

DEL  ozone™



# ***ECLIPSE***<sup>™</sup> 1, 2, & 4

*Corona Discharge Ozone Generators*  
**INSTALLATION & OPERATION MANUAL**

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## IMPORTANT SAFETY INSTRUCTIONS

### Read and Follow All Instructions

- Read this manual completely before attempting installation. Failure to install in accordance with the installation instructions could void warranty and result in injury or death.
- All permanent electrical connections should be made by a qualified electrician.
- For cord and plug-connected units, connect to a grounded, grounding type receptacle only. If the DEL Eclipse electrical connection is to be attached to the pool controls, be sure the pool controls are protected by a Ground Fault Circuit Interrupter (G.F.C.I.). If the DEL Eclipse is connected to an independent electrical supply, then a G.F.C.I. must be installed between the DEL Eclipse and the electrical supply.
- Do not bury cord.
- Warning - To reduce the risk of electrical shock, replace damaged cord immediately.
- A pressure wire connector is provided on the outside of the unit to permit connection to a minimum No. 8 AWG (8.4 mm<sup>2</sup>) solid bonding conductor between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipes, or conduit within five (5) feet (1.5m) of the unit as needed to comply with local requirements.
- Install at least 5 feet (1.5 meters) from wall of pool using nonmetallic tubing. Install ozone generator no less than one (1) foot above maximum water level to prevent water from contacting electrical equipment. Install in accordance with the installation instructions.
- Follow all applicable electrical codes.
- Electric shock hazard. 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.
- The DEL Eclipse must be installed in an outdoor location, or indoors in a forced air ventilated room, and installed so that the orientation is exactly as shown in Figure 1. Install to provide water drainage of generator to protect electrical components.
- Mount the DEL Eclipse so that it is inaccessible to anyone in the pool. Never attempt any servicing while unit is wet.
- Plastic ozone supply tubing is supplied with the Eclipse. Never replace this tubing with metal tubing.
- 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.
- For your safety, do not store or use gasoline, chemicals or other flammable liquids or vapors near this or any other appliance.

**SAVE THESE INSTRUCTIONS!**

## SECTION 1 General Information

### 1A Description

The DEL Eclipse Corona Discharge (CD) series ozone generators described in this manual are designed to provide the benefits of ozonated water in an environmentally safe and effective manner. The high quality, specially engineered components ensure efficient ozone output and reliable performance.

As a result of proper use of the DEL Eclipse CD ozone generators, unpleasant effects of traditional chemical use are virtually eliminated. The DEL Eclipse CD ozone generators are safe and harmless

to your equipment when installed properly.

### 1B Specifications

#### Power Requirements:

Domestic:

EC-1 . . . . .	120V, 60 Hz, 1Ø, 0.06 Amp
. . . . .	240V, 60 Hz, 1Ø, 0.03 Amp
EC-2 . . . . .	120V, 60 Hz, 1Ø, 0.12 Amp
. . . . .	240V, 60 Hz, 1Ø, 0.06 Amp
EC-4 . . . . .	120V, 60 Hz, 1Ø, 0.24 Amp
. . . . .	240V, 60 Hz, 1Ø, 0.12 Amp

#### Shipping Weight:

EC-1:	Approx. 3.5 pounds / 1.6 kg
EC-2:	Approx. 5.5 pounds / 2.5 kg
EC-4:	Approx. 10.5 pounds / 4.8 kg

#### Location Requirements:

Mounting: Wall mount in a clean, protected area.

Ambient Temp: 30°F - 120°F (0°C - 50°C)

### 1C Warranty Summary

#### Limited Warranty:

1 year warranty on entire generator. See Warranty section for limitations and details on obtaining warranty service.

## SECTION 2 Installation

### 2A Location

The DEL Eclipse units are designed for wall mounting. See Figure 1. Mount generator in a clean, protected area, either indoors or outdoors (preferably out of direct sunlight). Locate generator out of reach of sprinklers or drainage spouts. Allow sufficient access for maintenance and all tubing and electrical wires. Ozone generator should be installed at least (not less than) one foot above the maximum water level.

### 2B Wall Mounting

1. Refer to Figure 1 to mark the locations for the four mounting screws.
2. Install screws (or other hardware appropriate for the mounting surface) through the two mounting slots built in to the bottom end cap on the Eclipse. Install two more screws in the flanges towards the top.



Figure 1 Wall Mount

### 2C Electrical

**2C-1. Main Power:** Connect the DEL Eclipse to the pool timing clock so that the DEL Eclipse operates simultaneously with the pool pump. Refer to the IMPORTANT SAFETY INSTRUCTIONS at the beginning of this manual for important wiring information.

NOTE: The standard DEL Eclipse is equipped with a power cord that terminates with a NEMA plug. For units equipped with a conduit fitting, connect the Black wire to Line, the White wire to Neutral, and the Green wire to Ground.

**2C-2. Grounding Lug:** Using an 8AWG conductor, connect the grounding lug on the right side of the DEL Eclipse to an appropriate earth contact.

## 2D Plumbing

Ozone gas is introduced to the pool circulation line using a venturi injector. Suction developed by the venturi allows the DEL Eclipse generator to operate safely under vacuum.

Note: Water must never travel back to the ozone generator.

**2D-1. Plumbing the Injector Manifold:** The Injector Manifold must be installed in the pool's main return line after all other pool equipment (pump, filter, heater, and cleaner). Figure 2 shows the most basic installation. For installation with additional sanitizers and pool cleaners contact DEL Technical Support (see section 4E).

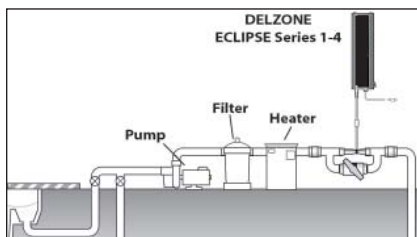


Figure 2 DEL Injector Manifold Mounting Location

Locate an appropriate section of the return line and install the injector manifold with PVC cement. Be very careful to observe and follow the correct water flow direction (as indicated by the arrow on the injector manifold).

**2D-2. Water Check Valve:** If the pool equipment is mounted above the water line, a check valve must be installed between the pump outlet and the Injector Manifold. This will prevent the pump from draining and losing its prime (when not in use).

**Note: If a 1/3# DELCheck™ is used, do not install immediately after chlorine feeders.**

### 2D-3. Pressure Test:

If a pressure test is required, it should be performed prior to connecting the Ozone Gas Line. Install the 3/4" pipe cap provided onto the Injector for the pressure test.

### 2D-4. Ozone Gas Line - refer to Figure 3.

1. Install Tube Adapter on injector. Use thread sealant as needed. (Do not use thread tape.)
2. Connect the end of the Ozone Tube Assembly with the check valve installed onto the Tube Adapter.
3. Cut off the excess tubing so that the line from the injector to the DEL Eclipse is as straight and free from dips and loops as possible.

4. The base of the DEL Eclipse has two tube connections. Connect the other end of the ozone supply tubing to the port marked "OZONE OUT" (see Bottom View - Figure 4).

NOTE: Plumbing the Ozone Line to the incorrect port will cause damage to the ozone generator.

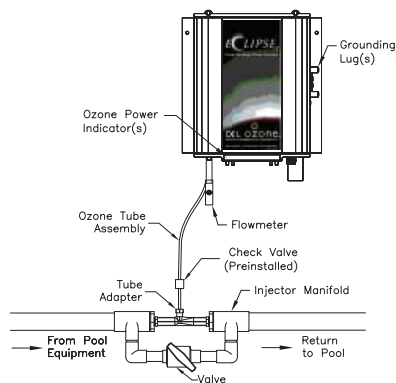


Figure 3 Installation Diagram

## SECTION 3 Operation

### 3A General

To achieve optimal performance from the ozone system, the pool must be as clean as possible to start with.

1. Backwash or clean filters one day before starting the ozone generator.
2. Superchlorinate pool water using a chlorine based shock treatment prior to ozone system start-up.
3. Test pool chemistry and adjust pH between 7.4 and 7.6. Adjust total alkalinity between 80 and 120 ppm.
4. Run pool filtration continuously for 24 hours prior to starting ozone system.

### 3B Initial System Start-Up

Upon completing all of the generator system connections and cleaning the pool as outlined above, you are ready to start the ozone generator.

1. Check electrical connections.
2. Check for proper voltage.
3. Adjust the injector manifold valve (if applicable) to half open (45°) as shown in Figure 2.
4. Turn on pool circulation system.

### 3C Normal Operation

1. **Indicator Lights:** When the pool's circulation system starts, the green LED indicator(s) on the front of the DEL Eclipse will illuminate. The EC-1, EC-2, and EC-4 should show 1, 2, and 4 indicators, respectively.
2. **Gas Flow:** Connect the flowmeter provided to the "AIR IN" port on the base of the Eclipse. Under worst-case system conditions the flowmeter ball should indicate at least a small amount of air flow. Flow may be adjusted as described below.

**Adjustable Injector Manifold:** Gas flow can be controlled by adjusting the Valve on the Manifold. Close the valve to increase gas flow, open the Valve to decrease gas flow.

**Rigid Injector Manifold:** This Manifold is equipped with a DELCheck™ spring loaded valve. It cannot be adjusted, but provides a wide operating range. If more gas flow is necessary, verify that other valves in the system are not inhibiting flow through the Manifold.

If you experience complications see TROUBLE SHOOTING Section 4D.

3. Remove flowmeter after setting flow.

### 3D System Shut-Down

The following sequence of steps must be followed for servicing or for storage.

1. Disconnect the power to the ozone generator.
2. After the generator has been shut down, the pool water circulation pump may be turned off.
3. If the system is to be shut down for an extended period, disconnect the Ozone Gas Line from the ozone generator.

### 3E Water Chemistry

Regular chlorine or bromine testing should be performed as normal. Ozone will be eliminating the majority of contaminants. Therefore, only a small amount of chemicals will need to be added - just enough to maintain a minimum of residual level of 0.5 - 1.0 ppm chlorine or 1.0 - 2.0 ppm bromine. Ozone is pH neutral thus minimizing pH adjustments.

## SECTION 4

### Maintenance and Service

#### 4A System Electromechanical Overview

Refer to Figure 4.

**4A-1. Ozone Module:** The Eclipse Ozone Generators are constructed with High voltage Corona Discharge Ozone Modules. The EC-1, EC-2, and EC-4 have 1, 2, and 4 modules, respectively.

**4A-2. Indicator Lights:** Each indicator light on the base of the Eclipse corresponds to one Ozone Module inside the unit. The EC-1, EC-2, and EC-4 have 1, 2, and 4 indicators, respectively. A green light indicates proper operation of its respective Ozone Module. For red indicators or no indicators, see the Troubleshooting Section.

#### 4B System Maintenance

**4B-1.** The green "ozone power" indicator light(s) on the front of the DEL Eclipse indicate that the ozone power supply is operating properly. When an indicator light turns red, replace the corresponding ozone module.

**4B-2.** Each ozone module should be replaced after 15,000 hours of operation. Even if the green indicator light(s) are glowing, the ozone module may be producing little or no ozone after this period of time due to contamination within the corona discharge ozone chamber.

**4B-3.** Regularly reinstall and check the flowmeter for proper flow. **Always remove the flow meter after confirming proper flow.** Inspect ozone supply tubing for cracks or wear and replace as necessary.

**4B-4.** Replace the Ozone Tube Assembly every year or sooner, if needed. If there is evidence of water leaking past the Check Valve toward the Eclipse, shut down the Ozone Generator immediately and replace the Ozone Tube Assembly. If water entered the Eclipse, allow the unit to dry completely before restarting the unit. Evidence of water in the Eclipse may void the warranty.

**WARNING:** Do NOT touch the ends of the Ozone Tube Assembly when replacing. Trace amounts of nitric acid may be present and could prove harmful if touched or ingested.

**4B-5.** While operating, check to see if bubbles are entering the pool. If an MDV is installed, check the MDV for bubbles.

#### 4C Generator Servicing - Refer to Figure 4

**4C-1. Removing the Cover:** The Eclipse ozone generator may be serviced on the wall without disconnecting any of the plumbing or wiring. Simply remove the cover as follows:

1. Shut down the pool system power, then disconnect power to the ozone generator.
2. From the Top End-cap of the Eclipse, remove the 2 rear screws.
3. From the Bottom End-cap, remove the 2 front screws. See Figure 4 - Do not remove the screws securing the unit to the wall.
4. Carefully lift and pull the cover off of the Eclipse.
5. Hold the cover and locate the screw connecting the ground wire to the base. Remove the screw and set the cover aside. Do not hang the cover from the ground wire.
6. The Base will remain firmly mounted to the wall with the Ozone Modules fully accessible for servicing.

#### 4C-2. Ozone Module Replacement

The EC-1, EC-2, and EC-4 have 1, 2, and 4 ozone modules, respectively. The green indicator lights on the front of the DEL Eclipse correspond from left to right to ozone module number 1 through 4. For the EC-2 and EC-4, the ozone modules are numbered beginning with number 1 at the bottom.

To replace an ozone module:

1. Open the DEL Eclipse as described in section 4C-1.
2. Disconnect the tubing at both the inlet and outlet of the ozone electrode.
3. Remove the two nuts that secure the ozone electrode to the support bracket.
4. Disconnect the plastic power connector between the power supply and wire harness.
5. Remove the two screws that secure the power supply to the metal base.
6. Install the new ozone module by reversing the above steps.

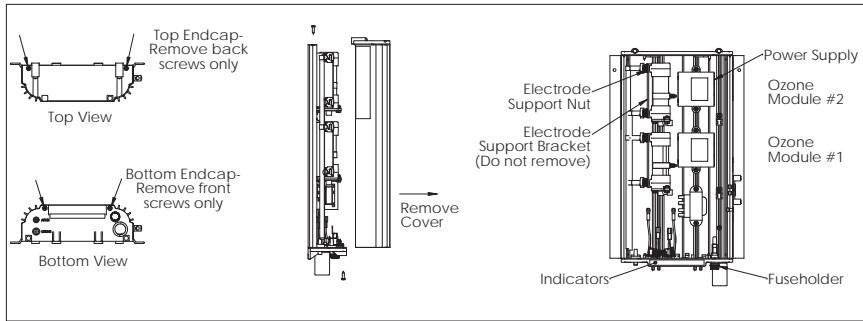


Figure 4 Component Locations (Eclipse-2 Shown).

**4D. Trouble Shooting**

Knowledge of electrical applications is required for trouble shooting. Contact a certified electrician if you are unsure of your ability to service the equipment. Improper servicing will void generator warranty. If any condition persists contact DEL technical support (see section 4E)

**4D-1 Symptom:** "LED Indicator" not lit when pool system is on.

1. **No power to the ozone generator from the power source:**
  - a. Check circuit breaker at the power distribution box.
  - b. Check for loose connections or wiring breaks from the power distribution box to the generator.
  - c. Fuse in the unit has blown and needs to be replaced. Fuse is an AGC-1 (1 amp ,1/4" x 1.25" long, glass fuse).

**2. G.F.C.I. has tripped.**

- a. Check power cord and reset G.F.C.I.

**4D-2 Symptom:** LED Indicator has turned red.

- a. This means that the power supply of that specific ozone module is no longer drawing power and needs to be replaced. Refer to section 4C for instructions on how to replace the corresponding ozone module.

**Note:** It is normal for the LED indicators to shine red for several seconds as the system powers up. As long as they turn back to green several seconds after startup.

**4D-3 Symptom:** Flowmeter not indicating flow.

**1. Injector not supplying adequate suction.**

- a. Check pump, filters, and skimmers to ensure water is flowing through injector.
- b. Ensure that there is no debris clogged inside the injector.

**2. Tubing is impaired.**

- a. Check for kinks or clogs.
- b. Check for cracks or cuts.
- c. Check connections.
- d. Check that the check valve is installed with the arrow pointing towards the injector.

- e. Be sure that the check valve has not become fouled with debris. Disconnect the ozone tubing from the injector. With the pump running, test the end of the injector with your thumb, and feel for suction. If there is sufficient suction without the check valve, replace the check valve with a new one.

**4D-4 Symptom:** Ozone tubing becomes yellow/brown and brittle.

- a. The high concentration of ozone created by the Eclipse family of corona discharge ozone generators, as well as environmental conditions like UV sunlight will tend to deteriorate the supplied ozone tubing. This is normal and acceptable, as long as the tubing doesn't become cracked and leak. Because of this, The Ozone Tube Assembly should be replaced every year.

**4D-5 Symptom:** Can't get ball to stay in the center of flowmeter.

- a. The flowmeter provided is a general tool to setup flow to the ozone generator. Flow will vary depending on pressures across the injector, and therefore can be affected by things such as filter or strainer loading. The ozone generator's efficiency is optimized near the center of the flow meter. The Eclipse ozone generator will still perform well at flows above and below the recommended range. However, the ball must be moving and not stuck on the bottom of the flowmeter.

**4E. Contact Information:**

For technical assistance :

Call: (805)541-1601, Ext.293 or (800)676-1335, Ext. 293

Email: [warrantysupport@delozone.com](mailto:warrantysupport@delozone.com)

Or visit our website: [www.delozone.com](http://www.delozone.com)

**SECTION 5 Replacement Parts and Order Information**

**5A. Ordering information:**

To locate a dealer nearest you call **1.800.676.1335, ext. 249** or visit [www.delozone.com](http://www.delozone.com).

Be prepared with the following information:

- Name
- Address
- DEL Model #
- Date Purchased

**5B. Standard replacement parts list:**

1. Ozone Module Kit..... 9-0667-01  
Each ozone module should be replaced after 15,000 hours of use.
2. Ozone Tube Assembly..... 9-0770-01  
**The Ozone Check Valve and Tubing Assembly must be replaced once a year.**

**Note:** The warranty is void if the parts listed above are not replaced at recommended intervals.

**DEL OZONE Eclipse™ LIMITED 1 YR WARRANTY**

The limited warranty set forth below applies to products manufactured by DEL OZONE – 3580 Sueldo Street, San Luis Obispo, California 93401, and sold by DEL OZONE 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.

DEL 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 DEL AUTHORIZED DEL REPLACEMENT PARTS. USE OF ANY OTHER PART(S) WILL VOID THIS WARRANTY.**

*Any replaced parts must be returned to DEL OZONE for warranty evaluation.*

**THIS LIMITED WARRANTY DOES NOT INCLUDE ANY OF THE FOLLOWING:**

- (a) Any repair or replacement of such parts necessitated by faulty installation, improper maintenance, improper operation, misuse, abuse, negligence, accident, fire, flood, repair materials, and/or unauthorized accessories.
- (b) Any such products installed without regard to required local codes and accepted trade practices.
- (c) Damage to unit caused by water backflow;
- (d) Any implied warranty of merchantability or implied warranty of fitness for particular purpose, and such warranties are hereby disclaimed.
- (e) DEL Ozone shall not be liable under any circumstances for loss of use of such product, loss of profits, direct damages, indirect damages, consequential damages, and / or incidental damages.

This warranty gives you specific legal rights. You may have other rights which vary from state to state.

**TO OBTAIN WARRANTY SERVICE:**

DEL OZONE Commercial Department  
3580 Sueldo, San Luis Obispo, CA 93401  
Customer Service Number: (800) 676-1335  
Fax Number: (805) 541-8459  
E mail: [warrantysupport@delozone.com](mailto:warrantysupport@delozone.com)

**PROVIDE:**

1. Project, contact name, mailing address and telephone.
2. Installer/Mechanical Contractor.
3. Unit Part Number, Serial Number, and date of purchase.
4. The date of failure.
5. A description of the failure.

After this information is provided, DEL Ozone may release a RETURN GOODS AUTHORIZATION (RGA) NUMBER. After receiving the RGA number the part in question must be returned to DEL Ozone, freight prepaid, with the RGA number clearly marked on the outside of the package. All preauthorized defective parts must be returned to DEL Ozone within thirty (30) days. Under no circumstances may any product be returned to DEL Ozone without prior authorization. Returns without the assigned RGA number on the outside of the package will be refused and shipped back to the sender at their expense. Upon receipt of preauthorized returned goods, DEL Ozone will repair or replace, at DEL Ozone's option, the defective product(s) and return them (freight prepaid for products under warranty). Buyer's acceptance of the product and use thereof constitutes acceptance of these terms

Appendix A



Eclipse Installation – Plumbing

The DEL Ozone Eclipse works under vacuum. The Injector Manifold draws the ozone/air gas mixture out of the ozone generator and mixes it into the water leaving behind some un-dissolved gas bubbles. These bubbles can affect certain pool system components, so care must be taken when installing the ozone Injector Manifold.

The diagrams below cover common plumbing configurations. For other configurations or installation questions, please call DEL Ozone Residential Pool & Spa Technical Support at 1 (800) 676-1335, ext. 293, or e-mail: [warrantysupport@delozone.com](mailto:warrantysupport@delozone.com)

- ❶ **Pool Cleaners** (i.e. Polaris 360): Always plumb the cleaner t-fitting before the Eclipse injector to prevent gas from affecting the operation of the cleaner.
- ❷ **Salt Chlorinator**: A Salt Chlorinator may be plumbed on either side of the Eclipse injector.
- ❸ **Chlorine Tab / Mineral Erosion Feeder**: Always plumb the Eclipse injector after any erosion feeder to avoid gas accumulating in the feeder.
- ❹ **In-Floor Cleaning System**: The Eclipse Injector must be on a different pool return leg than any In-Floor Cleaning system to avoid excess back pressure on the Injector. This will also prevent gas intrusion and high oxidizer levels in zone valve and cleaner heads.
- ❺ **Water Features**: Avoid plumbing the Injector Manifold into any leg with excessive back pressure such as those going to fountains, restrictive wall fittings, etc.
- ❻ **DEL Total Eclipse**: Also correct location for Total Eclipse By-Pass. Back pressure on Total Eclipse must be minimal.

Diagram 1: Pool Only

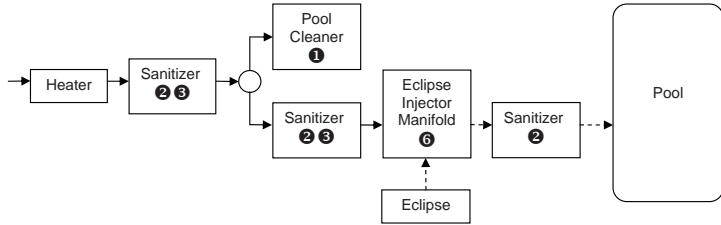


Diagram 2: Pool/Spa Combo

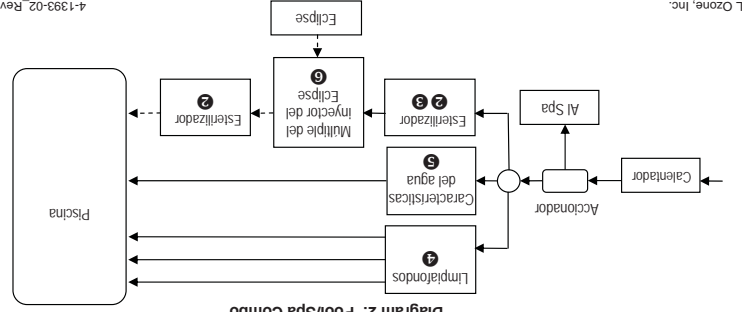
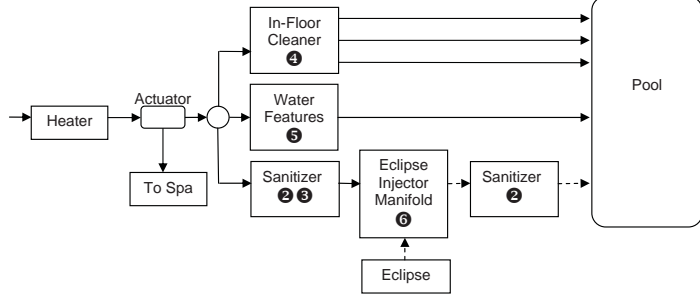


Diagram 2: Pool/Spa Combo

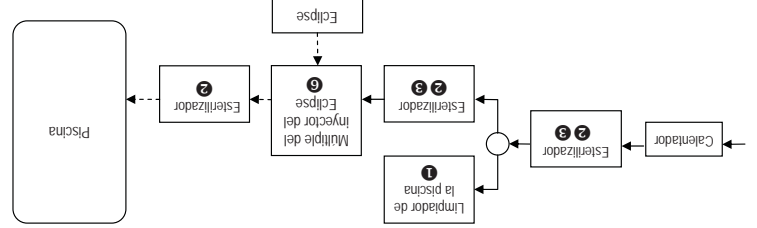


Diagrama 1: Piscina solamente

El equipo DEL Ozone Eclipse funciona al vacío. El múltiple del inyector hace salir la mezcla gaseosa de ozono/aire del generador de ozono y la mezcla con el agua, lo que deja atrás algunas burbujas de gas no disueltas. Estas burbujas pueden afectar algunos componentes del sistema de la piscina, de modo que se debe tener cuidado al instalar el múltiple del inyector de ozono.

Los siguientes diagramas cubren algunas configuraciones comunes de conexión de mangueras. Para ver otras configuraciones o cuestiones de instalación, comuníquese con el Soporte Técnico de DEL Ozone Residential Pool & Spa al 1 (800) 676-1335, ext. 293, o por correo electrónico: [warrantysupport@delozone.com](mailto:warrantysupport@delozone.com)

❶ **Limpiaadores de piscina**: (es decir, Polaris 360): Siempre conecte la conexión T del limpiaador antes del inyector del Eclipse para impedir que el gas afecte la operación del limpiaador.

❷ **Clorinator de sales**: Se puede conectar un clorinator de sales en cualquier lado del inyector Eclipse.

❸ **Costa de cloro / Alimentador erosivo**: Siempre conecte el inyector Eclipse después de cualquier alimentador erosivo para evitar que se acumule gas en el alimentador.

❹ **Sistema limpiafondos**: El inyector Eclipse debe estar en un tramo de retorno de la piscina diferente de cualquiera del sistema de limpiaador para evitar el exceso de presión de regreso en el inyector. Esto también impedirá la intrusión de gas y altos niveles de oxidantes en la válvula de la zona y los cabezales del limpiaador.

❺ **Características del agua**: Evite conectar el múltiple del inyector en cualquier tramo con excesiva contrapresión, como los que conducen a fuentes, accesorios restrictivos.

❻ **DEL Total Eclipse**: También se debe seleccionar la ubicación correcta para el Total Eclipse By-Pass. La contrapresión en el Total Eclipse debe ser mínima.

Instalación del Eclipse – Conexión de mangueras











