

**Warning:**

**Please read the following information.** Failure to do so could result in damage to your pool's plumbing system and/or pool equipment.

Note: The suction side installation can be used with any ultraviolet style of ozone generator, as well as DEL's Eclipse 1 or 2 models. However, we do not recommend introducing an Eclipse 4 through the pump suction due to the high concentration of ozone being produced.

The following information covers installation of residential pool ozone generators via the pump suction kit. Your ozone generator is sold separately and comes complete with its own manual. If you are using an injector manifold, a Total Eclipse generator, and/or an MDV you cannot use this kit.

**General Information:** Utilizing the pump's suction is simple and effective means for the introduction of ozone into water. Incorporating a shut-off valve, ozone gas check valve, and flow restrictor the ozone generator is plumbed directly into the drain fitting of the pump's strainer basket. Ozone produced by the ozone generator is drawn into the water by the pump's impeller. The impeller further mixes the ozone into the water and propels it on through the system. The liquid/gas mixture then enters the filter housing where the unmixed gas can be bled (via the internal and/or external bleed tube) back to the return line and into the pool as a stream of fine bubbles.

Successful installation and operation of a pump suction system requires proper attention to the following key items:

- a) **Pump materials:** Ozone is a strong oxidizer. Introducing it directly into the impeller housing of a pump may be harmful to some pump materials. Pump manufacturers will usually supply alternate seal materials, which are ozone resistant.
- b) **Filter type:** Sand filters have control valves either on the side or top. Top mounted controls will be exposed to ozone gas and may thus be adversely affected. Coating gaskets and o'rings with silicone gasket sealer can help prevent deterioration. Additionally, internal air bleed lines may come loose or kink during backwashing. This can cause the filter to fill with air. By installing the external bleed components contained in the installation kit, this problem can be prevented.

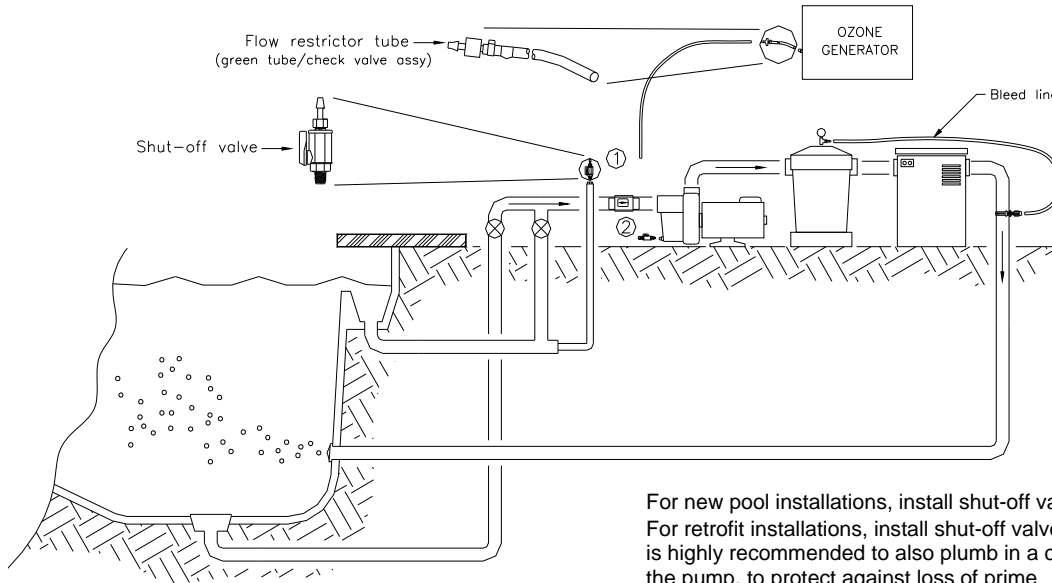
Cartridge and DE filters do not require special consideration. However, external bleed line should be installed in all cases.

- c) **Protection from loss of pump prime:** As with any typical pump installation, a check valve should be installed prior to the pump to protect against loss of prime. This is particularly important when ozone is introduced through the pump's suction side. Without a check valve, it is possible for air to be drawn through the ozone generator and drain water from the pump back to the pool (when the main pump is not running). Installing a check valve in the water line on the suction side (pool side) of the pump, as well as the check valve in the ozone line, will prevent this from occurring.

**Installation Instructions:**

- 1. Follow the electrical connection and mounting instructions for your ozone generator, as detailed in the manual that comes with your ozone generator.
- 2. With the pool circulation system off, install the supplied ball valve (see figure 1 for two options).
  - A. For new pool installations or complete renovations, the preferred plumbing method is with a 3/4" standpipe. Since the standpipe originates from below water level, there is no possibility for a loss of prime in the pump, due to the "water-lock" below grade. Install a 3/4" x 1/4" FPT Reducer Coupling on the standpipe. Apply Teflon tape to the threads on the ball valve assembly. Carefully thread the ball valve assembly into the Reducer Coupling.
  - B. For retrofit installations, remove the drain plug from the pump's skimmer basket. Apply Teflon tape to the threads of the ball valve assembly. Thread the ball valve assembly into the pump strainer's drain. It is especially recommended in this plumbing configuration to plumb in a light

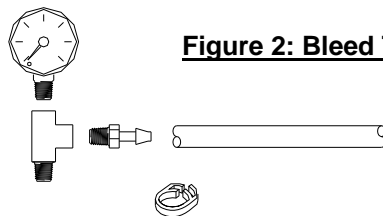
duty check valve (1/4-1psi, not included in this parts bag), on the suction side (pool side) of the pump to protect the pump from loss of prime.



For new pool installations, install shut-off valve in 3/4" standpipe  
For retrofit installations, install shut-off valve in strainer basket. It is highly recommended to also plumb in a check valve prior to the pump, to protect against loss of prime

**Figure 1: Installation Diagram**

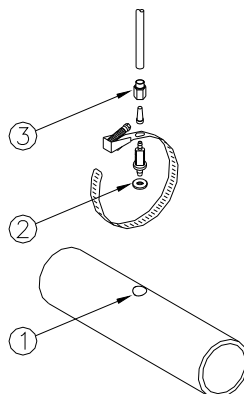
3. Install the external air bleed vent to the filter (see Figure 2). Remove the pressure gage from the top of the filter. Wrap all threaded fittings with Teflon tape. Carefully thread the pressure gage and hose barb fitting into the tee. Then carefully thread the tee assembly back into the filter.



**Figure 2: Bleed Tube Vent Installation**

Remove pressure gauge from filter  
Install tee with pressure gauge and hose barb  
Secure tubing to barb, using plastic tubing clamp

4. Install the bleed tube saddle clamp (see Figure 3). Drill a 7/16"-1/2" diameter hole in the pool's main return line. Wrap the saddle clamp around the return pipe, and insert the fitting in the hole, gasket side down. Remove the nut and cap. You may want to save the cap for future use, in case you ever wish to close off this connection. Slip the nut over the end of the supplied tubing. Fit the tubing on the barb of the saddle clamp fitting, and tighten the nut, until it is secure.



Drill 7/16"-1/2" hole in pipe.  
Ensure gasket is in place, and install fitting into hole.  
Remove nut and cap, slip nut over end of tubing. Fit tubing onto barb. Secure with nut.

**Figure 3: Bleed Tube Saddle Clamp Installation**

5. Run the tubing over to the air bleed vent on the filter, leaving enough excess (20' supplied) to connect the ozone generator to the barbed end of the flow restrictor assembly. Trim the tubing, and secure it to the filter's air bleed vent with the supplied plastic hose clamp.
6. Attach flow restrictor tube to your ozone generator (see Figure 1). Ensure that the arrow on the check valve (in the flow restrictor assembly) is pointing towards the direction of suction (away from the ozone generator). Use the remainder of the clear tubing to connect between the flow restrictor barb end and the barb fitting on the shut-off valve.
7. Ensure that the shut-off valve is closed (with the handle perpendicular to the body of the valve), and start the pump. Establish proper filtration flow and check all connections for leaks.
8. Completely open shut-off valve (with the handle parallel to the body of the valve), to allow the gas stream to be drawn into the pump. The flow restrictor tube will allow the correct amount of gas to be draw into the system. After a few minutes check that a bubble stream is entering the pool from one or more of the pool returns. If no bubbles are returning to the pool, ensure that the flow restrictor tube is installed in the proper direction (see item #6) and the shut-off valve is open.
9. Shut off the pump and check to be sure that the pump does not loose prime.
10. If pump does not lose prime, start up the pump again and allow the system to operate.

Installation is now complete.

### **Operation and Maintenance:**

The system should operate automatically, coming on with the filtration pump and mixing ozone with the water. It is normal for the tubing to discolor and become brittle with exposure to ozone, and the elements. Therefore, the only periodic maintenance that should be required for the suction side injection system, is to replace the ozone tubing and check valve every 1-2 years. Because the ozone check valve is a part of the "Restrictor Tube" assembly, it is advised that you purchase the entire restrictor tube assembly as a replacement part to avoid leaving out the other components of the assembly. Refer to the trouble-shooting guide below for answers to commonly asked questions about suction side installations.

Refer to ozone generator operations manual for operation, maintenance and trouble shooting of the ozone generator.

### **Trouble Shooting:**

- 1. Loss of pump prime or excessive noise while pump is running.**
  - 1.1. Some amount of noise is to be expected since air is entering the pump and passing through the plumbing.
  - 1.2. Check the suction side plumbing for leaks that may be introducing air from outside (other than the ozone system).
  - 1.3. Maximize water flow from the pump by enlarging eyeball return fittings.
  - 1.4. Decrease air draw from the ozone system by partially closing the shut-off valve.
- 2. Loss of prime when pump shuts off.**
  - 2.1. As a result to having an opening to air via the ozone supply tubing, it is possible for water to drain from the pump back into the pool causing the pump to lose prime. Appropriate steps should be taken to prevent water backflow from the suction side of the pump, such as installing a light duty spring check (1/4-1psi, not included in this parts bag), or flapper style check valve before the pump.
  - 2.2. If installing a check valve is not an option, it may be possible to plumb an upside down U shaped run of pipe on the suction side, which would create a water column just before the

pump. That water column would therefore be higher than the pump’s suction port, maintaining pump prime.

**3. Loss of air/ozone draw – bubbles stop coming back into the pool.**

- 3.1. Any condition that restricts flow (such as dirty filters), or reduces flow (such as low voltage or a worn pump), may affect the air suction. Correct the flow reduction in the system.
- 3.2. The shut off valve may be closed. Ensure that the valve is open to allow air/ozone to be drawn into the pump.
- 3.3. Maximize water flow from the pump by enlarging eyeball return fittings.

**Replacement Parts List**

<b>PART #</b>	<b>DESCRIPTION</b>
2-0541	¼” Brass Tee
4-0308	Eclipse Manual, EC-1/2/4 (available on line at <a href="http://www.delozone.com">www.delozone.com</a> )
4-0448	MANUAL, Suction Side Kit install instruction (available on line at <a href="http://www.delozone.com">www.delozone.com</a> )
7-0021	Black Nylon Squeeze Clamps for ¼”ID Tubing
7-0075	Tubing, 1/4”IDx3/8”OD, PVC, Clear
7-0452	Barb Fitting, 1/4”HBx1/4”MPT, Kynar
7-1100	Ball Valve,1/4”(MPT x FPT), Viton Seal
9-0001	Saddle Clamp Assembly
9-0544	Flow Restriction Tube Assembly for the ZO-900
9-0544EC	Flow Restriction Tube Assembly for the Eclipse-1 and Eclipse-2