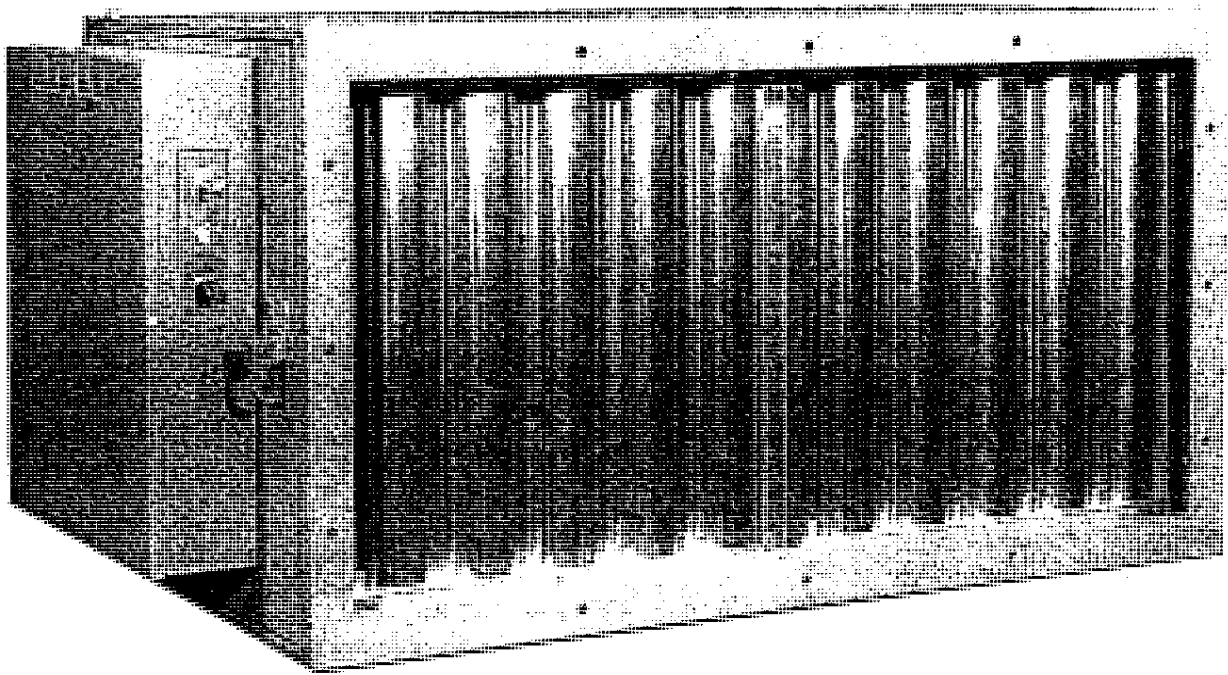


# **MICRO AIR<sup>®</sup>**

## **AIR CLEANERS**



### **Model 270BC**

# **OWNER'S MANUAL**

## **CAUTION**

Read complete instructions before operating.  
Please file for future reference.

## SPECIFICATIONS

**Overall Dimensions:** 21" h x 42" w x 22" l

**Weight:** 150 lbs. actual; 170 lbs. shipping

**Cabinet:** 16-gauge welded galvanized steel with exterior surfaces ground smooth.

**Finish:** Industrial grade brown textured baked enamel, inside and outside.

**Prefilter:** Two each - 18"x18"x2" washable baffle oil impinger filter.

**Ionizer:** 18½"x37"x1¼" aluminum rust-resistant frame, 10,000 VDC, 4.8 sq. ft. of face area.

**Ionizer Wires:** 20 each, .007 diameter, spiral-wound, self-tensioning tungsten ionizer wires.

**Collection Cell:** Two each - 18½"x18½"x8½" cells, 4500 VDC, 2.4 sq. ft. of face area per cell. Collecting area is 260 sq. ft. (130 sq. ft./cell) with plates spaced .19 inch apart. Plate depth is 8¾". Voltage gradient is 23.3 KV/in.

**Cell Weight:** 27 lbs each.

**Cell Access:** Side load through hinged door.

**Air Flow:** Horizontal from right-to-left, or left-to-right.

**Power Supply:** Solid-state with built-in short protection, UL approved.

**Air Volume Capacity:** 2700 CFM

**Electrical:** 208/230 volt, 60 Hz, three-phase.

Optional: 460 volt, 60 Hz, three-phase.

120 volt, 60 Hz, single-phase

**Controls:** On/off panel-mounted switch with power-on indicator light.

Specifications subject to change without notice.

**CAUTION: ELECTRONIC AIR CLEANERS SHOULD NOT BE INSTALLED IN AN EXPLOSIVE ATMOSPHERE.**

Metal-Fab, Inc. offers a limited 2 year warranty (from date of installation) on replacement parts due to faulty workmanship and materials. All patent rights reserved.

### Features:

- Units can be easily stacked or mounted side by side for greater capacity.
- Captive weld nuts for hanging on top and bottom of cabinet.
- External mounted power box.
- Oil drain knockouts at top and bottom of cabinet.
- 15 KV ionizer wire for high voltage resistance
- Cell door interlock safety switch.
- No contacts in air flow stream.

### Options:

- 2" aluminum mesh prefilter
- 1" charcoal after filter
- 2" pleated prefilter

## PRE-OPERATING INSTRUCTIONS

1. Remove the 270BC from cardboard carton and inspect for any external damage.
2. Open the cell access door and inspect the cells and ionizer for damage.

## HANGING INSTRUCTIONS

1. The 270BC cabinet contains eight (8) 5/16" weld nuts located on top and bottom corners to be used with eyebolts or threaded rods for suspended installation.

The recommended style of attachment is shown in Figure 1, and described in Steps 3 through 5.

2. If unit is to be suspended upside down, remove the 5/16" threaded bolts from four corner holes on bottom of cabinet. (Note: The 270BC is designed to work equally well whether hung from the top or bottom).

**NOTE: For oil mist application, it is recommended that unused holes be sealed with silicone sealant.**

3. Put an eyebolt into each hole and screw the two nuts onto the eyebolts. Tighten the nuts together to prevent loosening by vibration. The unit is now ready to be hung.

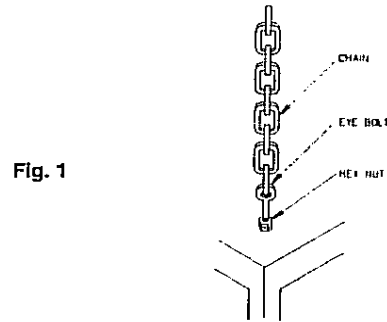


Fig. 1

4. Firmly secure four chains of equal strength to a firm structural support. Wire of equal or greater strength may be used in lieu of chains. (Fig. 1)

5. Raise unit up to chains and attach eyebolts to chains.

**CAUTION: FIRM STRUCTURE MUST BE CAPABLE OF SUPPORTING A MINIMUM WEIGHT OF 600 LBS. PER 270BC USED.**

6. Flanges on intake and exhaust side of unit are provided for attaching to plenums. **CAUTION: TAKE CARE TO USE APPROPRIATE SCREW LENGTH WHEN ATTACHING PLENUMS SO THAT SCREWS DO NOT INTERFERE WITH INTERNAL COMPONENTS OF UNIT.**

**NOTE: LOCATE UNIT SUCH THAT SERVICEABLE PARTS SUCH AS IONIZER AND COLLECTOR CAN BE REMOVED WITHOUT INTERFERENCE FROM STRUCTURAL POLES OR WALLS.**

**CAUTION: IF UNIT IS TO BE SUSPENDED BY OTHER MEANS SUCH AS AN ANGLE IRON ASSEMBLY OR A WALL MOUNT, BE CERTAIN THAT SUCH AN ASSEMBLY CAN SUPPORT FOUR TIMES THE TOTAL WEIGHT OF THE UNIT(S) INSTALLED.**

## ATTACHING THE 270BC TO OTHER UNITS

1. The 270BC contains numerous 5/16" holes located on the inlet and exhaust flanges. These holes are to be used to attach the 270BC to plenums, the IE270 or an additional 270BC.
2. By using the 5/16" flange holes of the 270BC, locate and drill adjacent holes on the unit to which the 270BC will be attached. (1/4" diameter holes minimum are recommended.)
3. Before attaching the 270BC to any structures, apply a thick bead of silicon sealant around flange surface so that an oil tight seal is generated. Once done the 270BC should be bonded to the structure with a minimum of eight (2 per flange) 1/4" bolts, nuts and washers.

## ELECTRICAL CONNECTIONS

For ease of installation, open door and remove nearest cell.

1. Electrical connections should be made by a qualified technician and must comply with local electrical codes.

**CAUTION: BE SURE THAT DESIGNATED CIRCUIT BREAKER IS OFF UNTIL ALL WIRING HAS BEEN COMPLETED**

### A. PERMANENT WIRING

**CAUTION: BE SURE THAT ON/OFF SWITCH IS IN THE OFF POSITION.**

1. Using a screw driver, remove the access panels to the interlock compartment and power box.
2. Remove 7/8" knockout located above interlock compartment and connect conduit.
3. Run wires from the conduit to the interlock compartment. Next, run wires through units flex conduit to inside power box compartment.
4. Make appropriate connections inside the power box compartment using the terminal block and grounding stud provided. (See Wiring Diagram.)
5. Place the access covers back onto the interlock compartment and power box compartment.
6. Replace cell and close door. Turn designated breaker on and turn unit on.

**NOTE: UNIT CAN BE OPERATED AT 208, 230, or 460 VAC INPUT BY USING FACTORY SUPPLIED STEP DOWN TRANSFORMER (OPTIONAL EQUIPMENT).**

### B. CORD CONNECTION

**CAUTION: BE SURE THAT ON/OFF SWITCH IS IN THE OFF POSITION.**

1. Remove the 7/8" knockout located above the interlock wiring compartment.
2. Remove the interlock compartment cover and the power box compartment cover.
3. Run cord through knockout hole and through flex conduit into power box compartment.
4. Make appropriate connections inside the power box compartment using the terminal block and grounding stud provided. (See Wiring Diagram.)
5. Place the access covers back onto the interlock compartment and power box compartment.
6. Replace cell and close door. Turn unit on.

## OIL IMPINGER DRAIN PLUG INSTALLATION INSTRUCTIONS

1. Open filter access door and remove collector cell(s) and prefilter. Locate and remove 1.125" diameter knockout from bottom side of air cleaner.
2. Take oil impinger drain fitting included in oil impinger kit and remove the hex nut. Retain hex nut.
3. Install oil impinger drain fitting in 1.125" diameter hole such that threads of the drain fitting are protruding outside of the air cleaner. Replace hex nut on drain fitting and tighten against the cabinet.
4. The oil impinger drain fitting will attach to standard garden hose female connector or 1/2" male threaded plumbing pipe. Attach hose or pipe to drain fitting.
5. The air cleaner should be hung in such a manner that the collected oil runs to the side of the unit where the fitting is located.

## OPERATING INSTRUCTIONS

1. Turn the switch on. The power lamp should glow. **NOTE: THE CELL ACCESS DOOR ACTIVATES AN INTERLOCK SWITCH WHEN IT IS CLOSED.**
2. Some initial arcing (popping noise) may occur when the unit is turned on. This will stop in a few minutes after loose lint and dust are collected.
3. During normal operation, the power lamp may blink intermittently. If the lamp stops glowing completely, the cells should be inspected for excessive moisture or large particles. (See Maintenance.)

## MAINTENANCE

1. Always be sure power switch is off before performing any service to air cleaner.
2. When checking cell and ionizer assemblies, turn unit off and wait approximately three minutes before attempting to remove assemblies.

**CAUTION: CELL ASSEMBLES WEIGHT 27 LBS. EACH.**

3. Open cell access door and note the orientation of the cell, ionizer and prefilter. Remove for cleaning.

**CAUTION: DO NOT USE ANY CAUSTIC OR ACIDIC SOLUTIONS STRONG ENOUGH TO DAMAGE ALUMINUM.**

4. Wash the prefilter, cell and ionizer in a container of hot water and ElectriClean or a good industrial detergent that is aluminum safe. Soak for 15 minutes or more, swishing the parts occasionally. Rinse thoroughly in clean water, drain, then allow to completely dry before assembly. Make sure the cell is completely dry before installing back into cabinet.
5. Wash foam filter located on door assembly during normal service.
6. Check all wiring for loose connections or cracked insulation .

## TROUBLESHOOTING & REPAIRS

Whenever the air cleaner is not functioning, the neon light on the cabinet will not be lit. When the unit is operating this light may flicker to some extent. This is normal and does not indicate trouble.

### A. If lighted switch is off:

1. Check fuse. If burnt, replace with 0.5 A fuse.
2. Remove cell and ionizer from cabinet. If light comes on upon activating door switch, the fault is in the ionizer and/or collector cell. To determine which, first place ionizer in unit. If lamp goes out, then the ionizer is at fault. Repeat procedure, with collector cell.
3. If light is still not operating:
  - a). Remove the power box access door.
  - b). Put a neon test light or voltmeter across the two input leads to check line voltage on primary of high voltage transformer.
  - c). If correct voltage (120V  $\pm$  10 volts, see nameplate) is not measured, check backward, using wiring diagram until problem can be found.
  - d). Check voltage to light terminals (yellow and green/yellow wires. See Wiring Diagram) on neon lamp. If voltage (75VDC  $\pm$  10V) is found and light is

out, replace lighted switch.

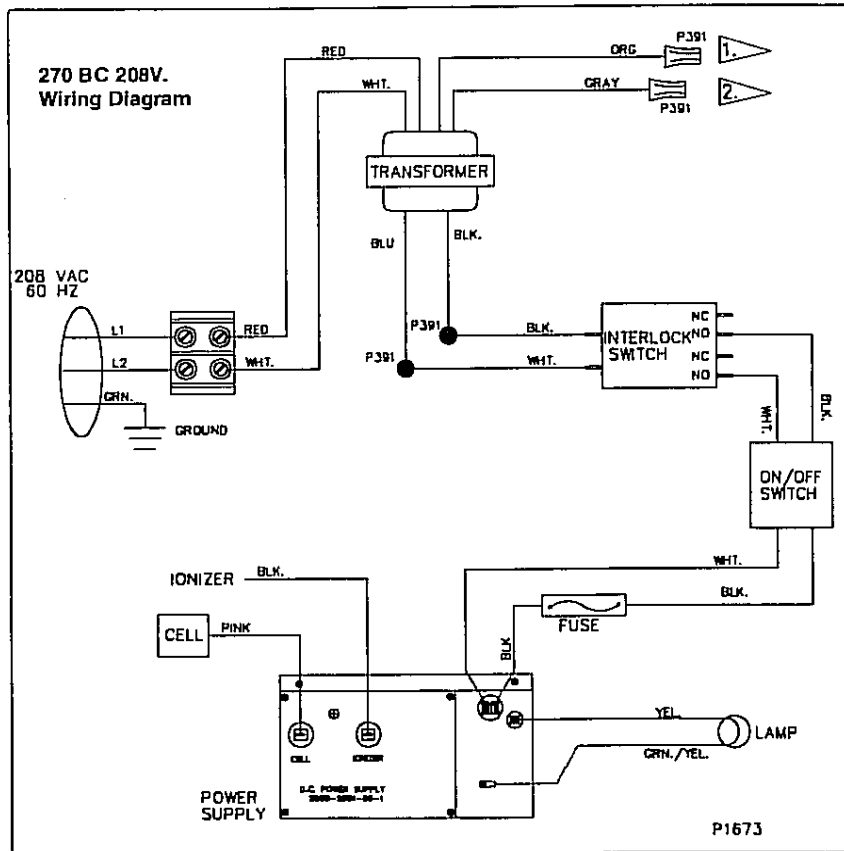
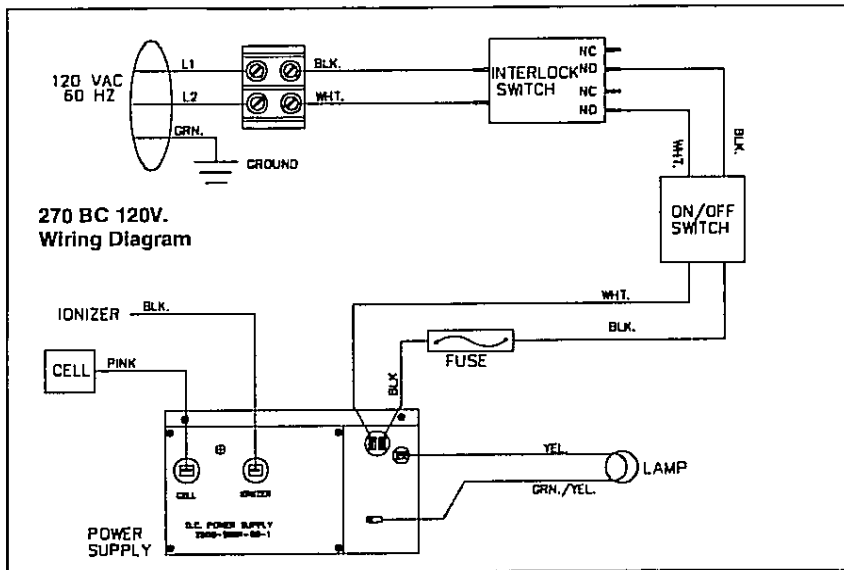
e). If there is no voltage, (20VDC or less) replace power pack. This can be removed by removing two nuts and lock washers and sliding out the power pack. Replace new power pack in same manner.

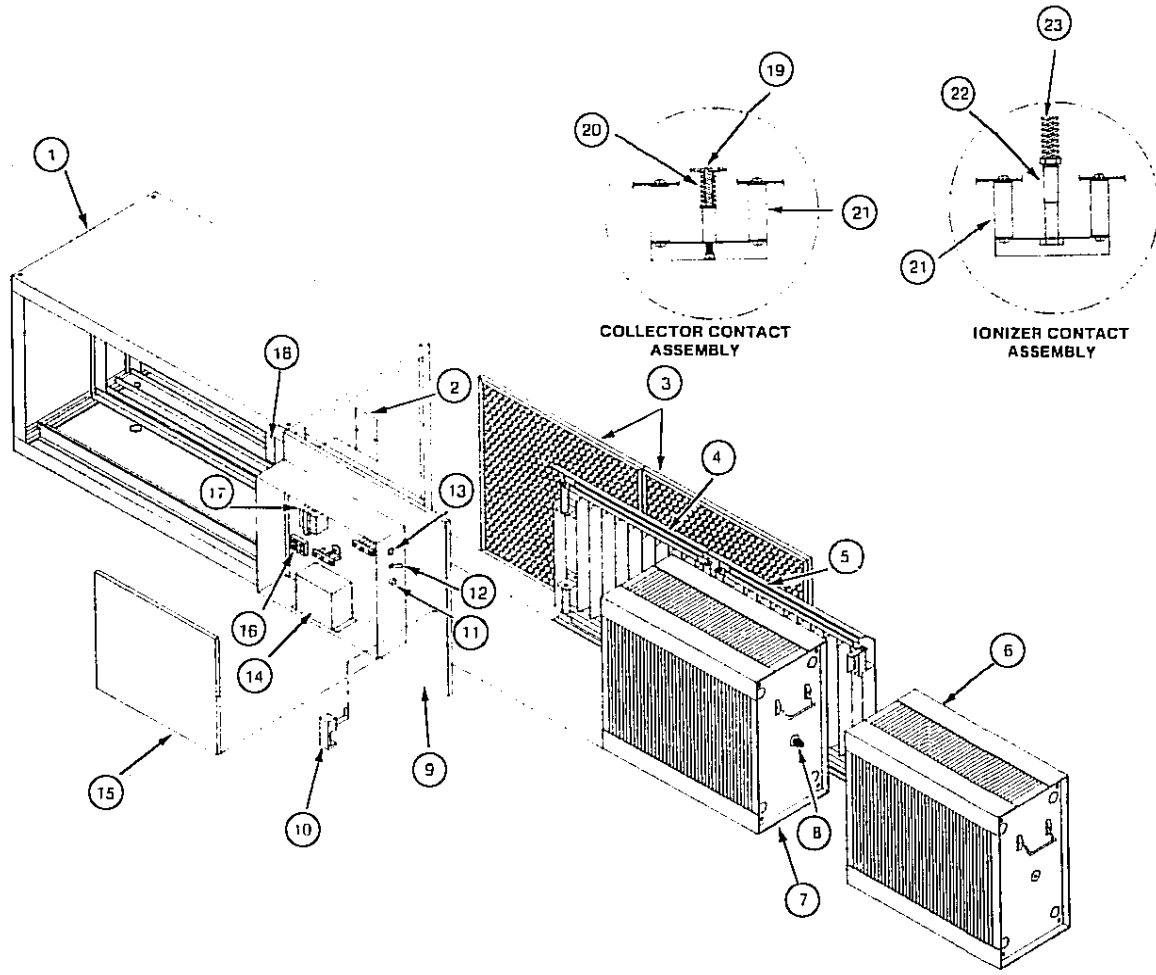
**B. If light is on, but cells are not collecting:**

1. Check ionizer for broken ionizer wires and replace if necessary. **NOTE: If replacement wires are not immediately available, unit will operate satisfactorily with some of the wires missing until proper wire can be obtained. (Efficiency of operation will be re-**

**duced.) Make certain to remove all remnants of broken wires.**

2. To check the cell, connect one side of an ohmmeter to outside plate of cell and other side of meter to copper contact on end of cell. Resistance should read infinity (open circuit). If resistance is not infinity, see Step 3.
3. Examine cells and ionizers for:
  - a). Broken ionizing wires.
  - b). Damaged or bent plates. Straighten bent plate with needle nose pliers.
  - c). Excessive dirt accumulation.





- 1. 30551-01 CABINET WELDMENT
- 2. 30566-01 INTERLOCK COMPARTMENT COVER
- 3. P1798 BAFFLE PREFILTER
- 4. 33910-01 IONIZER ASSEMBLY\*
- 5. 33910-02 IONIZER W/CONTACT ASSEMBLY\*
- 6. 33917-01 FRONT CELL
- 7. 33917-02 BACK CELL
- 8. 30515-01 CELL SPRING CONTACT
- 9. 30565-01 ACCESS DOOR
- 10. P1372 LATCH
- 11. P1720 FUSE HOLDER
- 12. P1718 NEON LAMP
- 13. P1727 SWITCH
- 14. P1700 POWER PACK
- 15. 30566-01 ELECTRICAL BOX COVER
- 16. P574 TERMINAL BLOCK
- 17. P1754 STEPDOWN TRANSFORMER  
(USE W/208-460 VAC ONLY)

- 18. P1702 INTERLOCK SWITCH (NOT SHOWN)
- 18. P1841 COLLECTOR CONTACT
- 20. P1715 COLLECTOR SPRING
- 21. P1716 CERAMIC INSULATOR
- 22. P1838 NYLON INSULATOR
- 23. 30610-01 IONIZER SPRING CONTACT
- NOT SHOWN P1812 DRAIN CONNECTOR
- NOT SHOWN P1746 LOGO
- NOT SHOWN 33911-01 IONIZER WIRE
- NOT SHOWN P1674 WIRING LABEL
- NOT SHOWN P1733 SWITCH LABEL
- NOT SHOWN P1749 CHARCOAL AFTER FILTER
- NOT SHOWN P1752 MEDIA AFTER FILTER

\*Note: Completed Ionizer Assembly items 4 and 5 are available by using part no. 33925-01



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