

# OZOTECH

## Poseidon 400 Ozone Generator Operation & Maintenance Manual



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Dear Valued Customer:

Welcome to the Poseidon 400 ozone generator User Manual!

Congratulations on your purchase of Poseidon 400 generator! This comprehensive user manual is designed to be your ultimate guide to unlocking the full potential of your new Poseidon 400. Whether you're a first-time user or an experienced water treatment professional, this manual will provide you with the knowledge and insights you need to make the most out of your Poseidon 400.

### **What's Inside**

In this manual, you'll find clear and concise instructions on how to set up, operate, and maintain your Poseidon 400. We've organized the content in a logical sequence, from initial unboxing to advanced usage techniques, making it easy for you to navigate and find exactly what you need. Each section is accompanied by illustrative diagrams, helpful tips, and troubleshooting suggestions, all aimed at enhancing your experience.

### **Your Feedback Matters**

We're dedicated to continuous improvement, and your feedback is invaluable to us. If you have suggestions for improving this manual please [contact us](#) If you encounter any challenges, please reach out to your local dealer.

Thank you for choosing Ozotech.

## 1.0 Caution



Read the following safety guidelines thoroughly before attempting to operate or install your equipment.



As with all electrical devices, this equipment should never be allowed to come in contact with water.



Only qualified personnel should be allowed to set up, maintain and operate this equipment



The equipment must be operated using a properly grounded electrical circuit that is protected by either a fuse or circuit breaker.



Do not use an extension cord to supply power to this equipment.

\* Ozotech, Inc., assumes no liability for damages or injuries incurred by misuse of this product.

## 2.0 Theory of Operation

Your Poseidon 400 ozone generator is a state-of-the-art device designed to produce ozone. The technology utilized to perform this function is PCS corona discharge ozone generation. Pulse modulated corona discharge generators create ozone through the action of high voltage, low current electrical “arcs” across an air space. When oxygen ( $O_2$ ) is passed through the air space, some molecules are split, resulting in “free” oxygen atoms which quickly attach themselves to intact  $O_2$  molecules. The result is a very unstable form of oxygen,  $O_3$  (ozone). It is the extra atom of oxygen that gives ozone its superior oxidation capabilities.

### 2.1 High/Low Feature

Your Poseidon 400 ozone generator is equipped with a “Low” and “High” setting. The “Low” setting will produce 220mg/hr. ozone, while the “High” setting will produce 440mg/hr. ozone. Select the setting that best satisfies your needs. Your ozone generator can be seamlessly transitioned between the two settings without additional adjustments.

## **2.2 PCS Corona Discharge Ozone Generation**

The PCS technology represents the heart of the ozone generator. As opposed to the plate type air dielectric corona generators, the PCS CD cell is biased with a series of pulsed DC, medium frequency signals within a cylindrical environment. The ceramic dielectrics surround a thin barrier of brass and are then surrounded by a stainless coil held to tight tolerances for length and diameter with high voltage applied, the combination of the brass sleeve, ceramic cylinder and coil provide a condensing action to produce ozone.

Improvements in the design have led to a method of producing ozone wherein the cell is: 1) Capable of withstanding high voltage inputs without plating; 2) No relative expansion and contraction of the parts; 3) Able to operate at lower temperatures than conventional corona discharge generators thus improving reliability and efficiency without the need for separate cooling water circuitry; 4) Maximum ozone output with minimum high voltage input.

Each cell(s) is separately housed within its own stainless holding chamber (manifold) with consideration for maximum efficiency. In other words, all the air that is drawn through the chambers is passed directly through the ozone producing region (corona gap) with little or no waste from improper channeling.

See section 4.1 for CD cell service procedure.

## **3.0 Operating Conditions**

Your generator requires special operating conditions in order to maintain performance and reliability. Your ozone generator is designed to be operated under a negative or positive pressure situation. Your Ozotech ozone generator has been factory tested to operate at a maximum positive pressure of 5 psi. Warranty coverage of your equipment is contingent upon strict compliance with the operating conditions specified in this manual.

### **3.1 Operating Environment**

#### **External**

It is most important to choose a cool, clean external operating environment. Consideration of these factors should be a priority. Mount your ozone generator in the best possible operating environment that is available at the chosen site. If possible, mount in an area that is free of airborne moisture particles.

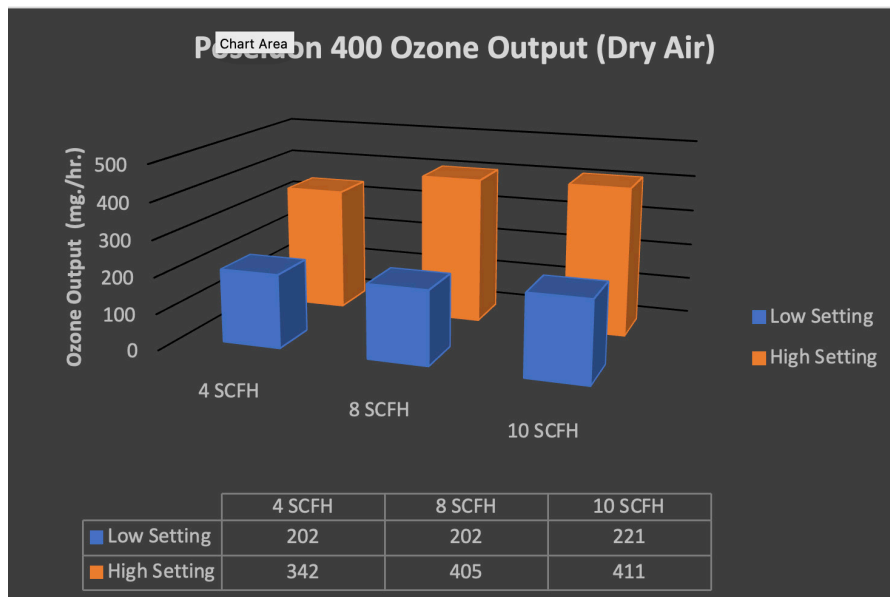
#### **Internal**

Keep the inside of the generator chassis clean and dry. Dust particles and condensation pose a challenge to the consistent operation of all ozone generators. Make a note to inspect the internal cleanliness of the equipment when you perform your scheduled maintenance. For further information refer to section 4.0.

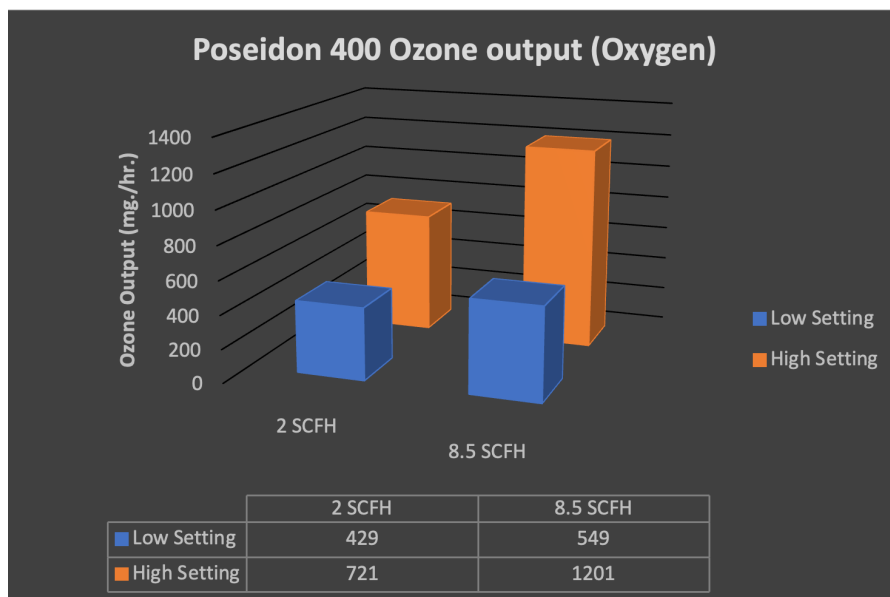
### 3.2 Input Power Requirements

Ozotech, Inc., offers the Poseidon ozone generator in a variety of configurations to accommodate a wide range of applications. Configurations include a standard AC to DC wall transformer, a cigarette lighter adapter or twisted wire for connection to a hard 12 Vdc source such as a car, boat or RV battery circuit. Most supply voltages fluctuate, so it is necessary to monitor your voltage and assure it is within acceptable variance values listed below.

Voltage = (Specified) 11.7 VDC to 13.9 VDC  
 Frequency = Not applicable  
 Power Consumption = 600mA to 1.3A @12vdc (7.2 to 15.6 watts) nominal



**Figure 1:** Poseidon 400 ozone output measured in mg./hr.



**Figure 2:** Poseidon 400 ozone output measured in %/wt.

## 4.0 Poseidon Servicing & Maintenance

A visual inspection of your Poseidon 400 should be done monthly to ensure there's been no salt creep or damage due to it being around a reef tank. Should the cell become plugged with nitric byproducts or if water backs into the cell, it could cause a catastrophic electrical failure. Proper air preparation can usually avoid the build-up of nitrous.



**CAUTION:** Disconnect ozone generator from power supply before performing any maintenance.

To service the Poseidon 400, the following steps can be taken:

- Disconnect unit from power source (back of the unit).
- Remove the front cover.
- Inspect the inside of the generator for dust and/or moisture.
- Thoroughly clean and dry the inside of the generator.
- Replace any ozone-resistant check valves on the air-in or ozone gas outlet lines as necessary or at least once a year.
- Place the cover back onto the unit and reconnect power.

### 4.1 Corona Discharge Cell Servicing

Ozotech recommends cleaning the corona discharge cell once a quarter and replacing the cell at least once a year. A new corona discharge cleaning kit or replacement cell may be purchased from your preferred distributor or by visiting the Ozotech website for a list of distributors. The cleaning kit part number can be found in the Spare/Replacement Parts section.

[Corona Discharge Cleaning Guide](#)

### 4.2 Corona Discharge Cell Replacement

- Disconnect the unit from its DC power source (back of the unit).
- Remove front cover.
- Disconnect electrical connection from cell to the power supply board.
- Pull corona discharge cell out of the holding clips, then disconnect all tubing from the corona discharge cell.
- Discard Corona discharge cell.
- Reverse steps to install replacement corona discharge cell.

[Corona Discharge Replacement Guide](#)

## 5.0 Spare/Replacement Parts

(\*) Denotes recommended spare maintenance parts with initial purchase. Followed by quantity, per unit, recommended for one year's scheduled maintenance.

<u>Part #</u>	<u>Description</u>
33218-R	Corona Discharge Cell
47049	Kynar Check Valve (3/16"x1/4") *1
40080-01	Wall Transformer, 115/230VAC to 12 Vdc Regulated, 2A
47044-1	CD Cell Maintenance Kit *1
30078	DI 2.0 Air Dryer

## 6.0 Fusing

There is one fuse per combo board connected to the 12 Vdc source. They are located on the component side of each combo board. Fuse size and value is listed below:

<u>Part Number</u>	<u>Fuse Size</u>	<u>Fuse Value</u>
43223	Type IEC 127	.800 amp, fast blo



## 7.0 Troubleshooting Guide

Symptom	Possible Cause	Remedy
Unit does not turn on.	Unit is not connected to a power source or is connected to improper power source.	Refer to the label on the side of the chassis for voltage requirements.  Connect unit to proper power source.
	ON/OFF switch not turned to the "HIGH/LOW" position.	Turn switch to HIGH/LOW position
	Fuse is blown.	Replace fuse with an equally rated substitute.  Fuse specification can be found in Section 6.0
Unit keeps blowing fuses	Electrical short circuit.	Visually inspect unit, and check for loose connections. Inspect printed circuit board for burn marks. Inspect HV wire from printed circuit board to ozone cell for disconnection or burn marks. Repair any and all problems prior to placing unit in service or contact factory for service information.
	Incorrect fuse value and type are being used.	Replace with appropriate size/type fuse. Refer to Spare/Replacement Parts for replacement part information.
	Unit is connected to improper power source.	Refer to the label on the side of the chassis for voltage requirements.  Connect unit to proper power source.
Unit does not produce adequate concentration of ozone.	Improper power source.	Refer to label on the side of the unit to ensure that unit is plugged into proper voltage outlet.
Unit turns on, but no ozone output	Combo board may be defective.	Replace the combo board.
	Frequency driver high voltage lead (s) not connected to ozone cell(s).	Connect lead(s) to corona discharge cell(s).
	Water has been allowed to back up into the cell and cause a direct short.	Refer to CD cell cleaning kit instructions.
	Cell is plugged with a build-up of nitrous byproducts and particulate matter. This is usually caused by the lack of proper air preparation.	Refer to CD cell cleaning kit instructions.

## 8.0 Limited Warranty

OZOTECH, Inc., warrants the Poseidon 400 ozone generator to be free from defects in parts and workmanship for (12) months from date of invoice, under conditions of normal use. The corona discharge cell is warranted against catastrophic electrical failure for 3 years from date of invoice. All other parts, repaired or replaced, will be warranted only for the remainder of the original warranty period.

OZOTECH, Incorporated will refund the purchase price, perform repairs or replace equipment, at the option of OZOTECH, Incorporated.

The warranty shall be null, void, and non-binding upon OZOTECH, Incorporated if OZOTECH, Incorporated (or authorized service center) determines the cause of malfunction or defect to be a result of:

1. Failure to perform proper maintenance as defined and recommended in this manual.
2. Failure to adhere to and provide proper operating conditions, as defined in this manual, including operation outside of temperature range, operating in wet or dirty environment, operation outside of manufacturer's specifications.
3. Adjustments made by user other than product output flow rate within ranges specified by manufacturer.

OZOTECH, Incorporated assumes no liability for damages incurred by deliberate or incidental misuse of this product, or damages incurred in transit.

Read Limited Product Warranty >[Link](#)

## 9.0 Service Returns

If the need arises to return your equipment for service, the following procedure must be followed to ensure accurate and timely processing of repairs.

- ✓ Obtain model number/name of unit to be returned.
- ✓ Contact Ozotech, Inc and request a Return Material Authorization (RMA) form. Make sure to give the factory representative an accurate and current shipping address.
- ✓ Provide a description detailing the problem with the unit. Be as specific as possible.
- ✓ After receipt of RMA form, package unit for shipment. Enclose the RMA form with the unit. Use the original packaging materials if possible. If not, please package the product to ensure against shipping damage.
- ✓ Clearly write the RMA number on the outside of the shipping package.
- ✓ Verify that the address is correct and current.
- ✓ Shipments that are not factory authorized will be refused.

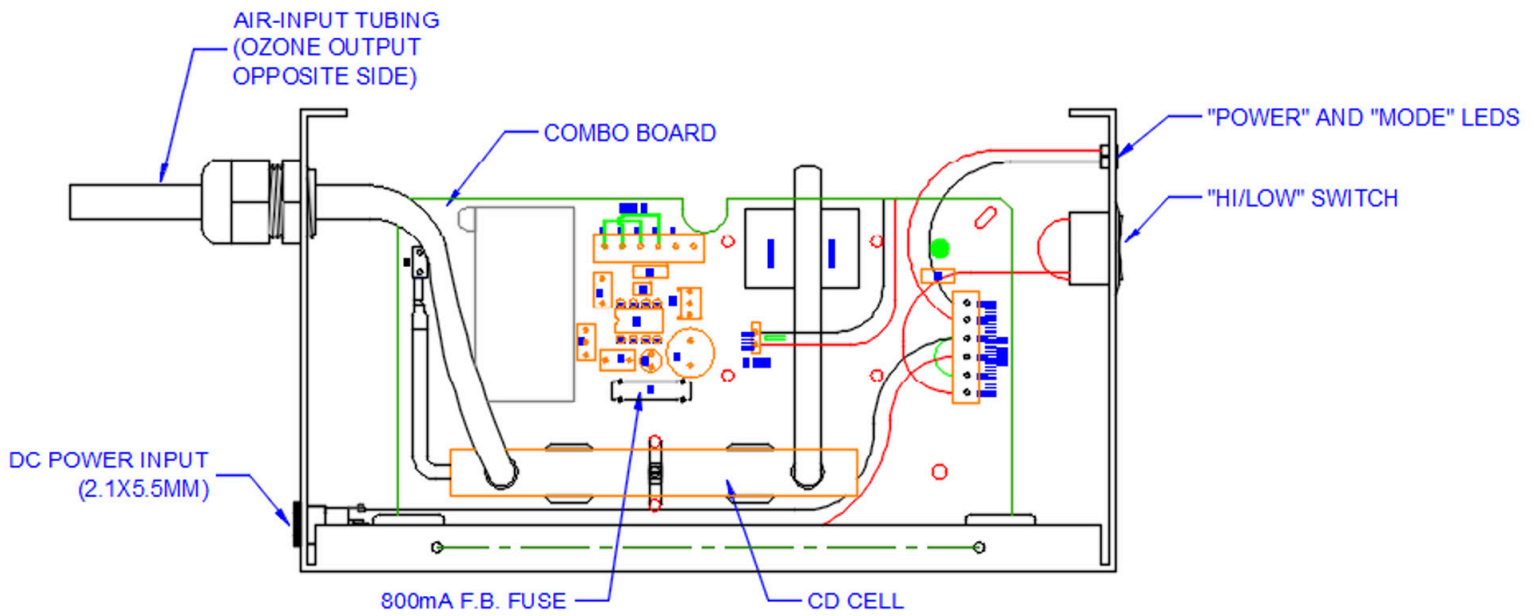
It is recommended that you ship with a reputable and reliable shipping company, and that the contents of the package are insured. Ozotech, Inc. accepts no responsibility for damage or loss of equipment in transit.

### **ALL FREIGHT CHARGES INTO THE FACTORY MUST BE PREPAID.**

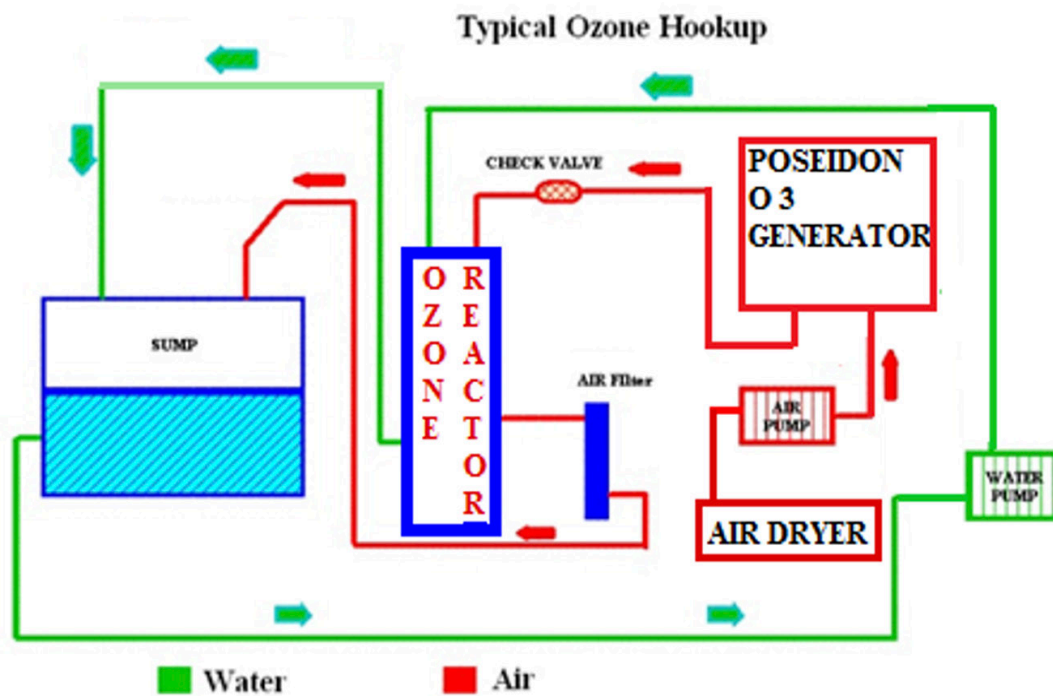
If the repair is covered under warranty, the factory will pay return shipping charges (surface rates only) to the address listed on the RMA, within the Continental United States.

If the repair is not covered under warranty, the returning party is responsible for payment of return shipping and handling charges, as well as labor and equipment costs associated with the repair.

# 10.0 Illustrations



**Figure 3:** Poseidon 400 Component



**Figure 4:** Poseidon 400 Typical Use Diagram