



SP-3G

Operating Manual



Produced for and Distributed by:

A2Z Ozone, Inc.
Louisville, KY 40299
EPA Est.: 95432-KY-1

Active Ingredient: Ozone.
Do Not Inhale Ozone.
Keep Out of Reach of Children.

Produced by:
Bluegrass Water Technology Shenzhen
Co., Ltd
China
EPA Est.: 95432-CHN-1

* register your product at a2zozone.com/pages/warranty

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IMPORTANT:

When operating an ozone generator, please remember to remove people, pets, and plants from the area in case of leakage. Be sure to leave the area being treated immediately and only return once the ozone is dissipated. Under most conditions, the area of incident should be safe to return to in 2-4 hours after the leakage occurs. Ozone has a half life of 30 minutes. Areas where ozonator is installed should be well-ventilated.

For questions, please call **1+ (502) 499-4977** OR email **info@a2zozone.com**

Important Safety Information

READ AND FOLLOW ALL INSTRUCTIONS

- Read this manual completely before attempting installation and/or operation.
- Install in accordance with the installation instructions.
- Connect to a grounded, grounding type receptacle only.
- Follow all applicable electrical codes.
- To avoid electric shock, be sure to turn power OFF and disconnect from power source before any service work is performed. Failure to do so could result in serious injury or death. A licensed electrician should make all electrical connections. Replace damaged electrical cables immediately.
- Install the ozone generator at least five feet from water using nonmetallic plumbing.
- The SP-3G must be mounted indoors or under a cover for protection from the elements.
- Install check valves to prevent water from coming into contact with the electrical equipment.
- The electrical supply for this product must include a suitably rated switch or circuit breaker to open all ungrounded supply conductors.
- Ambient temperature around the equipment should be between 40 and 100 degrees Fahrenheit (4.5 to 38 degrees Celsius). If the equipment is installed in an environment with temperatures over 100 degrees Fahrenheit, additional air cooling must be provided. Installation without additional air cooling in an environment where temperatures exceed 100 degrees Fahrenheit for any continuous 24-hour period will void the warranty.
- If feeding ozone generator with an oxygen supply, a spontaneous and violent ignition may occur if oil, grease or greasy substances come in contact with oxygen under pressure. These substances must be kept away from oxygen regulators, cylinder valves, tubing, connections, and all other oxygen equipment.

CAUTION!

In case of accidental leakage, keep the ozone generator in a well-ventilated area.

In accordance with California Regulations, this ozone generator is solely for industrial use and must be installed by a professional. Potential health hazard: emits ozone.

Technical Specifications

Items Included:

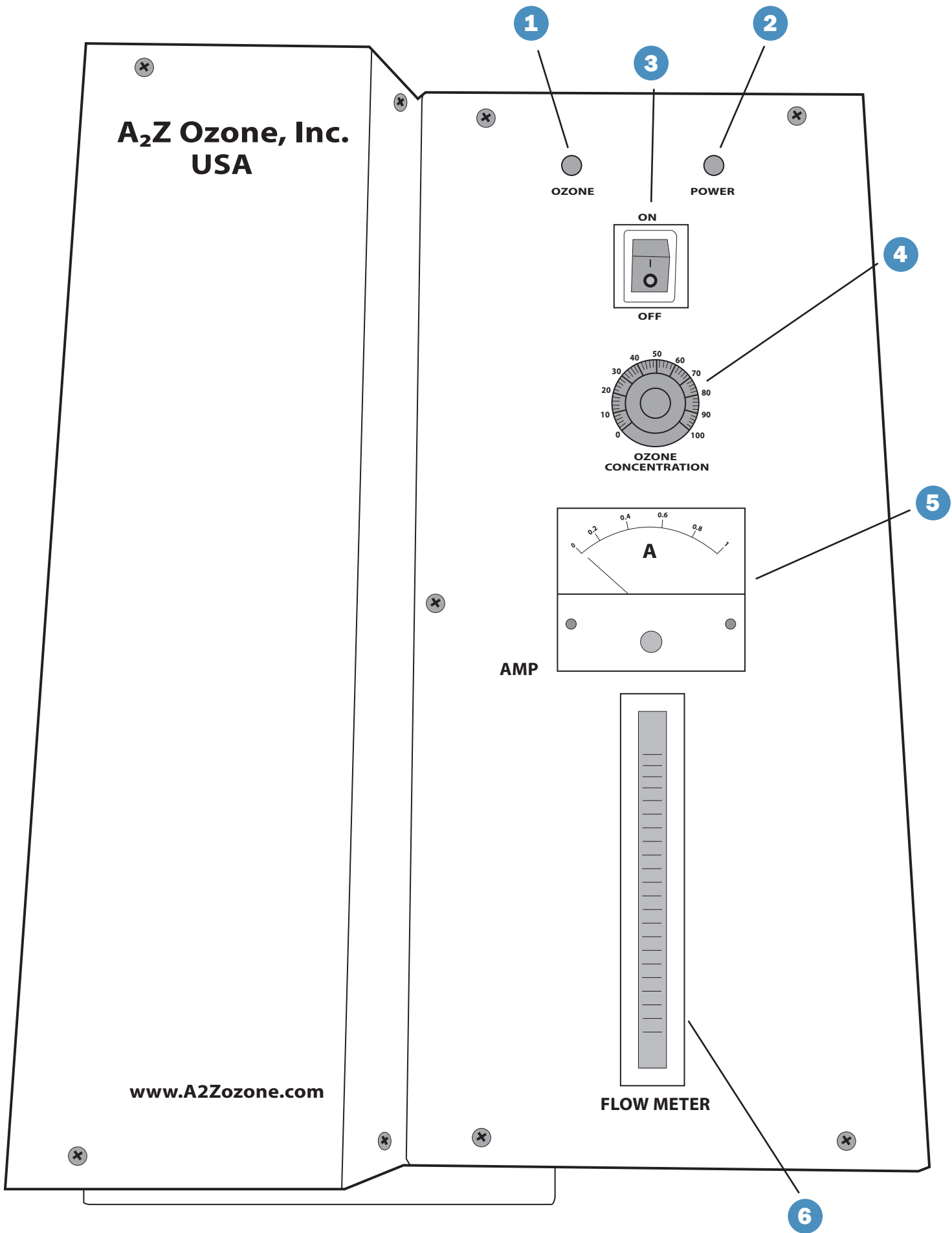
- SP Swimming Pool Ozone Generator
- SP Swimming Pool operating manual
- Flexible tubing (for oxygen supply)
- PTFE tubing (for ozone)
- Spare fuse
- Check valve (x2)
- Spare fan filter

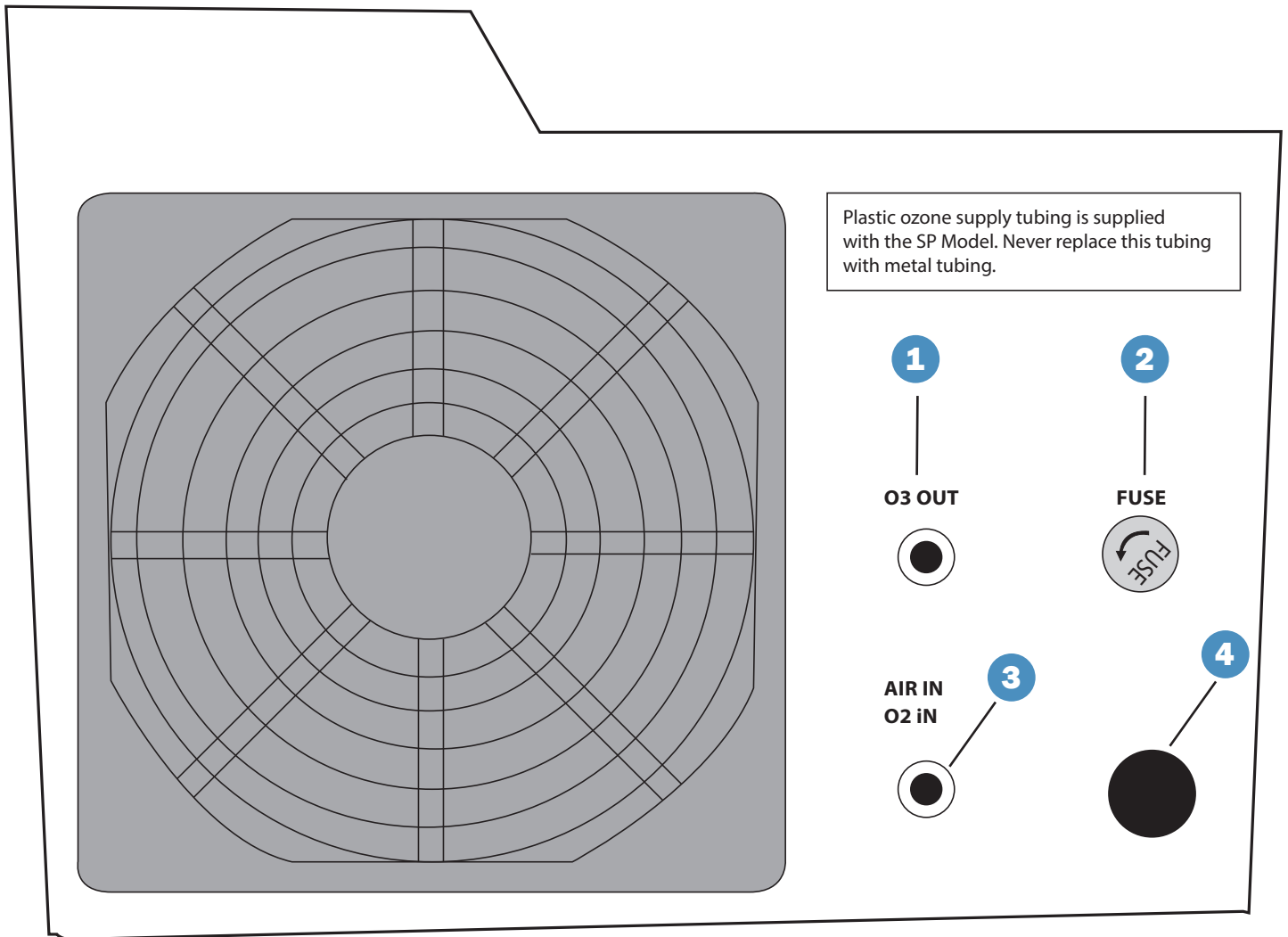
Note: The SP Series units are not built with an internal pump. This unit requires a venturi injector to force the ozone out into water pipes.

Model	Ozone Output (g/h)	Electric	Power (Watts)	Size (Inches)	Weight (lbs)
SP - 3G	3	220/240 or 110/120 VAC 50/60 Hz	80	11X8X14.3	14

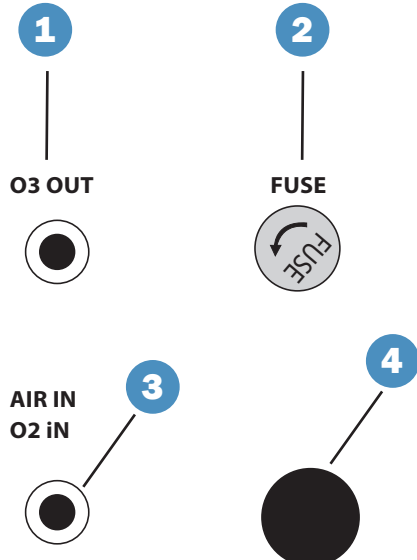
SP Series Features

1	Ozone Light	Indicates ozone is functioning.
2	Power Light	Indicates when there is power to the unit. If the power is supplied, the LED will illuminate.
3	Power Switch	Used to power the unit on and off.
4	Ozone Concentration Knob	Controls the percentage of ozone produced by the unit.
5	AMP Meter	Shows real time AMP usage.
6	Flow Meter	Shows the suction amount created by the venturi (measured in LPM).





Plastic ozone supply tubing is supplied with the SP Model. Never replace this tubing with metal tubing.



1	Ozone Out Port	The ozone is injected into the water through the ozone out.
2	Main Fuse	If the unit has no power, check here first.
3	Air/Oxygen In Port	This sucks in air for the unit to produce ozone. Please do not block this intake port. Optional oxygen intake or air pump location.
4	Power Cord	Supplies power to the unit.

Installation Instructions

Ozone Generator Placement

- Install the SP-3G ozone generator in a clean, dry area with good ventilation.
- Select a location for the ozone generator that is as close as possible to the ozone injection point.
- The SP-3G ozone generator enclosure is not waterproof, so it is important to choose a location that will keep the system away from direct weather and excessive heat.
- The ozone generator should be placed above water level because if pressure is lost in the venturi vacuum, gravity will cause water to travel down the ozone output tube and enter into the ozone generator.
- Situate the unit in a manner suitable for convenient electrical access.
- Mounting holes are located on the back of the ozone generator for convenient wall mounting (mounting hardware is not provided).
- The basic installation method for the SP-3G system is through a venturi injector manifold plumbing connection.
- The venturi injector manifold must be assembled (venturi injector is sold separately).

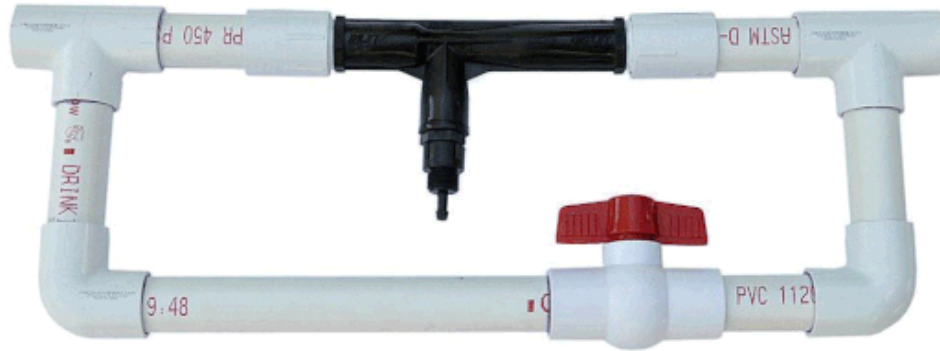
NOTE: Be sure to place the ozone generator in temperatures 40 and 100 degrees Fahrenheit (4.5 to 38 degrees Celsius).

Is the SP-3G the right size for my pool?

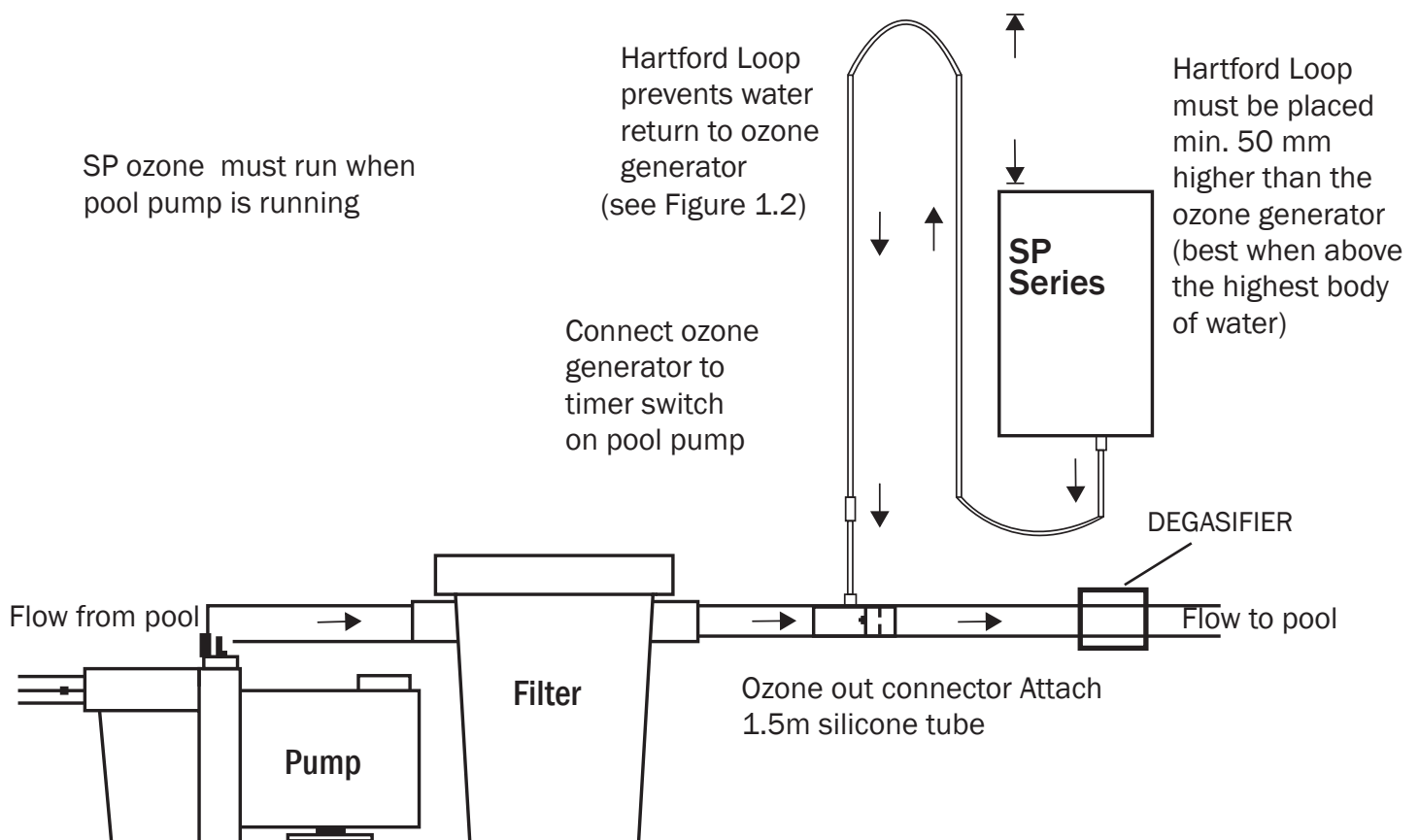
Ozone Generator	Size Pool for Mild/Cooler Climate	Size Pool for Tropical/Warmer Climate
SP-3G	10,000 Gallons / 37,854 Liters	5,000 Gallons / 18,927 Liters

The use of a degasifier and ozone destructor system is required. The degasifier removes all air, gas or ozone before the water is returned to the pool. The ozone destructor ensures that ozone is fully broken down before re-entry.

Venturi Injector Installation

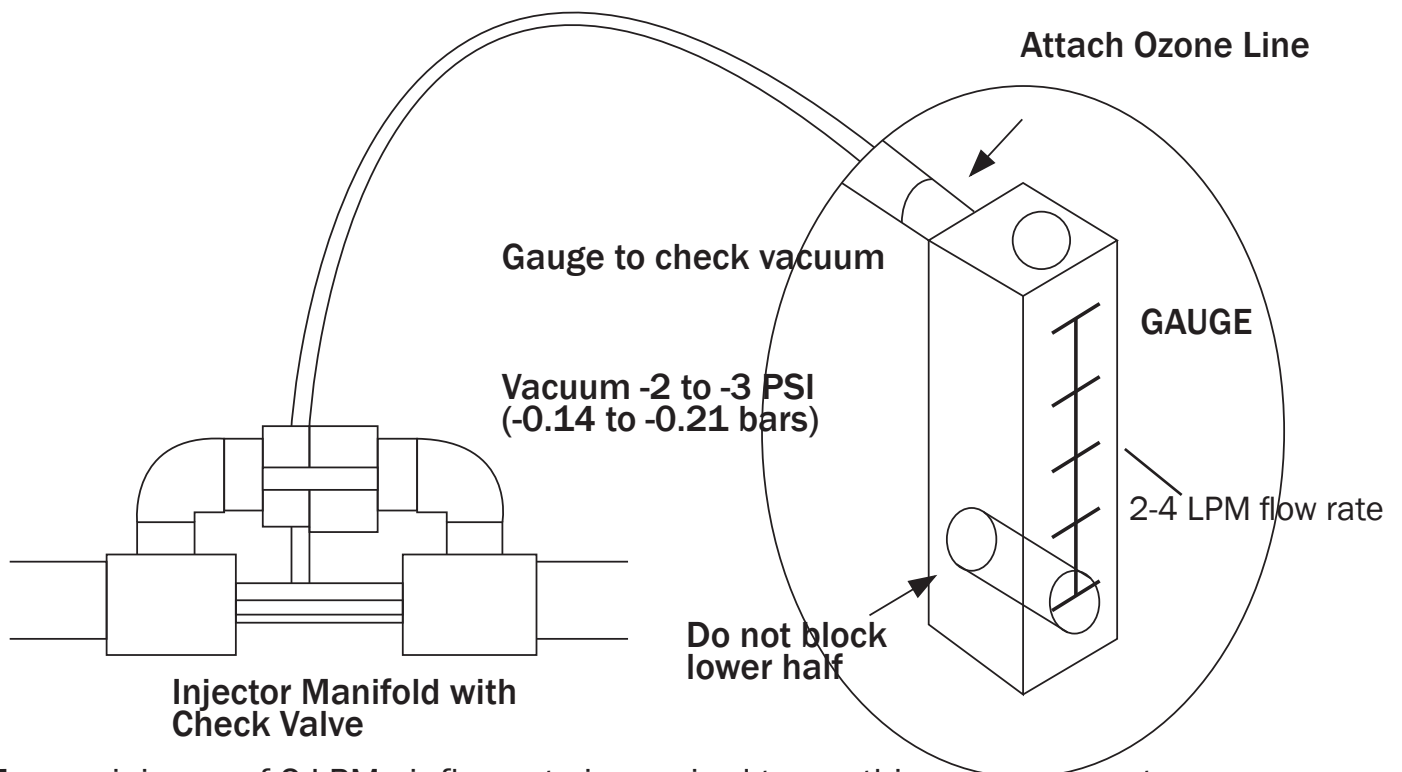


- Refer to the Venturi Injector Installation diagram (Figure 1.1) and follow the instructions below if the ozone is being injected directly into the full flow of the pool's return line:
 - Identify the pool's water return lines after the pump, filter and heater, then tap into this point. (Figure 1.3)
 - The ozone injection point should be the last component in line and as far as possible from the injection point of the residual chemical.
 - Glue in the proper injector manifold, noting the direction of flow which is indicated by an arrow on the injector.
 - Once the injector is installed, the vacuum may be adjusted as described in the Operating Instructions section.



Details of Venturi Injector Manifold

- Install the venturi injector with a bypass valve on the water return pipeline.
- The arrow on the venturi injector manifold MUST be set as the same direction as the water flow.
- Turn the water pump on and close the bypass valve until the vacuum is created at the venturi input.
- Use the installed flow meter to check vacuum for -2 to -3 PSI (-0.14 to -0.21 bars) or place finger over the end of the venturi valve to feel the vacuum while adjusting the bypass venturi valve.



Note: a minimum of 2 LPM air flow rate is required to run this ozone generator.

Main Power

- Use the power cable provided to connect the SP Series ozone generator to a properly rated and grounded receptacle.
- If the ozone generator will be used where water is present, a ground fault circuit interrupter must protect the circuit.

Tube Connection and Start Up

- Connect a silicone tube (if using an oxygen generator, oxygen tank or external air compressor) to the SP-3G unit (Air In). This will serve as oxygen or air for ozone production.
- Connect the ozone generator PTFE tube (Ozone Out) to the venturi injector manifold.
- Install a check valve 10 inches after the ozone outlet tube fitting (the venturi has an internal check valve). This can be done by cutting the tube ten inches after ozone out fitting.
- Next, connect both ends of the cut tubes to the check valve. Please direct the arrow on the check valve toward the venturi injector.
- Start up the swimming pool water recirculation pump.
- Make sure there is a vacuum (or that there is suction) at the venturi injector opening via a gauge or test it by putting your finger on the venturi injector opening.
- A small suction should be felt at this injector opening. The suction is what is needed to move the ozone out of the SP unit and inject it into the pool's piping system.
- Check that the flow meter indicates that the air flow is at least 2-4 LPM. (see Figure 2)
- Now connect the PTFE tube from the venturi to the ozone generator.
- Turn on the power on the external panel of the ozone generator.
- The ozone indicator light should illuminate and the unit's fan should turn on.
- Increase power to the cells by turning the ozone control knob clockwise.
- Please refer to the charts above for the approximate ozone concentration for the size of your pool.

Operating Instructions

System Run Times

On residential pools, the ozone generator should operate for six to eight hours per day. Normally, the ozone system will run whenever the pool filtration system is operating. Since commercial pool and spa filtration systems normally operate 24 hours a day, the ozone system will run continuously on a commercial pool.

Ozone and Chlorine

Chlorine also works as a residual oxidizer and may be used effectively in conjunction with the ozone system. For outdoor pools, we recommend the use of chlorine to supplement the ozone. Chlorine residual will act as a buffer when the ozone system is not operating. Chlorine needs to be maintained at 1.0 to 2.0 PPM (Parts Per Million).

Water Preparation

To properly prepare the water for the ozone system, make the following adjustments and maintain the levels outlined below:

NOTE: If any unusual reactions are experienced when ozone is introduced into the water (such as abnormal color or odor), please wait a few days to give the ozone and filter system time to work.

Algae

Always maintain the recommended residual levels of bromine or chlorine (at least 1.0 PPM) to help control algae formation. Brushing the sides of the pool once a week is also effective. Additionally, using an algaecide is effective.

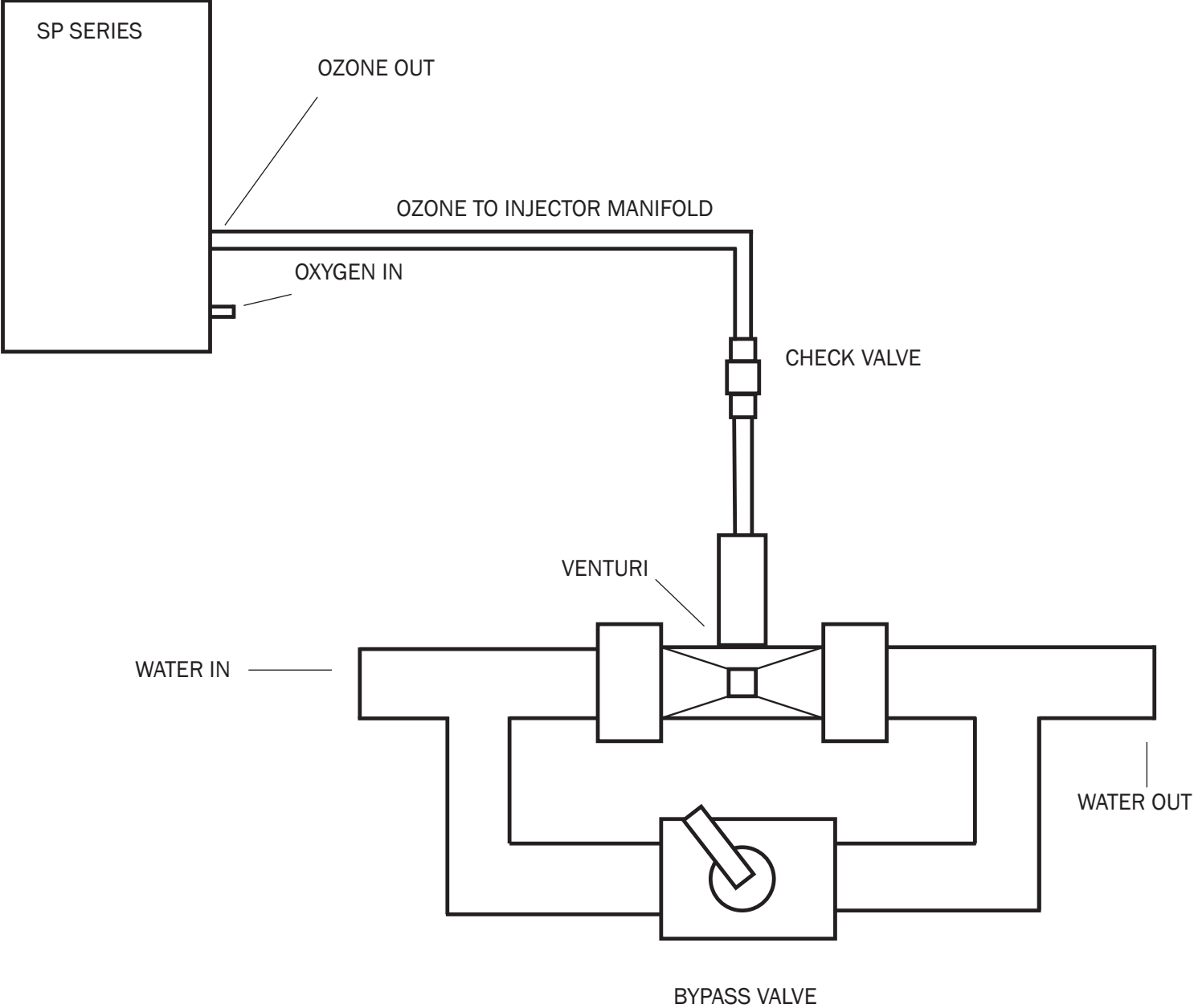
Shock Treatment

If an unusually high bather load causes cloudiness in the water, it is recommended that a chlorine shock treatment be used to assist the ozone in cleaning the water. Routine, periodic shocking is recommended to prevent buildup of organic contaminants, especially with indoor pools.

Degasifier & Destructor

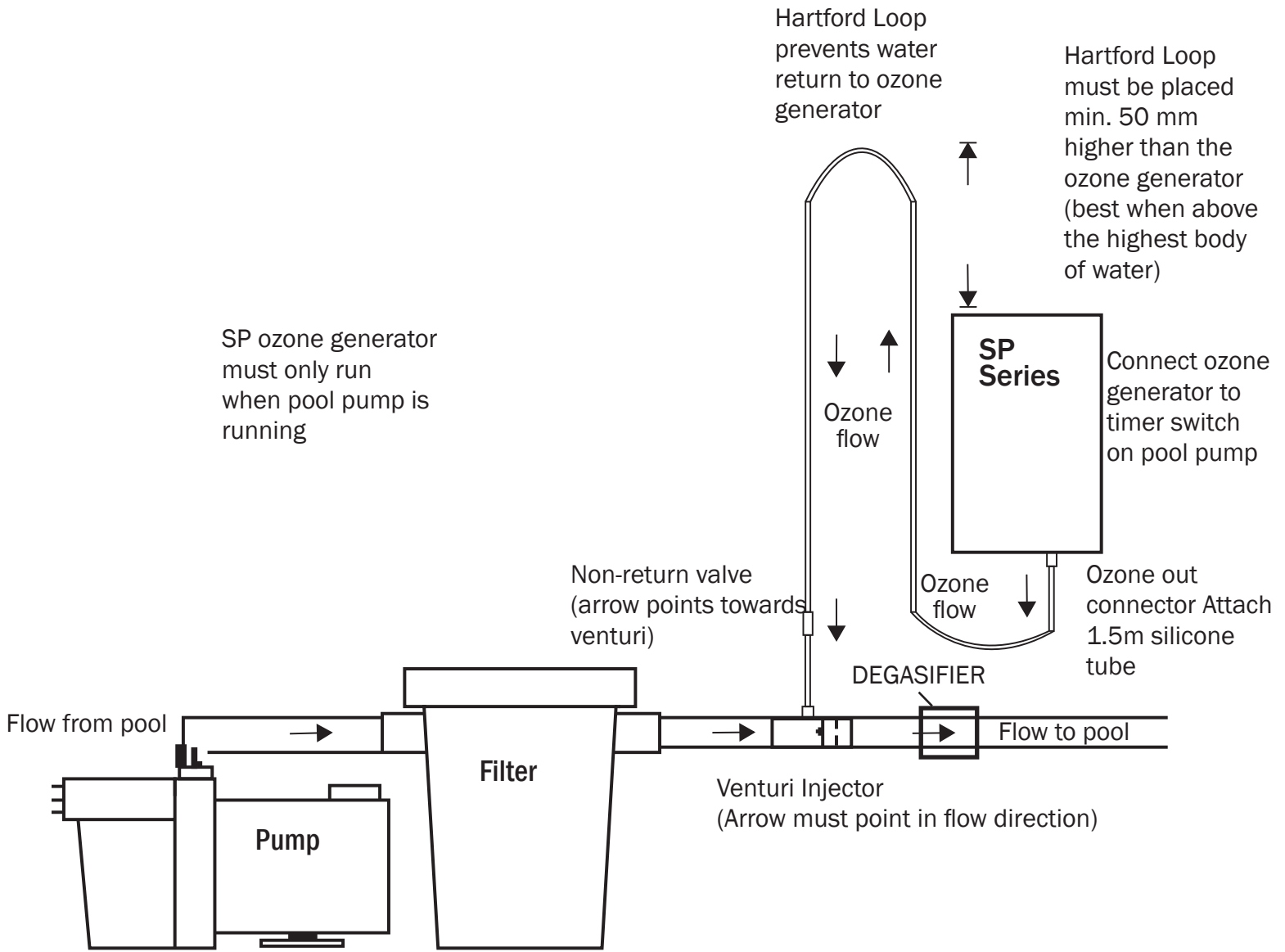
The venturi injector is used to get the ozone into the water. Use a degasifier and an ozone destructor to convert the ozone back to oxygen before returning the water to the pool.

Schematic Diagrams



INJECTOR MANIFOLD

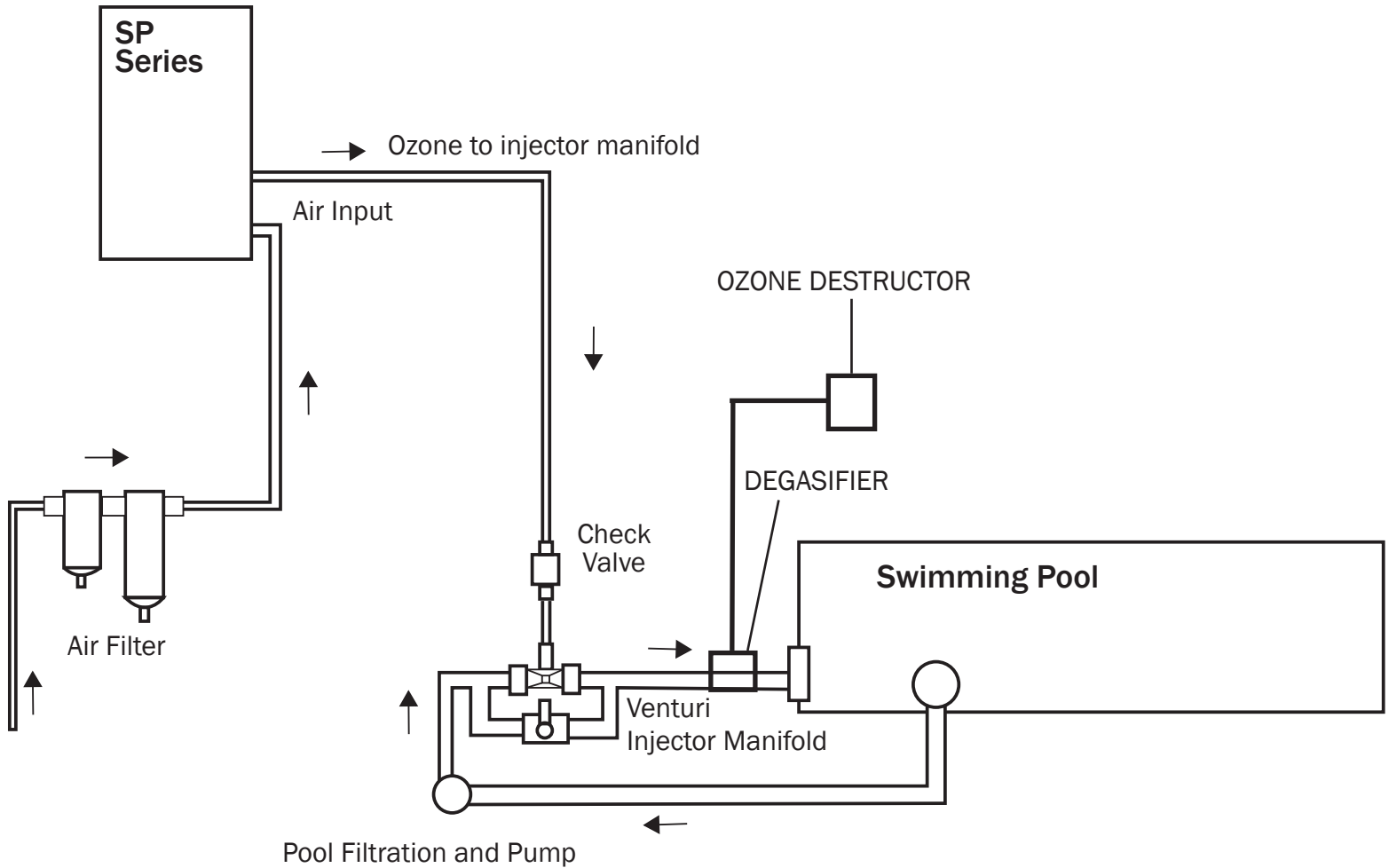
(Figure 1.1)



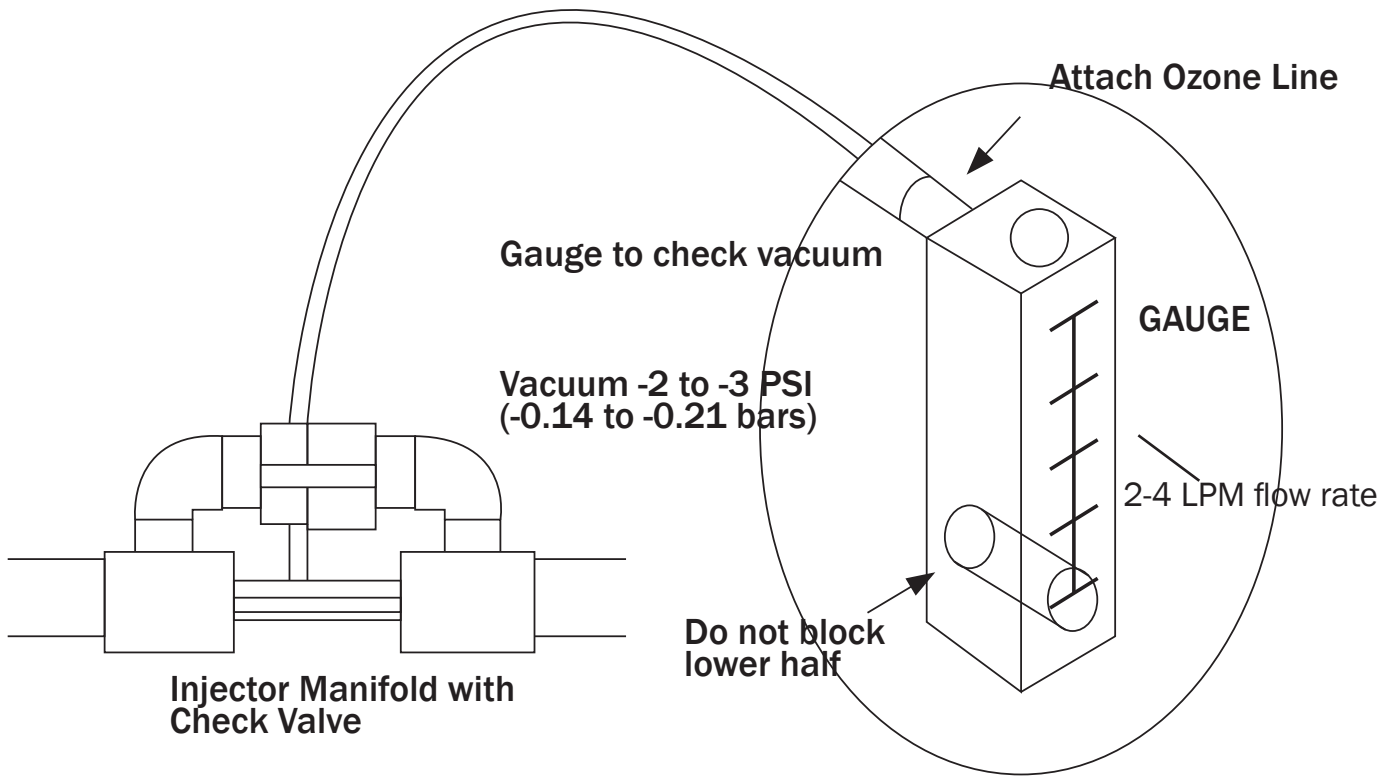
Injector Manifold Point of Installation with “Hartford Loop”

(Figure 1.2)

NOTE: SP UNIT AND OZONE LINE SHOULD BE ABOVE WATER TANK LEVEL. THIS PREVENTS WATER BACK FLOW TO THE OZONE GENERATOR.



(Figure 1.3)



Note: the required minimum air flow rate is 2 LPM.

Figure 2

Maintenance

Clean Air Filter

This filter must be cleaned regularly. Depending on the location of the unit, it may be necessary to clean the air filter monthly. The filter elements are located on the bottom of the cabinet. This is the air intake element for the cooling fan and may therefore require the most frequent cleaning. The element may be cleaned with soap and water and should be dried completely before reinstalling. Clean this filter regularly. Failure to do so will promote overheating and void the warranty.

NOTE: In a clean environment, this procedure may only need to be performed every three months.

- Turn the SP Series ozone generator off
- Clean the filter screen with water and soap
- Dry the filter with a clean towel
- Install the screen back onto the unit
- Turn the ozone generator on
- Be sure the unit's screen does not touch fan blade

CAUTION: There is extremely high voltage inside the ozone generator. If you suspect a problem, disconnect the power to the unit at the service disconnect box or main electrical panel and immediately contact your swimming pool maintenance technician. Inspect the ozone delivery line check valves daily for water seepage and replace the injector check valve every 6 months to a year.

Check Valves

Two check valves are available for the ozone delivery system. There is a check valve close to where the ozone tubing attaches to the ozone generator and a check valve also attaches to the injector. The purpose of these check valves is to prevent water from backing up into the ozone generator. The PTFE ozone delivery line(s) should be inspected daily to ensure water is not flowing back into the ozone generator. Check valves should be replaced after 6 months to a year of use.

NOTE: The only time it is possible for water to flow back toward the ozone generator is during a system shutdown. Always inspect for water seepage during this time.

Fuses

The fuse is located on the panel at the bottom of the unit. The fuse is 3 AMP for this unit.

Troubleshooting

The test method for failure of the ozone generator:

- Check the power input for correct voltage (110V or 220V)
- Unit is on, but no ozone; this is due to overheating or water back flow to the ozone generator.
- Turn off ozone generator and let air flow through the unit for 1 to 2 hours to dry the ozone tube.
- Check the main fuse and change as needed. It is a 3 AMP for this unit.
- Check the tubing inside the machine for kinks.
- If the machine can produce some air, but the air is not ozone; please check the following:
 - The power indication lamp is lit.
 - Check the ozone control knob is set above zero.
 - Check the ozone board fuse.
 - Check the wire from terminal to ozone board.
 - Check the potentiometer wire is connected to the ozone board.

If you are still experiencing problems, please contact A2Z Ozone at 1+ (502) 499-4977.

FAQ

How does ozone get into the water?

Ozone is a gas and it is only slightly soluble in water. The most common way in swimming pools is with a venturi injector – a device 100mm in length with each end the same diameter (40/50mm) as the pool plumbing line. Remove a section of pool piping and install a venturi injector. The injector's diameter is smaller in the middle, similar to squeezing or pinching a hose. The water traveling into the injector begins to move faster. In the middle of the injector there is a small hole. The water creates a vacuum as it's pumped through the plumbing and past the hole. The strength of vacuum is dependent on the amount of water flow through the injector – more water equals a stronger vacuum. If a small flexible hose or tube is attached to this small hole, a liquid or gas is drawn into the injector and mixed into the water. The goal is to make the smallest bubbles possible and to keep the bubbles in contact with the water for as long as possible.

How long will ozone last in my pool?

Because of its short half life, ozone will decay soon after it is produced. Ozone in water lasts about 2-4 hours, which means that every half hour the ozone concentration will be reduced to half its initial concentration. For example, when you have 1 mg/L, the concentration reduces every 30 minutes as follows: 0.5; 0.25; 0.125; 0.06; etc. In practice, the half life is shorter because a lot of factors can influence the half life. Factors that effect half life are temperature, pH, concentration and solutes. Because ozone reacts with all kinds of components, the concentration of ozone will reduce quickly. When most of the components are oxidized, the residual ozone will remain, and the concentration of ozone will reduce.

Will the temperature or humidity of the air/water affect ozone?

Yes. The temperature and humidity of the air will directly impact the concentration of ozone gas produced. The more humid and hotter the air, the less concentrated the ozone produced will be. Likewise the temperature of the water has a similar effect; the cooler the water the ozone is injected into, the less amount of ozone is needed. Heated pools require 10-15% more ozone than traditional pools.

Is ozone safe for my pool equipment?

Most pool systems these days come supplied with the plumbing that is ozone-resistant -- for example, PVC piping. However, ozone gas can corrode metal and other materials such as nylon and rubber. Care must be taken to check that all plumbing and piping between the injection point (Venturi Injector) and the point of entry to the pool are made of ozone-resistant materials. All our ozone generators are supplied with ozone-resistant accessories.

Can I run my pump and filter for fewer hours?

Ozone is only injected into your water when the pump is running. During summer/swimming season you should run your ozone generator, pump and filter a minimum of 12 hours each day. We recommend that you run your pump for 24 hours a day in the summer. Up to 80% of the water treatment is done by your filter, so don't be afraid to use it.

How should I prepare my pool or installation of the ozonator?

- Backwash pool
- Adjust alkalinity
- Adjust pH balance
- Shock treat the pool
- Use ozone as a primary sanitizer and 1-2 ppm chlorine
- Sodium bromide should test between 1-2 ppm

What special maintenance does the SP unit require?

- Check non-return valve for signs of water returning into the tube to the ozone generator and replace if necessary.
- Check the silicone tube for deterioration and replace if necessary.
- Check the unit for internal air filter for blockage.
- Check that small, fine bubbles are coming from pool return jet.
- Make sure no debris or dirt is blocking fan guards.
- Use the fingertip test on the air inlet port to the ozone generator to check that suction is still present and venturi injector is working correctly.

Warranty

A2Z Ozone Systems Inc. - ONE YEAR LIMITED WARRANTY

The limited warranty set forth below applies to products manufactured by A2Z Ozone Systems Inc. - and sold by A2Z Ozone Systems or its authorized dealers. This limited warranty is given only to the first retail purchaser of such products and is not transferable to any subsequent owners or purchasers of such products. A2Z Ozone warrants that it or its authorized dealers will repair or replace, at its option, any part of such products proven to be defective in materials or workmanship within ONE (1) year from the date of retail purchase of such products. (All parts) ANY REPAIR OR REPLACEMENT WILL BE WARRANTED ONLY FOR THE BALANCE OF THE ORIGINAL WARRANTY PERIOD. NOTE: USE ONLY A2Z Ozone AUTHORIZED REPLACEMENT PARTS. USE OF ANY OTHER PART(S) WILL AUTOMATICALLY VOID THIS WARRANTY. THIS LIMITED WARRANTY DOES NOT INCLUDE ANY OF THE FOLLOWING:

- (a) Any labor charges for troubleshooting, removal, or installation of such parts;
- (b) any repair or replacement of such parts necessitated by faulty installation, improper maintenance, improper operation, misuse, abuse, negligence, accident, fire, repair material, and/or unauthorized accessories;
- (c) Any such products installed without regard to required local codes and accepted trade practices;
- (d) ANY IMPLIED WARRANTY OF MERCHANTABILITY OR IMPLIED WARRANTY OF FITNESS FOR PARTICULAR PURPOSE, AND SUCH WARRANTIES ARE HEREBY DISCLAIMED: AND
- (e) A2Z Ozone SHALL NOT BE LIABLE UNDER ANY CIRCUMSTANCES FOR LOSS OF USE OF SUCH PRODUCTS, LOST PROFITS, DIRECT DAMAGES, INDIRECT DAMAGES, CONSEQUENTIAL DAMAGES AND/OR INCIDENTAL DAMAGES.

TO OBTAIN WARRANTY SERVICE

Contact A2Z Ozone, 1844 Cargo Court Louisville, KY 40299, USA

Customer Service Number: +1 502-499-4977.

When filing a claim, you must provide:

- 1) Your name, mailing address and telephone number
- 2) The selling dealer's name
- 3) Proof of date of purchase
- 4) The date of failure
- 5) A description of the failure.

After this information is provided, A2Z Ozone will release a RETURN GOODS AUTHORIZATION (RAN) NUMBER. After receiving the RAN number the part in question must be returned to A2Z Ozone, freight prepaid, with the RAN number clearly marked on the outside of the package. All preauthorized defective parts must be returned to A2Z Ozone within thirty (30) days. Under no circumstances may any product be returned to A2Z Ozone without prior authorization. You must call or write prior to returning product or your returned goods shipment will be refused. Upon receipt of preauthorized returned goods, A2Z Ozone will repair or replace, at its option, the defective product(s) and return them (shipping is prepaid for units under warranty for USA customers only). Buyer's acceptance of the product and use thereof constitutes acceptance of these terms.

A2Z Ozone WARRANTY REGISTRATION CARD

This information can be also sent by EMAIL to us. Please provide ALL pertinent information and send within twenty (20) days to: service@a2zozone.com

Otherwise, please fill out completely and return to A2Z Ozone by post within twenty (20) days of purchase.

Customer Info:

Name _____

Address _____

City _____ State _____ Zip _____

Phone (____) _____

Dealer Info:

Dealer Name _____

Dealer Address _____

City _____ State _____ Zip _____

Phone () _____

Purchase/Product Info:

Purchased Date: _____ Date Installed _____

Product Purchased: _____

Comments / Questions:

DO NOT FORGET TO CUT OUT, PLACE IN ENVELOPE AND MAIL TO THE FOLLOWING ADDRESS FOR INSTANT WARRANTY COVERAGE!

**A2Z Ozone Systems Inc.
ATTN: Warranty Dept.
1844 Cargo Court
Louisville, KY 40299, USA**