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SECTION I
Description and Operation

The Trion Oil Mist Precipitator is designed to remove contaminants in the form of oil mist and oil smoke from plant air. The contaminant is usually captured at its source by hooding, then conveyed through ducting to the precipitator where it is collected, leaving clean air to be recirculated directly back into the ventilated area. Contaminants from one or several sources may be ducted to a single unit providing the total rating of the unit is not exceeded. When so specified, a factory inlet adaptor is supplied for multiple inlet connections.

As contaminated air first enters the precipitator, it is subjected to a mechanical prefilter which serves a twofold purpose; to strain out any larger particulates, such as metallic chips from cutting or grinding operations, and to provide a slight pressure drop for even distribution of air through the electrostatic collecting elements.

The pre-filtered air then passes through an ionizing-collecting cell. In the ionizer, the particles in the airstream are charged by a corona discharge created from a series of electrically charged blades evenly positioned between grounded electrodes. The particles are then passed into a series of equally spaced parallel plates. Each alternate plate is charged with the same polarity as the particles, which repel, while the intermediate plates are grounded, which attract and collect.

As particles of mist are continuously precipitated, they build-up or agglomerate into liquid droplets which are drained away or returned to a reservoir for ultimate reuse.

The clean air, before entering the blower for exhaust, is again subjected to a mechanical after filter which further serves in air distribution as well as a baffle for any droplets from the trailing edges of the collecting plates that may be entrained in the air stream.

The exhaust port for the clean air is fitted with an adjustable blast gate to regulate the air volume for the given installation.

The high voltage direct current necessary to energize the ionizing-collecting cell is supplied through two high voltage leads from a power pack contained in a separate housing. It is equipped with the necessary equipment to monitor the electrical operation of the unit and should be installed in a location where it can be readily observed.

SECTION II
Operating Limitations

Due to occasional electrical arc over, inherent in all electrostatic precipitators, this equipment should not be used in a highly combustible atmosphere.

SECTION III
Installation

A. GENERAL DATA
Refer to chart on page 5.

B. PACKAGING
A Model 18-103 unit shipment consists of two containers; one for the precipitator-blower sections and one for the power pack. The Model 18-203 unit shipment consists of three containers as the ionizing-collecting cells, due to their weight are packaged separately. Inter-connecting cable, instructions, and associated paperware are packed inside the power pack. Upon receipt, the shipment should be carefully examined and any claim for damage, if required, should be immediately filed directly with the carrier.

C. DUCT AND HOOD DESIGN
The effectiveness of any oil mist or smoke collecting system is first dependent upon capturing the contaminants at their source and conducting them by an air stream to the collector.

In cases where adequate hooding is not provided on the basic machine or process, the design of the hood is of utmost importance to the overall effectiveness of the mist collecting system.

Hood design is a subject that should not be oversimplified if optimum results are to be expected. This subject warrants a great deal more consideration than can be given here; therefore, it is recommended that recognized text be consulted such as Industrial Ventilation - "A Manual of Recommended Practice", published by the Committee on Industrial Ventilation, P.O. Box 453, Lansing, Michigan.

The duct connecting the hood with the oil mist
eliminator should be as short as possible, of adequate cross-sectional area (duct velocity approximately 2,000 fpm) and should be sloped either toward the hood or the collector so that oil will not form pools in the duct.

Depending on the purchase specifications, the entrance collar may or may not be supplied with an inlet adaptor. If the adaptor plenum is factory installed, it must be sealed to prevent oil leakage with an oil resistant compound - such as silicone base or similar - when they are secured to the inlet collar. Refer to page 13.

When the inlet collar has been prepared to receive the type of ducting intended, the unit is ready for mounting.

D. MOUNTING

Although not necessary, the unit is usually located overhead of the machinery it serves. The unit must be installed level to facilitate proper drainage.

Due to the varying conditions, the specific design and fabrication of the necessary hangers, supports and bracing is determined by the installer.

To aid in installation, the 2400 cfm unit is equipped with suspension mounting holes, 3/8” - 16 NC, located in the cabinet top. Due to the weight, the 4800 cfm unit is provided with a mounting cradle. Refer to page 14.

Prior to lifting the unit into the mounting arrangement, the access panel, ionizing-collecting cell(s) and mechanical filter(s) should be removed and placed safely aside to lighten the load.

When the ducting from the hood has been secured to the air entrance collar or inlet adaptor the mechanical filter(s) and ionizing-collecting cell(s) may be reinstalled. When installing the cell(s) be sure it is placed into the cabinet in accordance with the air flow arrows on the cell end plates.

E. PIPING

Identical base sections are used on the precipitator section and the blower section and each are provided with a 2” drain nipple. The blower section nipple is supplied as a convenience for periodic maintenance. It should however, be capped at the time of installations.

The nipple under the precipitator section serves as a piping connection to return the collected oil to the machine sump or reservoir used for oil recovery. THE DRAIN LINE MUST INCLUDE A TRAP TO PREVENT AIR FROM BEING DRAWN THROUGH THE DRAIN.

F. ELECTRICAL

The power pack should be located so the meters may be readily observed and service access easily obtained.

The standard length of the blue and black high voltage leads are 50 feet. Therefore the power pack must be mounted within these limitations. When longer leads are required the length is usually specified on the order. DO NOT SPLICE HIGH VOLTAGE CABLE.

Refer to Section VIII, page 19 “Power Pack Outline” for mounting hole layout and dimensions.

(a) High Voltage Wiring. Interconnect the power pack to the ionizing-collecting cell with the two lengths of high voltage cable. Each cable should be run in separate conduit and should not be spliced at any point throughout its entire length. Use the blue cable to connect the ionizer section of the cell to the “ionizer” terminal marked within the power pack. Use the black cable to connect the plate section of the cell collector to the “collector” terminal marked within the power pack. A conduit box is located at the top side of the cabinet with a predrilled cable entrance hole to facilitate the wiring. Refer to Page 13.

(b) Primary wiring. Depending on the order specifications, the unit will be supplied as follows:

2. With 230/460V to 115V stepdown transformer wired to motor.

Note: Unless otherwise specified, all wiring completed at factory will be arranged for 460V input.

Refer to appropriate wiring diagram, pages 15-17 and complete wiring as shown.

SECTION IV

Start-up

Prior to start-up, check the following items:

1. Hooding and duct work completely connected and sealed to prevent the leakage of oil.
2. Drain lines connected and traps filled with oil to prevent air bypass.
3. Ionizing-collecting cell(s) clean of any debris and installed in accordance with directional arrows on the cell end plates.
4. Blower, motor, and sheaves secure and proper tension on belt.
5. Blast gate on discharge side set at one half open.
6. High voltage leads connected to their proper terminals and secure.
7. All access panels closed and the safety switches closed.
With primary input power connected to power pack, turn circuit breaker on front panel of power pack to "on" position. The indicating light should glow indicating that voltage is being supplied to the primary circuit. If light fails to glow, recheck power source and check the safety switches to be sure they are closed. The milliammeter and kilovoltmeter on the face of the power pack should read within the range indicated on the plate secured to the power pack. The milliammeter is read by depressing the "push to read" button directly under the meter. The kilovoltmeter is read for the ionizer section and the collector section by means of a selection switch directly under the meter.

Note: If more than one unit is energized by one power pack, the milliammeter should indicate the total current requirements for the units energized.

<table>
<thead>
<tr>
<th>Models</th>
<th>Current Range</th>
<th>Voltage Range (± 500 VDC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-103-01</td>
<td>3.2 to 4.0 MA</td>
<td>13.0 KVDC, 6.5 KVDC</td>
</tr>
<tr>
<td>18-203-01</td>
<td>6.4 to 8.0 MA</td>
<td>13.0 KVDC, 6.5 KVDC</td>
</tr>
</tbody>
</table>

The power supply is factory set for its designed load at 115 volt input. If field conditions vary, and they usually do, the output can be adjusted to bring the milliammeter reading into the specified range by adjusting the primary input to the high voltage transformer. With the access door to the power pack opened, adjust the two input taps on the terminal board secured to the transformer. (NOTE: ONE LEAD MUST ALWAYS BE SECURED TO TERMINAL 1 OR 2 AND THE OTHER LEAD TO TERMINALS 3 THROUGH 7.) The highest output is obtained from terminals 2 and 3 and the lowest from terminals 1 and 7. Adjustments to the output voltage and current are made by moving the wires from the different terminals. Terminals 3 through 7 will cause a change of approximately twice that of the change from 1 and 2.

Once the precipitator is energized, it is not unusual to hear an occasional arc from the ionizing-collecting cell, especially at initial start-up. However, if the arcing is quite heavy and persistent, the high voltage leads should be checked to see that they are not reversed, i.e., the 13 KVDC lead to the collector and the 6.5 KVDC lead to the ionizer. (Ionizer is 13 KVDC blue cable and plates 6.5 KVDC black cable). In the event the circuit breaker on the face plate of the power pack repeatedly trips out after resetting, it indicates a short circuit. Refer to the trouble shooting section of the manual for causes and corrections of this condition, located on pages 6-10.

Once the precipitator is functioning within the prescribed operating millampere range, the blower may be started. If excessive vibration or unusual noise is evident, shut the blower off and check securement of blower/motor mounting, sheaves and fan belt. Once the blower is running smoothly, adjust the blast gate located on the exhaust end of the blower cabinet until the optimum of contaminant capture and mist precipitation is obtained.

With the precipitator in total operation, indicated efficiency can be determined by observing the mist at, around and between its source and the hood area. If some mist is escaping the hood, the blower delivery should be increased by adjusting the blast gate to provide a larger discharge area. Next observe the discharge air for blow through or penetration. For maximum collection efficiency, the blast gate should not be opened further than required for adequate mist capture velocity.

It is advantageous from the standpoint of lowered power consumption, higher collecting efficiency, longer blower/motor life and less maintenance, when the hood-duct design and installation provide maximum efficiency at lower than rated precipitator capacity.

SECTION V
Reversing Location of Ionizer-Collector Cell Access Panel

1. General
The Trion Oil Mist Precipitator is supplied with three access panels, one on each side of the blower/motor section and one on the specified side of the ionizer-collector cell section. At times units are relocated within a plant and the ionizer-collector cell access panel may be changed to the opposite side of the unit cabinet when required.

2. To Relocate the Panel
A. Disengage the safety screw from the access panel switch located on the top of the cabinet and remove door by lifting upward.
B. Disconnect the 13KVDC and 6.5KVDC high voltage leads from their respective terminals in the power pack and ionizing-collecting cell and pull the leads from the conduit.
C. Remove the ionizing-collecting cell by sliding it out of the cabinet.
D. Disconnect the two high voltage lead conduits and the safety switch conduit from the cabinet.
E. Remove the access panel safety switch assembly from the top of cabinet.
F. Reach through the cell chamber to the upper flange of the panel on the opposite side of the cabinet. Remove the bolt and nut which secures the rear panel flange to the cabinet flange and remove the rear panel.
G. Unscrew the cell stops which are located on the ends of the cell runners and secure them, as in their former position to the opposite ends of the cell runners.
H. Place the cabinet rear panel in the former access
opening and fasten the top panel flange to the cabinet flange with the bolt and nut removed in step "F".

I. Mount the access panel safety switch box assembly on the opposite top side of the cabinet in the same location as the existing holes. Reconnect conduit and wiring.

J. Thread the high voltage lead through the conduit and reconnect them to their respective power pack terminals.

K. The open conduit holes on the opposite side of cabinet should be sealed air tight.

L. Position the cell so that its face, i.e., the side having the blades suspended between the Galvan plates, faces the entering air end of the cabinet. Also, the end plate of the cell has a directional arrow stamped on its side and the air flow must be in the direction of this arrow.

The cell should be placed on its supporting rails in the cabinet and pushed all the way back to the locating stops.

M. Reconnect the 13 KVDC lead to the ionizing section of the cell and the 6.5 KVDC lead to the plate section of the cell.

N. Install the access panel in its new location.

The Trion Oil Mist Precipitator is now ready to be placed in operation.

SECTION VI

Maintenance

1. Ionizing-Collecting Cell

   A. Periodic Inspection and Cleaning

   Depending on the type and amount of particulate matter collected in addition to oil mist, it may be necessary to clean the ionizing-collecting cell and the mechanical filters at periodic intervals. This is determined by weekly inspection of the ionizing-collecting cell during the first few weeks of operation. When the collected particulate matter is not excessive, it will be washed from the plates by the oil droplets as they run off the collecting surfaces, resulting in a continuous self-cleaning operation.

   B. To Remove Ionizing-Collecting Cell

   Remove the collector cell unit access door by disengaging the access door safety screw located at the top center of the door. As a precautionary measure when removing components, short from ground to the 13 KVDC and 3.5 KVDC terminal using an insulated handle screw driver. Disconnect the high voltage leads and slide the cell from the cabinet.

C. Cleaning

   When necessary, the accumulated build-up should be removed from the collecting elements and the insulators. On some dirt, household detergents work very well. Trion Tri-Dex, MSP-2T, a liquid detergent specifically designed for electronic air cleaners, is also available through the Trion representative or the factory. If commercial cleaning agents are used, be sure they are safe for use on aluminum products. Sock tanks or any method of cleaning is satisfactory but care must be exercised to prevent damage.

   Note: Dirt build-up on the ionizing blades could lower the operating efficiency. It is therefore advisable to periodically clean the ionizing blades with fine emery cloth to remove any particulate matter even though the collector plates may be relatively clean. (DO NOT USE STEEL WOOL).

2. Power Pack

   A. Daily Check

   The operation of the power pack should be checked daily to see that the indicating light is glowing and that the milliammeter is registering within the proper operating range. Should either fail to show normal operation, the fault should be corrected immediately. Refer to troubleshooting section of pages 6-10.

   B. Cleaning

   Periodically, the electrical components within the power pack should be wiped clean and dry. Cleaning solvents as recommended and sold by electrical supply houses are advantageous.

   C. To Remove Power Pack Components

   The components are essentially independent of one another and can usually be removed with a crescent wrench. As a precautionary measure when removing components, short from ground to the 13 KVDC and 6.5 KVDC terminal using an insulated handle screw driver. To determine which component(s) need replacing refer to pages 6-10, Section VII troubleshooting guide.

3. Blower and Motor

   The blower, motor and drive belt comprise the only moving parts of the unit and should be checked and/or cleaned every six months. Mineral spirits are recommended for the removal of any gummy grease and dirt deposits. Flammable fluids should never be used. All fasteners should be checked for securement and the belt for wear. Belt tension should be adjusted as required.

   The blower and motor bearings are sealed and permanently lubricated (even though the bearing block may contain a plugged lub port).
## GENERAL DATA

<table>
<thead>
<tr>
<th>Model</th>
<th>Rated Air Flow CFM</th>
<th>Blower Section Supplied</th>
<th>Blower Motor TEFC Ball Bearing 3 PH 230/460 60 Hz Horsepower</th>
<th>Cabinet Dimensions</th>
<th>Power Pack 1 PH 115V 60 Hz Watts</th>
<th>Power Pack Wt. Lb.</th>
</tr>
</thead>
<tbody>
<tr>
<td>18-103-00</td>
<td>2400</td>
<td>No</td>
<td>31 1/2</td>
<td>39 1/4</td>
<td>23 1/2</td>
<td>60</td>
</tr>
<tr>
<td>18-103-01</td>
<td>2400*</td>
<td>Yes</td>
<td>2</td>
<td>31 1/2</td>
<td>39 1/4</td>
<td>47</td>
</tr>
<tr>
<td>18-203-00</td>
<td>4800</td>
<td>No</td>
<td>55 1/2</td>
<td>39 1/4</td>
<td>23 1/2</td>
<td>80</td>
</tr>
<tr>
<td>18-203-01</td>
<td>4800*</td>
<td>Yes</td>
<td>3</td>
<td>39 1/4</td>
<td>53 3/4</td>
<td>80</td>
</tr>
</tbody>
</table>

**Accessories Available:**

- Inlet Adaptor - To receive ducting from more than one contaminant source.
- J.I.C. Control Box - To comply with code when required.

* Blower is capable of delivering rated CFM up to 1 1/2" water column.
SECTION VII
Trouble Shooting Guide

Warning: Exercise the usual precautions when working with high voltage. The maximum output from the power supply is 18,000 VDC and 12 MA. Any trouble shooting procedure should begin with a visual inspection of the equipment involved.

REFERENCE WIRING DIAGRAMS

<table>
<thead>
<tr>
<th>Installation Wiring</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>J.I.C. Control</td>
<td>15</td>
</tr>
<tr>
<td>Steppdown Transformer</td>
<td>16</td>
</tr>
<tr>
<td>Power Pack Schematic</td>
<td>17</td>
</tr>
<tr>
<td>Ionizing-Collecting Cell(s)</td>
<td>18</td>
</tr>
</tbody>
</table>

1. General
Service problems in electrostatic precipitators occur most frequently in the high voltage circuit. Other than the basic hand tools, it is advantageous to have a standard volt/ohm milliammeter with a 25 KVDC high voltage probe and a secondary high voltage component board assembly.

2. Secondary Short Circuits
The most common service problems are shorts in the secondary circuit. They are best located through the process of elimination. Normal symptoms are high milliammeter and low kilovoltmeter readings accompanied by the circuit breaker tripping. The service problem may be located in the IONIZING-COLLECTING CELLS, HIGH VOLTAGE LEADS OR THE POWER PACK.

To isolate the short circuit to one of these three components, proceed as follows:

A. Power Pack
Disconnect both high voltage leads from their respective terminals inside the power pack and energize the pack. If the circuit breaker remains "ON" and the milliammeter registers zero and the kilovoltmeter registers approximately half normal voltage, the pack is normal. If the circuit breaker continues to trip and/or the milliammeter and kilovoltmeter registers some value other than mentioned above, the trouble is indicated to be within the power pack. Refer to the Trouble Shooting Chart on pages 7-10.

B. High Voltage Leads
Next, reconnect both high voltage leads to their terminals inside the power pack. Disconnect them at their terminals at the ionizing-collecting cell(s). Support the free ends away from any point of contact. Energize the pack. If either or both leads are defective, it will be indicated by some value registered on the milliammeter and kilovoltmeter and/or the circuit breaker tripping. If the leads are defective, each can be independently checked from the other by disconnecting and energizing them one at a time. When a lead is found defective, replace it in its entirety. DO NOT ATTEMPT TO REPAIR OR SPLICE A HIGH VOLTAGE LEAD.

C. Ionizing-Collecting Cell(s)
The short can usually be isolated by a visual inspection of the cell(s). Remove the ionizing-collecting cell(s) from the cabinet and visually inspect for:
(a) A bent ionizing blade bridging the air space between the high voltage and ground - replace all bent blades.
(b) Foreign material bridging the spacing between the high voltage and ground plates - remove foreign material.
(c) Bent or damaged collecting plates - straighten the plates if possible, replace the cell if unable to correct.
(d) Broken or defective insulators - replace same.

After following the above steps, if unable to detect the trouble, isolate the short circuit in the following manner:

1. Determine if the short is in the ionizing section by disconnecting the blue lead from the ionizing section of the cell. Support the lead away from any point of contact and energize the power pack. If the circuit breaker trips, the short circuit is in the collector section of the cell. Reconnect the blue lead to the ionizer section and disconnect the black lead from the collector section. Support this lead away from any point of contact and energize the power pack. If the power pack circuit breaker trips, the short circuit is in the ionizer section of the cell. If the trouble causing the short is bridging both sections, then the short will be in both sections when they are individually connected.

2. If more than one cell exists, use the process of elimination to determine which cell has the short. Remove the blue and black high voltage jumpers from the top cell. Energize the power pack. If the power pack remains on, the short is in the cell that has been disconnected. With the trouble area limited to a specific area, examine the cell once again as mentioned above in the visual check outline in A thru D.

3. Primary Input Checks
The common indications of no primary power to the
secondary circuit are “zero” milliammeter and kilovoltmeter readings, indicating light “out”, and the circuit breaker “on”.

As all access panels and doors contain electrical interlocks, these switches should be checked to see that they are functioning normally.

Check the power pack circuit breaker to be sure it is functioning normally.

If the power is traced to the load side of the circuit breaker, check the transformer input connections to determine if power is being supplied to the high voltage transformer. Refer to Typical Power Pack Schematic, pge 18, or to the Elementary Diagrams as noted in the list of Reference Drawings on pages 15-17.

Due to the electrical characteristics of the high voltage rectifiers, resitors, and the capacitor on the secondary component board, practical field test require high voltage testing equipment. When a failure is in the secondary component board, it should be replaced in its entirety. The component board can easily be removed and replaced. Once removed, the component board can be returned to Trion for repair or replacement. The individual components can be bench tested at any facility where appropriate equipment is available. The electrical characteristics of the components are listed in the spare parts manual.

### TROUBLE SHOOTING CHART

<table>
<thead>
<tr>
<th>TROUBLE SYMPTOM</th>
<th>PROBABLE CAUSE</th>
<th>LOCATION</th>
<th>REASON-CORRECTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Circuit Breaker Tripping</td>
<td>Short Circuit</td>
<td>Ionizing section of cell</td>
<td>1. Bent ionizing blades - replace</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Defective Insulator(s) - replace</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>3. Dirty insulator(s) - clean</td>
</tr>
<tr>
<td>Lead(s) shorted</td>
<td>High voltage leads</td>
<td></td>
<td>1. Foreign material bridging plates - clean</td>
</tr>
<tr>
<td></td>
<td>between power pack</td>
<td></td>
<td>2. Defective insulator(s) - replace</td>
</tr>
<tr>
<td></td>
<td>and unit</td>
<td></td>
<td>3. Dirty insulator(s) - clean</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Bent Plate(s) - straighten or replace</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collecting section of cell</td>
<td></td>
</tr>
<tr>
<td>2. Transformer T1 shorted</td>
<td></td>
<td></td>
<td>2. High voltage transformer. Check AC output. Approximately 8,000 VAC open circuit.</td>
</tr>
<tr>
<td>Circuit Breaker may hold for few seconds or several minutes before tripping-correct meter readings</td>
<td>Dirty grounded electrodes between ionizing blades</td>
<td>Ionizing section of cell</td>
<td>Wash unit.</td>
</tr>
<tr>
<td>TROUBLE SYMPTOM</td>
<td>PROBABLE CAUSE</td>
<td>LOCATION</td>
<td>REASON-CORRECTION</td>
</tr>
<tr>
<td>-----------------</td>
<td>----------------</td>
<td>----------</td>
<td>-------------------</td>
</tr>
<tr>
<td>Low kilovoltmeter reading</td>
<td>Rectifier(s) open</td>
<td>Power Pack</td>
<td>Confirm by replacement</td>
</tr>
<tr>
<td>Defective capacitor</td>
<td>Power Pack</td>
<td>Look for traces of oil leakage or bulged case - confirm by replacement.</td>
<td></td>
</tr>
<tr>
<td>Decrease in supply line voltage</td>
<td>Power Pack</td>
<td>If condition is permanent, adjust variable taps on transformer (Refer to Power Pack Schematic, Page 18).</td>
<td></td>
</tr>
<tr>
<td>Defective meter</td>
<td>Power Pack</td>
<td>Check secondary high voltage. If voltage is correct, replace meter.</td>
<td></td>
</tr>
<tr>
<td>Meter resistor R3 defective</td>
<td>Power Pack</td>
<td>Replace resistor assembly.</td>
<td></td>
</tr>
<tr>
<td>No milliammeter reading, circuit breaker “On” indicating light glowing</td>
<td>Open Circuit</td>
<td>Cell or Power Pack</td>
<td>High voltage lead(s) disconnected. Reconnect.</td>
</tr>
<tr>
<td>Defective milliammeter</td>
<td>Power Pack</td>
<td>Check for secondary high voltage. If voltage is correct, replace meter.</td>
<td></td>
</tr>
<tr>
<td>Meter resistor R3 Defective</td>
<td>Power Pack</td>
<td>Confirm by replacement</td>
<td></td>
</tr>
<tr>
<td>Rectifier(s) Open D1 and/or D2</td>
<td>Power Pack</td>
<td>Confirm by replacement</td>
<td></td>
</tr>
<tr>
<td>Transformer T1 Primary Open (no output voltage)</td>
<td>Power Pack</td>
<td>Confirm transformer on taps 1 &amp; 7 equals 2.3 ohms.</td>
<td></td>
</tr>
<tr>
<td>Indicating light does not glow</td>
<td>Circuit breaker tripped</td>
<td>Power Pack</td>
<td>Reset circuit breaker</td>
</tr>
<tr>
<td>Electrical Interlock open</td>
<td>Primary Circuit</td>
<td>Reset each switch mechanically and/or electrically check switch and replace if required</td>
<td></td>
</tr>
<tr>
<td>TROUBLE SYMPTOM</td>
<td>PROBABLE CAUSE</td>
<td>LOCATION</td>
<td>REASON-CORRECTION</td>
</tr>
<tr>
<td>---------------------------------------</td>
<td>---------------------------------------</td>
<td>----------------------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>Indicating light does not glow</td>
<td>No primary power</td>
<td>Primary input</td>
<td>Check line service</td>
</tr>
<tr>
<td>Indicating light bulb burned out</td>
<td>Power Pack</td>
<td></td>
<td>Check and replace</td>
</tr>
<tr>
<td>Constant excessive arcing that may cause circuit breaker tripping</td>
<td>Loose or bent ionizer blades</td>
<td>Ionizing section of cell</td>
<td>Straighten or replace blade</td>
</tr>
<tr>
<td></td>
<td>Dirty collecting plates</td>
<td>Collecting section of cell</td>
<td>Wash unit</td>
</tr>
<tr>
<td></td>
<td>Bent or defective collecting plate(s)</td>
<td>Collecting section of cell</td>
<td>Repair or replace cell</td>
</tr>
<tr>
<td></td>
<td>Broke or defective insulator(s)</td>
<td>Ionizing-collecting cell</td>
<td>Replace insulator(s)</td>
</tr>
<tr>
<td></td>
<td>Foreign material bridging plates</td>
<td>Collecting section of cell</td>
<td>Remove and wash</td>
</tr>
<tr>
<td>High voltage Leads reversed</td>
<td>High voltage Leads reversed</td>
<td>Power Pack or Ionizing collecting cell(s)</td>
<td>Interchange high voltage leads</td>
</tr>
<tr>
<td>High milliammeter reading</td>
<td>Dirty insulators</td>
<td>Ionizing-Collecting Cell</td>
<td>Wash unit</td>
</tr>
<tr>
<td></td>
<td>Increase in supply line</td>
<td>Primary input</td>
<td>If condition is permanent, adjust tap settings on transformer. Refer to wiring diagram on the inside of the power pack access door.</td>
</tr>
<tr>
<td>Low milliammeter reading</td>
<td>Dirty ionizing blades</td>
<td>Ionizing section of cell</td>
<td>Clean ionizing blades with fine grit emery cloth.</td>
</tr>
<tr>
<td></td>
<td>Open rectifier(s) D1 and/or D2</td>
<td>Power Pack</td>
<td>Confirm by replacement</td>
</tr>
<tr>
<td>High kilovoltmeter reading</td>
<td>Increase in supply line voltage</td>
<td>Power Pack</td>
<td>If condition is permanent, adjust variable taps on transformer.</td>
</tr>
<tr>
<td></td>
<td>Defective meter</td>
<td>Power Pack</td>
<td>Check secondary high voltage. If voltage is correct, replace meter.</td>
</tr>
<tr>
<td>TROUBLE SYMPTOM</td>
<td>PROBABLE CAUSE</td>
<td>LOCATION</td>
<td>REASON-CORRECTION</td>
</tr>
<tr>
<td>-----------------------</td>
<td>---------------------------------</td>
<td>------------------</td>
<td>--------------------------------------------------------</td>
</tr>
<tr>
<td>High kilovoltmeter reading</td>
<td>Meter resistor(s) R2-1 and/or R2-2 defective</td>
<td>Power Pack</td>
<td>Replace resistor assembly(s).</td>
</tr>
<tr>
<td>Mist smoke penetration</td>
<td>Unit off</td>
<td>Power Pack</td>
<td>Refer to trouble symptom &quot;Indicating light does not glow&quot;</td>
</tr>
<tr>
<td>Dirty collecting elements</td>
<td>Ionizing-collecting cell</td>
<td></td>
<td>1. Clean ionizing blades with fine grit emery cloth</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>2. Clean collector plates with Tri-dex MSP21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>*3. Clean insulators with solvent and wipe clean.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>4. Be sure solvent will not attack aluminum.</td>
</tr>
<tr>
<td>Improper blast gate adjustment</td>
<td>Blast gate</td>
<td></td>
<td>Adjust to proper CFM</td>
</tr>
</tbody>
</table>

**SECTION VIII**

**Drawings**

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INSTALLER TO DRILL \( \frac{3}{4} \)" HOLES FOR \( \frac{5}{8} \)" SHT. MTL. SCREWS. BOLT HOLES TO MATCH APPROPRIATE UNIT.

INSTALLER TO APPLY SILICONE SEALANT TO NEOPRENE GASKET AND SEAL ALL JOINTS OIL TIGHT WHERE CONNECTED TO PRECIPITATOR HOUSING.

9 3/8" O.D. INLET PIPE 1 1/2"  
LE. 4 REQ'D. 3 W/CAPS SECURED BY SHT. MTL. SCREWS & 1 OPEN.

INLET ADAPTER  
MODEL 18 OMP
TOP MOUNTING HOLE LAYOUT

HOLES TAPPED 3/8'-16 NC

FOR MODELS 18-103-00 4 -01

MOUNTING CRADLE HOLE LAYOUT

FOR MODELS 18-203-00 4 -01

INSTALLATION
MOUNTING HOLE ARRANGEMENTS

MODEL 18
OMP
STANDARD WIRING

POWER PACK
HI-VOLT LEADS
13 KV
6.5 KV
600 VOLTS
COLLECTOR
IONIZER
SAFETY SWITCH

230/460 V
60 HZ 3 PH INPUT

MOTOR STARTER
SUPPLIED BY INSTALLER

MOTOR WIRED FOR 460 V UNLESS OTHERWISE SPECIFIED.

WIRING WITH STEPDOWN TRANSFORMER

230 OR 460 V
60 HZ 3 PH INPUT

JIC CONTROL BY TRION WHEN SPECIFIED. CONTROL WIRED FOR 460 V UNLESS OTHERWISE SPECIFIED.

WIRING WITH JIC CONTROL

INSTALLATION
WIRING
MODEL 1B
OMP
INPUT
440/480 V
3 PH 50/60 Hz

FUSED DISCONNECT SWITCH

FUSES

K1

T1

K1

T2

K1

T3

MOTOR

H1

H3

H2

H4

(SEE NOTE)

X1

X2

FUSE

STOP

START

1

2

3

4

K1

OL'S

G

MOTOR ON

3 4

TO POWER PACK

NOTE:

H1

H2

H3

H4

CAN BE USED ON 220/240 V
3 PH SYSTEMS BYREWIRING
H1, H2, H3, & H4 ON CONTROL
TRANSFORMER.

JIC CONTROL
WIRING DIAGRAM
MODEL 18 OMP
**Wiring Diagram**

**Stepdown Transformer**

**Model 18 OMP**

**230 Volt Input**

**50/60 Hz**

**Power Pack (Model 18) or Junction Box (Model 22)**

**460 Volt Input**

**50/60 Hz**

**Input** 460 V 3 PH

**L1**  **L2**  **L3**

**230/460 V 3 PH Motor**

**Stepdown Transformer**

**Trion P.N. 106545 or 109173**

**14 AWG Stranded**

**115 VAC**

**230 V3 PH**

**L1**  **L2**  **L3**

**14 AWG Stranded**

**Input** 230 V 3 PH

**H1**  **H2**  **H3**  **H4**

**X1**  **X2**  **X3**  **X4**

**230/460 V 3 PH Motor**

**Stepdown Transformer**

**Trion P.N. 106545 or 109173**

**16 AWG Stranded**

**115 VAC**

**Power Pack (Model 18) or Junction Box (Model 22)**
1. POWER PACKS SHOULD BE MOUNTED AS CLOSE TO EYE LEVEL AS PRACTICAL FOR EASE IN SERVICING AND OBSERVING CONTROLS.

2. THE VARIABLE TAP TRANSFORMER IS SET ON TAPS 2 AND 5 AT THE FACTORY. THE MAXIMUM OUTPUT TAPS ARE 2 AND 3. TO REDUCE OUTPUT MOVE BLACK LEAD TO A HIGHER NUMBER (4, 5, 6, OR 7) UNTIL APPROXIMATE DESIRED RANGE IS ATTAINED. THE WHITE LEAD ON TAP 2 MAY BE MOVED FOR FINE ADJUSTMENT. REMEMBER THE WHITE LEAD MUST ALWAYS BE CONNECTED TO 2 OR 1. THE BLACK LEAD MUST ALWAYS BE CONNECTED TO 3, 4, 5, 6, OR 7.