ECLIPSE™ 1, 2, & 4 (CE Version)

Corona Discharge Ozone Generators
INSTALLATION & OPERATION MANUAL

DEL ozone™

P/N: 4-0308-02 Rev. C

Table of Contents

CE

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 certified electrician in accordance with IEC 60335-1, IEC 60335-2-60, AND AS/NZS-3136.
- The appliance should be supplied through a residual current device (RDS) with a rated tripping current not exceeding 30 mA (per IEC 60335-2-60). 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.
- Warning - To reduce the risk of electrical shock, this device must be mounted such that it is inaccessible to a person in the pool.
- This unit must be installed in the correct zone per IEC 60335 and equipotential bonding must be carried out. A pressure wire connector is provided on the outside of the unit, marked with ⏚ to permit connection to a minimum No. 8 AWG (8.4 mm^2) solid bonding conductor between this point and any metal equipment, metal enclosures of electrical equipment, metal water pipes, or conduit at least five (5) feet (1.5m) of the unit or 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 routine maintenance is performed. Failure to do so could result in serious injury or death.
- Never attempt to open the enclosure. Any servicing of this device that would entail opening the enclosure must only be conducted by a DEL Authorized service provider.
- 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:

International:

EC-1 . . . 230V, 50 Hz, 1Ø, 0.05 Amp
EC-2 . . . 230V, 50 Hz, 1Ø, 0.07 Amp
EC-4 . . . 230V, 50 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. away from the pool, as described in IEC 60335
Ambient Temp: 30°F - 120°F (0°C - 50°C)

CE

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 toward the top.

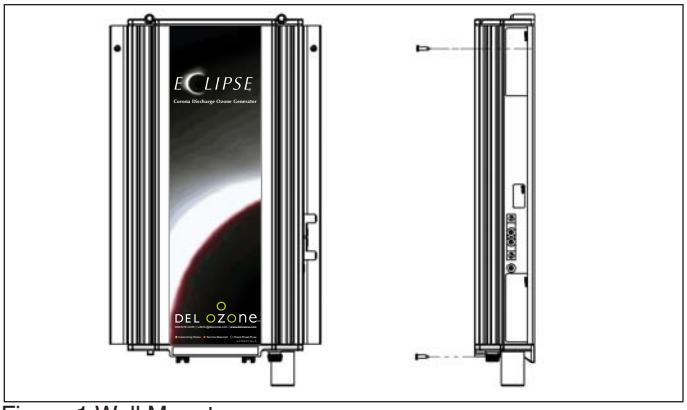

Figure 1 Wall Mount

2C Electrical

2C-1. Main Power: This device in intended to be installed by a certified electrical technician, in accordance with local electrical codes. 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: Connect the Brown wire to Line, the Blue wire to Neutral, and the Green/Yellow wire to Ground.

2C-2. Earth Grounding Lug: Using a 8.4mm^2 conductor, connect the Grounding lug on the right side of the DEL Eclipse, marked ⏚ 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).

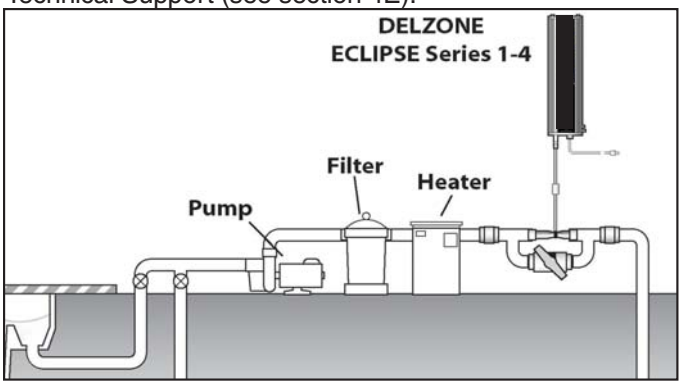

Figure 2 DEL Injector Manifold Mounting Location

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 tape or sealant as needed.
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 hose connections. Connect the 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.

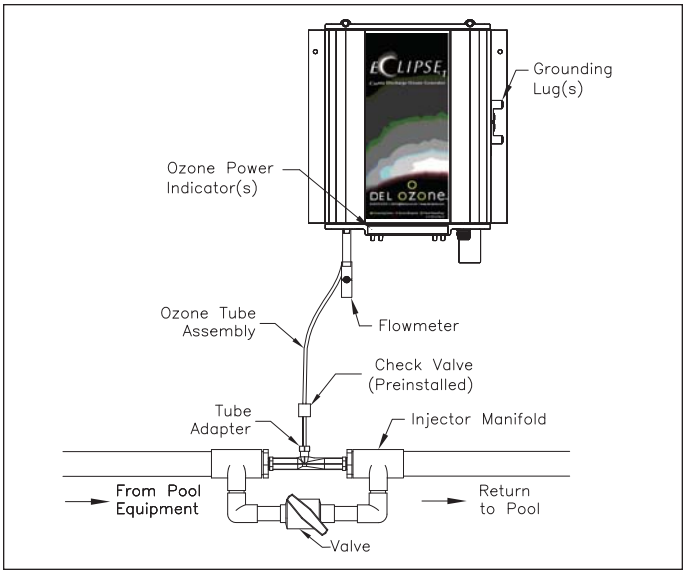

Figure 3 Installation Diagram

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 it's 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.