



A DIVISION OF AIRTEX MANUFACTURING LLLP

# INSTALLATION, OPERATION AND MAINTENANCE MANUAL

FOR

## TRI-MED OX-2000 SERIES

## ODOR CONTROL UNITS



UNIT MODEL NO. \_\_\_\_\_  
UNIT SERIAL NO. \_\_\_\_\_  
SERVICED BY: \_\_\_\_\_  
TEL. NO: \_\_\_\_\_

### CANADIAN HEAD OFFICE AND FACTORY

1401 HASTINGS CRES. SE  
CALGARY, ALBERTA  
T2G 4C8  
Ph: (403) 287-2590  
Fx: 888-364-2727

### USA HEAD OFFICE AND FACTORY

32050 W. 83<sup>rd</sup> STREET  
DESOTO, KANSAS  
66018  
Ph: (913) 583-3181  
Fx: (913) 583-1406

### CANADIAN EASTERN FACTORY

1175 TWINNEY DRIVE  
NEWMARKET, ONTARIO  
L3Y 5V7  
Ph: (905) 898-1114  
Fx: (905) 898-7244

### SALES OFFICES ACROSS CANADA AND USA

Retain instructions with unit and maintain in a legible condition.  
Please give model number and serial number when contacting  
factory for information and/or parts.

## TABLE OF CONTENTS

YOU HAVE RESPONSIBILITIES TOO.....	3
INTRODUCTION.....	3
SAFETY PRECAUTIONS.....	3
WARRANTY.....	4
PARTS.....	4
RECEIVING.....	5
TEMPORARY STORAGE.....	5
INSTALLATION.....	5
CODES.....	5
MOUNTING AND PIPING.....	6
ELECTRICAL CONNECTIONS.....	7
BEFORE STARTING.....	7
START-UP AND OPERATION.....	7
PERIODIC ADJUSTMENT.....	7
AIR-BALANCE SLIDE GATE ADJUSTMENT.....	8
MAINTENANCE.....	8
MAINTENANCE SCHEDULE.....	8
ELECTRICAL.....	9
CORONA PLATES.....	9
CORONA PLATE INSPECTION:.....	10
FILTER REPLACEMENT.....	11
TROUBLESHOOTING CHART.....	12
START-UP RECORD.....	13


## LIST OF FIGURES

Figure 1: TYPICAL UNIT MOUNTING.....	6
Figure 2: NEW CORONA PLATE.....	10
Figure 3: BURN SPOT FROM LACK OF CLEANING.....	10
Figure 4: CRACKED CORONA PLATE.....	10
Figure 5: COMPONENT ARRANGEMENT.....	11

© Airtex Manufacturing LLLP. All rights reserved.

## YOU HAVE RESPONSIBILITIES TOO

This installation, operation and maintenance manual can not cover every possibility, situation or eventuality. Regular service, cleaning and maintaining the equipment is necessary. If you are not capable of performing these tasks, hire a qualified service specialist. **Failure to perform these duties can cause property damage and/or harm to the building occupants and will void the manufacturer's warranty.**



<b>Warning:</b> 	<b>Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operation and maintenance manual thoroughly before installing or servicing this equipment.</b>
--	--


## INTRODUCTION


TRI-MED Oxidizers are high quality products designed and manufactured to provide many years of trouble-free operation. We recommend that this manual be read thoroughly to ensure proper installation, efficient operation, and proper maintenance of this equipment. The submittal record is considered to be part of the Installation, Operation and Maintenance Manual.


## SAFETY PRECAUTIONS

Read, understand and follow the complete manual before beginning the installation, including all safety precautions and warnings.

<b>Warning:</b>  	<b>This unit contains high voltage circuits. Electrical shock or death could occur if instructions are not followed. This equipment contains moving parts that can start unexpectedly. Injury or death could occur if instructions are not followed. All work should be performed by a qualified technician. Always disconnect and lock out power before servicing. DO NOT bypass any interlock or safety switches under any circumstances.</b>
---	---

<b>Caution:</b> 	<b>This unit generates high concentrations of ozone. Operate only as directed in this manual. Never breathe the air directly discharged from the unit. Ozone can be a respiratory irritant.</b>
--	---

<b>Warning:</b> 	<b>The ETL certification carried by this unit applies for installing the unit in a non-hazardous location. This unit is approved to the UL 867(US)/CSA C22.2 No. 187 (Canada). It is the owner's and/or agent's responsibility to obtain the appropriate approvals to use this unit in a hazardous environment.</b>
--	---

<b>Caution:</b> 	<b>A differential pressure gauge, supplied for some applications, reading 0" w.c. during fan operation indicates a positive pressure in the fan housing and thereby reverse air flow through the oxidizer. A differential pressure switch will disable the generator head operation in this condition. See included troubleshooting chart.</b>
--	--

## WARRANTY

**LIMITED WARRANTY** TRI-MED will furnish without charge, F.O.B. factory, freight collect, replacement parts for, or repairs to products covered herein which prove defective in material or workmanship under normal and proper use for a period of twelve (12) months from the date of shipment, provided the customer gives TRI-MED written notice of such defects within such time periods and provided that inspection by TRI-MED establishes the validity of the claim and all pertinent invoices have been paid in full. The repairs or replacements will be made only when the complete product(s) or part(s) claimed to be defective are returned to TRI-MED or a depot designated by TRI-MED, transportation charges prepaid. Repairs or replacements as provided for by this paragraph shall constitute fulfillment of all TRI-MED's obligations with respect to this warranty. Corona plates and filters are considered consumable items and are to be replaced by the owner/operator as per the maintenance schedule. Corona plates broken after original shipment will not be considered a manufacturing defect and replacement will be the responsibility of the owner/operator. This warranty does not apply to any products or parts thereof that have been subject to accident, misuse or unauthorized alterations, or where TRI-MED's installation and service requirements have not been met.

The foregoing warranty is in lieu of all other warranties, express or implied. TRI-MED specifically disclaims any implied warranty of merchantability and/or fitness for purpose. Under no circumstances shall TRI-MED be liable to, nor be required to indemnify, Buyer or any third parties for any claims, losses, labour, expenses or damages (including special, indirect, incidental, or consequential damages) of any kind, resulting from the performance (or lack thereof) of this Agreement or the use of, or inability to use the goods sold hereunder, including, but not limited to, damages for delay, temporary heating/cooling costs, loss of goodwill, loss of profits or loss of use. Furthermore, the parties agree that the Buyer's sole remedy under this Agreement shall be limited to the limited warranty set forth in the preceding paragraph relating to the repair or replacement of any defective goods. Under no circumstances shall any claim or award against TRI-MED exceed the original contract price whether awarded through arbitration, litigation or otherwise.

TRI-MED Warranty is void if:

1. The unit is not installed in accordance with this manual.
2. The start-up and operation of the unit is not performed in accordance with this manual.
3. The unit is operated in an atmosphere containing corrosive substances.
4. The unit is allowed to operate during building construction.

## PARTS

Contact the nearest TRI-MED sales office or factory for replacement parts. Be sure to include Model Number, Serial Number, date of installation, the nature of the failure and the description of the part(s) required. Some parts may not be stocked items and must be manufactured or ordered.

## RECEIVING

Refer to the back of the packing slip for receiving instructions.

On receipt of the unit, check for damage. Inspect protective covers for punctures or other signs that there may be internal damage. Remove protective covers and check for internal damage. Replace covers if the unit is not being installed at this time. Open access doors and check for internal damage. Close access doors when inspection is complete.

All units are pre-tested at the factory immediately prior to shipping and are ensured to be in good operating condition at that time. If damage is found, refer to the instructions on the back of packing slip.


On receipt of the unit, check the electrical characteristics (see rating plate) to make sure that the electrical supply matches. All parts for field installation are listed on the shipping order form.


## TEMPORARY STORAGE

If a unit is to be stored prior to installation the following precautions are required:

- Store in a well drained area that will not accumulate surface water.
- Store in an area where the unit will not be damaged.
- All protective coverings that were provided for shipping must be in place.
- Protect indoor mounted equipment from rain and snow.

## INSTALLATION

<p><b>Warning:</b></p> 	<p><b>This unit is not explosion proof. It is not suitable for hazardous locations as defined by the National Electrical Code of the Canadian Electrical Code.</b></p>
---	--

<p><b>Warning:</b></p> 	<p><b>All wiring and piping installation must be completed by qualified technicians in accordance with all federal, state, provincial and/or local codes.</b></p>
--	---

**Note: Installation shall be in accordance with this manual and all other associated component and control Installation, Operation and Maintenance Manuals.**

## CODES

### In Canada:

1. The installation of this unit shall be in accordance with the latest edition of the Canadian Electrical Code, Part 1 - C.S.A. Standard C22.1, Provincial and Local Codes, and in accordance with the local authorities having jurisdiction.
2. This unit shall be electrically grounded in accordance with the latest edition of the Canadian Electrical Code, Part 1 - C.S.A. Standard C22.1, Provincial and Local Codes, and in accordance with the local authorities having jurisdiction.
3. The installation of this unit shall be in accordance with all other National, Provincial, and Local Codes, and in accordance with the local authorities having jurisdiction.

In USA:

1. The installation of this unit shall be in accordance with the latest edition of the National Electrical Code, (ANSI/NFPA 70), State and Local Codes, and in accordance with the local authorities having jurisdiction.
2. This unit shall be electrically grounded in accordance with the latest edition of the National Electrical Code, (ANSI/NFPA 70), State and Local Codes, and in accordance with the local authorities having jurisdiction.
3. The installation of this unit shall be in accordance with all other National, State, and Local Codes, and in accordance with the local authorities having jurisdiction.

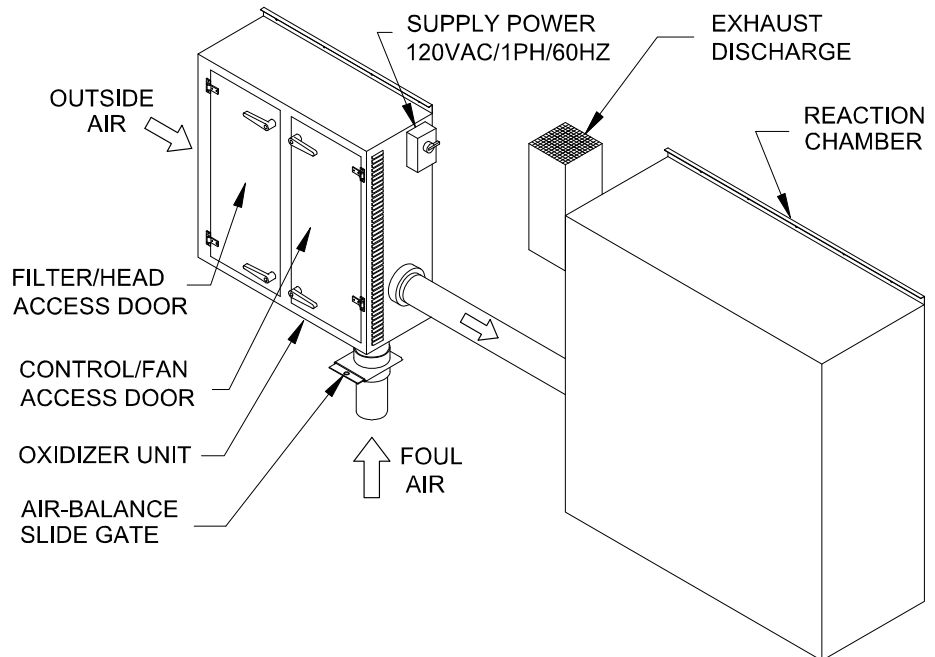
MOUNTING AND PIPING

<p><b>Warning:</b></p> 	<p><b>Injury or death can result from improper rigging and lifting. Rigging must be performed by qualified personnel with proper equipment using appropriate and approved safety precautions.</b></p>
--	---

**Note: DO NOT install anything that will interfere with equipment access or rating plate.**

**Note: In climates where snow can accumulate, the Oxidizer unit shall be mounted above the snow line.**

The oxidizer and optional reaction chamber are equipped with built-in upper and lower mounting flanges, which allows them to be either wall or base mounted. The optional foul exhaust air intake connection is located on the bottom of the oxidizer. Therefore, allow sufficient room below the oxidizer for the exhaust intake and the slide gate. Connect the Oxidizer to the optional Reaction Chamber as shown in Figure 1. Piping to and from the unit should be schedule 40 PVC, as a minimum. Piping between the two units should be kept as short as possible (preferably less than 10 feet), and should be sloped towards the reaction chamber at 1/8" per foot to allow condensate to drain from the reaction chamber.



**Figure 1: TYPICAL UNIT MOUNTING**

## ELECTRICAL CONNECTIONS

**DO NOT install anything that will interfere with equipment access or rating plate.**

The unit comes with a factory mounted disconnect. The unit is configured for standard single phase power, 120 VAC, single phase, 60 hertz (Line, Neutral, Ground) only.

## BEFORE STARTING

1. Set all associated electrical switches, controls and disconnect switch to “OFF” position.
2. Tighten all electrical connections.
3. Confirm all shipping materials have been removed. See any supplemental instructions to help identify possible locations.
4. Confirm that the unit has been installed correctly.
5. Confirm voltage is within  $\pm 10\%$  of rating plate. If not, contact the installing electrical contractor and have the voltage condition corrected before continuing.

## START-UP AND OPERATION


1. Open the control/fan access door (right side) of the Oxidizer that allows access to the control panel. (The filter/head access door (left side) is interlocked and will not allow the unit to run if it is open.) Refer to Figure 2.
2. Adjust the Oxidizer Output dial and fan speed to 100%.
3. Turn “ON” additional oxidizer banks.
4. Turn disconnect switch “ON”. Enable unit Start contact. The fan will start. Ensure correct fan operation. Following a 3-minute time delay, oxidizer banks are energized.
5. Once Oxidizer is fully operating, check for proper operation of the differential pressure switch as follows:
  - a. Using the Fan Speed Control, turn “OFF” the Oxidizer fan. Turn off any associated system fans to verify no air flow across the Oxidizer. The differential pressure switch should “OPEN” causing oxidizer bank light(s) to de-energize.
  - b. Turn “ON” the Oxidizer fan. The differential pressure switch should “CLOSE”. Following a 3-minute time delay, oxidizer bank light(s) should re-energize.
6. The fan regulates the evacuation airflow and the airflow through the generator head(s). The fan speed should be set to high unless noise or some other site requirement requires a slower speed.
7. Adjust Oxidizer output(s) to required levels. The discharge from the reaction chamber should have little or no odor.
8. See Air-Balance Slide Gate Adjustment procedure (below) for optional foul air induction package.

## PERIODIC ADJUSTMENT

Once the unit has been placed into operation, it will run continually at this level. The hourmeter tracks the total time that power is applied to the unit. It has been provided to track scheduled maintenance for the unit. Should the system see a load spike or if other contributing gases are temporarily introduced, some discharge odor may not be neutralized. Should load parameters change, re-adjustment of the output may be required.

## AIR-BALANCE SLIDE GATE ADJUSTMENT

(FOR OPTIONAL FOUL AIR INTAKE PACKAGE)



<p><b>Warning:</b></p> 	<p><b>A differential pressure gauge, supplied for some applications, reading 0" w.c. during fan operation indicates a positive pressure in the fan housing and thereby reverse air flow through the oxidizer. A differential pressure switch will disable the generator head operation. See included troubleshooting chart.</b></p>
--	---

The differential pressure gauge is used to verify a slight negative pressure is maintained between the fan inlet chamber and atmosphere. The normal operating pressure should range from 0.2 - 0.3" w.c. across generator head(s). Follow the procedure below to initially set the air-balance slide gate or if there are changes in the foul exhaust air loading.

1. With the fan running, shut the air-balance slide gate completely and record pressure on the differential pressure gauge. The reading should be 0.4 - 0.5" w.c.
2. Adjust the air-balance slide gate until the gauge reads 0.2 - 0.3" w.c. The air-balance slide gate should be approximately half open. This setting should provide adequate airflow across the generator head(s) and designed ozone flow into the foul exhaust air stream.

The differential pressure switch is factory set at 0.1" w.c. and should not require adjustment.

## MAINTENANCE

<p><b>Warning:</b></p>  	<p><b>This unit contains high voltage circuits. Electrical shock or death could occur if instructions are not followed. This equipment contains moving parts that can start unexpectedly. Injury or death could occur if instructions are not followed. All work should be performed by a qualified technician. Always disconnect and lock out power before servicing. DO NOT bypass any interlock or safety switches under any circumstances.</b></p>
--	--

The effectiveness of the Oxidizer 2000 is a function of its ability to convert oxygen (O<sub>2</sub>) to ozone (O<sub>3</sub>) through high voltage corona plates. It is essential to maintain airflow through clean corona plates. Dirty filters will not only reduce the oxygen across the corona plates, but also can change the air balance between the evacuation of the wet well and the air across the generator head(s).

To provide a maintenance history, it is recommended that the owner have a maintenance file. **The following maintenance instructions are to be carried out by qualified service personnel.**

## MAINTENANCE SCHEDULE



Every installation is different. Therefore, a maintenance schedule needs to be established based on each installation. An initial two-month or 1400 hour inspection must be performed. If the filters and plates are found to be dirty, clean and replace and adjust the maintenance schedule accordingly. A review of the installation should be performed to find the source of the contamination.

Note: Seasonal changes may affect the maintenance requirements. Adjust the schedule accordingly.

The maximum time between maintenance checks should be 6 months.





## ELECTRICAL

<p><b>Warning:</b></p>  	<p><b>This unit contains high voltage circuits. Electrical shock or death could occur if instructions are not followed. This equipment contains moving parts that can start unexpectedly. Injury or death could occur if instructions are not followed. All work should be performed by a qualified technician. Always disconnect and lock out power before servicing. DO NOT bypass any interlock or safety switches under any circumstances.</b></p>
--	--

1. Check all wiring for loose connections.
2. Check voltage at unit (while in operation).
3. Check amperage draw against unit rating plate.

## CORONA PLATES

<p><b>Warning:</b></p>  	<p><b>This unit contains high voltage circuits. Electrical shock or death could occur if instructions are not followed. This equipment contains moving parts that can start unexpectedly. Injury or death could occur if instructions are not followed. All work should be performed by a qualified technician. Always disconnect and lock out power before servicing. DO NOT bypass any interlock or safety switches under any circumstances.</b></p>
--	--

Disconnect the power from the unit. Open the filter door. Locate the generator head(s) and remove the cover. Each generator head has 6 corona plates. Locate the corona plates. Note the electrical contacts between the plates. This is important for reinstallation later. Slide them out of their locating grooves and clean. All plates must be cleaned at the same time.

Plate Cleaning:

The oxidizer includes a second complete set of corona plates when delivered new. Alternate plate usage between the two sets.

**Note: The contacts between plates are designed to touch both plates.**

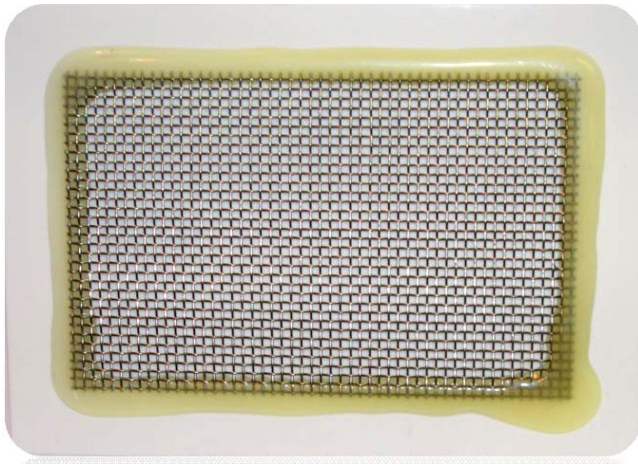
Clean the dirty corona plates by using a dishwasher or hand wash. If cleaning by hand, begin cleaning the plates by spraying or dipping them in cleaning solution. The cleaning solution should be a detergent product that is capable of breaking down oils and greases but leaves no residue when rinsed off. Cleaners with light abrasives can also be used (ex: citrus based hand cleaner). Scrub each plate, particularly the screen area, with a plastic bristled brush. Rinse them thoroughly to remove any residue. The corona plates must be dried before use.

If the plates are rinsed in hard water, then clean compressed air should be used to dry off of the corona plates to prevent hard water deposits.

## CORONA PLATE INSPECTION:

After cleaning, inspect each corona plate for pin holes or other damage. A pin-hole in the plate will cause the generator head(s) to operate incorrectly. Inspect the ceramic plate and wire mesh area for any damage. No holes or cracks should be visible on the plate. Replace any corona plates that fail inspection.

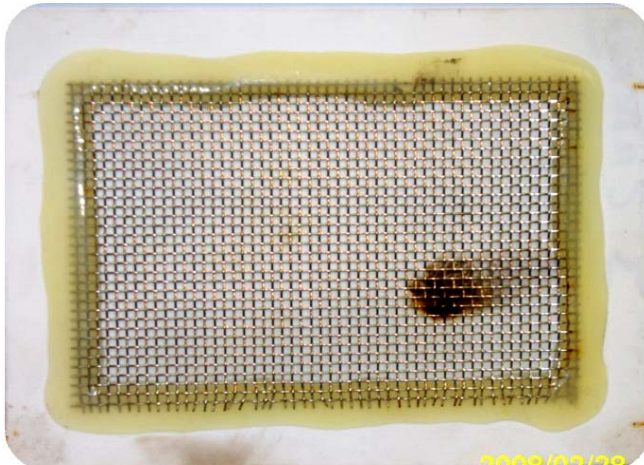
After the plates and contact positions have been checked, reinstall the cover and repeat the procedure to any other generator head(s).



**Figure 2: NEW CORONA PLATE**



**Figure 4: CRACKED CORONA PLATE**



**Figure 3: BURN SPOT FROM LACK OF CLEANING**

## FILTER REPLACEMENT

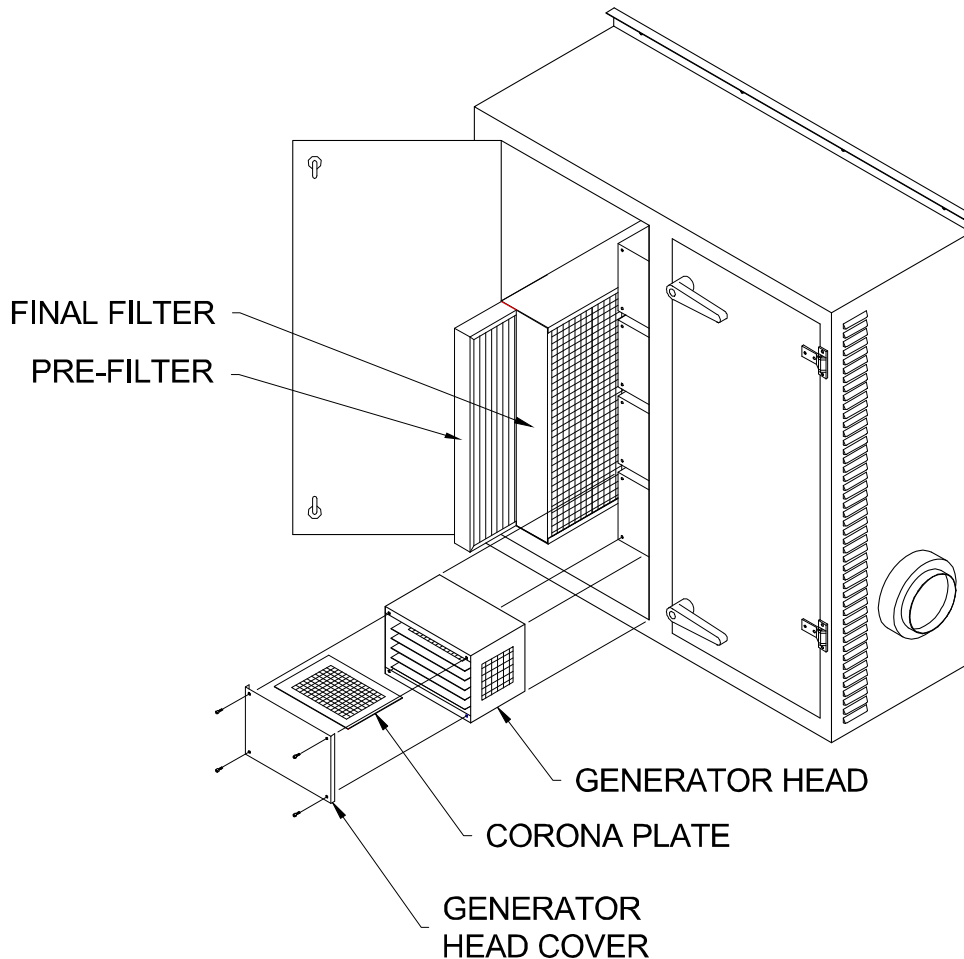
**Warning:**



In some applications the used filter may contain chemical or biological hazards. All local, regional and national regulations for safety and disposal should always be followed.



The Oxidizer is equipped with a two-stage filtration system. The pre-filter is provided to extend the life of the more costly final filter. It is important to check the filters often during the period immediately following installation in order to establish the maintenance schedule. Filter change out schedules will vary from site to site or from season to season on outdoor equipment. A good maintenance schedule will allow several pre-filter changes before it is necessary to replace the final four inch 85% filter. Clean the filter track with a damp cloth at each filter inspection. See Figure 5 below for filter location.


Replace with equivalent filters only.



**Figure 5: COMPONENT ARRANGEMENT**

## TROUBLESHOOTING CHART

<p><b>Warning:</b></p>  	<p><b>This unit contains high voltage circuits. Electrical shock or death could occur if instructions are not followed. This equipment contains moving parts that can start unexpectedly. Injury or death could occur if instructions are not followed. All work should be performed by a qualified technician. Always disconnect and lock out power before servicing. DO NOT bypass any interlock or safety switches under any circumstances.</b></p>
--	--

<p><b>Warning:</b></p> 	<p><b>A differential pressure gauge, supplied for some applications, reading 0" w.c. during fan operation indicates a positive pressure in the fan housing and thereby reverse air flow through the oxidizer. A differential pressure switch will disable the generator head operation. See included troubleshooting chart.</b></p>
--	---

Operating conditions can vary from day to day or even hour to hour. Check that the piping is not clogged or separated. Please follow the trouble shooting steps to make sure the unit is operating as designed.

Symptoms	Problem	Cure
No power to fan or control panel	No power	Restore power to circuit.
	Power disconnect not turned on	Turn on disconnect switch.
	Blown fuse or breaker	Replace fuse or reset breaker.
	Control panel not closed	Close panel and make sure door interlock switch(es) closed.
	Defective door interlock Switch(es)	Check and replace if required.
Power on - fan not running	Fan speed control turned to the off position	Turn on and adjust fan speed.
	Defective fan speed control	Check and replace if required.
	Defective fan motor	Check power at fan and replace if required.
Power on - blower on - no corona buzz or odor too high	Purge timer not timed out yet	Wait three minutes for purge timer.
	Differential pressure switch not closed	Increase fan speed or adjust air-balance slide gate. See AIR-BALANCE SLIDE GATE ADJUSTMENT on page 8.
	Oxidizer output control not high enough	Adjust Oxidizer Output control higher. 1. Energize additional generator heads. 2. Decrease fan speed as required. 3. Perform air-balance.
	Filter clogged	Replace filter. See Filter Replacement on page 11.
	Corona plates dirty	Clean corona plates. See Plate Cleaning on page 9.
	No voltage at plates after cleaning	Inspect for plate damage and replace damaged plate. See Corona Plate Inspection on page 10.
	Defective transformer	Check primary and secondary voltages and replace if required.
	Power on - Blower on- Pressure gauge at zero	Wet well extremely positive pressure, blower not able to draw air across generator heads
Wet well extremely positive pressure, blower not able to draw air across generator heads after adjusting damper		Close Air-Balance slide gate and shut system off. Contact factory.

## START-UP RECORD

Unit Serial Number:	Date:
Model:	
All shipping material removed.	
All piping properly installed.	
All field wiring is complete and installed as per the wiring diagram.	
Incoming power Voltage measurement:	V
Rotation Correct.	
Amperage measurements:	
Fan Motor	A
	A
	A
Differential Pressure (with Air Balance Slide Gate Shut)	“W.C.
Air-Balance Slide Gate properly adjusted.	
Differential Pressure (with Balance Slide Gate Open)	“W.C.
Unit operates as described in the unit function.	
All controls set at the correct setpoints as indicated in the unit function.	
Notes:	
Start-up Completed By:	
Technician:	Company: