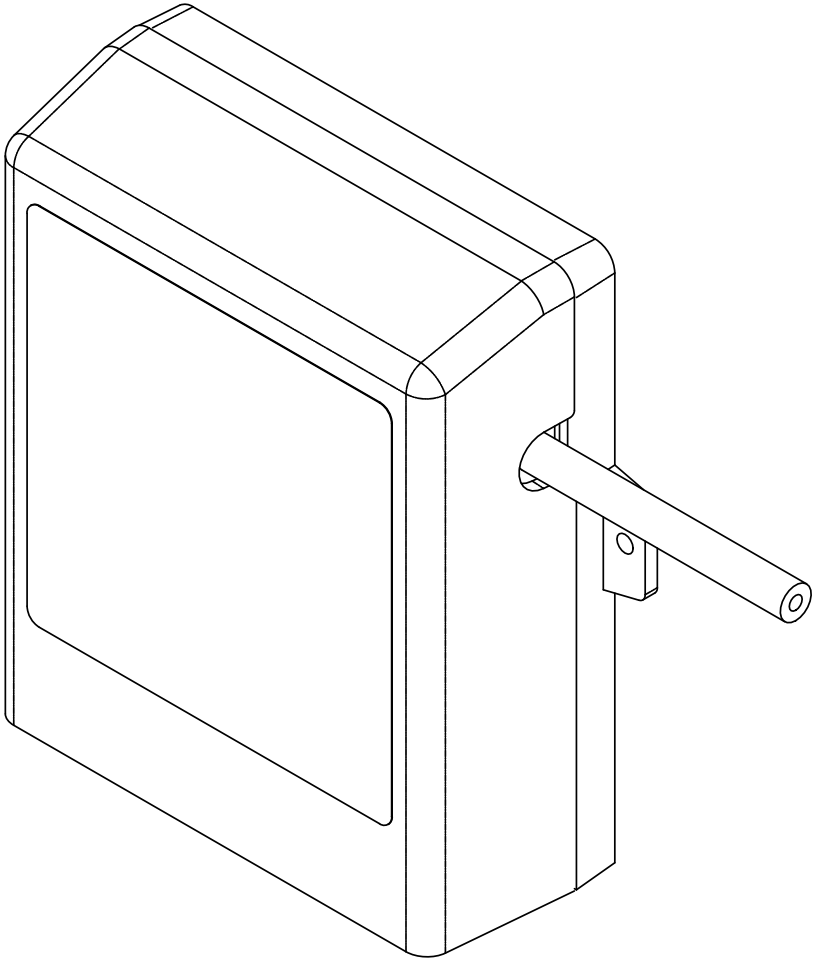




MCD SPA OZONE GENERATOR

INSTALLATION INSTRUCTIONS & PRODUCT MANUAL

MCD-250SE-01



IMPORTANT SAFETY INSTRUCTIONS

When installing and using the DEL MCD Spa Ozone Generator, basic safety precautions should always be followed. Be sure all the electrical power is shut OFF at the main circuit breaker before installing the MCD.

READ AND FOLLOW ALL INSTRUCTIONS.

All permanent electrical connections should be made by a qualified electrician. Follow all applicable electrical codes.

Be sure all the electrical power is shut off at the main circuit breaker before installing the MCD.

If the MCD electrical connections will be attached directly to the spa controls, be sure the spa controls are protected by a Ground Fault Circuit Interrupter (G.F.C.I.). If the MCD is connected to an independent electrical supply, then a G.F.C.I. must be installed between the MCD and the electrical supply.

Do not bury cord.

 **WARNING** To reduce the risk of electric shock, replace the unit immediately if the cord is damaged.

The MCD must be mounted indoors or, under a cover, sheltered from natural elements (rain, sun, sprinklers).

Mount the MCD so that it is inaccessible to anyone in the spa.


MCD must be located or fixed so that it cannot fall into the bath.

Mount the MCD cord facing downward.

Install a check valve in the tubing between the MCD and the vacuum source.

Plastic ozone supply tubing is supplied with the MCD. Never replace this tubing with metal tubing.

Do not operate the MCD unless sufficient air flow is being drawn through the unit.

 **WARNING** Short term inhalation of high concentrations of ozone and a long term inhalations of low concentrations of ozone can cause harmful physiological effects. Do not inhale ozone gas produced by this device.

This appliance can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the appliance in a safe way and understand the hazards involved. Children shall not play with the appliance. Cleaning and user maintenance shall not be made by children without supervision.

SAVE THESE INSTRUCTIONS!

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SECTION 1 Installation

1. How the DEL Spa Ozone Generator Works

DEL Generators produce ozone gas which is introduced to the spa water through suction. 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 backwards through the tubing connection, the unit must be mounted and plumbed as described in this manual.

2. Installation Parts

Common Installation Parts for MCD Spa Ozone Generators:

- One (1) Installation Manual
- One (1) check valve
- Five (5) feet of tubing
- Four (4) hose clamps

3. Installation Tools and Materials

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

4. Unit Assembly

All models are pre-assembled and ready to install.

5. Mounting

- a. Mount MCD in a space with at least 1 inch (25mm) clearance all around, except for the back mounting surface.
- b. Mount the Ozone Generator as high as possible within the spa's protected equipment area
- c. Mount using the tabs provided on the MCD, spaced 4.7 inches (120mm) horizontally.
- d. Screws are provided for mounting but may not be appropriate for all surfaces. Substitute proper mounting hardware as required.

6. Plumbing – Vacuum System (*refer to Figure 1*)

- a. Most spas are factory equipped with an ozone injector, like the one shown in Fig. 1. Review your Spa's Installation Manual to identify the correct ozone connection location.

SECTION 1 Installation

7. Plumbing – Ozone Generator (refer to Figure 1)

- a. Connect the PVC ozone tubing provided to the hose barb on the Ozone Generator.
- b. Slide hose clamps onto the tubing and run the tubing to the vacuum source.
 - i. If the Ozone Generator is mounted above the water line, tubing may be run directly to the vacuum source.
 - ii. If Ozone Generator is mounted below the water line, run tubing to a point above the water line and back down to the vacuum source. Secure tubing in this position.
- c. Cut the tubing at the high point in the tubing. Slide hose clamps on 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.
- d. Secure all tubing connections with the hose clamps.

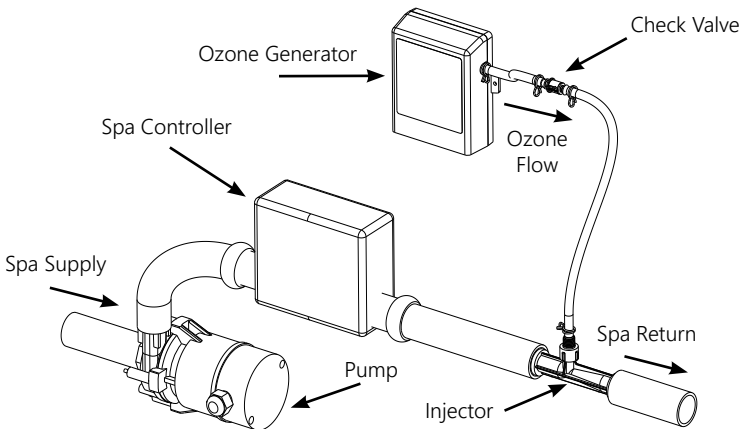


Figure 1: Typical Injection System Arrangement

8. Electrical

- a. Test the G.F.C.I. breaker protecting the spa for proper operation.
- b. Disconnect power to the spa.
- c. Connect the Ozone Generator cord to the mating connector(s) on the spa controller as described in the Spa's Installation Manual.
- d. Where possible, route the power cord away from other electrical lines. Do not run the power cord parallel to any low voltage signal wires.
- e. Secure the power cord as required to prevent damage.

SECTION 1 Installation

9. Operation

- a. With the spa filled to the proper level, run the spa controller through several cycles.
- b. Verify that the Ozone Generator turns on and off as required by the controller: LED light will illuminate when the ozone generator is turned on (cover must be removed to view light).
- c. Verify that gas is flowing into the injector (there should be no water in the tubing).
- d. Verify that water does not push past the check valve during any spa cycle.
- e. Check for and correct any leaks.

10. Installation Complete

- a. Once properly installed, the Ozone Generator requires no further user operation. It will operate automatically with the spa system.

SECTION 2 Maintenance

For optimum performance, we recommend the MCD be replaced every five years. Ozone tubing and check valve should be replaced annually. Follow the steps below to replace the MCD and tubing. Refer to Figure 2.

NOTICE Condensate may collect in dips or loops in the tubing. If condensation appears in the tubing, DO NOT DRAIN IT as the moisture may be moderately corrosive. Disconnect the power to the MCD and allow the liquid to be drawn out or dried up before removing the tubing.

CAUTION Wear proper safety equipment (gloves and eye protection).

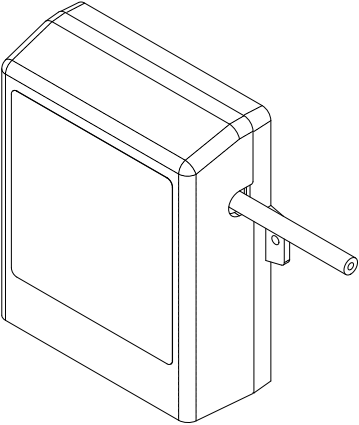
1. Remove the MCD From Your Spa

- a. Shut off power to the spa.
- b. Disconnect the ozone tubing from the MCD outlet hose barb.
- c. Open the spa controller panel and disconnect the MCD power cord.
- d. Remove the mounting screws and remove the MCD from the spa.
- e. Disconnect the ozone tubing from the injector port (or MDV port if spa is equipped with a mixing vessel).

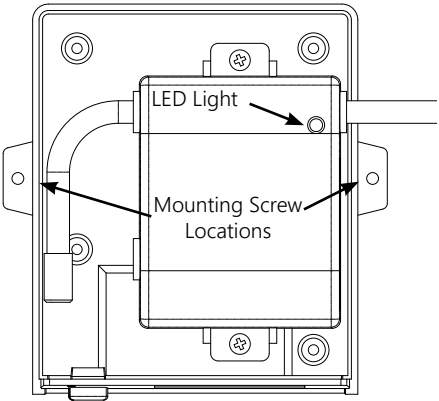
2. Install the New MCD

- a. Reverse the steps above to install the new MCD.
- b. Connect one end of the new tubing to the injector or MDV port, connect the other end to the MCD.
- c. If the check valve is pre-installed in the tubing, secure the check valve as high as possible in the equipment area. Otherwise, run the tubing to the highest point possible, cut the tubing and install the check valve. In either case, ensure the check valve flow arrow is pointing towards the injector.

OZONE GENERATOR COMPONENT LOCATIONS



Ozone Generator



(Cover removed for clarity)

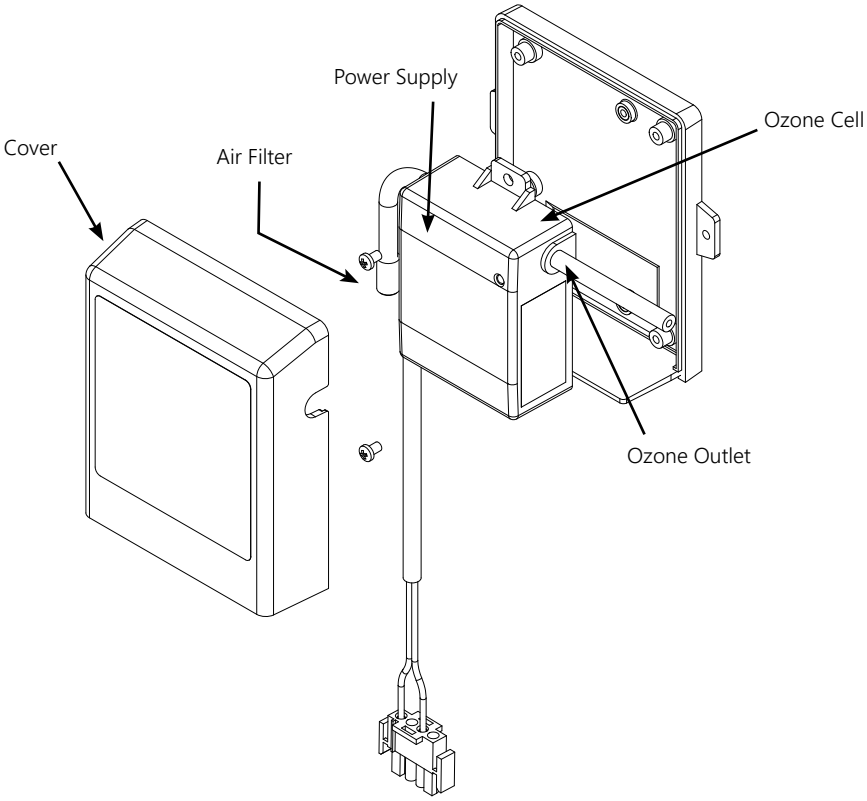
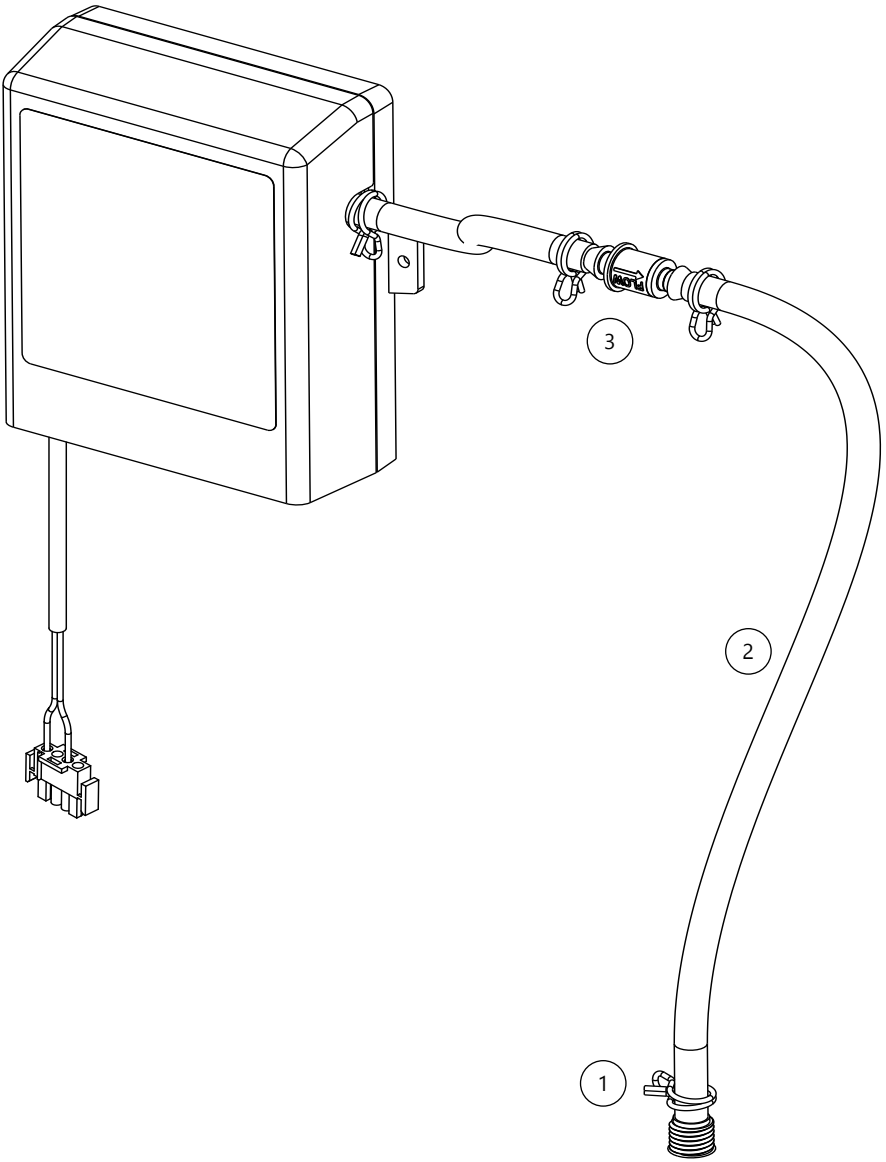


Figure 2: MCD Component Locations

TROUBLESHOOTING

Problem	Description	Cause	Remedy
Green Algae	<ol style="list-style-type: none"> 1. Green water 2. Green spots on surface 3. Slippery surface 	<ol style="list-style-type: none"> 1. Low ozone, bromine or chlorine levels 2. Low algaecide levels 	<ol style="list-style-type: none"> 1. Superchlorinate 2. Brush spa (removing algae) 3. Vacuum spa (removing algae) 4. Increase oxidizer residual 5. Increase algaecide level
Black Algae	<ol style="list-style-type: none"> 1. Black spots on spa surface 	<ol style="list-style-type: none"> 1. Low oxidizer levels 2. Low algaecide levels 	<ol style="list-style-type: none"> 1. Superchlorinate 2. Brush spa (removing algae) 3. Increase ozone, chlorine or bromine residual 4. Increase algaecide level
Unpleasant Odor Burning Eyes	<ol style="list-style-type: none"> 1. Chlorine-like odor 2. Burning sensation in eyes 	<ol style="list-style-type: none"> 1. Combined chlorine; 2. pH out of balance 	<ol style="list-style-type: none"> 1. Balance pH to 7.2-7.6 2. Superchlorinate
Colored Water	<ol style="list-style-type: none"> 1. Water in newly filled spa turns black, blue or brown when first treated with ozone 	<ol style="list-style-type: none"> 1. Copper, iron, or manganese in water being oxidized by chlorine or ozone 	<ol style="list-style-type: none"> 1. Adjust pH to 7.2-7.6 2. Run filter continuously and clean as required 3. Vacuum settled material 4. Use sequestering agent for prevention
Hard Water	<ol style="list-style-type: none"> 1. Cloudy water 2. Scaling 	<ol style="list-style-type: none"> 1. Excessive hardness of makeup water or building up of dissolved minerals in the water caused by continued use of spa chemicals 	<ol style="list-style-type: none"> 1. Clean filter 2. Filter continuously 3. Adjust pH to 7.2-7.6 4. Use scale inhibitor 5. Dilute with makeup water

REPLACEMENT PARTS



	CMP P/N	DESCRIPTION
1	2-0078	HOSE CLAMP (4 REQUIRED)
2	7-0075	OZONE TUBING (5 FT REQUIRED)
3	7-1140-01	CHECK VALVE

SAVE THESE INSTRUCTIONS

Record Information on this System Below & Keep for Your Records

Installer _____

System Purchased From _____

Installation Date _____

Serial Number _____

Model Number _____

CMP Customer Service & Tech Support

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Warranty Questions

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