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Waterzone 2AD

Ozone Injection System

Installation and Operation Manual

Cautions, Warnings and Hazards

Refer to the manual of the ozone generating system first, to assure proper location of all ozone equipment.

Ozone is a powerful oxidizing agent. Observe strict operating procedures when using ozone equipment.

Ensure that the Waterzone is in a well-ventilated area. Do not allow rain or condensation to contact the Waterzone. The Waterzone is not weather proof. The unit must be operated indoors or in an enclosure in a non-condensing environment.

Note: If the operator has asthma, he/she must not enter an ozonated airspace. Ozone can induce and an asthma attack.

Carefully review and familiarize yourself with the following important safety information statements concerning the use of ozone with the Waterzone.

- WARNING** Ozone is an extremely aggressive and powerful oxidizer. The Occupational Safety and Health Administration (OSHA) 8-hour exposure limit is 0.10-PPM. The OSHA 15-minute exposure limit for ozone is 0.3 PPM. Above 0.3 PPM, there is the risk of damage to respiratory tissues.
- WARNING** People who have no sense of smell should not operate this equipment.
- WARNING** **Never** attempt to verify ozone production by directly breathing or smelling the ozone outlet or the ozone-tubing outlet.
- WARNING** The WATERZONE uses ozone compatible Stainless and PVC pipes to move water under high pressure in some places. These tubes under high pressures pose a possibility of leaks to occur. In the event water does leak inside the WATERZONE shut all equipment off and repair immediately to prevent electric shock.
- WARNING** Make sure all tubing connections between the ozone generator and the injection point are secure, and in good working condition. Failure to do so could result in the discharge of ozone into an undesired space.

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Introduction

The Waterzone is a completely stainless steel injection system to withstand high dissolved ozone concentrations for the life of the unit. This system has an OZ-2AD ozone generator to generate the ozone for water disinfection. The ozone is efficiently injected into the water with the integrated pump and venturi assembly. Each of the Waterzone functions will be described in this manual. Please read and familiarize yourself with the Waterzone manual before use.

Installation

Remove the Waterzone from shipping crate; also remove all packaging from Waterzone exterior before use.

IMPORTANT: Choose a location for the Waterzone that does not allow rain or condensation to contact the unit. The Waterzone is not weather proof. It must be operated indoors or in an enclosure in a non-condensing environment. The room must be free of dust, oil, acid or other volatile vapors.

NOTE: All items referred to in the INSTALLATION section are referenced in the diagrams on pages 8 – 9 of this manual. Please refer to these images to become familiar with each major component of the Waterzone.

1. Choose a well-ventilated room suitable for the size of the ozone system. The Waterzone includes a steel skid for ease of installation. Ensure the Waterzone is mounted flat and in a safe place. Proper floor drainage is required to prevent water damage in case of water leak or overflow. The ambient temperature in the room should remain within 40-90 °F, the relative humidity should not exceed 85%.
1. Position the Waterzone system for easy connection to the water system. Connect water supply inlet to 1" MPT fitting protruding near the edge of the skid. Connect water supply outlet to the 1" FPT fitting on the bottom of the contact tank. Keep in mind that the intake of the pump must be flooded at all times as it cannot prime itself. *Operating the pump dry for more than 1 minute will burn the shaft seal.* If the Waterzone is fed from a same floor level tank, and if that tank may run low, install a check valve and isolating valve into the intake line of the Waterzone system. Install the check valve as far away from the Waterzone as possible, so that enough water stays in the system at all time for trouble free start.
2. Isolating ball valves should be installed into the connecting intake and discharge lines, to allow for later maintenance of the Waterzone system.
3. There is an air vent mounted to the top of the contact tank. This vent off-gasses all undissolved ozone from the water. This air has high concentrations of ozone in it and must be routed via ¼" ID tubing to a location outside of the building where no human contact is possible (through the roof is suggested).

4. In the event you have the need to power the pump on and off from a remote location there are contacts inside the power control box to do this. These contacts are illustrated on page 8 of this manual.
5. Ensure the ozone generator plug is plugged into the correct receptacle on the bottom of the power box. (See diagram on page #8)
6. Ensure the ozone generator plug is plugged into the correct receptacle on the bottom of the power box. (See diagram on page #8)

WATERZONE Startup Procedure

1. Ensure the Pump power switch is in the OFF position at this time.
2. Plug the unit into a 110V 15Amp power source. The Ozone generator “Main” light should turn on at this time. The ozone generator should be left on for at least 4 hours before the pump can be turned on.
3. Open isolating ball valves to begin water flowing through the Waterzone injection system. The pressure gauge closest to the tank (injector outlet gauge) should be reading no more than 30 PSI at this time.
4. After it is evident water is flowing through the Waterzone, the recirculation pump can be started. The pump switch is located on the power control box and is labeled accordingly. The Injector inlet gauge will read close to 35 PSI at this time. The injector outlet gauge should be fluctuating near 5 PSI. The flow-meter on the ozone generator should be reading between 6 – 10 LPM

Four actions are now occurring:

- air is being sucked into the venturi
 - dry air is being created via the air dryer
 - ozone is being produced and injected into the water
 - excess ozone is off-gassing through vent
5. Check to ensure proper water flow is available at water usage point. The vent installed on the top of the contact tank should also be releasing air periodically to remove off-gassing air.

Operation

The Waterzone is capable of disinfecting up to 20 GPM of water flow depending upon the cleanliness of the water. There should be a 0.2 PPM residual of ozone directly after the output of the contact tank. This can be verified with a colorimetric ozone test kit. The water flow through the Waterzone may be as low as desired as long as the contact tank is kept full of water. There is no adverse effect of too much ozone. Poor water quality requires slower water flows to ensure proper disinfection.

While the Waterzone is operating, the pressure gauges and the ozone generator flow meter are a good indicator of how well the system is running and ozone is being properly introduced. The injector inlet pressure gauge should read above 35 PSI during operation. The injector outlet gauge will indicate how much pressure is being exerted on the outlet side of the injector. The tank pressure will also be indicated on the injector outlet gauge. This gauge should read close to 5 PSI if enough water is supplied from pump and never more than 80 PSI at all times.

When the system is turned off at night or during any period of more than ½ hour when ozonated water is not needed the recirculation pump switch should be turned off. This is the only switch necessary to turn off. The Waterzone should be left on at all times to keep the air dryer warm and moisture from building up inside the desiccant tubes. In the event the system will not be running for extended periods of time, it can be unplugged. Before the system is used again the unit should be turned on for at least 5 hours before ozonated water is needed.

Fuse Light

There are circuit overload fuses found inside the ozone generator to protect against power surges. If power fluctuations are encountered and one of these fuses does blow, the “Fuse” light will illuminate to alert personnel of a problem. Before any repairs are made the technicians at Ozone Solutions, Inc. should be contacted.

Main Light

This light illuminates to show that the OZ-2AD is receiving power. If this light does not illuminate, check the power to the unit and ensure all wiring is intact.

Recirculation Pump Light

The green recirculation Pump light is illuminated any time the pump is switched to the ON position. In the event this light is illuminated and the recirculation pump is not running check the cord and plug to the pump and ensure all wiring is intact.

Moisture Indicator

A moisture indicator is located on the side of the ozone generator. This moisture indicator should be blue at all times. This indicator is plumbed into the tubing between the integrated air dryer and ozone generator corona tubes (see picture on page 9). If this color does change the new color will indicate:

- **Purple** - the dry air dew point is above allowable -40° F. If a power failure took place within last five hours, continue to operate as is, the air dryer cycle will be restored automatically, and the crystals will turn blue again. If not, the air dryer may need repair, please contact Ozone Solutions.
- **Black** - the blue crystals are permanently damaged by an exposure to ozone. This could happen due to a failure of the ozone room ventilation system. Check and restore proper ventilation, replace the indicator.
- **Yellow** - the blue crystals are permanently damaged by an exposure to oil vapours. In this case also the air-drying desiccant in main cylinders is damaged and it must be replaced.
- **Pink/Red** - the blue crystals are permanently damaged from acid vapours in the air. The source of the problem must be identified and removed. Examples: A solid fuel burner near by, overcharged battery,....

Maintenance

The Waterzone needs very little maintenance in normal operating conditions. The air dryer desiccant inside of the OZ-2AD ozone generator should be replaced after 20,000 hours of use, or sooner, depending upon the humidity level in the ambient air. This desiccant can be obtained from Ozone Solutions (see contact info on page 10). No other maintenance should be necessary for the life of this injection system. If there are any problems encountered while operating the ozone injection system or ozone generator, please contact Ozone Solutions, before attempting any major repairs.

Specifications

Treated Water Flow: up to 20 GPM

Ozone Production: 2 g/h at 6 LPM of airflow

Environment:

Temperature (Operating): 40°F to 90°F

Temperature (Storage): -10°F to 150°F

Mechanical:

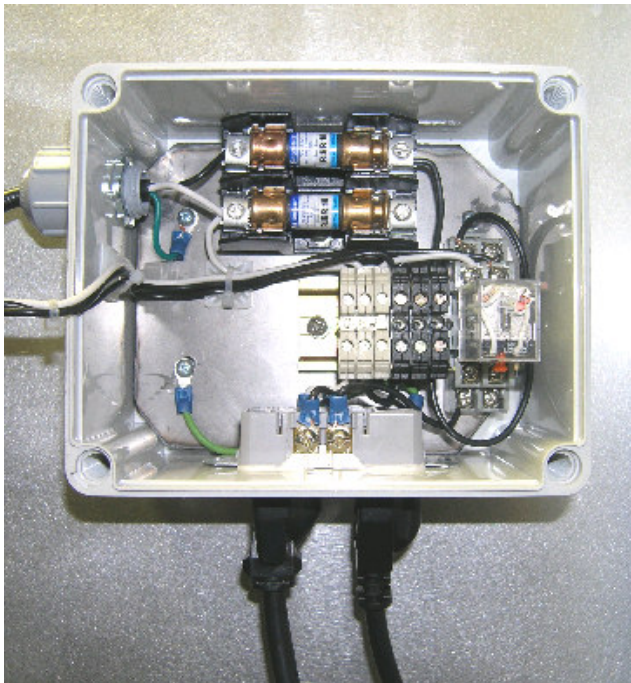
Maximum Dimensions: "32H x 25"W x 18"D

Weight: 100 lb.

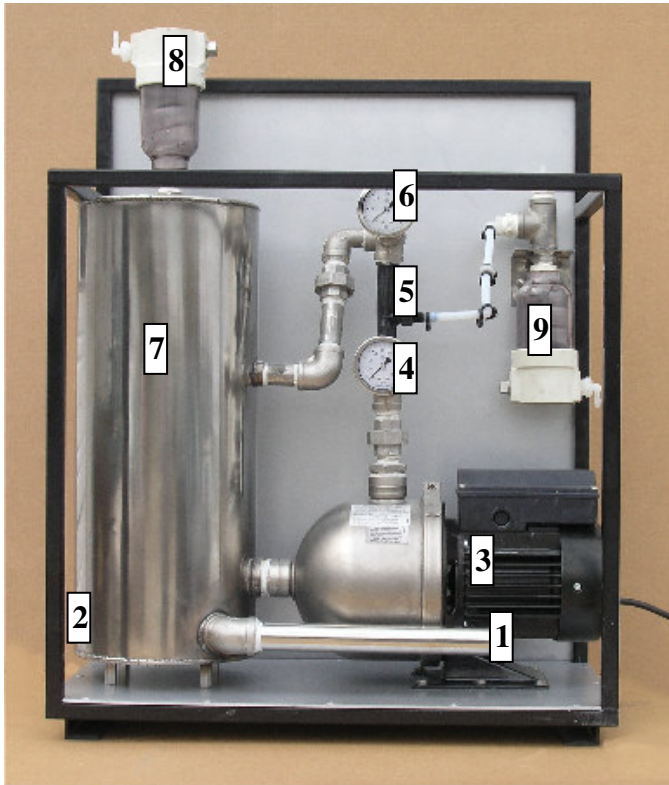
Electrical Connections

Connect power to box as shown

1. Main Power to skid 110V 15 Amp
2. Surge protection fuses
3. Pump plug
4. Ozone generator plug



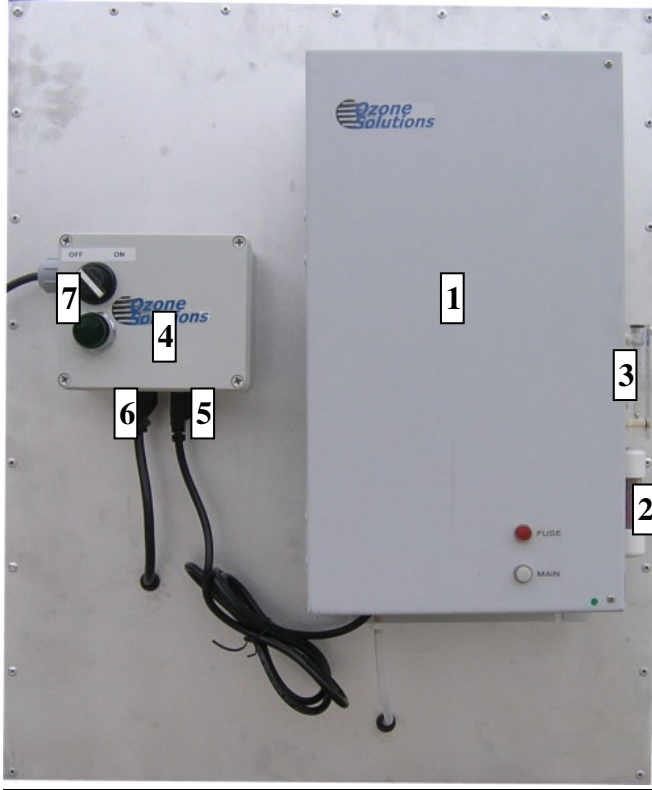
WATERZONE Component Diagram



WATERZONE Front

- 1- Water inlet
- 2- Water outlet
- 3- Recirculation pump
- 4- Injector inlet pressure gauge
- 5- Injector
- 6- Injector outlet pressure gauge
- 7- Contact tank
- 8- Off-gassing vent
- 9- Water trap

Waterzone Rear



1. OZ-2AD ozone generator
2. Moisture indicator
3. Flow-Meter
4. Power control box
5. Ozone generator plug
6. Recirculation pump plug
7. Pump power switch and indicator light

How to Contact Ozone Solutions

By mail:

Ozone Solutions, Inc.
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Sioux Center, IA 51250 USA

By telephone: (712) 722-0337

By fax: (712) 722-1787

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