

INSTALLATION & OPERATIONS  
MANUAL FOR DELZONE® Z0-151

# PORTABLE PURIFIER

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MANUFACTURED BY



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# IMPORTANT SAFETY INSTRUCTIONS

When using the **DELZONE® ZO-151 PORTABLE PURIFIER**, basic safety precautions must always be followed, including the following:

1. **READ AND FOLLOW ALL INSTRUCTIONS**
2. Install in a sheltered area protected from the weather and exposure to water.
3. Unplug the *Portable Purifier* before attempting any service. Never attempt any servicing while wet.
4. Do not bury cord.
5. **WARNING:** To reduce the risk of electrical shock, replace damaged cord immediately.
6. Leave rooms and areas unoccupied during period of treatment. It is preferable to leave the ozone generator itself outside of the room and pass the diffusion stone through a door or window opening.
7. Do not reenter treated area for thirty minutes.
8. Avoid inhaling high concentrations of ozone.
9. Do not expose your pets to ozone
10. When used for water purification, make sure that:
  - a) If the electrical connection of the ZO-151 Portable Purifier is made directly to a spas electrical system, be sure the spa or water vessel is protected by a ground fault circuit interrupter (G.F.C.I.). If the Portable Purifier is connected to an independent electrical supply, a G.F.C.I. should be installed between the ZO-151 Portable Purifier and the electrical supply.
  - b) When mounting to a spa, fountain, holding tank, livestock/water tank or wading pool for permanent application: connect only to a grounded grounding-type receptacle.
  - c) Mount the Portable Purifier at least twelve (12) inches above the maximum water level and at least five (5) feet away from the spa or water vessel.
  - d) As with any electrical appliance, to reduce the risk of injury, the Portable Purifier should be placed where it is inaccessible to children or anyone in the water.
11. **SAVE THESE INSTRUCTIONS.**

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# THE HISTORY OF OZONE

Ozone, sometimes called active oxygen, is comprised of three atoms of oxygen. Ozone is a natural purifier and one of nature's basic elements. Ozone is produced in nature when the ultraviolet rays of the sun strike oxygen molecules. When this occurs high in the atmosphere it creates what we know as the "ozone layer". Because the oxygen molecules absorb the sun's energy, living things on earth are protected from the damaging and potentially cancer-causing rays of the sun. Nature also produces ozone near the earth's surface, especially during a thunderstorm, when lightning flashes. The sweet, fresh smell after a thunderstorm is ozone.

Ozone will destroy viruses, bacteria, and virtually all other forms of microbes, as well as break down chemical contaminants. It does this in both air and water and does it without the use of chemicals or additives of any kind!

Ozone's use as a water purifier was discovered in the late 1800's in the Netherlands. Its first large-scale use was in Nice, France where it was used to purify drinking water. Today, more than thirty countries use ozone systems to purify drinking water. In fact, Los Angeles has one of the largest ozone water treatment plants in the world, processing more than 580 million gallons of city drinking water per day. This system was chosen over a chlorine system due to ozone's extraordinary ability to effectively purify water without negative side effects. In addition, most of the world's bottled water plants use ozone as part of their water purification process.

Ozone is also gaining tremendous popularity as an air purifier throughout the world. Our homes and offices can be a source of environmental pollution. The EPA estimates that indoor pollution causes tens of thousands of illnesses each year, and many more from contaminated water. Ozone is the most effective way to purify your air and water.

Ozone is clearly superior to virtually all other forms of purification. When you use the **PORTABLE PURIFIER**, you won't have to purchase or store any chemical or purification materials or change any filters. Everything you need is generated within the small, lightweight, and portable unit. All this for just pennies a day.

The **DELZONE PORTABLE PURIFIER** is easy to use. It has an easy-carry handle and is light weight so you can take it anywhere and feel good about the quality of the air you breathe and the water you drink. The Portable Purifier can be used indoors or out, uses only 60 watts of power and is virtually maintenance free. Simply plug it in and you have natural purification at your finger tips!

## OZONE IS AN EFFECTIVE PURIFIER

*Ozone kills:* bacteria, viruses, molds, mildew, spores, and cysts.

*Ozone destroys:* chemical contaminants such as aldehydes which can be emitted from paneling, carpets, insulation, paints, stains, and plastics.

*Ozone eliminates odors:* cigarettes, cigars, pets, diapers, mildews, musty/stale smells, airborne molds, food, locker rooms, shoes and boots, and more!

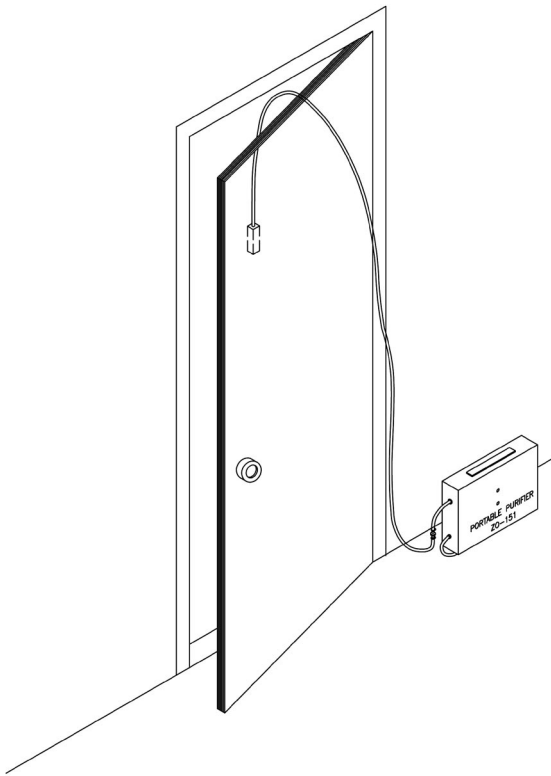
## OPERATION

Unpack the Portable Purifier and familiarize yourself with the unit and its components. The unit should include:

**ZO-151 PORTABLE PURIFIER UNIT**  
**OZONE SUPPLY TUBING (15 FEET)**  
**OZONE DISPERSION STONE**  
**SUCTION CUP**  
**4" BALL CHAIN**  
**4 ADHESIVE RUBBER FEET**

Connect ozone supply tubing to the ozone supply check valve. Hint: Soften the tubing if necessary by dipping it in warm water. To use the suction cup, feed the ball chain through the hole in the suction cup, then through the loop in the steel clamp (attached to the dispersion stone). Snap the ball chain closed. Attach the rubber feet to the enclosure as desired.

Plug in the Portable Purifier as described in the **SAFETY INSTRUCTIONS**. Turn on the Portable Purifier with the toggle switch located on the left side of the unit. The *green* indicator light will come on and remain on while power is being supplied to the unit to show that the unit is operating. The *red* indicator light on the front of the unit should light, flicker, and then go out. This indicates that the purifier is operating properly. If the red light remains on, see the **TROUBLE SHOOTING** section.



**Figure 1: Example Dispersion Stone Location**

## **PORTABLE APPLICATIONS**

### **ELIMINATION OF ODORS IN ROOMS**

The Portable Purifier will effectively eliminate odors in your homes and offices. Due to its portability you can move it from room to room to treat the whole home or office.

If possible, place the Portable Purifier in a separate room from the dispersion stone. Locate the dispersion stone as high and as far from other objects as possible (Figure 1, for example). Turn on the Portable Purifier and/or set the timer and *leave the room*. Allow the Portable Purifier to run for the approximate times as indicated in the table below.

The amount of ozone treatment required will vary depending on the air flow in the room and the air quality. When the treatment is completed, turn off the Portable Purifier and air out the room. This can be done to as many rooms, and as often as desired.

The treatment times listed below are intended as guidelines. Your application may require a longer or shorter treatment time.

<b><u>ROOM/AREA</u></b>	<b><u>ODOR TYPE</u></b>	<b><u>SIZE</u></b>	<b><u>SUGGESTED TIME</u></b>
KITCHEN	Food smells: broccoli, fish, cabbage, eggs, greasy foods	10' X 10'	60 minutes
	cigarette odors, pet odors, Persistent odors, Strong pet odors	15' X 15' or larger	60 min. intervals or until gone
REFRIGERATOR	Soured foods (locate dispersion stone on top inside door)		15 minutes
GARBAGE DISPOSAL	Soured foods (locate dispersion stone inside disposal)		15 minutes
GARBAGE CAN	Soured foods (locate dispersion stone at bottom of can)		15 minutes
LIVING ROOM	Cigarette odors	15' X 20'	40 minutes
	Cigar odors		60 minutes
BATHROOM	Unpleasant odors	10' X 10'	60 minutes
BEDROOM	Unpleasant odors Cigarette odors	17' X 18'	60 minutes
CLOSET AREA	Shoes, clothes with odors	4' X 4'	45 minutes
CLOTHES	Mildew/Musty (locate dispersion stone near garment)		15 minutes
	Cigarette/cigar odors (locate dispersion stone near garment)		15 minutes
SHOES	Foot odor (locate dispersion stone inside each shoe)		15 minutes
NURSERY	Diaper odors, spit up odors	10' X 10'	30 minutes
DIAPER PAIL	Diaper odors (locate dispersion stone at bottom of can)		30 minutes
OFFICE	Cigarette odors, art materials, paints, glues	15' x 15'	60 minutes
GARAGE	Paint, wood-working exhaust fumes	20' X 20'	120 minutes
PET BED/ BLANKET	Pet odors (locate dispersion stone in middle of bed)		30 minutes
FLOOR MAT	Mildew on bottom (locate dispersion stone underneath)		60 minutes
HOTEL ROOM	Occupant odors Cigarette odors	20' X 20'	40 minutes
CONFERENCE ROOM	Heavy cigarette odors, Food or alcohol	20 X 30	120 minutes

## OZONE TREATMENT OF BOATS AND RV's

Boats and Recreational Vehicles often have a stale/musty smell or owners have difficulty eliminating cigarette/food odors. To get rid of these odors, simply place the dispersion stone in the RV and shut the door tightly, or in the case of a boat, under the boat cover. The required periods of ozone treatment may vary depending upon the size and condition of the affected area. For both an RV and an average-sized boat, please refer to the suggested guidelines below:

<u>AREA</u>	<u>ODOR TYPE</u>	<u>SIZE</u>	<u>SUGGESTED TIME</u>
RV INTERIOR	Dust/stale air	18- 24	45 minutes
	Dust/stale air	30-32	50 minutes
	Dust/stale air	35-40	60 minutes
	Cigarette/food odors	18-24	60 minutes
	Cigarette/food odors	30-32	70 minutes
	Cigarette/food odors	35-40	75 minutes
	Soured foods (locate dispersion stone at bottom of garbage can)		15 minutes
BOAT INTERIOR			
	Dust/stale air/mildew	18-24	120 minutes
	Dust/stale air/mildew	30-32	240 minutes
	Dust/stale air/mildew	35-40	360 minutes

## TREATMENT OF AUTOMOBILE ODORS

Automobiles can acquire a variety of odors from drinks, food crumbs, cigarettes and pets. Guidelines below are for a standard four-door automobile. For effective treatment, place dispersion stone in the car through a 1/4" crack above the window. Locate the dispersion stone near the rear-view mirror. Close all other openings. Leave the vehicle unoccupied during treatment.

<u>ODOR TYPE</u>	<u>SUGGESTED TIME</u>
CIGARETTE ODOR	120 minutes
PET ODORS	180 minutes
FOOD AND DRINK	90 minutes
OTHER ODORS	90 minute intervals until odors are gone



## TREATMENT of FRUITS & VEGETABLES

The shelf life of fruits and vegetables can be extended by ozone treatment. Not only will they keep a more attractive appearance, but they will also taste fresher! To help keep your produce fresh, fill your sink with water and place the Portable Purifier's dispersion stone in the bottom of the sink. Place the vegetables and/or fruit to be treated in the water and operate the Portable Purifier for 15 minutes. (Average sized sink half-full of pre-washed produce). Increase treatment time for larger sinks and greater quantities of produce.

## TREATMENT of FOOD & COOKING UTENSILS

Since ozone kills bacteria and viruses, it can aid in the destruction of bacteria found on raw foods and cooking utensils. Soaking uncooked chicken parts, for example, in ozone treated water will help retard the growth of salmonella. For best results, follow the same procedure described above for produce. For utensils, rinse off food debris and treat in clean water with ozone for fifteen minutes.

## PORTABLE WATER TREATMENT

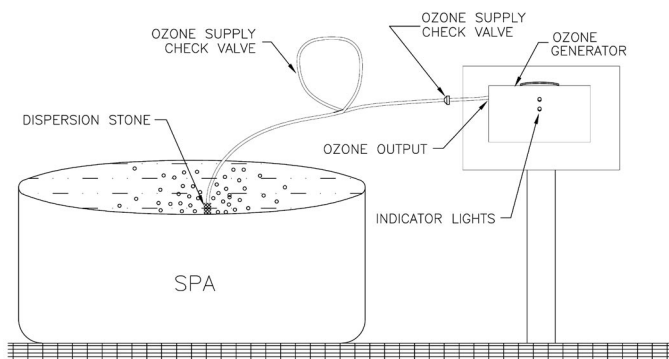
The ZO-151 Portable Purifier is specifically designed to purify water in emergency storage, spas, bathtubs, fountains, and wading pools. It can also be used to purify drinking water from well sources or city water supplies, removing undesirable tastes, odors and colors caused by iron, copper, manganese, chlorine and organics. Do not use water from a source that is questionable such as stagnant pool water or the like.

To treat water, place the dispersion stone into the water container and leave the unit on the approximate amount of time shown in the table below. If bacteria is suspected, allow a *minimum* of one hour per gallon. When completed, turn off the Purifier and allow a few moments for excess ozone to dissipate from the water. Higher output ozone generators are available for wells and holding tanks

When used in conjunction with a particulate filter, ozone will also remove excess minerals including iron, manganese, and lead, as well as radon and sulfur gases.

<u>NUMBER OF GALLONS</u>	<u>SUGGESTED TREATMENT TIME</u>
1	15 minutes
5	30 minutes
10	45 minutes
50	1.5 hours
100	3 hours

## PERMANENT INSTALLATIONS



**Figure 2: Standard Installation Diagram**

### SPAS AND POOLS

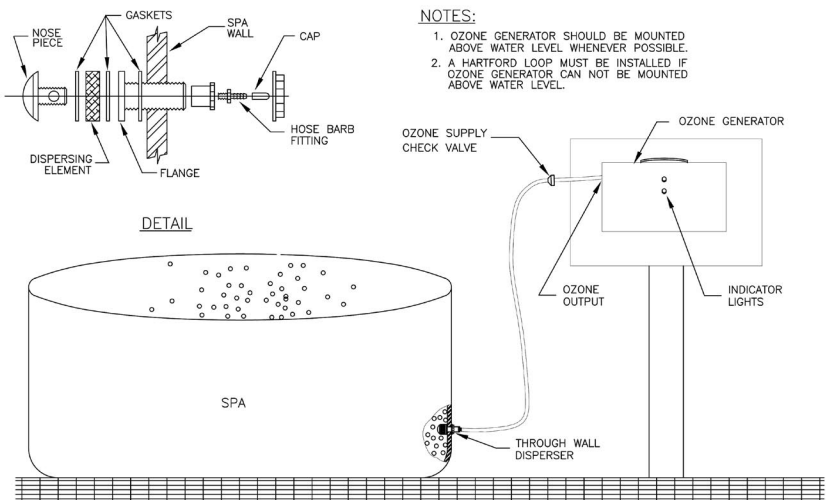
The Portable Purifier can be used on spas, hot tubs, and wading pools to 1,000 gallons, allowing you to reduce your chemical usage up to 90%. You will never need to put up with dry skin, red eyes, faded suits, or green hair again! Ozone is pH neutral, so it will not adversely affect the acid/alkaline balance of your water. It is more cost effective than traditional chemicals and leaves no undesirable smell or taste. Continuous operation is proven to be the most economical treatment method for spa water, fountains and larger bodies of water to 1,000 gallons.

1. The ZO-151 must be securely mounted to a clean surface and sheltered from direct exposure to the elements (rain and water). Mount at least five feet from the spa or water enclosure and at twelve inches above the maximum water level. Ensure that the location is out of the reach of children or anyone in the water.
2. To mount the ZO-151 Portable Purifier remove the two screws on the unit cover and gently lift off the cover.
3. Using the four mounting holes in the corners, secure the ZO-151 Portable Purifier to the wall with screws. Spacer blocks may be necessary for your particular installation. After mounting your Portable Purifier reinstall the cover.
4. Connect the ozone supply tubing to the check valve on the left side of the purifier. If the ozone supply tubing is too long, trim it with household scissors or a razor knife. If the tubing is too short, additional ozone supply tubing is available.
5. Place the dispersion stone into the body of water near the bottom center for maximum ozone saturation in the water.
6. Plug the ZO-151 Portable Purifier into a Ground fault circuit interrupter (G.F.C.I.) protected outlet.

# THRU-WALL DISPERSER INSTALLATION

For permanent spa installations, **DEL Ozone** can supply a dispersion fitting that is permanently installed in the spa wall. The thru-wall disperser is designed to provide excellent ozone saturation in the water while being rugged enough for heavy spa use. Both sides of the spa wall must be accessible for installation. The ZO-151 Thru-wall disperser should be located as low in the spa as is conveniently possible.

1. **Drain the spa**, determine the location for the Thru-wall Disperser and drill a 1-1/8 diameter hole in the spa wall. Remove any rough edges in the hole and remove any drilling debris from the bottom of the spa.



**Figure 3: Thru-Wall Disperser Installation Diagram**

2. Place the supplied gasket on the threaded side of the thru-wall disperser fitting. From the inside of the spa, place the fitting through the 1-1/8 diameter hole in the spa wall. From the outside of the spa, install the plastic nut and tighten to make a water-tight assembly.
3. Attach the ozone supply tubing to the hose barb on the thru-wall disperser fitting using the supplied hose clamp to secure in place.
4. Place the dispersion disc on the nose piece with the smooth side toward the nose piece and the textured side toward the thru-wall disperser fitting. Screw the nose piece into the front of the thru-wall disperser and hand-tighten.

# TROUBLE SHOOTING

There are four areas to check to determine the location of any problem:

1. The green indicator light should remain ON during operation
2. The red indicator light should remain OFF during operating
3. Presence of ozone bubbles in the water
4. The condition of the water

## **SYMPTOM: *Green indicator light OFF - air pump not working***

### **PROBABLE CAUSE**

1. No power to unit
2. Tripped circuit breaker
3. G.F.C.I. tripped
4. Defective electrical system

### **CORRECTIVE ACTION**

- 1A. Check power source and cord
- 2A. Reset circuit breaker
- 3A. Reset G.F.C.I.
- 4A. Return for service/repair

## **SYMPTOM: *Red and green indicator lights ON - air pump working***

### **PROBABLE CAUSE**

5. Lamp cartridge connection loose
6. Lamp burnt out

### **CORRECTIVE ACTION**

- 5A. Reconnect
- 6A. Replace lamp

## **SYMPTOM: *Red indicator light OFF, air pump working but no ozone bubbles in spa***

### **PROBABLE CAUSE**

7. Leak in system
8. Tubing is kinked or crimped
9. Dispersal element plugged
10. Defective electrical system

### **CORRECTIVE ACTION**

- 7A. Check all tubing connections
- 8A. Check all tubing and unkink
- 9A. Clean or replace dispersal element
- 10A. Return to dealer for service

## **SYMPTOM: *Everything works correctly, but water is dirty***

### **PROBABLE CAUSE**

11. Excessive bather load
12. pH not balanced
13. Total alkalinity incorrect
14. Dirty, loose, or cracked filter

### **CORRECTIVE ACTION**

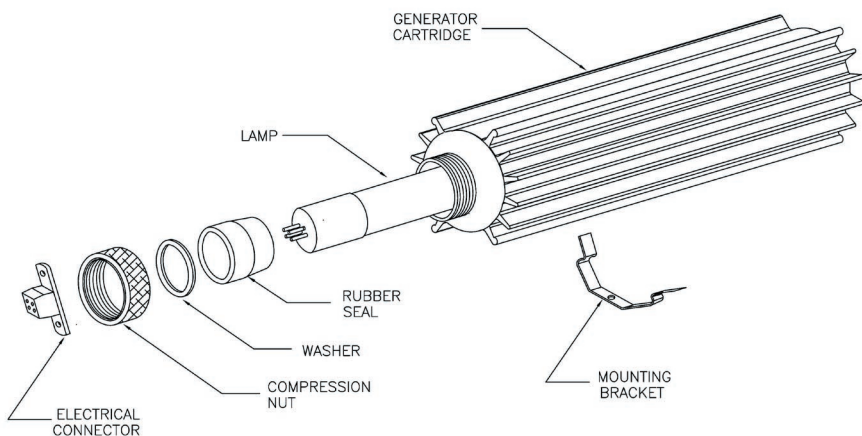
- 11A. If the extra high bather load is not unusual, continue 24 hr. operation and begin program of adding a small amount of chlorine, bromine shock treatment.
- 12A. Adjust pH to 7.2 to 7.8
- 13A. Adjust total alkalinity to 80 -150 PPM
- 14A. Service filter.

# MAINTENANCE

## CHANGING THE OZONE LAMP

The Portable Purifier Ozone producing lamp has a life expectancy of approximately two years, however, fluctuations in local line voltage may reduce the lamp's life. When the red indicator light stays on, it is time to change the lamp. To maintain optimal performance, DEL recommends replacing the lamp once a year.

1. Disconnect power before servicing unit.
2. Remove the Portable Purifier from its support if access is limited.
3. Remove the cover from the Portable Purifier enclosure (it is held by two Philips head screws on the bottom). Be careful not to put strain on wires connecting cover components.
4. Separate the finned aluminum lamp cartridge from its mounting bracket. It may require the use of a screwdriver to pry the unit loose as these clamps are specifically designed to hold the cartridge securely in place.
5. Separate the electrical connector from the end of the lamp cartridge by rocking the connector back and forth while pulling it in an outward direction.
6. Remove the compression nut, washer and rubber seal from the lamp cartridge by turning the compression nut in a counter-clock wise direction (should be hand-tight).
7. Remove the old lamp by sliding it out of the aluminum cartridge.
8. Reverse this procedure to install the new lamp. Be sure the lamp is fully seated and straight inside the cartridge.



**Figure 4: Lamp Change Diagram**

## CLEANING the DISPERSION STONE

Periodically, the dispersion stone may clog up with mineral deposits reducing the amount of ozone flow through the stone. The stone will appear a darker color. **Disconnect Power** and remove the dispersion stone. Soak it in lemon juice or vinegar for a few hours to overnight until the discoloration is gone and the dispersion stone is a uniform color. Rinse the dispersion stone thoroughly with fresh water. Reinstall the dispersion stone.

**NOTE:** Sometimes the stain will be permanent; if ozone bubbles still flow from the dispersion stone the stain will not affect operation.

## CHANGING the PUMP FILTER

The Portable Purifier Pump filter may require cleaning or replacing up to every six months depending on the purifier's exposure. **Disconnect Power before servicing the unit.** The filter can be removed and replaced by accessing it through the hole in the back of the purifier with a pair of tweezers or pliers. If there is no filter access hole on the back of your purifier, remove the pump by removing the two mounting screws on the back of the unit. Be careful not to over-tighten the screws when re-mounting the pump.

## UNIT SPECIFICATIONS

<i>Electrical Specs:</i>	120 vac, .5 amps, 60 watts
<i>Cabinet:</i>	Aluminum, powder coated finish
<i>Unit Dimensions:</i>	9H X 13.5W X 3.2D
<i>Unit Weight:</i>	6 lbs
<i>Shipping Weight:</i>	7 lbs
<i>Operating Temperature:</i>	35° F to 100° F
<i>Compressor Provides:</i>	5 scfh @ 2 psi

## PARTS LIST

Replacement Lamp	9-0488
Ballast	5-0240
Ozone Supply Tubing	7-0723
Dispersion Stone	7-0785
Suction Cup	7-0839
Pump	5-0782
Pump Filter	7-0877
Ball Chain	8-0304
Ozone Supply Check Valve	7-1004
Thru-Wall Dispenser Assembly	9-0152
Thru-Wall Dispenser Element	7-0422

## DEL Ozone • ONE YEAR LIMITED WARRANTY

The warranty set forth below applies to the DEL Ozone 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 FOR A FULL ONE YEAR WARRANTY PERIOD. (All parts) ANY REPAIR OR REPLACEMENT WILL BE WARRANTED ONLY FOR THE BALANCE OF THE ORIGINAL WARRANTY PERIOD. NOTE: USE ONLY DEL Ozone AUTHORIZED REPLACEMENT PARTS. USE OF ANY Other PART(S) WILL AUTOMATICALLY VOID THIS WARRANTY. **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; 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 Inc., 3428 Bullock Ln., 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;
- 5) a description of the failure.

After this information is provided, DEL Ozone. will release 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 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.** You must call or write first or your returned goods shipment will be refused. 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 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.

