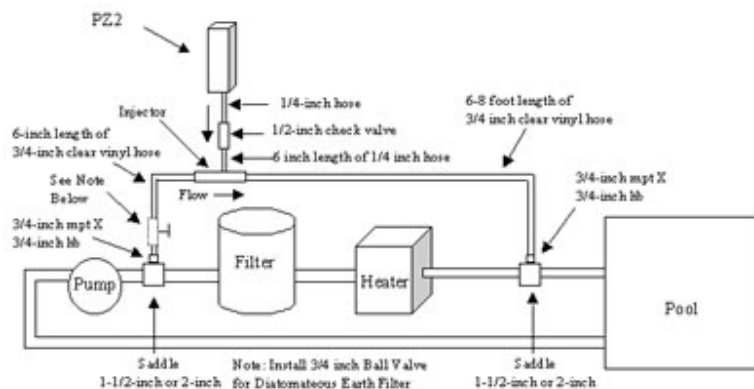
1. Locate Model PZ2-1 or PZ2-2 Ozonators or the compressor unit for PZ2-4 and higher models so that dust, sand, debris, chemicals, or other foreign objects are not sucked into the compressor's intake fan or hose (if equipped with Noise Attenuator).
2. Check electrical system: 240VAC double switched per N.E.C. standards; 120VAC single switched.
3. Check for and correct all plumbing for leaks.
4. Check for Suction Line Check Valve. Equipment may draw if no check valve is present.
5. Balance the pH.
6. Backwash the filter.
7. Shock the pool with a non-lithium-based material. The use of Calcium Hypochlorite or Sodium Hypochlorite is recommended.

NOTE: If the pool has a Diatomaceous Earth (DE) filter, a 3/4" ball valve must be installed between the pump and the input side of the Venturi Injector.

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. 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

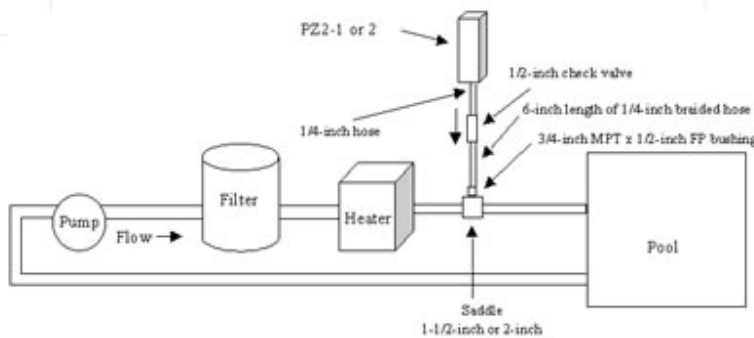


PZ2-1 and PZ2-2 with BYPASS VENTURI

1. Directly after pump and before filter, attach one 1-1/2 inch or 2 inch brass saddle clamp using attached screws.
2. After all existing equipment (including heater, chlorinator, etc), attach second 1-1/2 inch or 2 inch brass saddle clamp to return line using attached screws.
3. Drill a 1/2 inch hole in the pipe through the hole in the top of each saddle clamp.
4. Apply Teflon tape to threaded end of each 3/4 inch mpt x 3/4 inch hb fitting.
5. Screw 3/4 inch x 3/4 inch fitting snugly into top of each saddle clamp.
6. Cut a 6 inch (15cm) length (plus or minus 1 inch) of 3/4 inch clear hose and connect one end to the 3/4 inch barb fitting on saddle clamp nearest to pump; secure with a clamp.
7. If the venturi injector is model V3, insert the INPUT end of injector into 6 inch length of hose. If Mazzie injector, make sure flow is away from saddle; secure with a clamp (an arrow on the side of injector indicates flow direction).
8. Insert opposite end of venturi injector into remaining length of 3/4 inch clear hose and secure with a clamp.
9. Attach loose end of 3/4 inch hose to the 3/4 inch barb fitting on the return line saddle clamp using screw-type clamp.
10. Apply Teflon tape to threads of the two 1/2 inch x 1/4 inch fittings and screw these two fittings into each end of the check valve.
11. Cut a 6 inch length of 1/4 inch hose and connect one end to the output side of the check valve (flow away from ozone generator) and other end to ozone fitting on injector; secure with clamps. If V3 injector attach hose to port 1 (port 2 should be capped.)
12. Mount the PZ2 ozone generator vertically on wall with compressor at lower end, using two holes in rain shield. 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).
13. Attach one end of the remaining length of 1/4 inch hose to the ozone generator and the other end to the inlet side of the check valve. Making sure flow is away from ozone generator, secure ends with clamps.
14. Slip the M09 Noise Attenuator onto the 1 inch fitting on the rear of the PZ2. (See item 1 above, Preparing for Installation.
15. 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 swimming pool equipment.

Note: If Diatemateous Earth filter, install a 3/4 inch ball valve in the 3/4 inch hose line to the input side of the venturi.

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



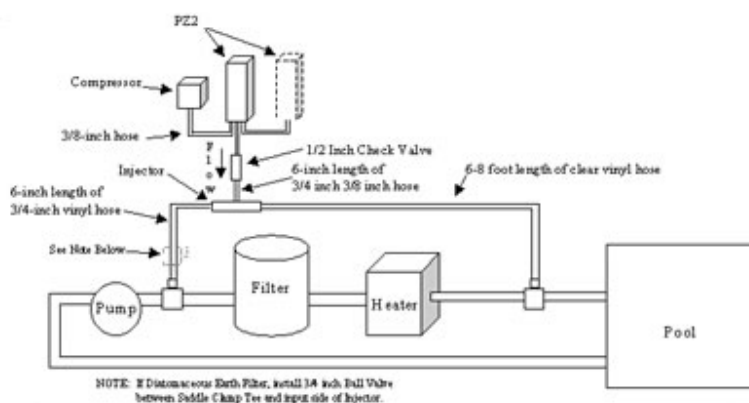
PZ2-1 & PZ2-2 with DIRECT INJECTION

NOTE: There must be at least four feet (1.2 m) 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. Attach a 1-1/2 inch or 2 inch saddle clamp to return line after heater and automatic floor sweep using the attached screws.
2. Drill four (4) 3/16 inch holes in the pipe through the center of the hole in the saddle clamp.
3. Apply Teflon tape to threads of the 3/4 inch x 1/2 inch bushing; screw the bushing snugly into the saddle clamp.
4. Apply Teflon tape to threads of one of the 1/2 inch x 1/4 inch fittings.
5. Screw this 1/2 inch x 1/4 inch fitting into the 3/4 inch x 1/2 inch bushing.
6. Apply Teflon tape to the threads of the other two 1/2 inch x 1/4 inch fittings.
7. Screw these two 1/2 inch x 1/4 inch fittings into each end of the check valve.
8. Cut a 6 inch (15cm) length (plus or minus 1 inch) of 1/4 inch hose and slide it over the barb on the 1/2 inch x 1/4 inch fitting screwed into the 3/4 inch x 1/2 inch bushing. Secure hose with a clamp.

9. Attach the other end of the 6 inch length of 1/4 inch hose to the barb on the output side of the check valve; secure with a clamp. (Flow is marked on side of check valve with an arrow.)
10. Mount the PZ2 ozone generator vertically on wall with compressor at lower end, using two holes in rain shield. 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). **(See item 1 above, Preparing for Installation.)**
11. Attach the remaining length of 1/4 inch hose between check valve and ozone generator; secure with clamps.
12. 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 activated 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.

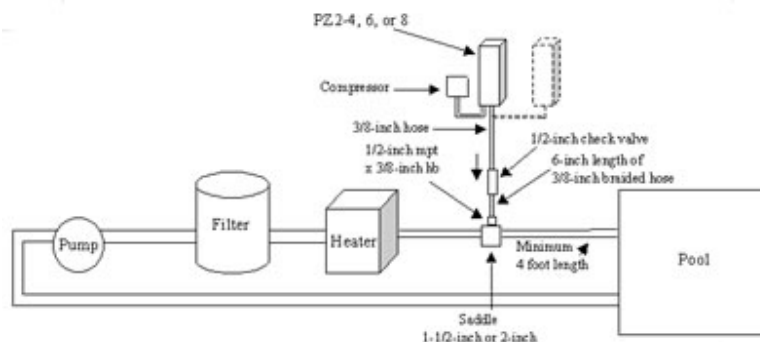


PZ2-4, PZ2-6, AND PZ2-8 SERIES WITH BYPASS VENTURI

1. Directly after pump and before filter, attach a 3/4 inch x 1 inch hose barb fitting to the plumbing using other appropriate fittings (not provided).
2. After all existing equipment (including heater, chlorinator, etc.), attach another 3/4 inch x 1 inch hose barb fitting using appropriate fittings (not provided).
3. Cut a 6 inch (15cm) length (plus or minus 1 inch) of 1 inch clear vinyl hose and connect to the barb on the 3/4 inch x 1 inch fitting installed nearest to pump; secure with a clamp.
4. Insert venturi injector into the other end of the 6 inch length of 1 inch hose making sure flow is away from the saddle, and secure with a clamp. Flow is marked on side of injector with an arrow.
5. Insert opposite end of injector into remaining length of 1 inch hose and secure with a clamp.
6. Attach loose end of 1 inch hose to second 3/4 inch x 1 inch fitting installed in step 2.
7. Apply Teflon tape to the threads of the two 1/2 inch x 3/8 inch fittings.
8. Screw these two 1/2 inch x 3/8 inch fittings into each end of the check valve.
9. Cut a 6 inch length of 3/8 inch braided hose and connect the check valve and venturi together; secure with clamps.
10. Mount the PZ2 ozone generator(s) vertically on wall using two holes in rain shield. 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).
11. Mount the compressor next to the ozone generator(s). **(See item 1 above, Preparing for Installation.)**
12. Cut a length of 3/8 inch braided hose long enough to reach between ozone generator and compressor.
13. Attach this length of hose to the ozone generator(s) and compressor; secure with clamps.
14. Attach one end of remaining 3/8 inch braided hose to the barb on the ozone generator and other end to the barb on the input side of the check valve. Making sure flow is away from ozone generator, secure ends with clamps.
15. Electrical Installation: System is 120 or 240 VAC, 50/60 HZ. 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, PZ2-6, PZ2-8 WITH DIRECT INJECTION



NOTE: There must be at least four feet (1.2m) 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. Apply Teflon tape to the threads of one of the 1/2 inch x 3/8 inch fittings and attach the fitting to the return line after the heater and other equipment using other appropriate fittings (not provided).
2. Cut a 6 inch (15cm) length (plus or minus 1 inch) of 3/8 inch polybraided hose and slide it over the barb on this fitting. Secure hose with a clamp.
3. Apply Teflon tape to the threads of the other two 1/2 inch x 3/8 inch fittings.
4. Screw these two 1/2 inch x 3/8 inch fittings into each end of the check valve.
5. Attach the other end of the 6 inch length of 3/8 inch hose to the barb on the output side of the check valve; secure with a clamp. (Flow is marked on side of check valve with an arrow.)
6. Mount the PZ2 ozone generator(s) vertically on wall. Place system at or above water level. If unit must be mounted below water level, loop 3/8 inch hose so that at some point it is above water level (a solenoid control valve may be necessary).
7. Mount the compressor next to the ozone generator. **(See item 1 above, Preparing for Installation.)**
8. Cut a length of 3/8 inch hose long enough to connect the ozone generator and compressor together; secure with clamps.
9. Attach the remaining length of 3/8 inch hose between input side of check valve (flow away from ozone generator) and ozone generator; secure with clamps.
10. 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 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.

OPERATION

A. PROZONE 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.

B. WATER CHEMISTRY

Water chemistry must be maintained to assure proper performance of the Prozone ozonator system and existing pool or spa equipment. The following levels are recommended:

- **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 pool water.

TROUBLESHOOTING GUIDE

PROBLEM	PROBABLE CAUSE	REMEDY
No light from Prozone unit	Loose wiring No power to unit Defective lamp or other internal component	Check all wiring connections Voltage compatibility Check power source Return unit to dealer
No bubbles from injector or no evidence of ozone in pool	Excessive back pressure Leak in fitting Filter not working	Check for kinks or clogs in hose or plumbing Replace fitting 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 Total Dissolved Solids (TDS) level too high Filter not working	Check readings and balance accordingly Refer to dealer for proper water testing Clean or replace filter

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

INSTALLATION KIT INVENTORY

PZ2-1 & PZ2-2 SERIES WITH BYPASS VENTURI

Tee, Saddle, 1-1/2 inch x 3/4 inch	2 each	Fitting, 1/2 inch MPT x 1/4 inch HB	2 each
Fitting, 3/4 inch MPT x 3/4 inch HB	2 each	Injector, 3/4 inch HB	1 each
Valve, Check, 1/2 inch	1 each	Hose, Polybraid, 1/4 inch	6 feet (1.82m)
Hose, Clear Vinyl, 3/4 inch	8 feet (2.4m)	Clamp, Plastic, Black, 0.500 inch	4 each
Clamp, Hose, Metal, 1.25 inch	4 each		

PZ2-1 & PZ2-2 SERIES WITH DIRECT INJECTION

Tee, Saddle, 1-1/2 inch or 2 inch x 3/4 inch	1 each	Valve, Check, 1/2 inch	1 ea
Fitting, 1/2 inch MPT x 1/4 inch HB	3 each	Fitting, 3/4 inch MPT x 1/2 inch FP Bushing	1 ea
Hose, Polybraid, 1/4 inch	10 feet (3.05m)	Clamp, Plastic, Black, 0.500 inch	4 ea

PZ2-4, PZ2-6 & PZ2-8 SERIES WITH BYPASS VENTURI

Injector, 1 inch MPT 1078	1 each	Fitting, 1/2 inch MPT x 3/8 inch HB	2 each
Fitting, 3/4 inch MPT x 1 inch HB	2 each	Fitting, 1 inch FPT x 1 inch HB	2 each
Hose, Polybraid, 3/8 inch	20 feet (6m)	Hose, Clear Vinyl, 1 inch	10 feet (3.05m)
Compressor	1 each	Valve, Check, 1/2 inch	1 each
Clamp, Hose, Metal, 1.5 inch	4 each	Clamp, Plastic, Black, 0.60 inch	30 each

PZ2-4, PZ2-6, & PZ2-8 SERIES WITH DIRECT INJECTION

Fitting, 1/2 inch MPT x 3/8 inch HB	3 each	Valve, Check, 1/2 inch	1 each
Compressor	1 each	Hose, Polybraid, 3/8 inch	10 feet (3.05m)
Clamp, Plastic, Black, 0.620 inch	10 each		

Note: For pools with Diatomaceous Earth filter and Bypass Venturi installation, add 1 each Valve, Ball 3/4 inch fpt x fpt; 1 each Fitting, 3/4 inch mpt x 3/4 inch mpt; 1 each Fitting, 3/4 inch mpt x 3/4 hb.