

INSTALLATION MANUAL for MDV

**Mixing Degas Vessel (MDV)
EC-1, EC-2, EC-4,
Total Eclipse 2 or 4, and
TrioPure-25 or TrioPure-50**

MANUFACTURED BY



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San Luis Obispo, CA 93401
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MDV / Eclipse 1, 2, & 4 Installation & Operation Instructions

General Information:

The DEL MDV (Mixing Degas Vessel) allows for a higher concentration of ozone to be used on a pool while preventing virtually all ozone bubbles from returning to the pool, eliminating bubble noise and visibility. The MDV eliminates unused ozone from returning to the pool; eliminates the potential of ozone reacting with pool components such as covers, fittings, or surfaces; and prevents bubbles from gathering under the cover or inside the plumbing. The MDV system utilizes a Granulated Activated Carbon (GAC) destruct cartridge that destroys ozone gas removed by the MDV. The MDV is designed to work with a minimum of backpressure downstream of the injector. The de-gassing of bubbles will not be as effective in systems with backpressures in excess of 10 psi. Oversized pumps and small returns should be avoided. In pools with in floor cleaning systems, Del recommends running the pool return from the ozonator to a single cleaning head, located at the lowermost depth of the pool.

Installation (refer to Figure 1):

1. Follow ozone generator mounting and electrical connection instructions in Eclipse manual.
2. Mount the MDV vertically as shown in Figure 1 to a solid surface (i.e. fence, wall, post) using the (2) cable ties, (4) cable tie mounts, and (4) screws included. Use a pair of pliers to tighten and secure the cable tie. If trimming away excess, fold tab over to avoid the sharp edge. To avoid discoloration, mount in an area out of direct sunlight.
3. Mount the (GAC) Cartridge vertically to a flat surface using (2) #6 screws.
NOTE: Mount the cartridge close enough to the MDV so that the tubing can be connected from the cartridge to the top of the MDV.
4. Plumb the ball valve, T's, and injector as indicated in Figure 1. Confirm that the water flow direction arrow on the injector matches the water flow direction as indicated in Figure 1. Wrap all threaded fittings with 2 layers of Teflon tape.
5. Complete the plumbing from the injector to the inlet of the MDV, and from the outlet of the MDV back to the return to the pool, using the adapters and elbow provided. Wrap all threaded fittings with 2 layers of Teflon tape.
6. Wrap the threaded end of barb fitting with 2 layers of Teflon tape and thread into injector.
7. Attach the ozone check valve assembly (#11) to the ozone outlet on the Eclipse so that the 3/16" ID green/blue tubing is connected to the Eclipse.
8. Using the 1/4" ID clear PVC tubing, complete the connection from the check valve assembly to the hose barb fitting on the injector.
9. The drain at the base of the Destruct cartridge will release small amounts of condensation and carbon under normal operation. To avoid water or carbon stains, connect tubing to the bottom of the Destruct and divert the condensation to a suitable location.
10. Allow all PVC glue to dry completely per manufacturer's instructions before running water through MDV.

Operation:

1. The system flow must now be optimized. Refer to **Section 3** of your Eclipse manual.
2. Attach the flow meter to the air inlet on the ozone generator.
3. Begin with the ball valve in the wide open position (as shown in figure 1.) and initiate flow through the main circulation pump.
4. With the system running, slowly turn the handle, closing the ball valve until the flow-meter ball begins to bounce near the center line of the flow meter.
5. The water level inside the MDV should be at or near the top of the intersection of the clear PVC tower and the molded top cap. Streams of gas bubbles should be rising to the top. There should be few gas bubbles in the bottom of the tower. Water returning to the pool should be virtually bubble free.
6. The water will drain from the MDV when the main circulation pump shuts off.

Troubleshooting:

Symptom: The water level in the tower is only around half full, or steadily dropping.

1. There is not enough backpressure downstream of the MDV to maintain water level in the tower. -- **Plumb in a small ball valve downstream of the MDV. Close it off to the point where the proper water level in the tower is maintained.**

Symptom: Large bubbles are visible at the bottom couple inches of the tower, and are exiting the pool return.

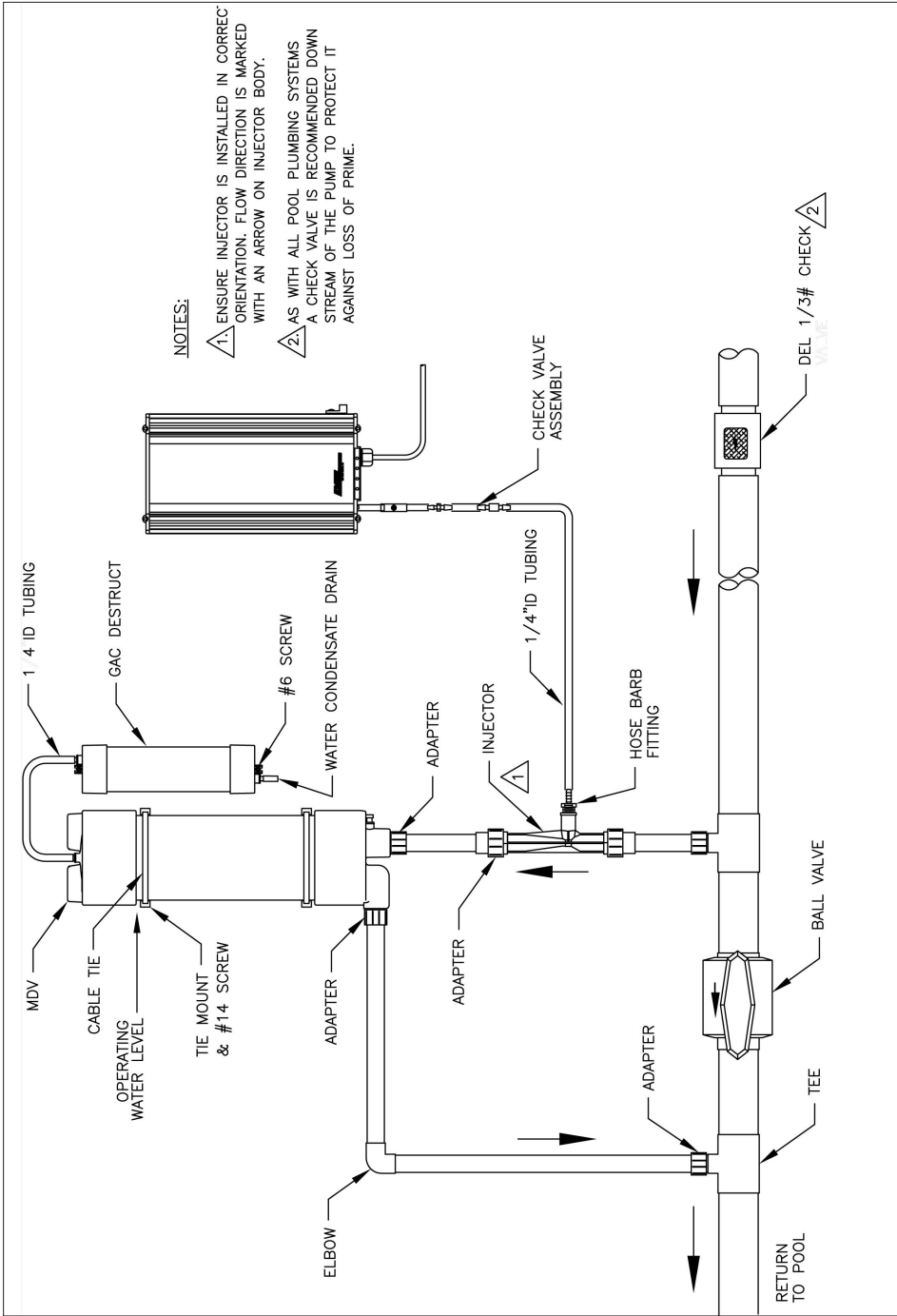
2. The gas flow rate is too high. -- **Reduce the gas flow through the injector, by slowly turning the handle on the ball valve towards the open position. Ensure that the flow-meter ball is still bouncing in the flow meter.**

Maintenance:

1. The MDV itself is maintenance free. The destruct cartridge must be replaced every 12 months of operation. A new cartridge can be ordered from your dealer/distributor using DEL part number 9-0620.
2. Winterizing, if necessary, can be done by draining water from MDV.

Replacement Parts:

Hose Clamp for 1/4" ID tubing	#2-0078
Tubing, 1/4" ID clear vinyl	#7-0075
Cable Tie (for mounting MDV)	#8-0668



NOTES:

- 1. ENSURE INJECTOR IS INSTALLED IN CORRECT ORIENTATION. FLOW DIRECTION IS MARKED WITH AN ARROW ON INJECTOR BODY.
- 2. AS WITH ALL POOL PLUMBING SYSTEMS A CHECK VALVE IS RECOMMENDED DOWN STREAM OF THE PUMP TO PROTECT IT AGAINST LOSS OF PRIME.

Figure 1

MDV / Total Eclipse Installation & Operation Instructions

General Information:

The DEL MDV (Mixing Degas Vessel) allows for a higher concentration of ozone to be used on a pool while preventing ozone bubbles from returning to the pool, eliminating bubble noise and visibility. The MDV eliminates unused ozone from returning to the pool; eliminates the potential of ozone reacting with pool components such as covers, fittings, or surfaces; and prevents bubbles from gathering under the cover or inside the plumbing. The MDV system utilizes a Granulated Activated Carbon (GAC) destruct cartridge that destroys ozone gas removed by the MDV. The MDV is designed to work with a minimum of backpressure downstream of the injector. The de-gassing of bubbles will not be as effective in systems with backpressures in excess of 10 psi. Oversized pumps and small returns should be avoided. In pools with in floor cleaning systems, DEL recommends running the pool return from the ozonator to a single cleaning head, located at the lowermost depth of the pool.

Installation (refer to Figure 2):

1. Follow ozone generator mounting and electrical connection instructions in Total Eclipse manual.
2. Mount the MDV vertically as shown in **Figure 2** to a solid surface (i.e. fence, wall, post) using the (2) cable ties, (4) cable tie mounts, and (4) screws included. Use a pair of pliers to tighten and secure the cable tie. If trimming away excess, fold tab over to avoid the sharp edge. To avoid discoloration, mount in an area out of direct sunlight.
3. Mount the GAC Cartridge vertically to a flat surface using 2 #6 screws.
NOTE: Mount the cartridge close enough to the MDV so that the tubing can be connected from the cartridge to the top of the MDV.
4. Plumb the Total Eclipse and MDV to the pool return line as indicated in Figure 2. Wrap all threaded fittings with 2 layers of Teflon tape.
NOTE: Be sure that the flow direction arrow on the 5# is correctly oriented with the direction of water flow.
5. The drain at the base of the Destruct cartridge will release small amounts of condensation and carbon under normal operation. To avoid water or carbon stains, connect tubing to the bottom of the Destruct and divert the condensation to a suitable location.

Operation:

1. Begin with the ball valve in the wide open position (as shown in figure 2.) Follow system start-up instructions in Total Eclipse manual. Turn off the pool's main circulation pump, and allow the Total Eclipse to run on its own. At this point water will be flowing through the MDV, but not filling up the tower.
2. Slowly begin to turn the handle of the ball valve towards the closed position. Until the water level inside the MDV tower should be at or near the top of the intersection of the clear PVC tower and the molded top cap.
3. Restart then shut down the pool's main circulation pump several times, ensuring that the water level in the tower remains at the top of the tower both when the main circulation pump is on and off.

Troubleshooting:

Symptom: There is no water in my MDV.

1. The pump in your Total Eclipse is not or has stopped running -- **Refer to the troubleshooting guide in your total eclipse manual.**

Maintenance:

1. The MDV itself is maintenance free. The destruct cartridge must be replaced every 12 months of operation. A new cartridge can be ordered from your dealer/distributor using DEL part number 9-0620.
2. Winterizing, if necessary, can be done by draining water from MDV.

Replacement Parts:

Hose Clamp for 1/4" ID tubing	#2-0078
Tubing, 1/4" ID clear vinyl	#7-0075
Cable Tie (for mounting MDV)	#8-0668

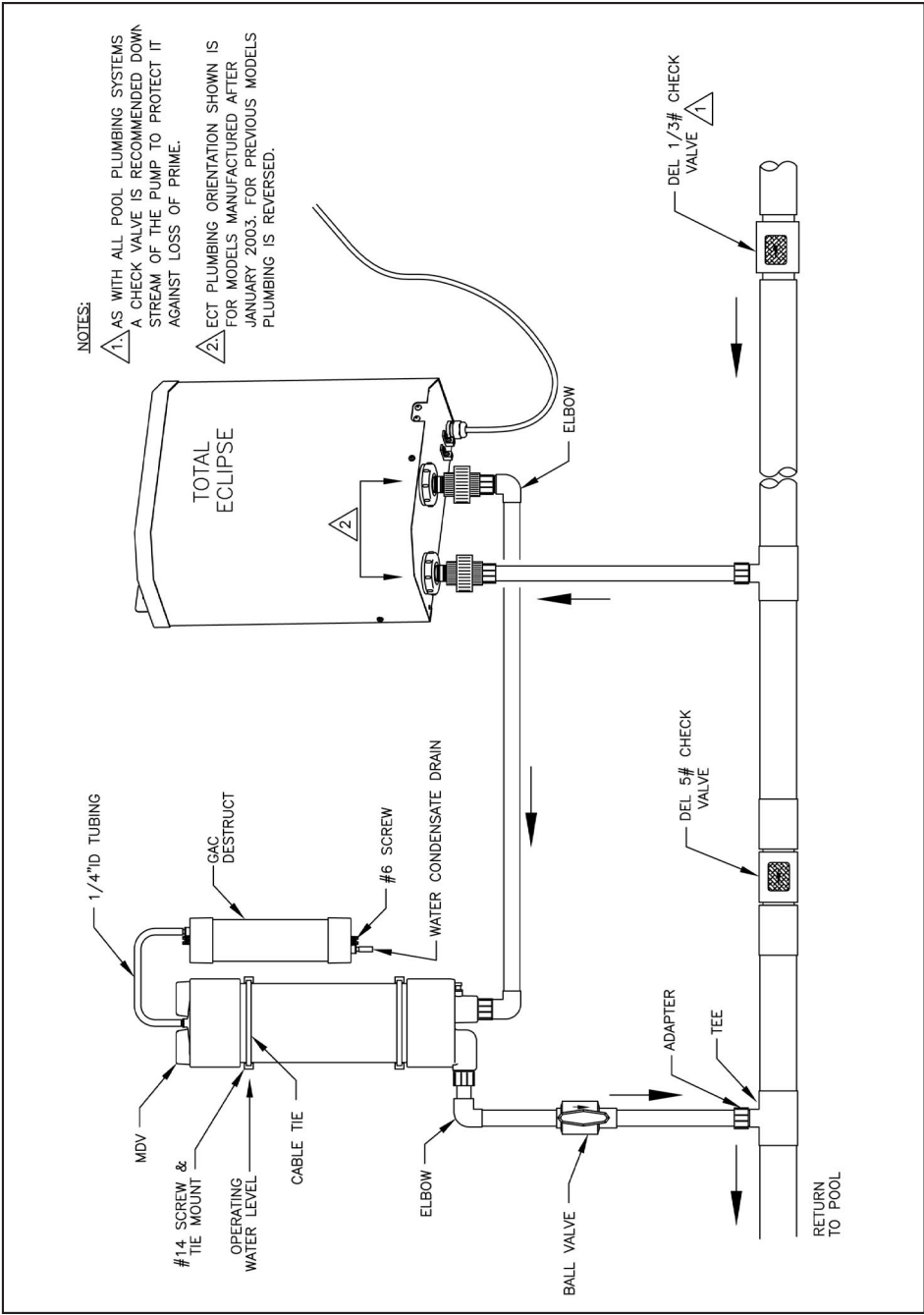


Figure 2

MDV / TrioPure™ Installation & Operation Instructions

General Information:

The DEL MDV (Mixing Degas Vessel) allows for a higher concentration of ozone to be used on a pool while preventing ozone bubbles from returning to the pool, eliminating bubble noise and visibility. The MDV eliminates unused ozone from returning to the pool; eliminates the potential of ozone reacting with pool components such as covers, fittings, or surfaces; and prevents bubbles from gathering under the cover or inside the plumbing. The MDV system utilizes a Granular Activated Carbon (GAC) destruct cartridge that destroys ozone gas removed by the MDV. The MDV is designed to work with a minimum of backpressure downstream of the injector. The de-gassing of bubbles will not be as effective in systems with backpressures in excess of 10 psi. Oversized pumps and small returns should be avoided. In pools with in floor cleaning systems, Del recommends running the pool return from the ozonator to a single cleaning head, located at the lowermost depth of the pool.

Installation (refer to Figure 3):

1. Follow the TrioPure mounting instructions found in the TrioPure manual.
2. Mount the MDV vertically as shown in Figure 1 to a solid surface (i.e. fence, wall, post) using the (2) cable ties, (4) cable tie mounts, and (4) screws included. Use a pair of pliers to tighten and secure the cable tie. If trimming away excess, fold tab over to avoid the sharp edge. To avoid discoloration, mount in an area out of direct sunlight.
3. Mount the Granular Activated Carbon (GAC) Cartridge vertically to a flat surface using 2 #6 screws.
NOTE: Mount the cartridge close enough to the MDV so that the tubing can be connected from the cartridge to the top of the MDV.
4. Plumb the TrioPure and MDV to the pool return line as indicated in Figure 3 and in conjunction with Figures 1-9 in the TrioPure manual. Wrap all threaded fittings with 2 layers of Teflon tape.
5. The drain at the base of the Destruct cartridge will release small amounts of condensation and carbon under normal operation. To avoid water or carbon stains, connect tubing to the bottom of the Destruct and divert the condensation to a suitable location.
6. After the MDV is plumbed to the TrioPure, continue with the Electrical Installation portion of the TrioPure manual. This procedure begins on **Page 9** of the TrioPure manual.

Operation:

1. After completing the Electrical and Adding Pool Preparation Sections of the TrioPure manual, begin with the ball valve in the wide open position (as shown in figure 3). Follow the TrioPure's manual system start-up instructions. After running the TrioPure for 10 minutes, turn off the pool's main circulation pump, and allow the TrioPure to run on its own. At this point water will be flowing through the MDV, but not filling up the tower.
2. Slowly begin to turn the handle of the ball valve towards the closed position. Until the water level inside the MDV tower should be at or near the top of the intersection of the clear PVC tower and the molded top cap.
3. Restart then shut down the pool's main circulation pump several times, ensuring that the water level in the tower remains at the top of the tower both when the main circulation pump is on and off.

Troubleshooting:

Symptom: There is no water in my MDV.

1. The pump in your TrioPure is not or has stopped running -- **Refer to the troubleshooting guide in the TrioPure manual.**

Maintenance:

1. The MDV itself is maintenance free. The destruct cartridge should be replaced every 12 months of operation. A new cartridge can be ordered from your dealer/distributor using DEL part number 9-0620.
2. Winterizing, if necessary, can be done by draining water from MDV.

Replacement Parts:

Hose Clamp for 1/4" ID tubing	#2-0078
Tubing, 1/4" ID clear vinyl	#7-0075
Tie Straps (for mounting MDV)	#8-0668

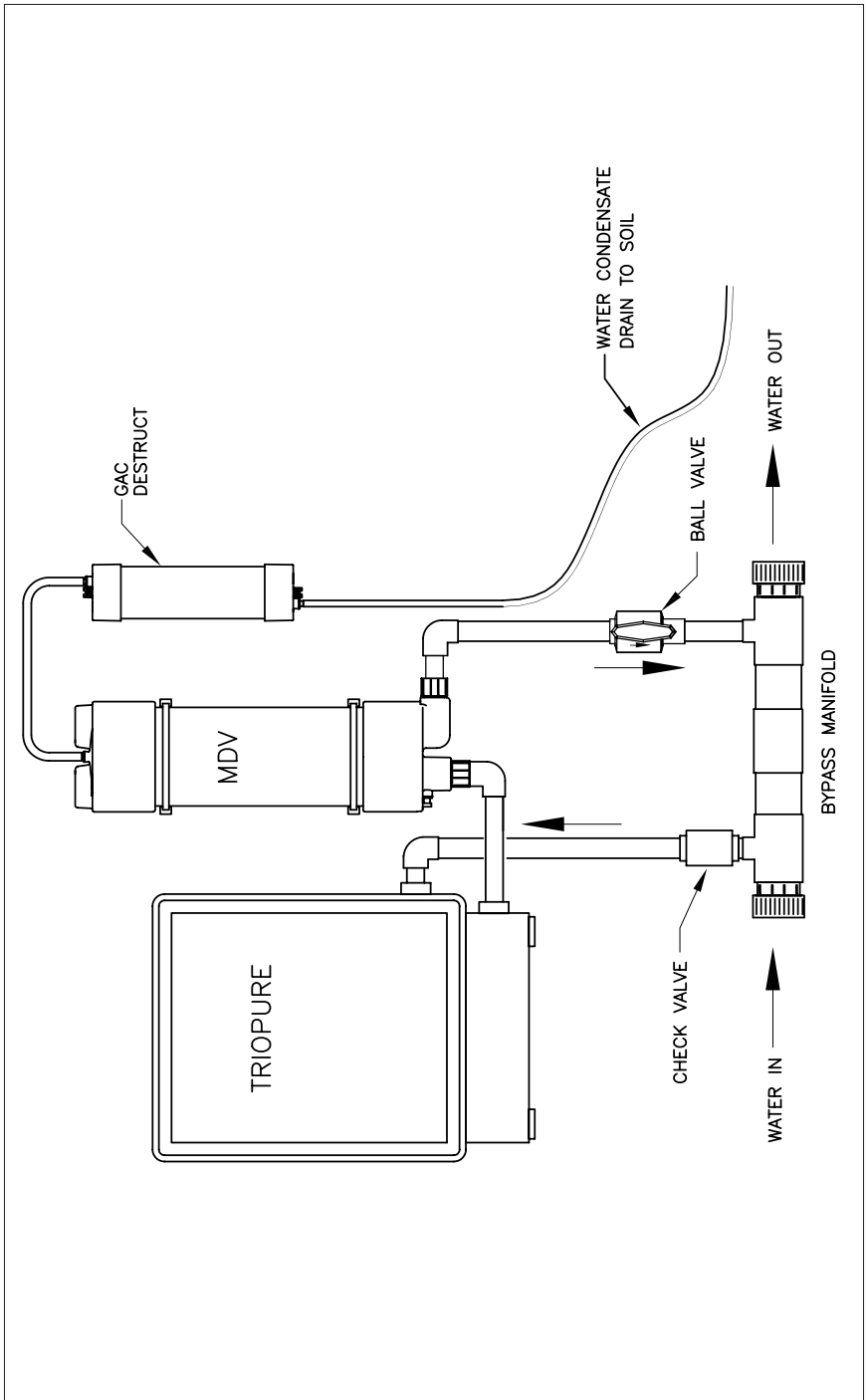


Figure 3

DEL Ozone • ONE YEAR LIMITED 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 and 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 of the date of retail purchase of such products ANY REPAIR OR REPLACEMENT WILL BE WARRANTED ONLY FOR THE BALANCE OF THE ORIGINAL WARRANTY PERIOD. NOTE: USE ONLY DEL AUTHORIZED REPLACEMENT PARTS. USE OF ANY OTHER PART(S) WILL AUTOMATICALLY VOID THIS WARRANTY. THIS LIMITED WARRANTY DOES NOT INCLUDE ANY OF THE FOLLOWING: (a) any labor charges for trouble-shooting, 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; AND (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. This warranty gives you specific legal rights. You may also have other rights which vary from state to state.

TO OBTAIN WARRANTY SERVICE:

Contact DEL Ozone, 3428 Bullock Lane, San Luis Obispo, CA 93401 Customer Service Number: (805) 541-1601. 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; and 5) a description of the failure.

After this information is provided, DEL Ozone will issue a RETURN GOODS AUTHORIZATION (RGA) NUMBER. After receiving this 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 pre-authorized 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.** You must call or write first or your returned goods shipment will be refused. Upon receipt of pre-authorized returned goods, DEL Ozone will repair or replace, at DEL's option, the defective product(s) and return them freight collect. To validate your warranty, fill in the enclosed warranty registration card and return it to DEL Ozone within ten (10) days of your purchase. Buyer's acceptance of the product and use thereof constitutes acceptance of these terms.

DEL Ozone WARRANTY REGISTRATION CARD Product Serial Date:

Fill out completely and return to DEL Ozone within ten (10) days of purchase.

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: _____

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