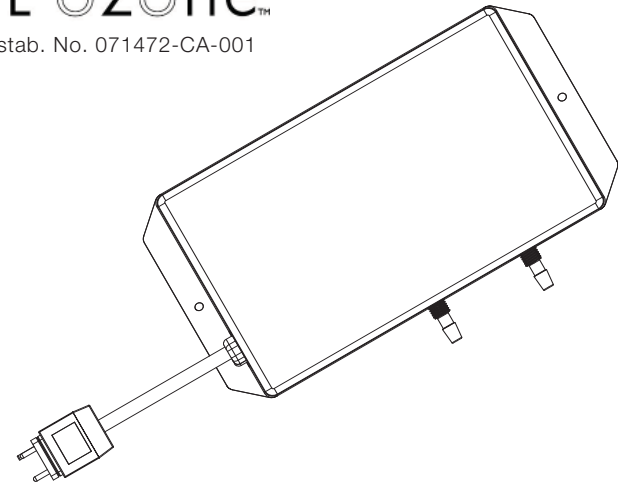


OZONE GENERATORS FOR SPAS

INSTALLATION & OPERATION MANUAL

For Models: SO & HO


EPA Estab. No. 071472-CA-001




DEL  Ozone™

3580 Sueldo St., San Luis Obispo, Ca. 93401

800.676.1335

www.delozone.com

4-1433-01 Rev. A

IMPORTANT SAFETY INSTRUCTIONS

Proper installation and usage of your DEL Spa Ozone Generator is your responsibility. Read and follow this Owner's Manual carefully for important installation, operation and safety information. Basic safety precautions should always be followed, including but not limited to the following:

1. READ AND FOLLOW ALL INSTRUCTIONS.
2. All electrical connections should be made by a qualified electrician.
3. Follow all applicable electrical codes.
4. Be sure the electrical power is shut OFF at the main circuit breaker before installing the Ozone Generator.
5. If the Ozone Generator electrical connection is to be attached to the spa controls, be sure the spa controls are protected by a Ground Fault Circuit Interrupter (G.F.C.I.). If the DEL Spa Ozone Generator is connected to an independent electrical supply, then a G.F.C.I. must be installed between the Ozone Generator and the electrical supply.

6. Do not bury cord.
7. WARNING - To reduce the risk of electrical shock, replace damaged cord immediately.
8. Per UL requirements, the Ozone Generator must be mounted indoors or under a cover, sheltered from natural elements (rain, sun, sprinklers).
9. Mount the Ozone Generator so that it is inaccessible to anyone in the spa. Never attempt servicing when wet.
10. To reduce the risk of injury, the unit should be mounted where it is inaccessible to children.
11. Plastic ozone supply tubing is available with the Ozone Generator. Never replace this tubing with metal tubing.
12. Do not operate the Ozone Generator unless sufficient air flow is being drawn through the unit.
13. WARNING: Short term inhalation of high concentrations of ozone and long-term inhalations of low concentrations of ozone can cause harmful physiological effects. Do not inhale ozone gas produced by the device.

SAVE THESE INSTRUCTIONS.

DEL Ozone
ATTN: Warranty Dept.
PO Box 4509
San Luis Obispo, CA 93401-9787

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

DEL Ozone WARRANTY REGISTRATION CARD Product Serial Date: _____	
<i>Fill out completely and return to DEL Ozone within ten (10) days of purchase.</i>	
Customer Info:	Name _____ Phone () _____
	Address _____
	City _____ State _____ Zip _____
Dealer Info:	Dealer Name _____ Phone () _____
	Dealer Address _____
	City _____ State _____ Zip _____
Purchase/Product Info:	Purchase Date _____ Date Installed _____
	Product Purchased: <input type="radio"/> Model SO <input type="radio"/> Model HO
	Comments / Questions: _____

DEL OZONE LIMITED 1 YEAR WARRANTY

The limited warranty set forth below applies to products manufactured by DEL Ozone - 3428 Bullock Lane, 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 OR 90 DAYS WHICH EVER IS LONGER.

NOTE: USE ONLY DEL Ozone AUTHORIZED REPLACEMENT PARTS. USE OF ANY OTHER PART(S) WILL AUTOMATICALLY 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 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 materials, 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.
- (e) DEL 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:

DEL Ozone Warranty Department
3428 Bullock Lane, San Luis Obispo, CA 93401
Customer Service Number: (800) 676-1335 x 293
Fax Number: (805) 541-8459
E mail to service@ delozone.com

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
6. Part number and serial number / mfg date

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.

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Installation Instructions

1. How the DEL Spa Ozone Generator Works

a. DEL Ozone Generators produce ozone gas which is introduced to the spa water through suction created by the spa. Tubing is used to connect the Ozone Generator to an injector or a vacuum port provided by the spa manufacturer. The injector or port are vacuum sources used to pull the ozone gas out of the Ozone Generator and into the water. **At no time should water come in contact with the Ozone Generator.** To protect the Ozone Generator from water traveling back-wards through the tubing connection, the unit must be mounted and plumbed as described in this manual.

2. Installation Parts

- a. ONE Installation Manual – Ozone Generators for Spas (4-1433-01)
- b. ONE check valve (7-1140-01)
- c. FIVE feet of tubing (7-0075)
- d. FOUR hose clamps (2-0078)
- e. TWO screws for mounting

3. Installation Tools and Materials

- a. Phillips Screwdriver
- b. Pliers
- c. Scissors

Troubleshooting

SYMPTOM: *Cloudy water condition even though the unit appears to be operating properly*

PROBABLE CAUSE:	CORRECTIVE ACTION:
1. Unit and pump not operating long enough	1A. Increase operating time (min. 6 hours is recommended)
2. Total alkalinity not correct	2A. Adjust total alkalinity between 80 and 150 ppm
3. pH not correctly balanced	3A. Check for proper pH between 7.2 and 7.6
4. Not enough suction	4A. Clear any obstruction in the water lines or return fitting. Straighten any kinks in the water or ozone plumbing. Clean spa filter.
5. Dirty, loose or cracked filter	5A. Check/replace spa filter as needed.
6. Metals or minerals in the water	6A. Ozone may react with metals/minerals in the water (this is common when new water is added) causing cloudy water. Check alkalinity, pH, and clean filter. Run filtration system and ozone 24 hours and clean filter.

SYMPTOM: *System on/off - water backing into ozonator*

When your system is in its “on” cycle a suction of air is being pulled through the tubing from the ozonator to the return line.

When the system is in its “off” cycle water tends to flow back in the tubing toward the ozonator. Therefore, mounting your ozone unit as high as possible in relation to the spa water level is important. There is also a one-way check valve provided to prevent the back flow of water from reaching the ozonator. As a secondary precaution, a Hartford Loop in the tubing, also hanging above water level, will help prevent water damage to the ozonator.

4. Unit Assembly

AMP Mate-N-Lok® Connector Installation Instructions

Some Ozone Generator models are shipped with the AMP Mate-N-Lok® Connector Housing shown below in the parts bag. This connector must be correctly attached to the end of the Ozone Generator for the Ozone Generator to operate properly.

1. Disconnect power to the Spa.
2. If replacing an existing Ozone Generator, match the pin locations to the existing Ozone Generator,
3. For a new installation, determine the correct Pin locations from the Spa Controller. This may require opening the controller panel to verify the wire colors and positions.

CAUTION: Observe the Flat Mating Key when determining Pin positions. The connector can only be plugged in one way.

4. Push the Pins into the correct locations in the Housing. The Pins will click when fully inserted. Gently tug on the wires to verify they are secure.

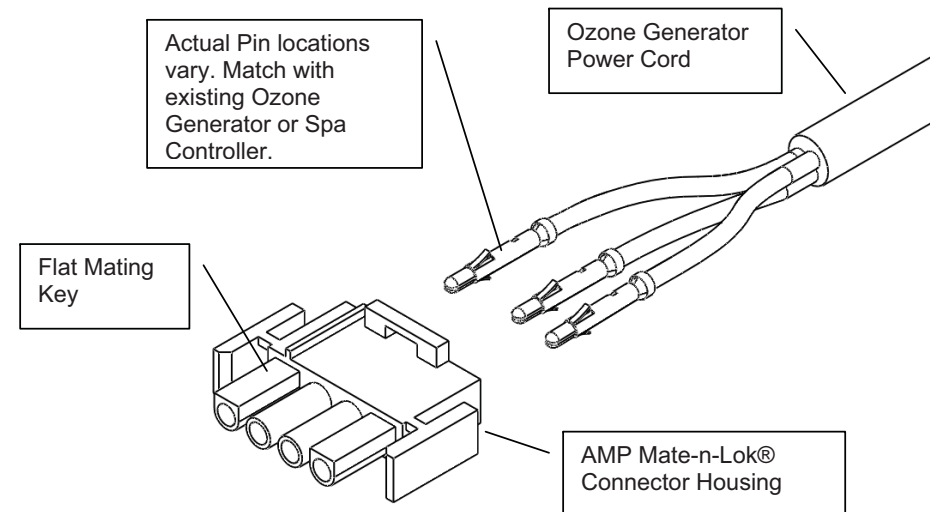


Figure 1

5. Mounting

- Mount the Ozone Generator as high as possible within the spa's protected equipment area.

Screws are provided for mounting but may not be appropriate for all surfaces. Substitute proper mounting hardware as required. Use the mounting holes on the ozone generator as a template to determine the proper screw locations.

6. Plumbing - Vacuum System (refer to Figure 4)

- Most spas are factory equipped with an ozone injector or vacuum port, like the one shown in Figure 2. Review your Spa's Installation Manual to identify the correct ozone connection location.
- If the spa is not equipped with a vacuum source, DEL Ozone provides a wide range of optional installation kits. Contact DEL Customer Service for assistance at 800.676.1335 x 249.

7. Plumbing - Ozone Generator (refer to Figure 4)

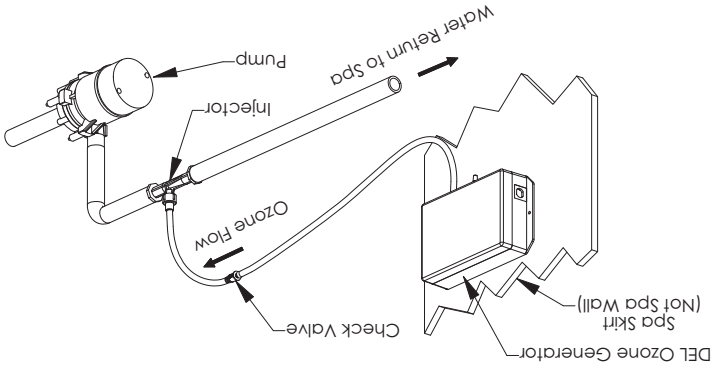
- Connect the PVC ozone tubing provided to the hose barb on the Ozone Generator.
- Slide hose clamps onto the tubing and connect the other end of the tubing to the vacuum source.
- Ensure that a section of the tubing is located above the water line. Secure the Tubing in this position.
- Cut the tubing at the highest point, slide hose clamps onto each end and install the check valve in the tubing. Observe the flow arrow on the check valve and ensure that the flow direction is into the vacuum source.
- Secure all tubing connections with the hose clamps.

8. Electrical

- Test the GFCI breaker protecting the spa for proper operation.
- Disconnect power to the spa.
- Connect the Ozone Generator cord to the mating connector(s) on the spa control box as described in the Spa's Installation Manual.
- Where possible, route the power cord away from other electrical lines. Do not run the power cord parallel to any low voltage signal wires. (i.e. control panel cable.)
- Secure the power cord as required to prevent damage.

Figure 2

Typical Injection System



9. Operation

- With the spa filled to the proper level, run the spa controller through several cycles.
- Verify that gas is flowing into the injector (there should be no water in the tubing, and bubbles entering the spa through the return).
- Verify that water does not push past the check valve during any spa cycle. Check for and correct any leaks.
- Once properly installed, the Ozone Generator requires no further user operation. It will operate automatically with the spa system.

10. Installation Complete

11. Maintenance

- Change the ozone check valve (7-1140-01) and Ozone Tubing (7-0075) every year.
- NOTE: Mildly corrosive condensation may collect in dips or loops in the tubing. DO NOT DRAIN IT. Disconnect power to the Ozone Generator and allow all liquid to be drawn out or dried up before replacing the tubing.