

ECLIPSE

Next Generation Corona Discharge
Auto Voltage Sensing


EC-10, EC-20 & EC-40
Installation Manual




DEL ozoneTM
advanced sanitation solutions

IMPORTANT SAFETY INSTRUCTIONS

READ & 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.
- 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.
- A pressure wire connector is provided on the outside of the unit, marked with to permit connection to a minimum No. 6 AWG (13.3 mm²) 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.
- 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.
- WARNING - To reduce the risk of injury, do not permit children to use this product unless they are closely supervised at all times.
- A green-colored terminal or a terminal marked G, GR, Ground, Grounding, or the  symbol is located inside the supply terminal box or compartment. To reduce the risk of electric shock, this terminal must be connected to the grounding means provided in the electric supply service panel with a continuous copper wire equivalent in size to the circuit conductors supplying this equipment.
- At least two lugs marked "BONDING LUGS" are provided on the external surface or on the inside of the supply terminal box or compartment. To reduce the risk of electric shock, connect the local common bonding grid in the area of the hot tub or spa to these terminals with an insulated or bare copper conductor not smaller than No. 6 AWG.

SAVE THESE INSTRUCTIONS!

TABLE OF CONTENTS

Installation Instructions

SECTION 1. Overview	1
SECTION 2. Installation	2
SECTION 3. Operation	6
SECTION 4. Maintenance	7
SECTION 5. Replacement Parts	10
Warranty	12
Appendix	13

SECTION 1. Overview

1A. Description

The DEL Eclipse 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 ozone generators, unpleasant effects of traditional chemical use are virtually eliminated. The DEL Eclipse ozone generators are safe and harmless to your equipment when installed properly.

1B. Specifications

Power Requirements:

EC-10	110-250V, 0.10A max, 50-60 Hz
EC-20	110-250V, 0.20A max, 50-60 Hz
EC-40	110-250V, 0.31A max, 50-60 Hz

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. 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, 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. Open the Enclosure Door and locate the three mounting holes on the back wall of the Enclosure. There will be two holes located

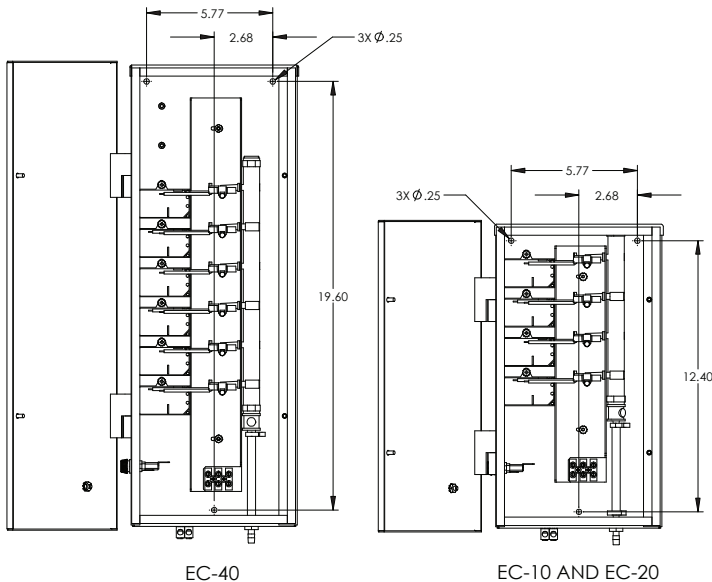


Figure 1: Mounting Hole Dimensions

near the top on the left and right and one located in the center near the bottom. Refer to Figure 1 for clarification.

2. Install screws (or other hardware appropriate for the mounting surface) through the two mounting holes near the top of the enclosure. Install the last screw through the mounting hole near the bottom of the enclosure. Mounting hardware must be driven until the head fully contacts the enclosure wall. Mounting hardware head must not be smaller than 0.25 inches (6.3 mm) in diameter and the threads of the hardware must be smaller than 0.25 inches (6.3 mm) in diameter.

2C. Electrical

2C-1. Main Power

This device is 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. The DEL Eclipse has three available Knockouts for a 1/2" conduit fitting, two on each side and one on the back. Remove only the ideal Knockout and install the proper conduit fitting. Open the Enclosure and locate the Terminal Block. Connect Line 1, Line 2, and Ground to the Terminal Block as indicated by the label on the inside of the enclosure door. Refer to the IMPORTANT SAFETY INSTRUCTIONS at the beginning of this manual for important wiring information.

2C-2. Earth Grounding Lug

Using an 6 AWG (13.3 mm²) conductor, connect the Grounding lug on the bottom 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 not travel back to the ozone generator. Mounting the unit above the water line and scheduled check valve replacement will keep water from entering the DEL Eclipse.

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, refer to Appendix A.

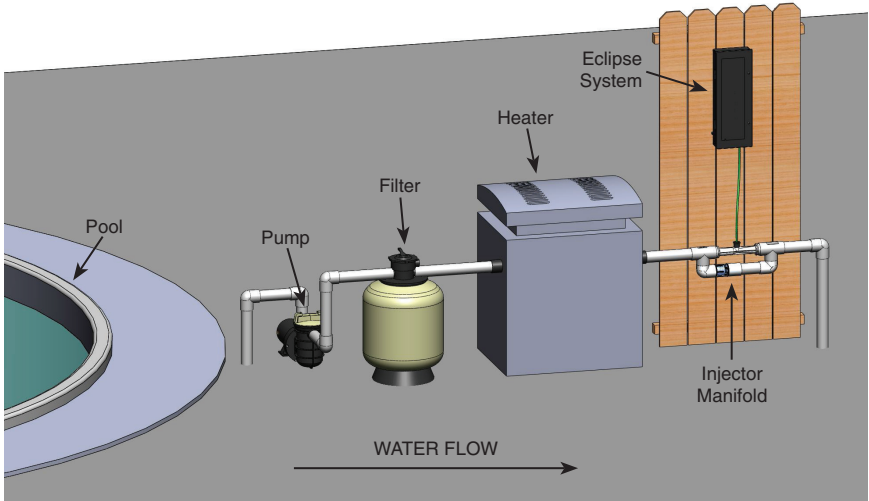


Figure 2: Injector Manifold Mounting Location

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.

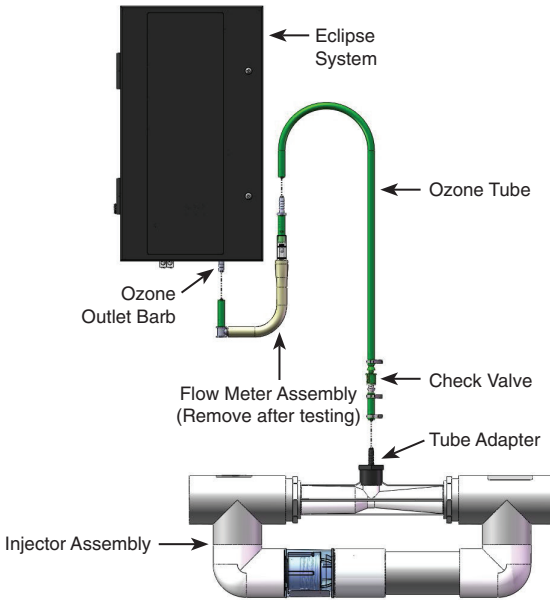


Figure 3: Flow Test Assembly

2D-4. Flow Test - Refer to Figure 3.

1. Install Tube Adapter on injector. Use Teflon thread tape as needed.
2. Connect the end of the Ozone Tube with the check valve installed onto the Tube Adapter with the tube clamp provided.
3. Connect the longer end of the Flow Meter Assembly to the Ozone Outlet Barb.
4. Connect the remaining ends of the Ozone Tube and the Flow Meter Assembly together.
5. Hold the Flow Meter Assembly so that the clear plastic chamber is vertical with the longer tubing toward the bottom.
6. Turn on the pool's circulation system as this allows the Injector Assembly to pull a vacuum. Under normal operation, the metal ball in the Flow Meter Assembly will be floating in between its Max and Min line. 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.

7. After the system has been set for the correct flow rate. **Remove the Flow Meter Assembly** and connect the remaining end of the Ozone Tube to the Ozone Outlet Barb on the DEL Eclipse unit with the tube clamp provided. 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.

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. Turn on pool circulation system.

3C. Normal Operation

1. Indicator Lights: When the pool's circulation system starts, the Eclipse will power up and the green indicator lights on the ozone cells will illuminate. Open the Enclosure Door to verify that all indicator lights are green. The EC-10, EC-20, and EC-40 should show 2, 4, and 6 indicators, respectively.

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 Tube from the unit.

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

4A. System Electromechanical Overview

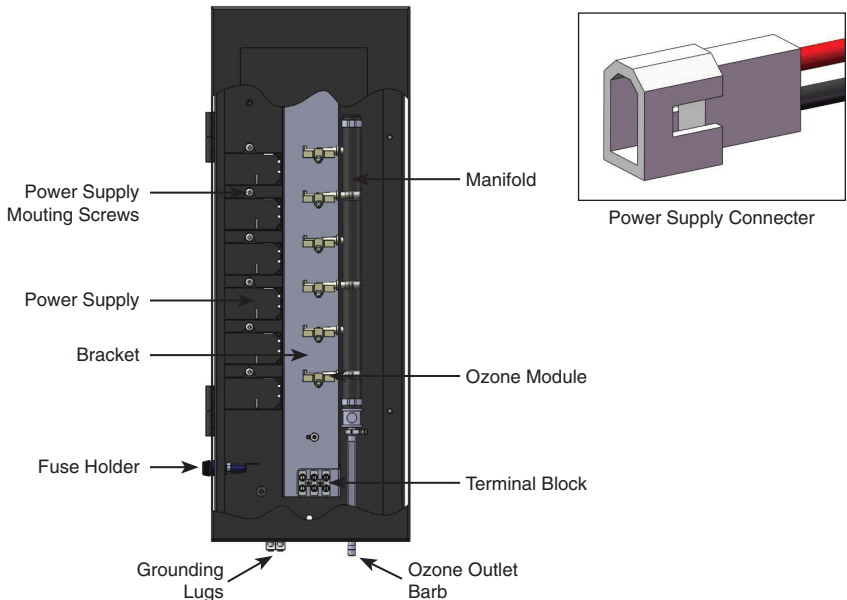


Figure 4: Eclipse Overview

4A-1. Ozone Module

The Eclipse Ozone Generators are constructed with high voltage plasma gap Ozone Modules. The EC-10, EC-20, and EC-40 have 2, 4, and 6 modules, respectively. Each module has an indicator light that signals it's working properly. If the light goes out, replace the module.

4B. System Maintenance

4B-1. The green indicator lights on the Ozone Modules located inside the enclosure indicates that the Power Supply is operating properly. When an indicator light goes out, replace the corresponding Ozone Module. Regularly check inside the unit to verify all the Ozone Modules are working.

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 less ozone after this period of time due to contamination within the plasma gap ozone chamber.

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

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

WARNING: Do NOT touch the ends of the Ozone Tube 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. Opening the Unit

The Eclipse ozone generator may be serviced on the wall without disconnecting any of the plumbing or wiring. Simply remove the two screws on the right side of the Enclosure Door to open the unit.

4C-2. Ozone Module Replacement

The EC-10, EC-20, and EC-40 have 2, 4, and 6 Ozone Modules, respectively. When the green indicator lights go out, the corresponding Ozone Module will need to be replaced.

To replace an Ozone Module:

1. Disconnect the Ozone Module from the Manifold and pull the Ozone Module from the Bracket so it hangs by its wires.
2. Locate the Power Supply Connector and disconnect it from the wire harness.
3. Remove the Power Supply Mounting Screw; make sure to note plastic spacer and the star washer positions for proper reassembly. The Ozone Module and Power Supply can now be removed from the unit.
4. Install the new Ozone Module by reversing the above steps.

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: Module Indicator Lights 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. The fuse in the unit has blown and needs to be replaced. The fuse is a replaceable glass, .25" x 1.25", 1 amp, slo-blo type.
2. G.F.C.I. has tripped.
 - a. Check power cord and reset G.F.C.I.

4D-2 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 Tube from the injector. With the pump running, cover 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-3 Symptom: Ozone Tube becomes yellow/brown and brittle.

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

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

1. 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

Or visit our website: www.delozone.com

SECTION 5. Replacement Parts

5A. Ordering Information

To locate a dealer nearest you call 1.800.676.1335 ext. 232 or visit www.delozone.com.

Be prepared with the following information:

- Name
- Date Purchased
- Address
- Dealer Name
- DEL Model #

5B. Standard replacement parts list:

1. Ozone Module Kit9-1056-01
Each ozone module should be replaced after 15,000 hours of use.
2. Ozone Tube Assembly9-0770-02
The Ozone Tube Assembly (includes Ozone Tube and Check Valve) 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
3580 Sueldo, San Luis Obispo, CA 93401
Customer Service Number: (800) 676-1335
Fax Number: (805) 541-8459
E mail: warrantysupport@delozone.com

PROVIDE:

1. Customer name, mailing address, and telephone.
2. Installer/Mechanical Contractor or Dealer name.
3. Unit Part Number, Serial Number or Manufacture Date, 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.



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

- 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

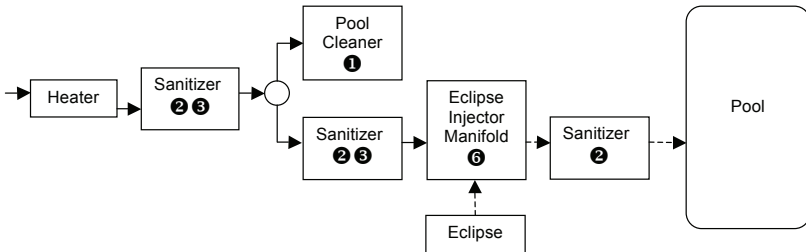
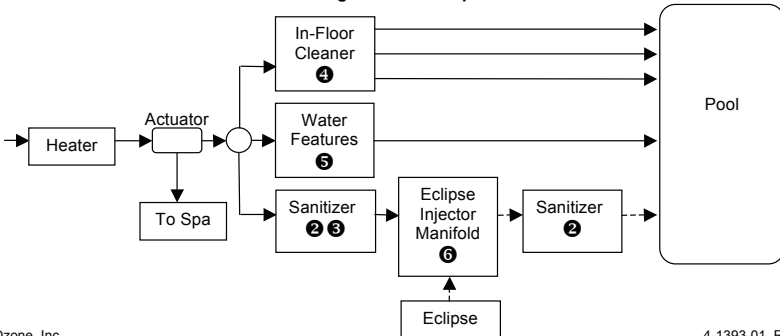


Diagram 2: Pool/Spa Combo





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