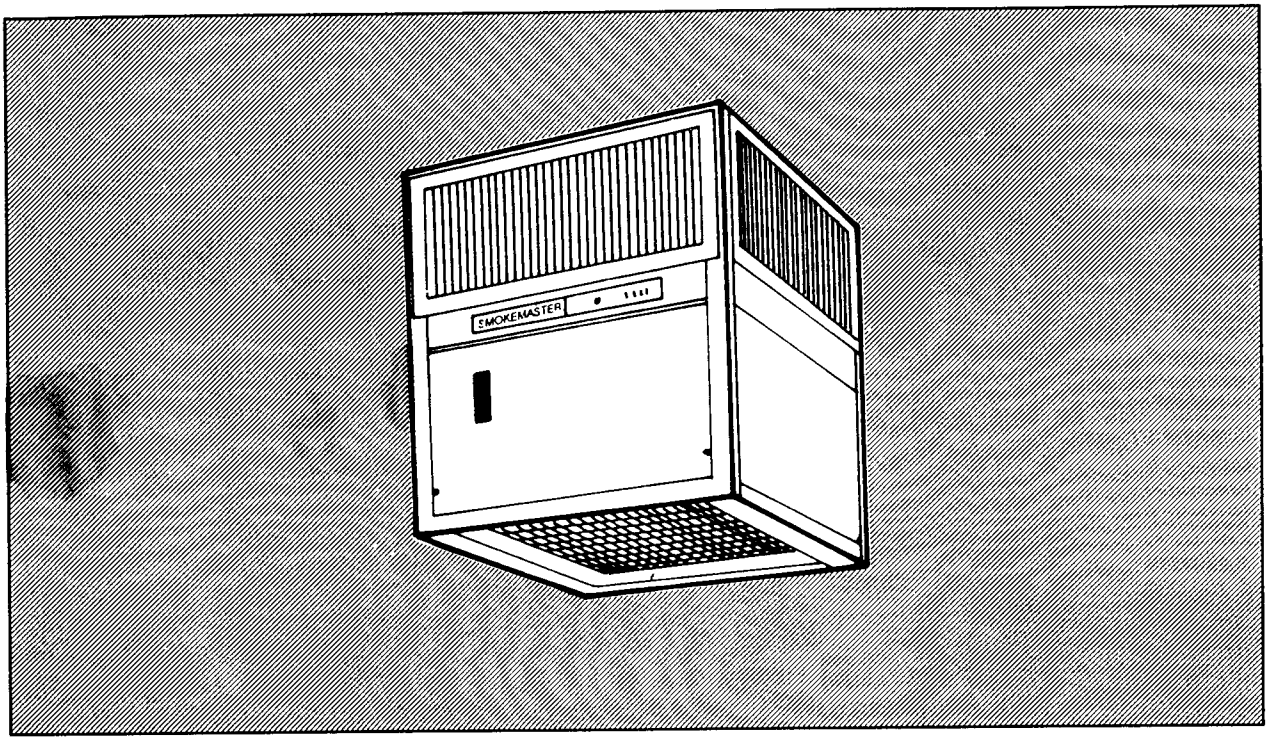
# SMOKEMASTER®

# F62B

## INDUSTRIAL ELECTRONIC AIR CLEANER




THE F62B IS A SELF-CONTAINED ELECTRONIC AIR CLEANER FOR USE IN INDUSTRIAL APPLICATIONS. THE AIR CLEANER IS MOUNTED IN THE ROOM OR AREA WHERE THE AIR IS TO BE CLEANED. A 3-SPEED FAN CIRCULATES AIR THROUGH A PREFILTER, ELECTRONIC CELL, AND POSTFILTER. IT REMOVES AIRBORNE PARTICLES SUCH AS DUST, SOOT, SMOKE AND FUMES FROM THE AIR CIRCULATED THROUGH IT.

- Four direction "Coanda" airflow pattern creates air circulation zone for each air cleaner.
- 3-speed fan circulates up to 2500 cfm (4250 $m^3$/hr)*.
- Simplified direct drive fan with sealed bearings reduce maintenance.
- Industrial rated power supply is in separate, sealed module with disconnect plug.
- Solid state, self-regulating power supply output is not affected by moderate fluctuations in line voltage.
- Interlock switches prevent operation when the access door is open, or when prefilter screen is removed.
- Electronic cells remove easily for cleaning.
- Adjustable discharge grilles direct airflow where needed.
- Performance indicator light gives operational status.
- Prefilter and postfilter are 1 inch (25.4 mm) thick.
- Test button diagnostics give status of collector section.
- Permanently lubricated ball bearing motor requires no maintenance.
- High voltage power supply uses voltage doubler to provide increased ionization voltage.
- Door latches open for access to cells and filters.

*Three phase models are single speed.

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# SPECIFICATIONS

## IMPORTANT

**THE SPECIFICATIONS GIVEN IN THIS PUBLICATION DO NOT INCLUDE NORMAL MANUFACTURING TOLERANCES. THEREFORE, THIS UNIT MAY NOT MATCH THE LISTED SPECIFICATIONS EXACTLY. ALSO, THIS PRODUCT IS TESTED AND CALIBRATED UNDER CLOSELY CONTROLLED CONDITIONS, AND SOME MINOR DIFFERENCES IN PERFORMANCE CAN BE EXPECTED IF THOSE CONDITIONS ARE CHANGED.**

**MODEL:**
F62B Industrial Electronic Air Cleaner with Coanda 4-direction air pattern and capacity of 2500 cfm (4250 $m^3$/hr.). Contains 2 electronic cells and 3-speed fan.

**POWER SUPPLY:**
Solid state heavy duty industrial rated in sealed module with disconnect plug

**CELLS:**
Two 38003 heavy duty industrial, 33 lbs. (15 kg) each

**MOTOR:**
3/4 hp high efficiency with sealed bearings

**AMBIENT TEMPERATURE RATING:**
**Shipping and Storage:** - 30°F to +150°F (- 34°C to +66°C)
**Operating:** - 40°F to 115°F (-40°C to 46°C)

**WEIGHT:**
**Shipping**: 280 lbs. (127 kg.)
**Device**: 225 lbs. (102 kg.)
**Cell Weight**: 33 lbs. (15 kg.) each

**DIMENSIONS:**
See Figure 1

**CURRENT CONSUMPTION (60 Hz):**

| SPEED / POWER | HIGH | MED | LOW |
|---|---|---|---|
| 120V - 1Ø | 7.7A | 6.2A | 5.2A |
| 240V - 1Ø | 4.0A | 3.0A | 2.8A |
| 208V - 3Ø | 4.4A | N/A | N/A |
| 240V - 3Ø | 3.8A | N/A | N/A |
| 480V - 3Ø | 1.9A | N/A | N/A |

**CAPACITY:**

| SPEED SETTING | cfm | $m^3$/hr |
|---|---|---|
| HIGH | 2500 | 4250 |
| MED | 2200 | 3750 |
| LOW | 1900 | 3225 |

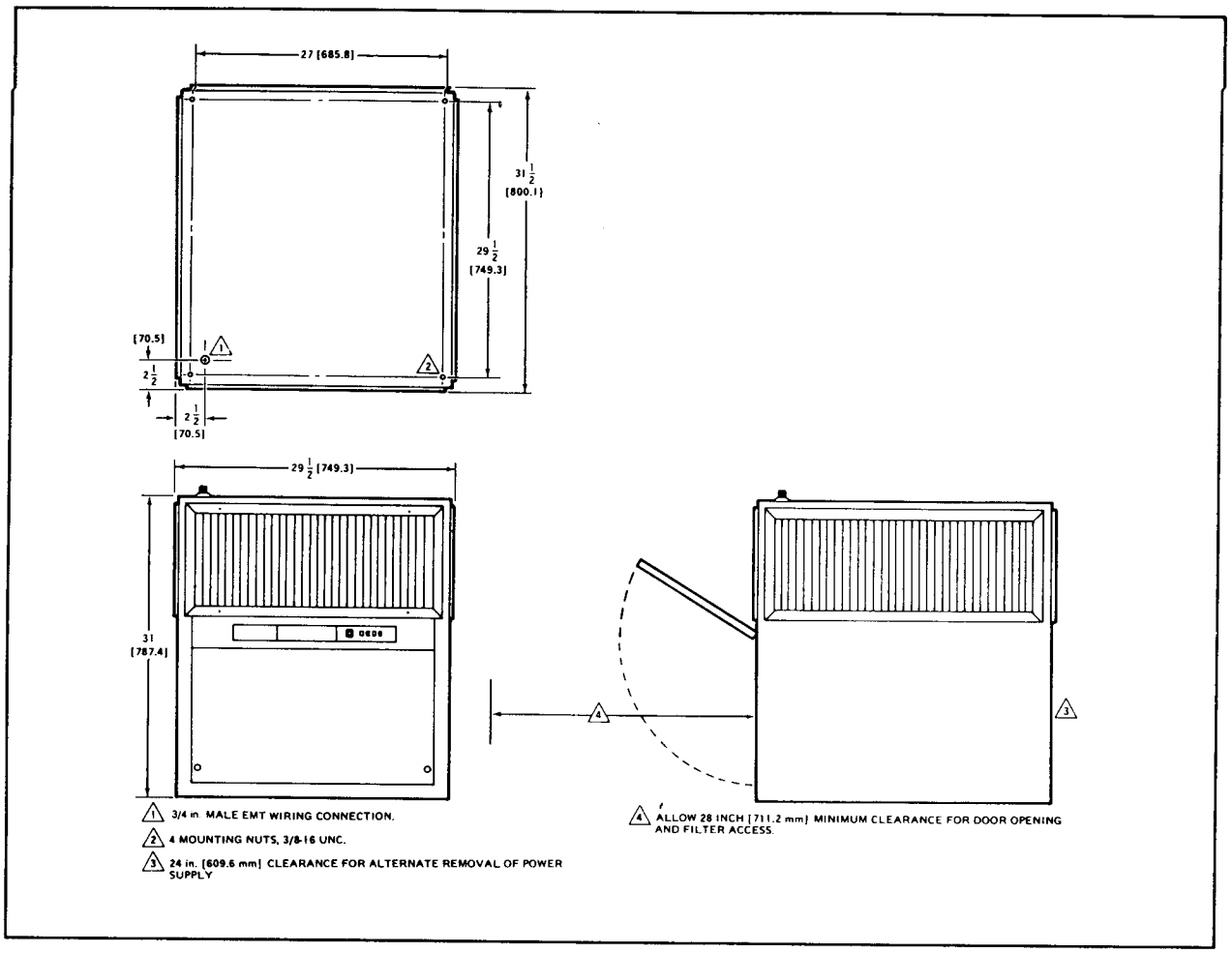



**FIGURE 1** - F62B DIMENSIONS IN INCHES (mm SHOWN IN BRACKETS)

# PLANNING THE INSTALLATION

## WARNING

The F62B Industrial Electronic Air Cleaner is not explosion proof. It must not be installed where there is danger of vapor, gas, or dust explosion.

### INTRODUCTION

Clean air in industry creates safe and healthy working conditions. The requirements for clean air are based on the regulations of the Occupational Safety and Health Administration (OSHA) and the recommendations of the American Society of Heating, Refrigerating, and Air-conditioning Engineers (ASHRAE).

OSHA defines clean air by limiting the amounts of specific contaminants which may be allowed in the air. For example, common air contaminants in a welding shop are iron oxide and copper fumes. OSHA limits their time-weighted average concentration during an eight hour day to 10 mg/M$^3$ and 0.1 mg/M$^3$, respectively. For further information on specific contaminants and how to determine the legal condition of the air in an industrial setting, consult OSHA 2206, General Industry Standards.

The ASRAE Standard 62-81, Natural and Mechanical Ventilation, gives recommended quantities of ventilation air in terms of 100 percent outdoor air. The standard recommends as much as 35 cfm per person ventilation air in even relatively clean industrial environments such as light assembly areas. Process requirements may dictate even higher quantities of ventilation air. These recommended outdoor air quantities may be reduced if air cleaning is provided. However, the standard recommends that "in no case shall the outdoor air quantity be less than 5 cfm per person."

The reduction in outside ventilation air required represents the potential for savings through the use of clean recirculated air. This potential for savings can be achieved by a system that reduces particulate and gaseous contaminants to within the ASHRAE recommended limits.

At no time should the F62B industrial electronic air cleaner be installed where there is a potential for vapor, gas or dust explosion. Contact your Air Quality Engineering representative for assistance in the proper application of the F62B industrial electronic air cleaner.

**SIZING**

Sizing is determining how many air cleaning units are required to maintain a desired level of air quality. The process of sizing an application involves roughly figuring the number of air cleaners needed and then modifying the figures according to the specific characteristics of each application.

For ambient air cleaning, the estimated number of electronic air cleaners may be determined by the relationship of air volume to the needed air changes per hour.

An alternative method for calculating the estimated number of electronic air cleaners can be used if it is possible to measure the generation rate of the contaminants and the allowable level of contamination. To use either method of calculation, consult your Air Quality Engineering representative.

Regardless of the method used to calculate the number of units needed to produce clean air, the physical conditions of the space to be cleaned may either limit this number or demand that more units be installed. For ambient air cleaning it is important to establish a uniform airflow pattern throughout the entire space. Limitations to the calculated sizing may be a lack of space for mounting areas or the number of units may interrupt normal building operation; that is, a unit cannot be mounted where an overhead crane will smash into it or where stand mountings seriously interrupt building traffic patterns. The number of units required by air volume and air changes per hour might need to be increased when the shape of a structure is such that effective capturing and air distribution is not possible according to the sizing calculations.

**LOCATION**

**AMBIENT CLEANING**

The air cleaner should be ceiling-mounted or suspended in the air near the center of the room or area to be cleaned. Air is drawn into the bottom of the F62B and discharged horizontally in four directions. Divide large rooms or buildings into sections and use an F62B in the center of each section.

The F62B should be installed above the contaminant source, as close to the contaminant source as practical. This is especially important when the air cleaner is to be used for contaminant control where process heat lifts the contaminants. Hang the air cleaner as low as possible above the source. A flange or hood may be attached under the F62B to assist in capturing contaminants.

If the F62B is to be installed below the ceiling, make sure it is at least 14 in. [355.6 mm] from the ceiling. This is necessary to reduce staining of the ceiling by lingering smoky air. When the air cleaner is right against the ceiling, the air at the ceiling is moving too fast to deposit dirt particles. Over 14 in. [355.6 mm] from the ceiling, the effect is not a problem. But in the space between, slow moving, dirty air is drawn into the area of the discharge outlets and can stain a light colored ceiling.

The Coanda airflow of the F62B is independent of other air cleaners and room airflow patterns. However, the F62B should be installed so that it does not directly block established vents or duct grilles.

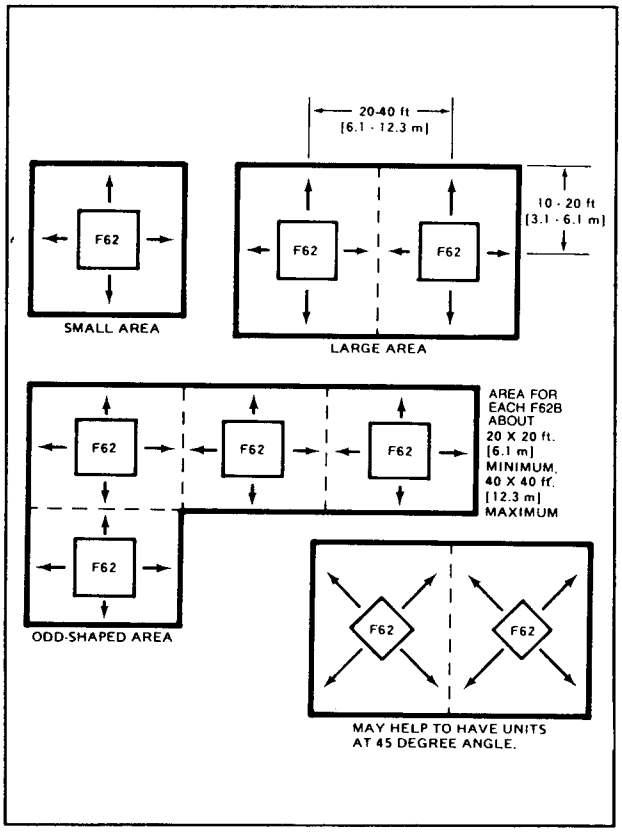



**FIGURE 2** - MOUNT THE F62B IN THE CENTER OF THE AREA TO BE CLEANED

The basic principle of air cleaner location is to keep the F62B air cleaner out in the room, but generally close to the contaminant generation source. Don't "starve" it against the wall. The air cleaners must also be close enough to create air mixing between units; too few air cleaners for a given area can also leave areas of air stratification.

# INSTALLATION

**WHEN INSTALLING THIS PRODUCT...**

1. Read these instructions carefully. Failure to follow them could damage the product or cause a hazardous condition.
2. Check that the ratings given in the instructions and on the product are suitable for your application.
3. Installer must be a trained, experienced service technician.
4. After installation is complete, check out product operation as provided in these instructions.

**CAUTION**

1. **Connect power source after mounting air cleaner to prevent electrical shock and equipment damage.**
2. **Motor is equipped with automatic thermal overload. Should motor become overloaded it will de-energize. However, it automatically energizes after sufficient cooling time (several minutes to an hour). Therefore, be sure to turn off air cleaner before servicing.**
3. **If air cleaner must be energized for electrical check, be extremely careful near moving parts.**

**UNPACKING**

All components of the F62B are assembled and packed in one box. Check all air cleaner components carefully when unpacking. Remove all shipping cardboard and any cell retainers. Be sure to inspect all packing materials before discarding them.

**CEILING MOUNTING**

The mounting holes in the F62B are spaced 27 x 29-1/2 inches [685.8 x 749.3 mm] between centers in both directions. This makes it easy to fasten the air cleaner directly to the ceiling framework with 3/8-16 UNC bolts or threaded rods (obtain locally). Leave space for the power connection to run between the top of F62B and ceiling.

Be sure that you select a strong structural part of the ceiling. Do not fasten the F62B to a false ceiling or to plaster or plasterboard. In some cases, it may be necessary to construct some type of framing strong enough to support the weight of the F62B.

The F62B may also be mounted using 3/8-16 UNC threaded steel rods available in many hardware stores. Four steel rods will be required.

**WIRING**

All wiring must comply with applicable codes and ordinances. Wire the F62B using the junction box and conduit as indicated in Figures 3 & 4. The power source must be compatible with model ordered.

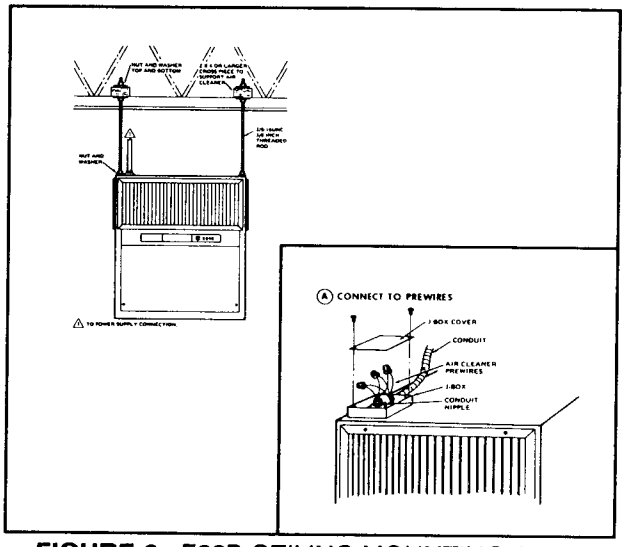



**FIGURE 3** - F62B CEILING MOUNTING AND WIRING

It is recommended that No. 14 wire be used to complete the wiring from the junction box to the external power source. However, be certain to comply with local codes. A green wire lead is provided in the wiring box for a grounding connection. (Figures 3 & 4.) Proper grounding of this device is mandatory for proper operation and safety.

Connect power supply using method below:

1. Attach junction box (J-box not included) to conduit nipple on top of air cleaner with nut (Figure 3).
2. Run conduit from power supply to J-box. Fish wires to J-box.
3. Connect leadwires with solderless connectors. See Figure 4. Attach cover to J-box.

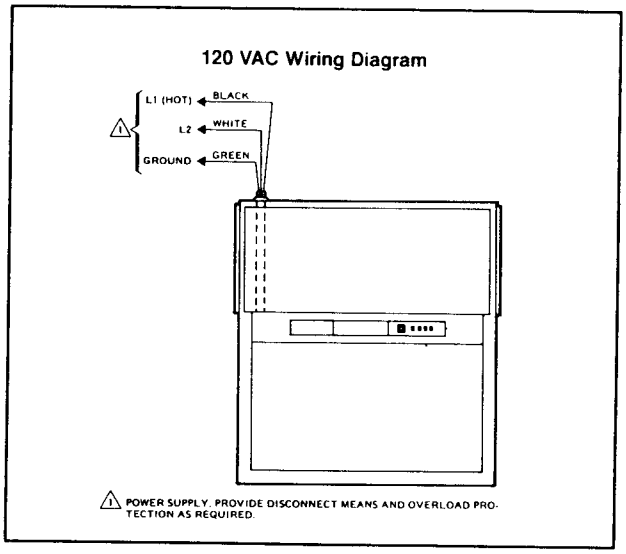



**FIGURE 4** - WIRING HOOKUP TO F62B AIR CLEANER

# OPERATION AND CHECKOUT

## CHECKOUT

Before operating the F62B, check out the installation using the following procedures:

1. Observe that the air cleaner is oriented for good air circulation where it will not interfere with personnel and material traffic. Keep out of fire lanes and away from overhead cranes.
2. Note that the access door can be easily opened.
3. Check that the F62B is securely mounted overhead.
4. Check that the electronic cells are correctly oriented; the airflow arrows are pointing toward the fan and the handles are near the access door.
5. Observe that the prefilter and postfilter screens are properly in place.
6. Adjust discharge grille to direct airflow as desired.
7. Clean up the inside of the cabinet, the outside of the cabinet, and the installation area.

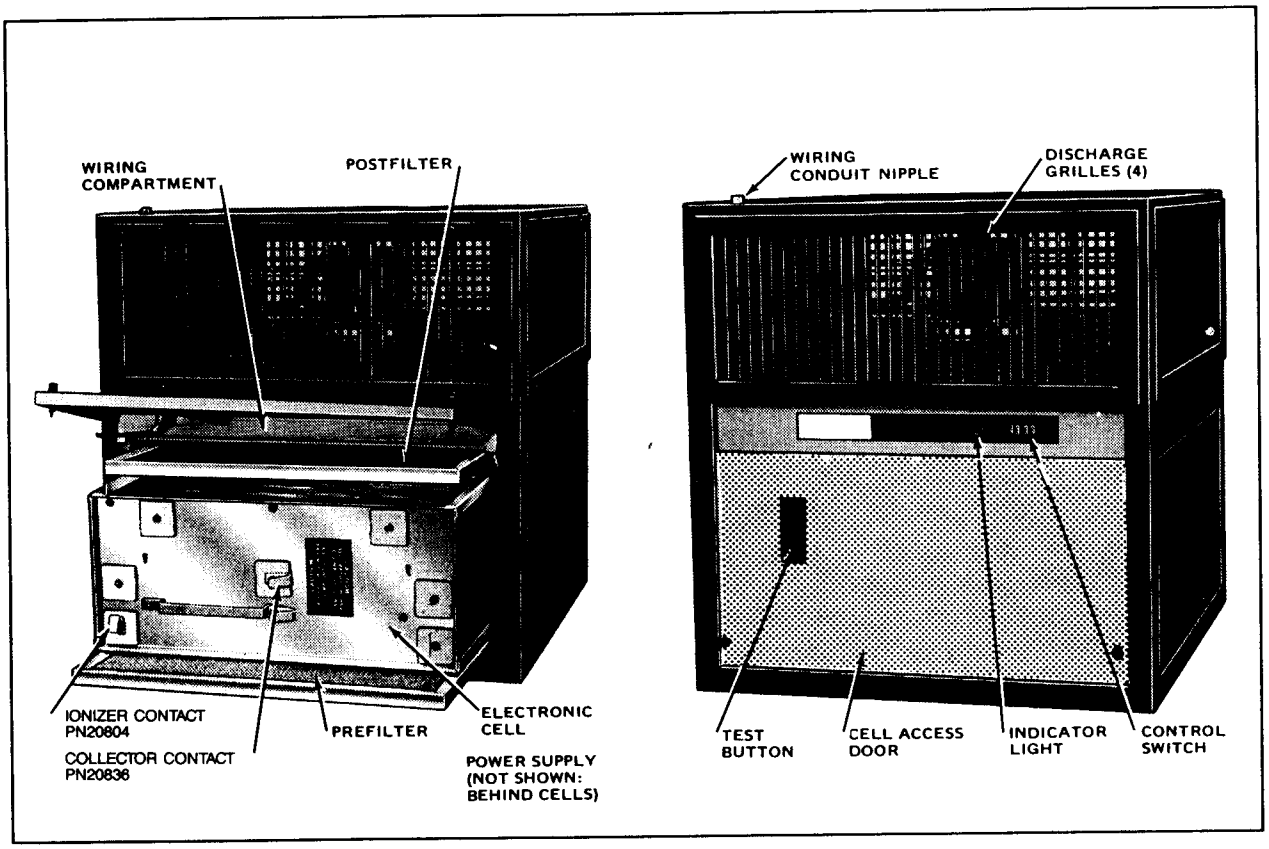



**FIGURE 5** - F62B COMPONENTS

## OPERATION

When the electronic air cleaner is energized, the fan produces an airflow velocity which conveys contaminated air into the air cleaner inlet. Particles that are too small to be caught by the prefilter screen are given an intense electrical charge in the ionizing section of the electronic cell. As the air carries these charged particles into the collecting section of the electronic cell, they are hurled against metal plates by the force of a powerful electrical field. These particles cling to the metal plates and the air passes through a postfilter screen, the fan compartment, and re-enters the building space as cleaned air.

Start up the air cleaner with the access door properly closed. Turn air cleaner on by pressing control switch for LOW, MED, or HIGH fan speed. Check for the following:

1. The fan should be providing a strong discharge.
2. The performance indicator light should be on when the fan is running.
3. Opening the access door should stop the fan and turn off the performance indicator light. Do not place a ladder against the air cleaner when it is mounted overhead in order to gain access to the air cleaner interior.

**NOTE: If the F62B does not appear to operate correctly, refer to ELECTRICAL TROUBLESHOOTING SECTION.**

# SERVICE

### CLEANING THE ELECTRONIC AIR CLEANER

The F62B is used to remove a variety of contaminants from the air. In the process of cleaning the air, however, parts of the air cleaner will become dirty and the cleaning efficiency will be lowered.

In order to maintain a high standard of reliability and efficiency, it is necessary for the F62B to receive periodic maintenance. Periodic maintenance means cleaning the collector cells and inspecting the electronic air cleaner, both visibly and with instruments. Service will be required if the air cleaner seems damaged or appears to be performing at substandard efficiency.

Air Quality Engineering, Inc. recommends regular cleaning and the use of an alkaline detergent solution. The exact scheduling is a matter of experience, since each air cleaning situation varies. Actual experience may dictate a greater or lesser period between cleanings.

If, because of excessive buildup of captured contaminants, the alkaline detergent solution proves inadequate, the use of physical force (such as high pressure air, water, or steam) or an acid detergent solution may be required.

**CAUTION**

1. Be extremely careful when working with F62B cells and filters. The edges of the cells and filters, and the collection plates and ionizing wires of the cell may be sharp.
2. When cleaning the cells and filters, be sure to wear appropriate protective gear, especially goggles and gloves. Skin contact with either alkaline or acid detergent solution should be avoided.

### REMOVING THE ELECTRONIC CELLS AND PRE/POST FILTERS

Before the electronic cells and pre/post filters can be cleaned, they must be removed from the F62B. Be careful NOT to place a ladder or other heavy item against the F62B unit, cells or pre/post filters. Electronic air cleaners and their components are susceptible to damage.

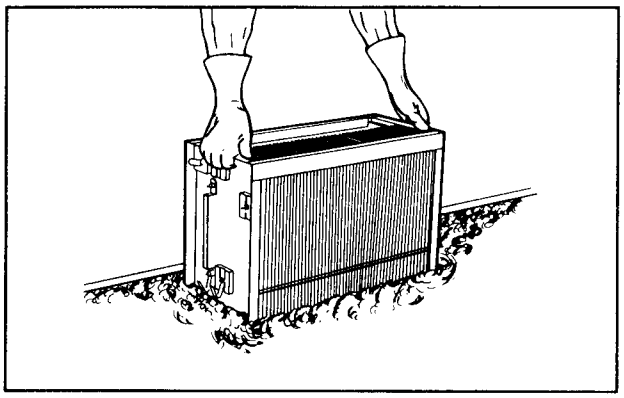
### CLEANING THE PRE/POST FILTERS

The pre/post filters on an F62B do require cleaning. The procedure is simple. Remove the pre/post filter and shake the accumulated contaminants from it. If this does not seem adequate, a vacuum can be used, or the pre/post filter can be soaked in the alkaline detergent solution. DO NOT soak the pre/post filter in an acid detergent solution. Physical force methods could also harm the pre/post filters.

### THE ALKALINE DETERGENT SOLUTION CLEANING METHOD

**NOTE:** Be careful to avoid prolonged skin contact with the solution. DO NOT SPLASH SOLUTION IN THE EYES.

1. Provide a container large enough to hold the electronic cells to be cleaned.
2. Fill the container sufficiently with detergent and hot water to cover the electronic cell.
3. Soak the cells in the solution for about 15 minutes. The solution should be agitated in some way, such as sloshing the cells or stirring the solution.



'WHEN SOAKING THE CELL, AGITATE THE WATER

4. Remove the cells from the alkaline cleaning solution and place them in another container of hot water (150°F to 170°F [66°C to 77°C]) for rinsing. The cells should be rinsed for 5 to 10 minutes.
5. Remove the cells from the rinse water. Allow the cells to drain and dry before energizing them.

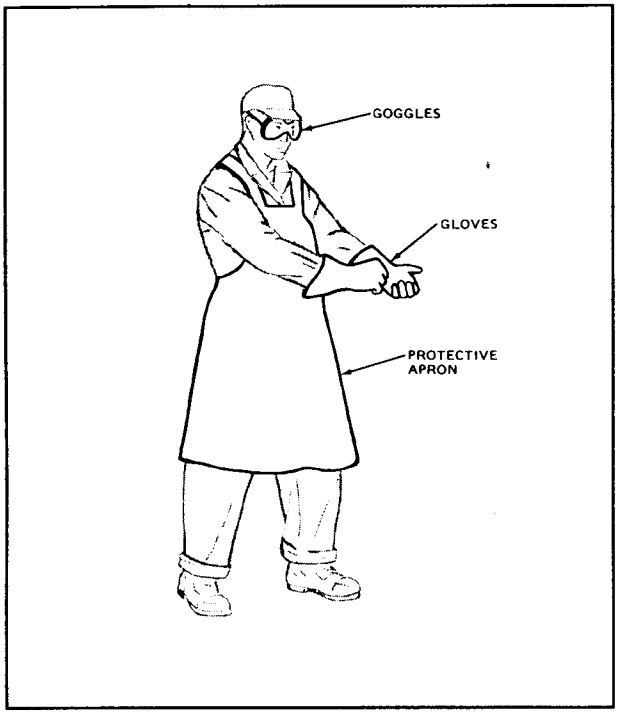
The collection plates of the electronic cells MUST be checked for any detergent residue. If there is any residue remaining, rinse it off, since it may affect the efficiency of the electronic air cleaner.

### THE ACID DETERGENT METHOD

Air Quality Engineering, Inc. does sell an acid detergent, however, acid cleaners should be used only after alkaline detergents have proven inadequate. Acid cleaners have been tested and proven to be corrosive. They will decrease the life of cells. If an acid detergent solution is used, be sure to use a weak mixture. DO NOT place pre/post filters in an acid detergent solution.

**IMPORTANT**

**Acid cleaners MUST be properly handled. Refer to the label on the acid detergent used. This means wearing protective clothing, rubber gloves and goggles, and reading all precautions on the label of the detergent used. If contact is made in the eyes, flush with large amounts of water and consult a physician.**




**BE SURE TO WEAR THE PROPER EQUIPMENT FOR WORKING WITH DETERGENT SOLUTIONS**

**NOTE: Be sure to provide adequate ventilation when using acid detergents.**

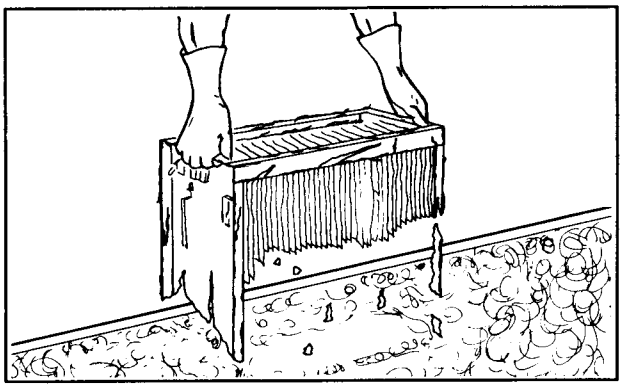
After the cleaning process is completed, the soak water must be neutralized according to the U.S. Environmental Protection Agency, and state and local pollution control guidelines and requirements. Soda ash is one neutralizer.

1. Use a polyethylene or type 316 stainless steel container large enough to hold the electronic cell. Other types of containers should be avoided since the acid detergent may react with the container material.

2. Following the instructions for temperature of the water and amount of acid detergent used, prepare the cleaning solution. The amount of detergent and the soaking time will be determined by the amount of contaminants captured by the cells and the difficulty encountered in removing the buildup. The usual mix for acid solution is 2 oz. of acid detergent to 1 gal. of water [59.2 mL to 3.8 L].

**NOTE: It is recommended that acid cleaning of any electronic air cleaner cells containing metal oxide contaminants be performed with room temperature or cold water. NEVER add acid detergent to hot water.**

3. Be sure to observe the cleaning operation when the cells are placed in the acid detergent solution. The amount of acid detergent should be reduced if less than 30 seconds pass before large amounts of bubbles are released. The cells should NOT remain in the acid detergent solution more than 30 seconds after vigorous reaction begins. It is a good idea to remove the cells and inspect the cleaning action of the acid detergent solution. If contaminant deposits remain, the cells can be returned to the solution.



**TOO MUCH TIME IN THE ACID SOLUTION WILL HARM THE ELECTRONIC CELL**

**IMPORTANT**

**After the contaminants are removed by the acid detergent solution, any further time the cells remain in the solution serves only to decrease their life.**

4. After removing the cells from the acid detergent solution, rinse them thoroughly for at least 5 minutes.

5. Allow the cells to drain and dry before energizing them.

**STAINING**

Occasionally, after the soaking process, the cell or pre/post filter may seem stained. If the stain is black or very dark, it is probably detergent residue and should be rinsed off at once. Detergent residue may affect the electronic air cleaner's efficiency.

If yellowing appears, it is probably staining. The acid detergent solution will remove the yellowing. However, it should be noted that the yellowing does not affect air cleaner efficiency.

**PHYSICAL FORCE METHODS**

The following physical force methods may be needed to clean some contaminants from the F62B cells. DO NOT use physical force methods on the filter screens.

1. High Pressure Air or Water. Either of these methods should prove to be adequate. However, care should be taken to avoid damage to the electronic cells.

**NOTE: Using any caustic detergent with high pressure is dangerous.**

If a detergent is required with the high pressure water, an alkaline detergent should be used, if allowed by the high pressure equipment manufacturer. DO NOT use an acid detergent, except when allowed by the equipment manufacturer.

2. Steam. Extreme care must be exercised when steam cleaning to avoid warping or bending the collector plates of the electronic cells or any other damage to the cells. Remember that the cells will be hot after steam cleaning, and that care must be taken to avoid burns.

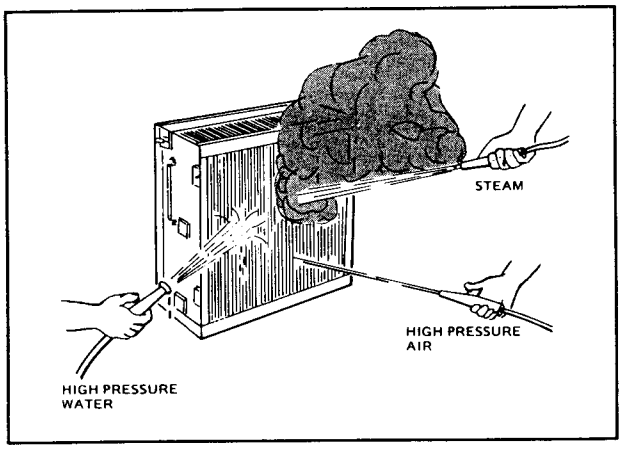



**FIGURE 6-** IT MAY BE NECESSARY TO USE PHYSICAL FORCE METHODS TO REMOVE COLLECTED CONTAMINANTS

**CONTAMINANTS AND CLEANING PROCEDURES**

The following is a selective listing of contaminants captured by electronic air cleaners. This listing gives the appropriate cleaning procedure for various types of contaminants found on electronic air cleaner collector plates and prefilters.

| CONTAMINANT | CLEANING PROCEDURE[a] |
|---|---|
| Animal Hair | Alkaline Solution |
| Cabosil | Alkaline Solution<br>High Pressure Air |
| Carbon (carbon black, soot, lamp black, graphite, charcoal dust, etc.) | Alkaline Solution<br>High Pressure Air<br>High Pressure Water |
| Cooking Oils<br>Veg. (soybean, peanut, etc.)<br>Animal (lard, butter, etc.) | Alkaline Solution<br>Steam |
| Cotton Fibers | Alkaline Solution |
| Dust (silicon dioxide and calcium carbonate and mineral type compounds) | Alkaline Solution |
| Flour Dust | Alkaline Solution |
| Linseed Oil | Alkaline Solution |
| Lubricants | Alkaline Solution<br>High Pressure Water |
| Metal Oxides | Acid Solution |
| Metals | Acid Solution |
| Mineral Oil<br>(petroleum base, diesters, and silicone) | Alkaline Solution<br>High Pressure Water |
| Paper Products | Alkaline Solution |
| Paint<br>Oil Base<br>Water Base | <br>Alkaline Solution<br>Alkaline Solution |
| Pine Tar Resins | Alkaline Solution<br>Steam |
| Polyethylene | Alkaline Solution |
| Polyphenyleneoxide | Alkaline Solution |
| Polypropylene | Alkaline Solution |

(continued next column)

| CONTAMINANT | CLEANING PROCEDURE[a] |
|---|---|
| Rubber Molding Accelerators | Alkaline Solution |
| Soaps | Alkaline Solution |
| Sodium Chloride | Alkaline Solution |
| Sugar (includes molasses) | Alkaline Solution<br>Steam |
| Talc | High Pressure Air<br>Alkaline Solution |
| Tobacco Tars and Smoke | Alkaline Solution |
| Varnishes | Alkaline Solution |
| Waxes (all types) | Alkaline Solution<br>Steam |
| Welding Fumes | Acid Solution |
| Wood Products | Alkaline Solution |

[a]Cleaning procedures are listed in order of preference.

**REPLACING THE CELLS AND PREFILTERS**

Before replacing the electronic cells, be sure to visually check the electronic cell for bent or damaged collector plates or broken ionizing wires.

Bent or warped collector plates may be bent back into shape.

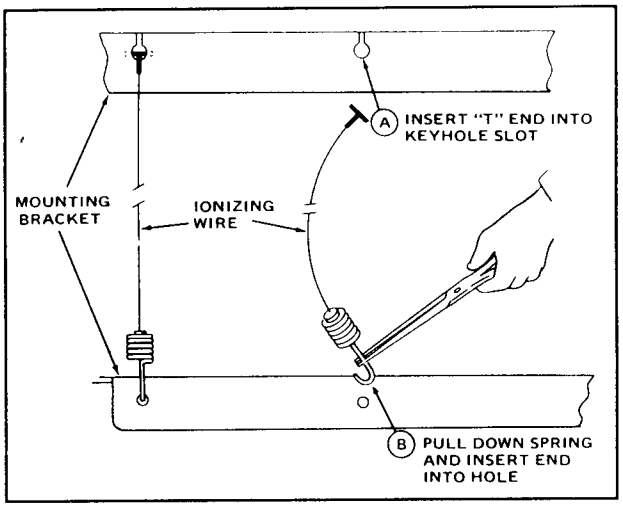



**FIGURE 7** - REPLACING IONIZING WIRES

Broken or damaged ionizing wires must be replaced for top efficiency. Remove all parts of the broken or damaged wire. Replacement wires come cut to length and ready for installation. Remember, when replacing the ionizing wires, to:

1. Use care to avoid damage to the spring connector or other parts of the cell during installation.
2. Hook "T" end of the ionizing wire in keyhole slot at one end of the cell.
3. Pull down spring with a needlenose pliers and insert hook into hole.

Before replacing the cell, it might be a good idea to check it for a short circuit. This is done by using an ohmmeter to check the resistance between the frame of the cell and both the ionizer and collector contacts. In each case, the resistance should be infinite.

# TROUBLESHOOTING

## CAUTION

1. During troubleshooting, dangerous line voltage circuits are exposed. Use extreme care to avoid electrical shock or equipment damage.
2. Although not normally lethal, the high voltage output of the electronic air cleaner power supply can produce a painful shock. Use caution.
3. To prevent injuries from the motor and blower, always turn the electronic air cleaner off using the control switch before opening the access doors.
4. DO NOT place any heavy object, such as a ladder, against the F62B.

**TROUBLESHOOTING PROCEDURE**

The following procedure has been designed to speed troubleshooting and insure the quick detection and proper repair of any malfunction in the electronic air cleaner.

Most of the troubleshooting steps can be performed by observing the performance indicator light and by pushing the test button.

Troubleshooting can be done with only a few tools:

- Test Meter -- Simpson 248 Hi Voltage meter or equivalent.
- Neon test lamp for line voltage.
- Screwdrivers -- long shank with plastic or rubber handles.
- Needlenose or longnose pliers -- for replacing ionizing wires.

Before troubleshooting the F62B, study the flow chart in Figure 8. The boxes in the chart describe actions to take when troubleshooting the F62B. In between the boxes are possible responses of the F62B to these specific actions. Note that the flow chart branches into three problem areas:

1. Fan motor
2. Ionizer circuitry
3. Collector output voltage

To complete the troubleshooting procedure, read the following information which describes how to perform the actions called for in the boxes of the flow chart.

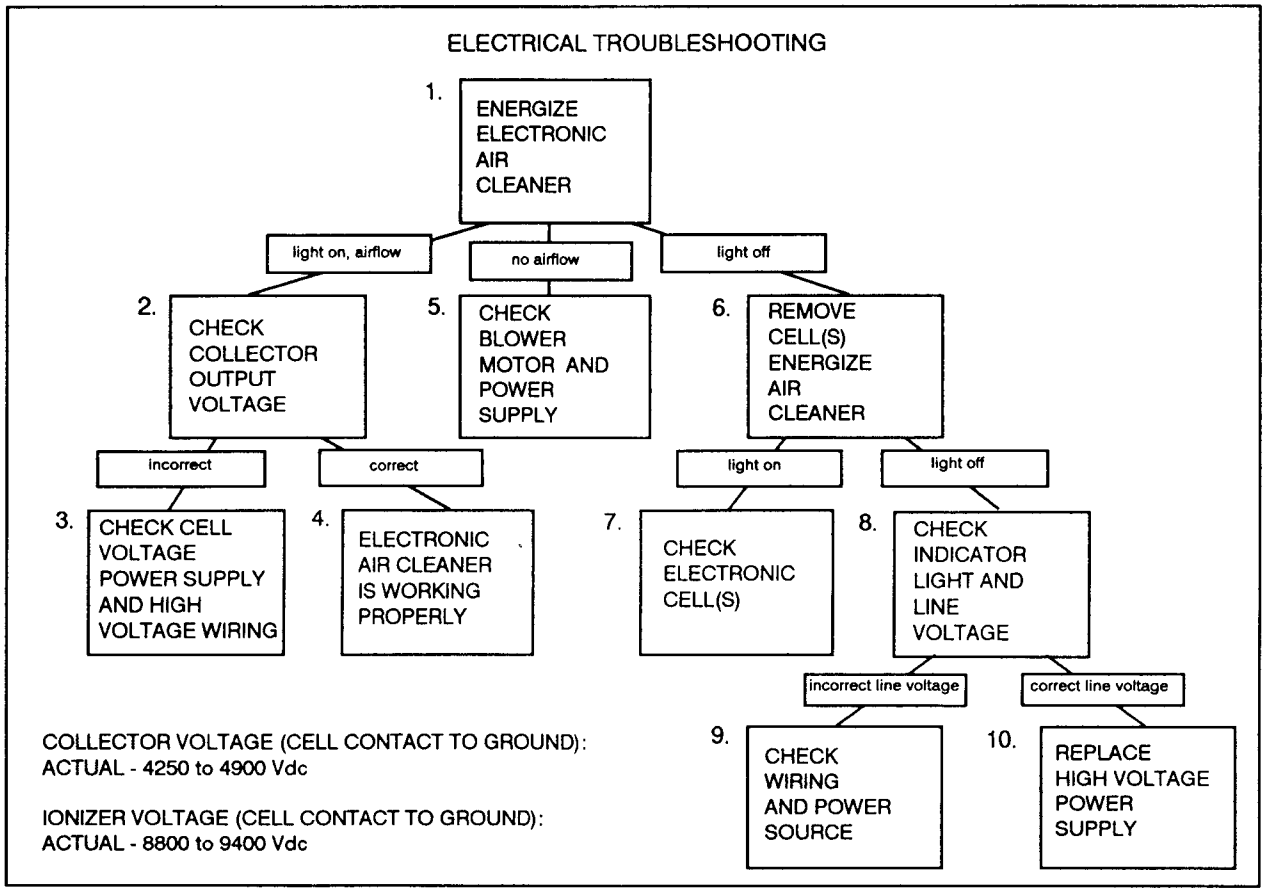



**FIGURE 8 -** F62B TROUBLESHOOTING FLOW CHART

# DIAGNOSTIC CHECKS

**1. ENERGIZE THE ELECTRONIC AIR CLEANER**

a. Be sure the electronic cells are properly installed, with the airflow arrow pointing toward the fan motor. The cells should be clean and dry. (Though wet cells may be placed in the air cleaner, it will not operate until the cells are dry.)

b. Be sure the filters are installed correctly.

c. Close the access door properly, and turn the air cleaner control switch ON.

d. Go to Step 2, if there is airflow and the light is ON.

e. Go to Step 5, if there is NO airflow.

f. Go to Step 6, if the light is OFF.

**2. CHECK COLLECTOR OUTPUT VOLTAGE AND CELLS**

a. Turn the air cleaner OFF and open the access door to the electronic cells.

b. Actuate the interlock safety switch with the power switch on by pushing the prefilter in toward the power module.

c. Using a voltmeter, measure the voltage from the collector contact to ground. See Figure 11.

d. Actual collector output voltage should be about 4600 Vdc. A voltage measurement taken with a meter could range from 3950 Vdc to 4800 Vdc.

e. Using a voltmeter, measure the voltage from the ionizer contact to ground. See Figure 11.

f. Actual ionizer output voltage should be about 9200 Vdc. A voltage measurement taken with a meter could range from 8400 Vdc to 9600 Vdc.

**3. CHECK HIGH VOLTAGE OUTPUT AND POWER SUPPLY**

a. Turn the electronic air cleaner OFF, and release the interlock safety switch. Bleed the electronic cells by placing a screwdriver across the ionzer contact to ground and the collector contact to ground. See Figure 11.

b. Remove the electronic cells and actuate the interlock safety switch with the power switch on. Removing the belt from the motor will stop airflow.

c. Using a voltmeter, measure the voltage from the collector contact to ground. See Figure 10.

d. Actual collector output voltage should be about 4700 Vdc. A voltage measurement taken with a meter could range from 4250 Vdc to 4900 Vdc.

e. Using a voltmeter, measure the voltage from the ionizer contact to ground. See Figure 10.

f. Actual ionizer output voltage should be about 9400 Vdc. A voltage measurement taken with a meter could range from 8600 Vdc to 9600 Vdc.

g. If the voltage measurements are correct, check the electronic cells as described in Step 7.

h. If the voltage measurements are incorrect, check the high voltage wiring to the power supply as detailed in Step 9.

**4. ELECTRONIC AIR CLEANER IS WORKING PROPERLY**

a. Release the actuated interlock safety switch.

b. Read the SERVICE section to find out how to clean the cells, if necessary.

**5. CHECK FAN, MOTOR, AND POWER SOURCE**

a. Turn the electronic air cleaner OFF and open the access door to the fan and motor.

b. Examine the motor for physical damage. Make sure the motor can rotate freely. Replace or repair worn out or damaged parts as necessary.

c. Remove 4 screws and discharge grille above access door. Disconnect fan motor locking plug in left corner.

d. Actuate the interlock switch (push prefilter screen in) and measure voltage at plug pin for each fan speed setting as shown in Figure 9.

**6. REMOVE CELLS, ENERGIZE ELECTRONIC AIR CLEANER**

a. Turn OFF the electronic air cleaner and open the access door to the electronic cells.

b. Bleed the electronic cell as in Step 3.a. Remove the electronic cells.

c. Close the access door and turn the electronic air cleaner ON.

**7. CHECK THE ELECTRONIC CELLS**

a. Turn OFF the electronic air cleaner.

b. Visually inspect the electronic cells for bent collector plates. Bent collector plates may be straightened with a needlenose pliers. If the cell is damaged too badly, replace it.

c. Remove dirt accumulated on the insulators and on the ionizer and collector contact tabs. See Figure 11.

d. Make sure the cell contact tabs are making a good contact with the air cleaner contacts.

e. Replace any broken or damaged ionizing wires (see SERVICE section).

f. Use an ohmmeter to check resistance between the outside frame of the electronic cell and both the ionizer and collector contacts. In both cases, the resistance should be infinite because it is an open circuit.

**8. CHECK INDICATOR LIGHT AND LINE VOLTAGE**

a. Turn the electronic air cleaner OFF and remove blower access cover to gain access to the indicator light.

b. Actuate the interlock safety switch and turn the electronic air cleaner ON.

c. Use a voltmeter to measure the voltage across the indicator light terminals. If the voltage is about 120 Vac and the light does not come on, replace the light.,

d. If the indicator light voltage is incorrect, use a voltmeter to check the power supply input voltage at terminals L1 and L2 on the control switch.

e. If the power supply input voltage is INCORRECT, go to Step 9.

f. If the power supply input voltage is CORRECT, go to Step 10.

**9. CHECK WIRING AND POWER SOURCE**

a. Check the wiring and connectors from the power supply circuit board back to the power source. Repair or replace wiring as necessary.

b. Measure the voltage from the collector terminal to ground and from the ionizer terminal to ground.

c. If the voltage is not the same as the cell contact, check the continuity of the wire from the cell contact in the air cleaner to the circuit board.

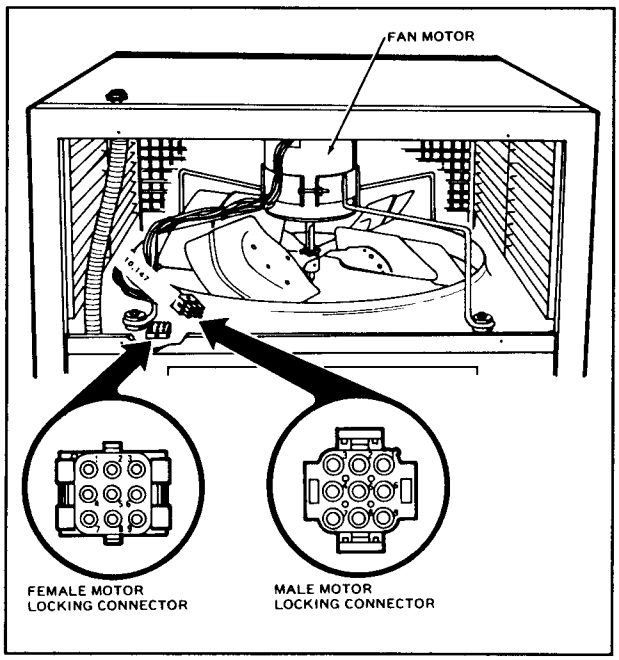



**FIGURE 9** - MEASURING FAN MOTOR VOLTAGE

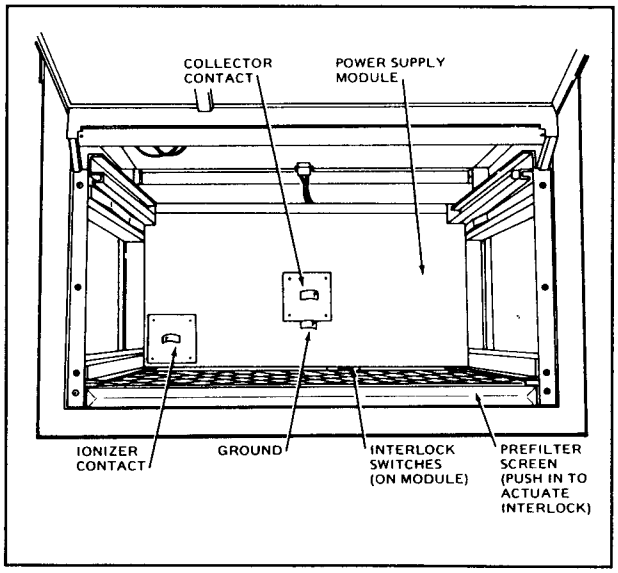



**FIGURE 10** - MEASURING CELL INPUT VOLTAGE

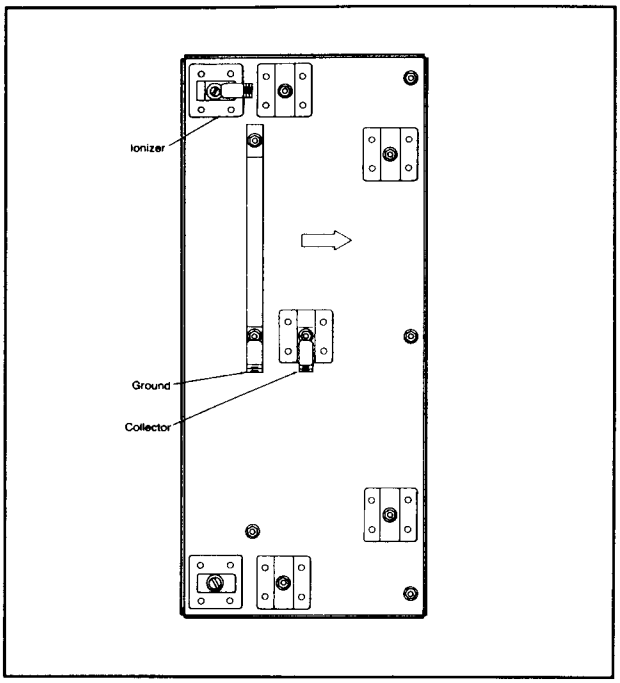



**FIGURE 11** - CELL INSULATORS & CONTACTS

**10. REPLACEMENT OF HIGH VOLTAGE POWER SUPPLY**

a. Turn off the electronic air cleaner.

b. Remove power supply module from the air cleaner. See Figure 10 and 15.

-Remove 4 screws and the back panel opposite the access door.

-unplug the power supply module wire harness.

-slide module out of the air cleaner.

**NOTE: THE POWER SUPPLY MODULE CAN BE REMOVED THROUGH THE CELL ACCESS DOOR, IF THE PRE/POST FILTER AND THE CELLS ARE REMOVED FIRST. SEE FIGURE 10 AND 15.**

c. Place the power supply module on a bench, and remove 17 screws and the cover.

d. Unplug the 6 wires from the power supply.

e. Remove the 4 nuts holding the power supply.

f. Install the new power supply and 4 nuts.

g. Plug in the 6 wires from the module to the power supply.

BROWN to $P_1$ WHITE $P_2$

YELLOW to $P_5$ YELLOW $P_6$

GREY (CENTER CONTACT BOARD TO $P_4$)

GREY (CORNER CONTACT BOARD TO $P_3$)

h. Replace the cover and the 17 screws on the power supply module.

i. Replace power supply module in the air cleaner and reconnect the wire harness plug.

j. Replace back panel and 4 screws.

k. Turn electronic air cleaner ON. Check that the indicator light is on and the test button is working.

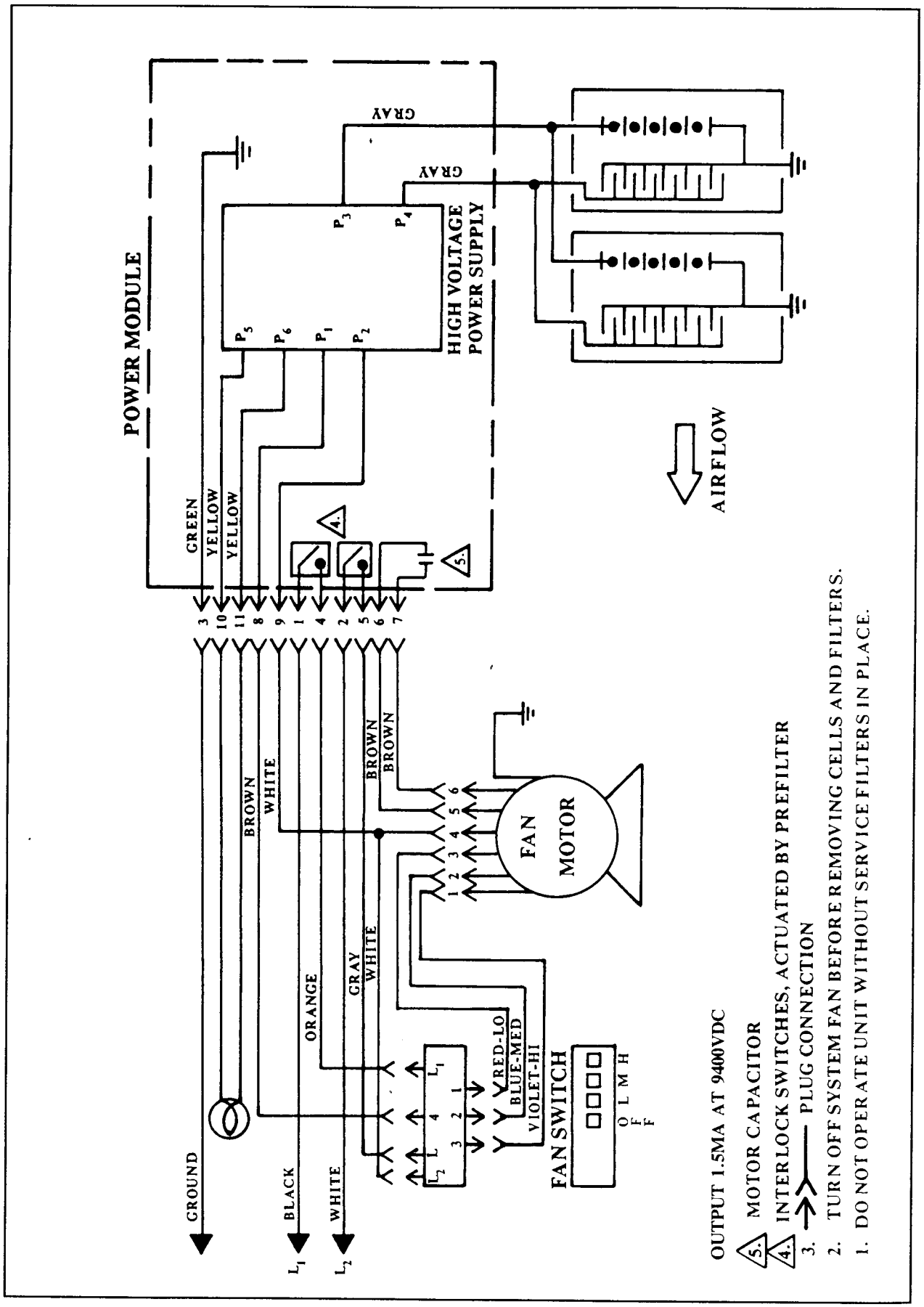



**FIGURE 12** - F62B INTERNAL SCHEMATIC DIAGRAM

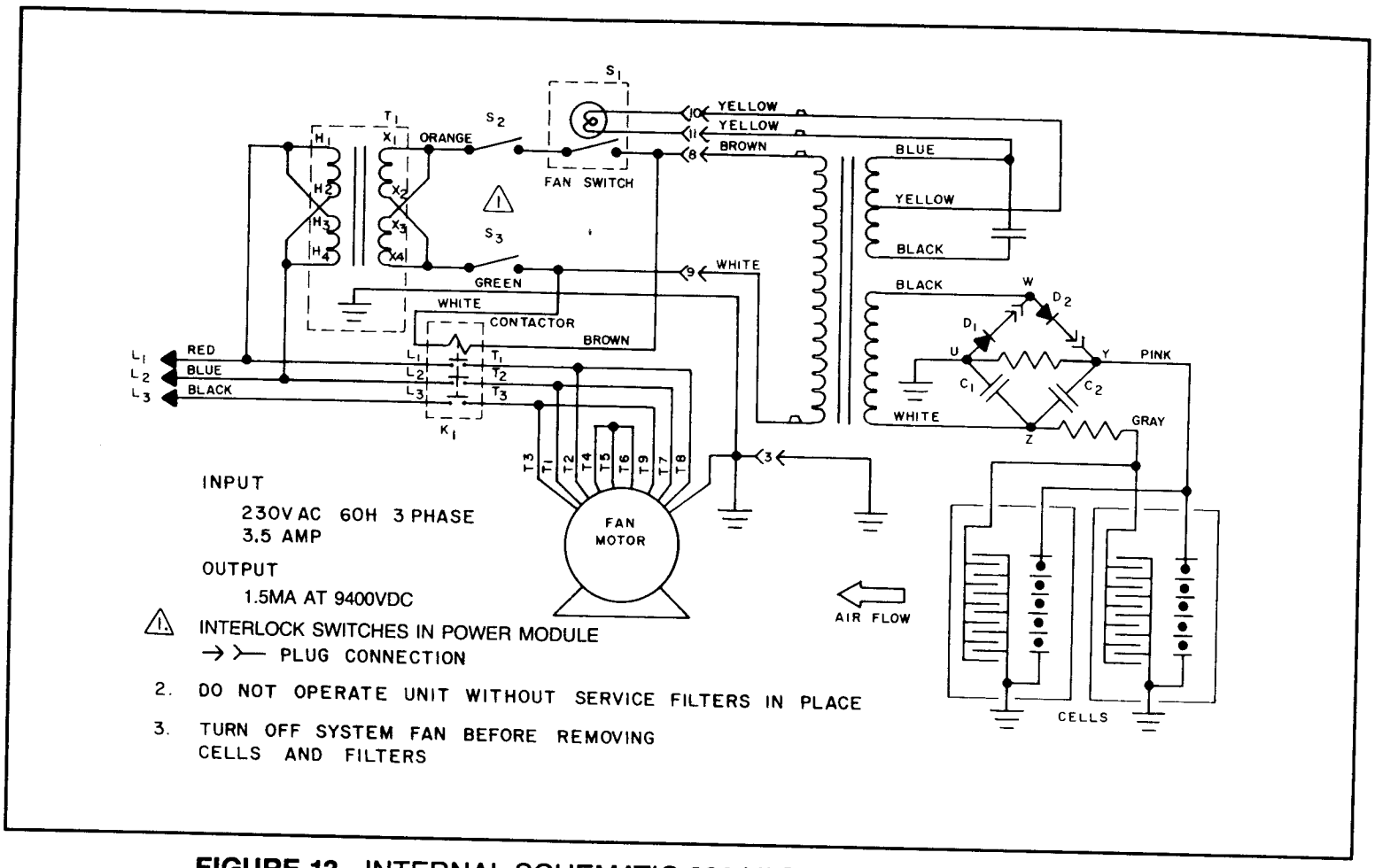



**FIGURE 13** - INTERNAL SCHEMATIC 230 VAC 3 PHASE/208 VAC 3 PHASE

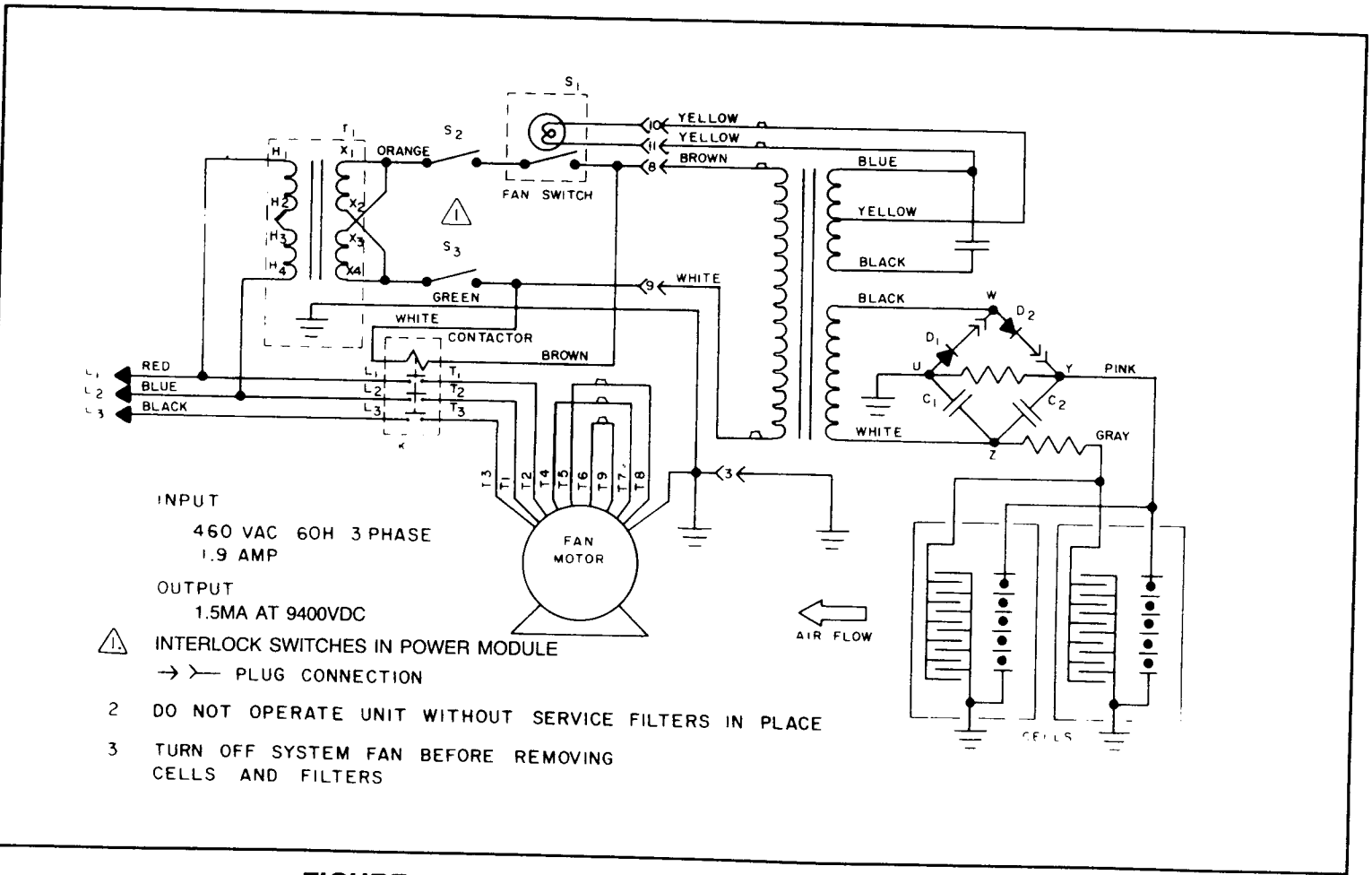



**FIGURE 14** - INTERNAL SCHEMATIC 460 VAC 3 PHASE

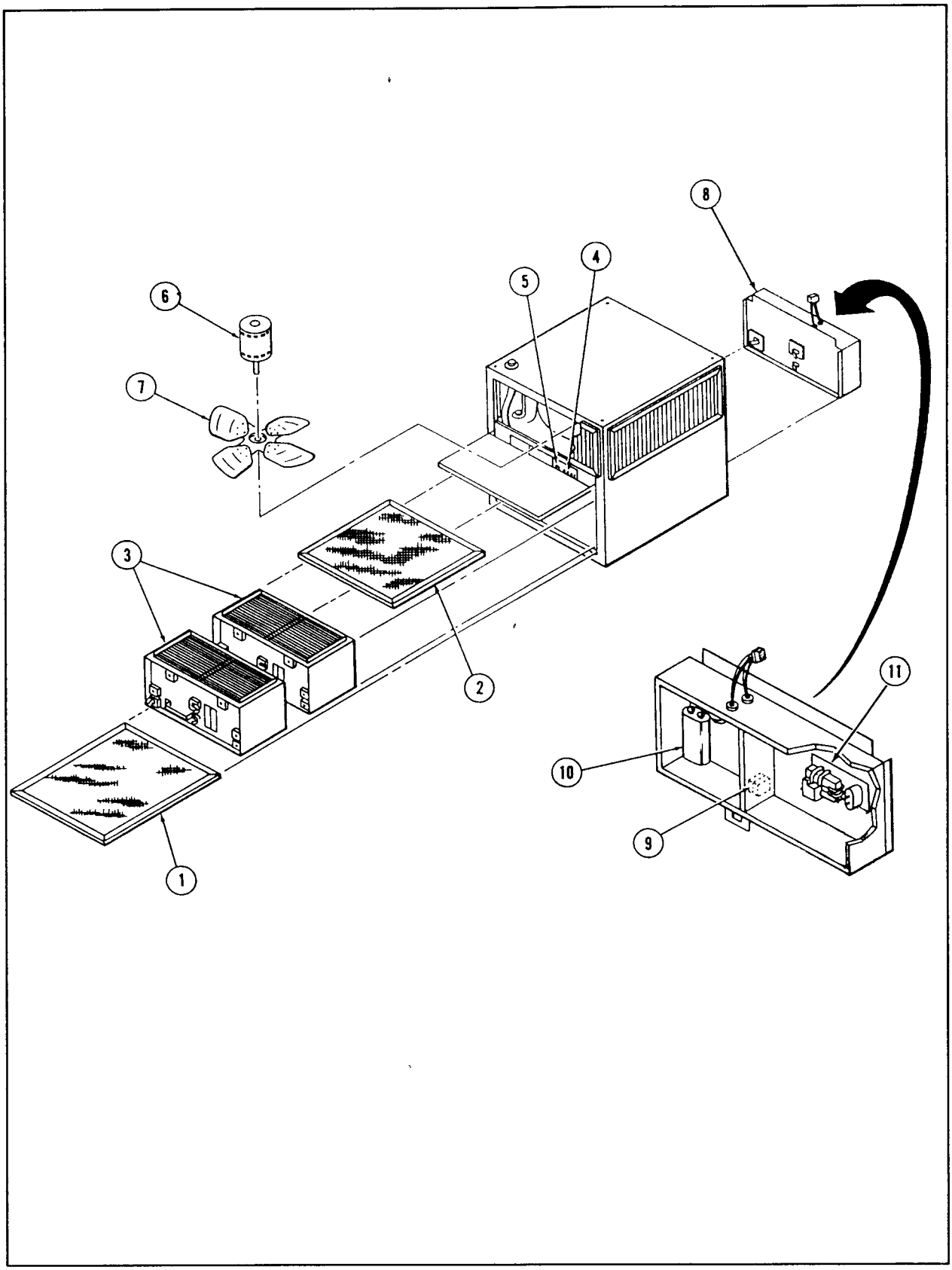



**FIGURE 15** - EXPLODED VIEW OF F62B ELECTRONIC AIR CLEANER

# PARTS LIST

| NUMBER | DESCRIPTION | PART NUMBER | | |
|---|---|---|---|---|
| | | 120V, 60HZ, 1 PHASE | 208-240V, 60 HZ, 1 PHASE | 208-240V, 460-480V, 60 HZ, 3 PHASE |
| 1 | Prefilter (24 1/8" x 29 1/4" x 1") | 41018 | 41018 | 41018 |
| 2 | Postfilter (24 1/8" x 24 5/8" x 1") | 41017 | 41017 | 41093 |
| 3 | Electronic Cells (2) | 38003 | 38003 | 38003 |
| 4 | Control Switch | 10114 | 10114 | 10114 |
| 5 | Indicator Light | 10097 | 10097 | 10097 |
| 6 | Motor | 40015 | 40016 | 40008 |
| 7 | Fan Blade | 37010 | 37010 | 37026 |
| 8 | Power Supply Module Assembly (Includes 9, 10, 11) | 05021 | 05022 | 05028 |
| 9 | Interlock Switch (2) | 10091 | 10091 | 10091 |
| 10 | Motor Capacitor | 40103 | 40103 | N/A |
| 11 | Power Supply | 07082 | 07084 | 07082 |
| Not Shown | Ionizing Wire | 38005 | 38005 | 38005 |
| Not Shown | Remote Control Assembly | 07022 | 07022 | 07022 |
| Not Shown | Drain Pan | 07052 | 07052 | 07052 |
| Not Shown | Activated Carbon Postfilter | 41019 | 41019 | 41019 |
| Not Shown | Media Prefilter Frame | 41043 | 41043 | 41043 |
| Not Shown | Media Prefilter, Uncoated | 41039 | 41039 | 41039 |
| Not Shown | Media Prefilter, Coated | 41041 | 41041 | 41041 |
| Not Shown | Canopy Hood | 07080 | 07080 | 07080 |
| Not Shown | Wash Container with Lid | 30183 | 30183 | 30183 |
| Not Shown | Alkaline Cell Cleaner Detergent | 45008 | 45008 | 45008 |

AIR QUALITY ENGINEERING INC. TOLL FREE: 1-800-328-0787

# GUIDE SPECIFICATIONS

## F62B ELECTRONIC AIR CLEANER (Single Phase Models)

**SCOPE:**

The following describes a self-contained, industrial grade, electronic air cleaning device normally suspended from the ceiling in an industrial or diesel garage environment.

**DESCRIPTION:**

1. Units shall be provided with integral cord and plug assemblies.

2. Solid state, high voltage power supply design shall limit short circuited output current to less than 5 ma.

3. Standard collection cells (2) to weigh no more than 33 pounds each to facilitate manual handling during service.

4. Voltage gradient within collector section to be over 20,000 volts per inch.

5. Unit shall have a total electronic cell plate area of at least 218 $ft^2$.

6. Unit to utilize Coanda air flow pattern to allow it to pick up contaminants from below and discharge clean air in four different directions.

7. Unit shall have 4-way diffuser grilles at exhaust of blower.

8. Blower motor shall be constructed with ball bearings.

9. Design of air cleaner shall limit production of noxious ozone to within OSHA approved levels.

10. Optional remote control system shall be available from equipment manufacturer.

11. Unit shall incorporate bell-mouthed fan orifice for purposes of quieter operation.

12. Unit shall deliver a minimum of 2500 cfm on high speed operation.

13. Unit shall include 1" metal mesh prefilter and postfilter.

14. Unit shall have test button and system lamp to indicate proper operation of high voltage power supply and cell collector system.

15. Metal cabinet to be 16 gauge steel framework with 18 gauge inset panels.

16. Unit shall come equipped with 3-speed switch.

17. Built-in interlock switch shall disconnect power (both power leads) from all functions when service door is opened.

# CERTIFICATE OF WARRANTY

**LIMITED ONE YEAR WARRANTY**

**Air Quality Engineering Inc. (AQE) warrants the Smokemaster electronic air cleaner to be free from defects in workmanship or materials, under normal use and service, for a period of three (3) years from date of purchase by the consumer. If, at any time during the warranty period, the product is defective or malfunctions, AQE shall repair or replace it (at AQE's option) within a reasonable period of time.**

**If the product is defective:**

**(i) return the unit or defective component with a bill of sale, or other dated proof of purchase, to the retailer from which you purchased it, or**

**(ii) package the unit or component, along with proof of purchase (including date purchased) and a short description of the malfunction, and mail or ship, postage or freight prepaid, to the following address:**

**AIR QUALITY ENGINEERING, INC.**
7140 Northland Drive North
Minneapolis, MN 55428-1520
(800) 328-0787 • Fax: (763) 531-9900
aqe@isd.net • www.air-quality-eng.com

**The repaired or replaced part or unit will be shipped by AQE to the purchaser, freight collect, with the purchaser to be responsible for all freight charges. The warranty on any repaired or replacement part shall be for a duration of time no longer than the remaining or unexpired term of the original warranty. This warranty does not cover any labor or other service charges incurred by the purchaser.**

**This warranty shall not apply if it is shown by AQE that the defect or malfunction was caused by damage which occurred while the product was in the possession of the consumer.**

**AQE's sole responsibility shall be to repair or replace the product within the terms stated above. AQE SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES RESULTING FROM ANY BREACH OF WARRANTY, EXPRESS OR IMPLIED, APPLICABLE TO THIS PRODUCT. Some states do not allow the exclusion or limitation of consequential damages, so this limitation may not apply to you.**

**THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, AND THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY EXCLUDED BEYOND THE ONE YEAR DURATION OF THIS WARRANTY. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you.**

**This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.**

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aqe@isd.net • www.air-quality-eng.com

**)NE: (612)544-4426**
**(612)544-4013**

MANUFACTURER & WORLDWIDE DISTRIBUTOR OF SMOKEMASTER® AIR CLEANING SYSTEMS