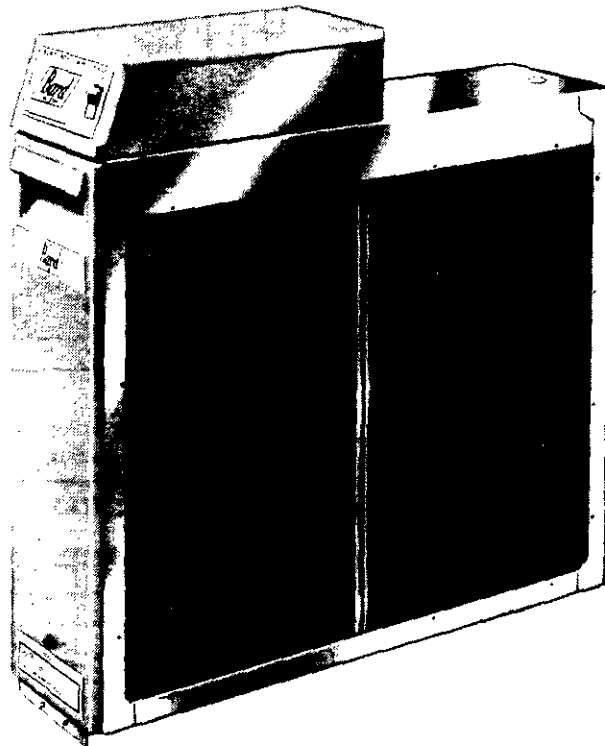


EC1400 AND EC2000 ELECTRONIC AIR CLEANERS



**INSTALLATION AND
SERVICE INSTRUCTIONS
BARD MANUFACTURING CO.
BRYAN, OHIO 43506**

GENERAL

This unit is designed to add electronic air cleaning to a forced air heating or cooling system.

The electronic air cleaner is mounted in the return air duct to remove airborne particles such as dust, soot, pollen, and tobacco and cooking smoke from the air circulated through the air cleaner.

FEATURES

- Components of this electronic air cleaner include a cabinet which mounts in the duct, 2 electronic cells, 2 prefilter screens, an access door, and a solid state power supply.
- Efficiency (see SPECIFICATIONS) is measured by the National Bureau of Standards Dust Spot Method using atmospheric dust, and American Society of Heating, Refrigerating and Air Conditioning Engineers Standard 52-76.
- The solid state power supply is self-regulating, so performance is not affected by moderate fluctuations in line voltage.
- Opening the cabinet door shorts out the high voltage.
- Electronic cells may be installed for airflow in either direction.

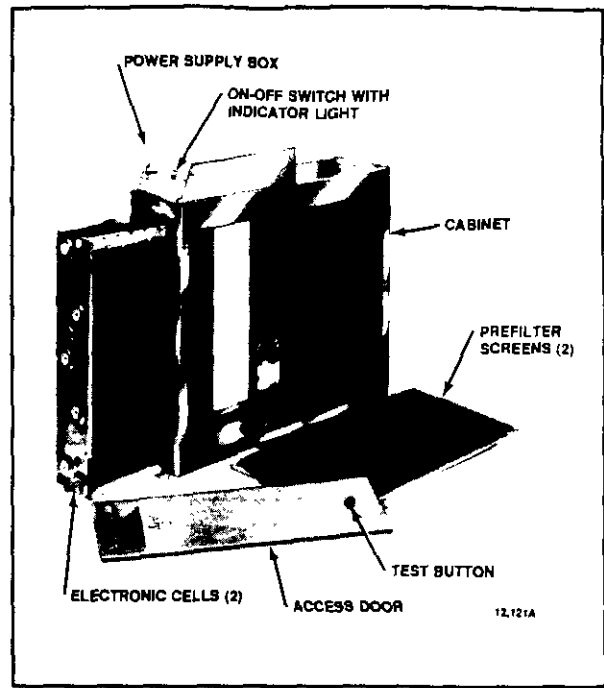


FIG. 1—AIR CLEANER COMPONENTS.

SPECIFICATIONS

MODELS:

EC1400—16 x 25 in. [406 x 635 mm] model.

EC2000—20 x 25 in. [508 x 635 mm] model.

COMPONENTS: Both models include cabinet, access door, power supply, 2 electronic cells, and 2 prefilter screens. See Fig. 1.

ELECTRICAL RATINGS:

Voltage and Frequency—120 Vac, 60 Hz.

Current—0.3 A at 120 Vac, 60 Hz.

Power Consumption—33 W maximum.

TEMPERATURE RATINGS:

Operating Ambient—40°F to 125°F [4°C to 52°C].

Temperature of Airflow Through Cells—40°F to 125°F [4°C to 52°C].

Maximum Cell Washing Temperature—220°F [104°C].

Storage and Shipping (entire unit)—minus 40°F to plus 140°F [minus 40°C to plus 60°C].

UNDERWRITERS LABORATORIES INC. LISTED.

WEIGHT:

	16 x 25 in. [406 x 635 mm] Model		20 x 25 in. [508 x 635 mm] Model	
	lb	kg	lb	kg
Electronic Cell (each)	8	3.6	9-1/2	4.3
Installed Unit (cells included)	39	17.7	44	20.0
Shipping Weight	47	21.3	52	23.6

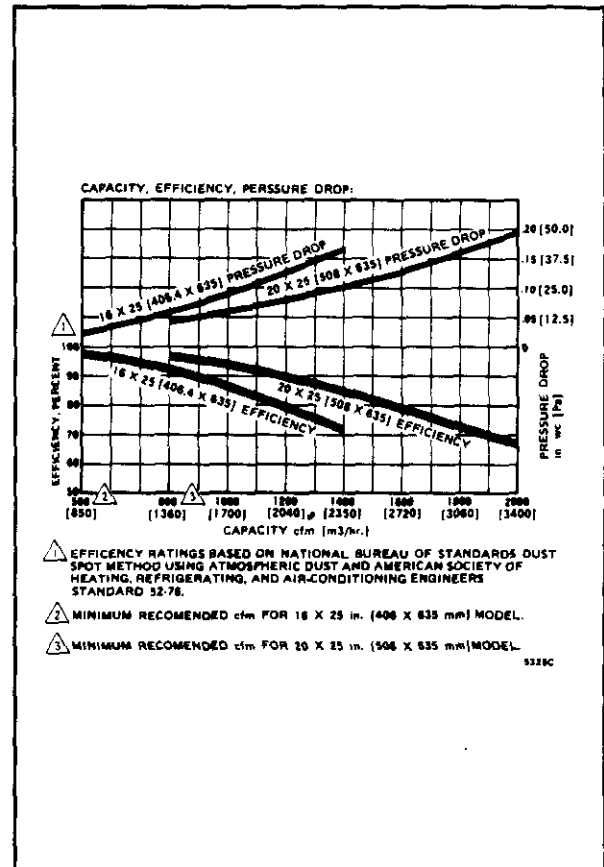


FIG. 2—AIR CLEANER EFFICIENCY AND PRESSURE DROP AT VARIOUS AIRFLOW RATES.

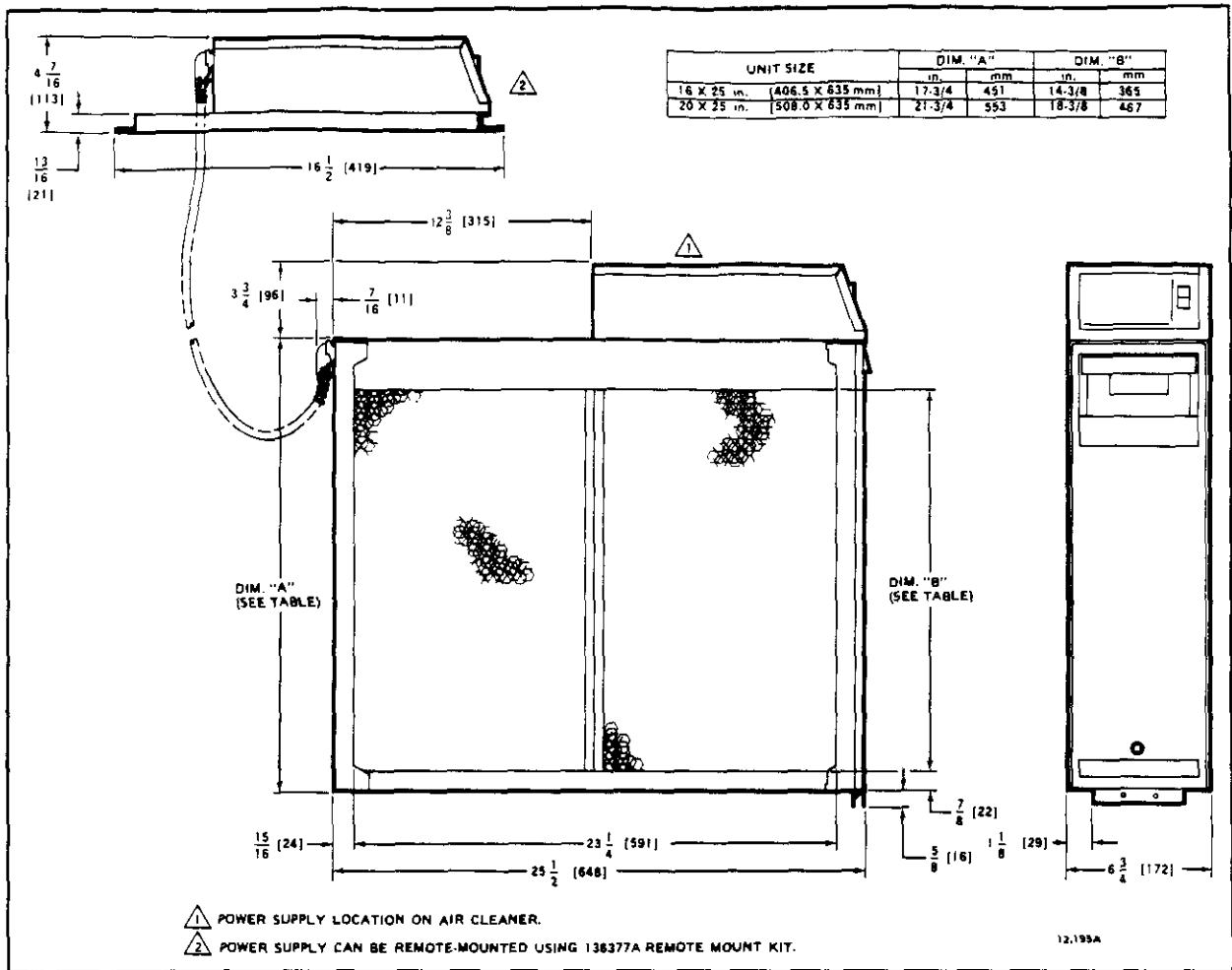


FIG. 3—APPROXIMATE INSTALLATION DIMENSIONS IN in. [mm IN BRACKETS].

PLANNING THE INSTALLATION

APPLICATION

The air cleaner is used in a forced air heating, cooling, or ventilating system. It operates with the system blower and can be energized through the fan switch, a dpdt fan relay or an airflow switch such as a sail switch. An isolating fan relay or airflow switch is required if the system has a multispeed or modulating blower motor.

REVIEW INSTALLATION REQUIREMENTS

The air cleaner should be installed where all the air passing through the system circulates through it. The best location is in the return air duct next to the blower compartment so the air cleaner can help keep the blower motor and evaporator coils clean. Do not mount in the discharge air duct.

For most efficient air cleaning, airflow must be spread evenly across the face of the air cleaner. If the duct is a different size than the air cleaner cabinet, gradual transitions are recommended. If the duct turns sharply just before the air cleaner, turning vanes are recommended.

Applications With Air Conditioning

The air cleaner should be installed upstream of the

evaporator coil. The air cleaner will help keep the coil clean, reducing maintenance. Also, if the air cleaner is downstream, the high relative humidity of the cooled air leaving the evaporator coil can cause water condensation on the cells, reducing air cleaner efficiency.

Applications With A Humidifier

An evaporative humidifier can be mounted upstream of the air cleaner. An atomizing humidifier should be mounted downstream of the air cleaner, even though hard water salts will be blown into the living space and deposited as dust. If an atomizing humidifier must be mounted upstream of the air cleaner:

1. Mount it as far upstream of the air cleaner as possible.
2. Install a standard disposable furnace filter between the humidifier and the air cleaner to trap water droplets and hard water salts.
3. Clean the air cleaner frequently to prevent a hard water salt buildup.
4. The volume of water that passes through an atomizing humidifier may overload the air cleaner, resulting in hard water salts being deposited as dust in the living space.

Applications With An Activated Carbon Filter

If desired, an activated carbon (charcoal) filter can be used to remove odors or other gaseous contaminants (not particle-based), which are not removed by the air cleaner. Locate the carbon filter:

- Downstream of the air cleaner. This means, of course, that dust from the carbon filter will not be collected by the air cleaner and will be deposited in the living space.
- Outside the air cleaner cabinet. Some carbon filters are combustible, and contact with high voltage could result in smoke or fire.
- Where carbon granules cannot fall into the electronic cells. Use a disposable furnace filter if necessary between the carbon filter and electronic cells.
- With proper transitions, if the activated carbon filter requires a different size duct than the air cleaner. Allow 20 degrees expansion per side, per fitting. See Fig. 12.

Applications With Outdoor Air Intake

Return air temperature must be at least 40°F [4°C]. Lower temperatures can cause ionizer wire failure. If outdoor air is used, warm it ahead of the air cleaner by:

- Making sure the outdoor intake is far enough ahead of the air cleaner so the return and outdoor air is thoroughly mixed. Stratified air can dump a stream of very cold air into one section of the air cleaner.
- Adding baffles ahead of the air cleaner to force thorough air mixing.
- Installing a preheater, if large amounts of outdoor air are used. The preheater, which could be an electric strip heater or hot water coil, should be controlled by a thermostat. Water coils should be protected by a freezer control.

CHOOSE LOCATION

Choose a location that is readily accessible for regular inspection and cleaning. Allow at least 13 in. [330 mm] in front of the access door for removing the prefilter screens and electronic cells. Allow enough room above the power supply so the power supply can be serviced without removing pipes, ducts, or other heating system components.

The air cleaner must be installed where the temperature will not exceed the ratings given in the SPECIFICATIONS section.

CHOOSE MOUNTING POSITION

WARNING

Heavy equipment.

Can cause injury or equipment damage.

If the access door faces down, the latch may not hold, and the cells and screens may fall unexpectedly. Also, nothing holds the cells and screens in place once the access door is opened.

The air cleaner can be mounted in any position, except with the access door facing down. Figs. 4-11 show

proper air cleaner mounting with a variety of furnace installations.

TYPICAL MOUNTING POSITIONS

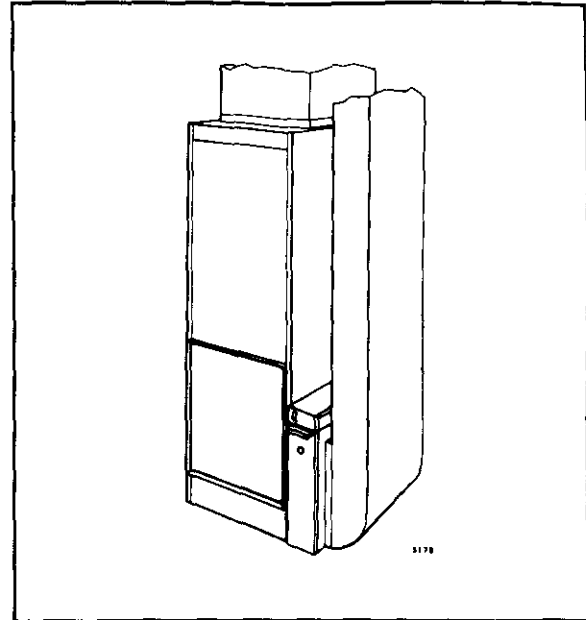


FIG. 4—HIGHBOY FURNACE. SIDE INSTALLATION. AIR CLEANER IS MOUNTED VERTICALLY WHERE RETURN ENTERS SIDE INLET OF FURNACE.

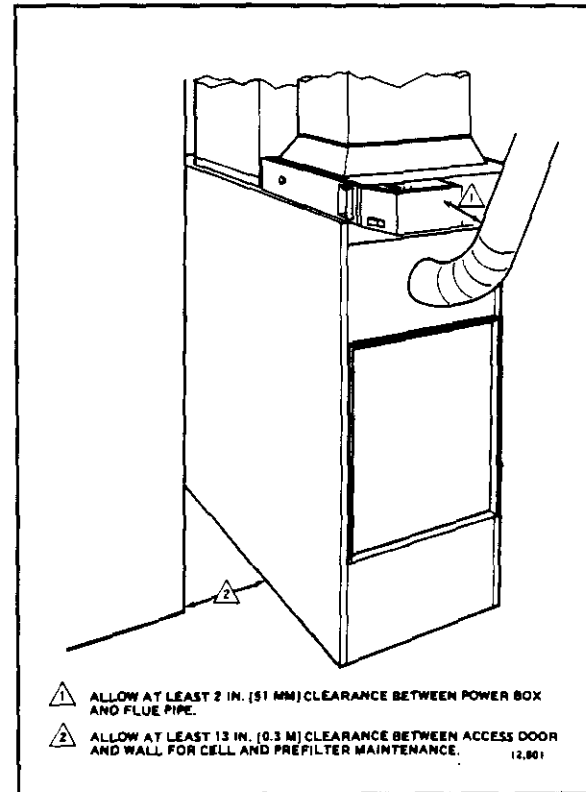


FIG. 5—LOWBOY FURNACE. AIR CLEANER IS MOUNTED HORIZONTALLY IN RETURN PLENUM JUST ABOVE FURNACE, OPPOSITE HEATING PLENUM.

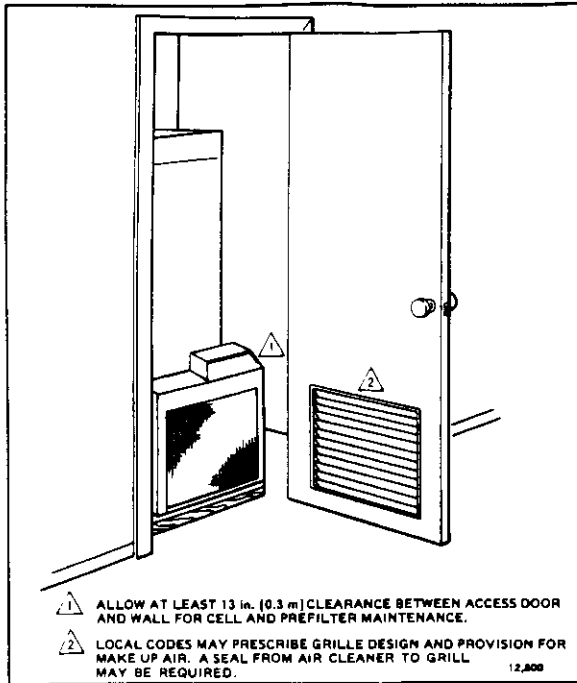


FIG. 6—HIGHBOY FURNACE. CLOSET INSTALLATION. AIR CLEANER IS MOUNTED VERTICALLY ON FURNACE BETWEEN FURNACE AND LOUVERED RETURN AIR OPENING IN CLOSET DOOR.

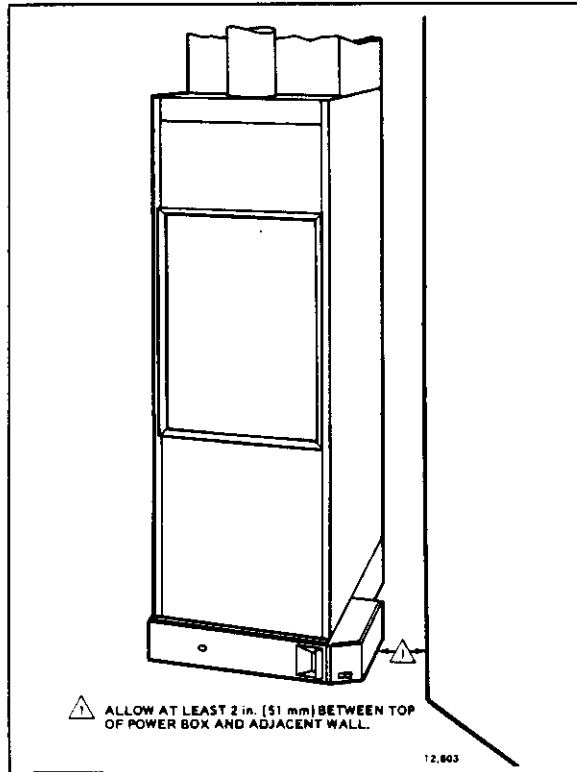


FIG. 7—HIGHBOY FURNACE. INSTALLATION BENEATH FURNACE. UNIT MOUNTS HORIZONTALLY, WHERE RETURN ENTERS FROM BELOW. RAISE FURNACE AND INSTALL BENEATH BASE. THE CABINET WILL EASILY SUPPORT THE WEIGHT OF A FURNACE AND AIR-CONDITIONING COIL.

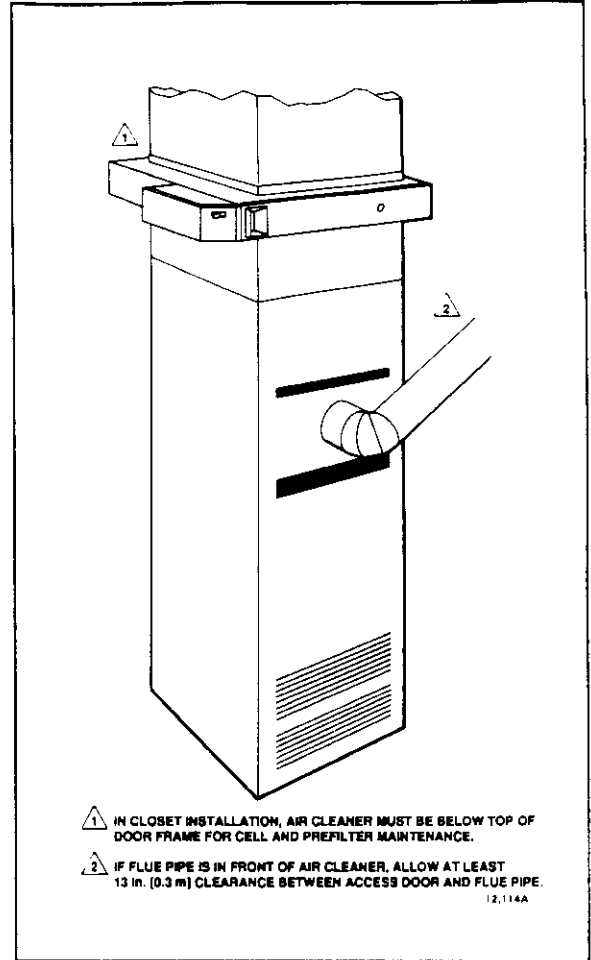


FIG. 8—COUNTERFLOW FURNACE. AIR CLEANER IS MOUNTED HORIZONTALLY IN RETURN DUCT OR PLENUM, JUST ABOVE FURNACE.

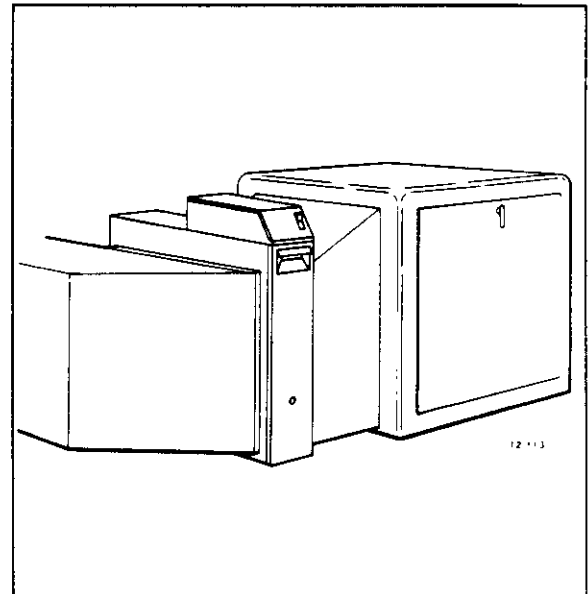


FIG. 9—HORIZONTAL FURNACE. AIR CLEANER IS MOUNTED VERTICALLY IN THE RETURN DUCT NEAR FURNACE. NOTE TRANSITION.

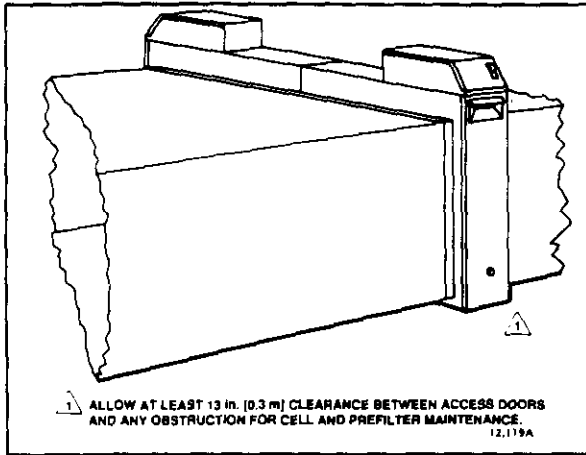


FIG. 10—HIGH CAPACITY SYSTEM. TWO OR MORE AIR CLEANERS CAN BE USED TOGETHER. AT LEAST 13 IN. [0.3 m] CLEARANCE IS REQUIRED BETWEEN ACCESS DOORS AND WALLS FOR CELLS AND PREFILTER MAINTENANCE.

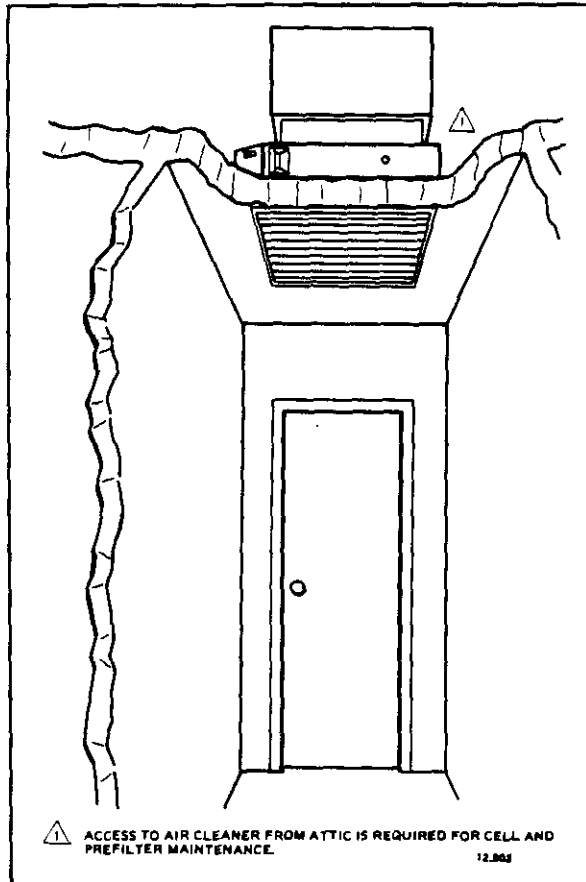


FIG. 11—HORIZONTAL FURNACE. AIR CLEANER IS MOUNTED HORIZONTALLY ABOVE CEILING.

DETERMINE SHEETMETAL REQUIREMENTS

The air cleaner is adaptable to all new or existing residential forced air heating, cooling and ventilating systems. Sheetmetal transitions, turning vanes, or offsets may be needed in some applications.

Transitions

Transitions are needed when the duct is a different size than the air cleaner cabinet. Gradual transitions reduce air turbulence and increase efficiency. Limit expansion to 20 degrees (about 4 in. per running foot [100 mm per 300 linear mm] on each side of a transition fitting. See Fig. 12.

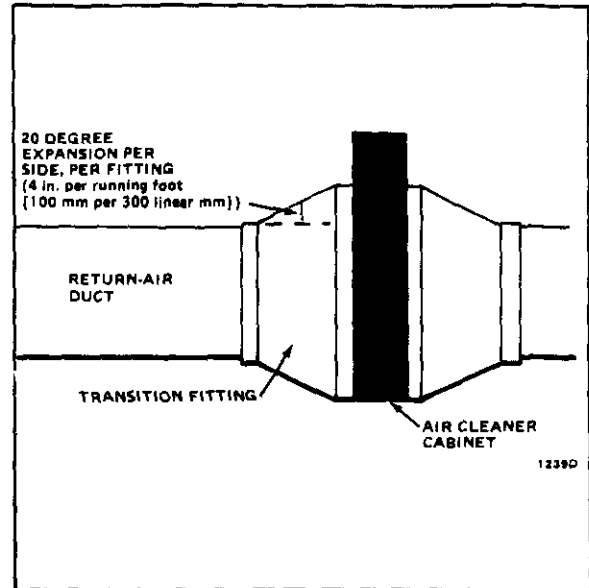


FIG. 12—CHANGE DUCT SIZE GRADUALLY TO MINIMIZE TURBULENCE.

Turning Vanes

If the air cleaner is installed close to an elbow or angle fitting, install turning vanes inside the angle to distribute airflow more evenly across the face of the cell(s). See Fig. 13.

Offsets

If the duct connection to the furnace in a side installation allows less than 7 in. [178 mm] for mounting air cleaner cabinet, shorten the lateral trunk or add an offset to the elbow. See Fig. 14.



FIG. 13—TURNING VANES INSTALLED IN A BEND HELP DISTRIBUTE AIRFLOW EVENLY OVER THE FACE OF THE ELECTRONIC CELLS.

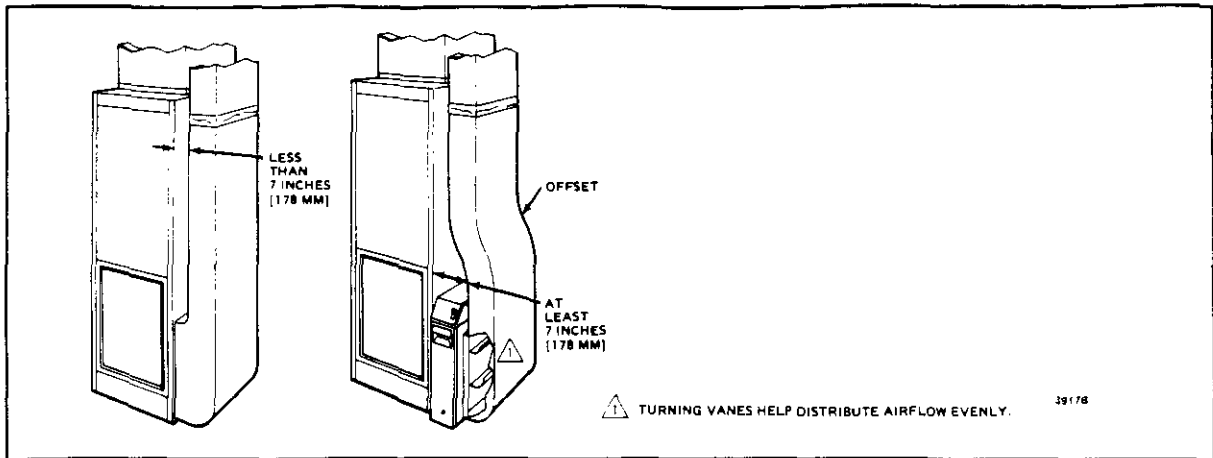


FIG. 14—TYPICAL USE OF DUCT OFFSET TO MAKE ROOM FOR ELECTRONIC AIR CLEANER.

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 the ratings given in the instructions and on the product to make sure the product is 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

Electric shock hazard.
Can cause electrical shock or equipment damage.
Disconnect power supply before installing air cleaner.

UNPACK ELECTRONIC AIR CLEANER

- Check that all components are included. The electronic air cleaner is shipped assembled. The unit consists of (see Fig. 1):
 - Galvanized steel cabinet.
 - Power supply with on-off switch and indicator light.
 - Two electronic cells.
 - Two prefilter screens.
 - Access door with test button.

CLEAN BLOWER COMPARTMENT

- Remove and discard the existing furnace filter.
- Thoroughly clean the blower compartment.
- If possible, power vacuum ductwork to remove accumulated dust in existing home, or construction dirt in a new home. The electronic air cleaner cannot remove dust that has settled in the blower compartment and distribution ducts.
- Check the edges of the furnace fan blades for dirt buildup and clean as necessary. The fan will not deliver the rated cfm if the blades are dirty.

REVIEW THE INSTALLATION PLAN

- Temporarily place the cabinet on the floor, positioned as it will be when installed.
- Remove and set aside the access door, electronic cells and prefilter screens, checking that the selected location provides enough clearance for easy removal and replacement of these components. Unless the power supply will be remote mounted, make sure there will be room above the unit to wire and service the power supply.
- Make sure that shop-fabricated sheetmetal components, such as turning vanes, are on hand.

REMOTE MOUNT POWER SUPPLY, IF DESIRED

- If remote mount is not desired, go on to "Fasten the Cabinet to the Furnace", page 8.

CAUTION

Electric shock hazard.
Can cause personal injury or equipment damage.
Do not attempt to remote-mount the power supply without the remote mount kit. The special high voltage wire in the kit has extra thick insulation to protect against electric shock from the high voltage carried between the air cleaner cells and the power supply. Standard NEC class 1 wire is only rated for 600 volts and will fail if used. Do not try to pull any other wires through the flexible conduit in the kit.

Mount Remote Base

- Select an easily accessible location for the power supply within reach of the conduit assembly. Make sure the on-off switch and indicator light are readily visible.
- Mount the remote mounting base using 4 screws (obtain locally).

Mount Power Box

- Remove the cover from the power supply box. Set aside.

- Disconnect the leadwires from the ionizer and collector terminals on the power supply board. See Fig. 15.
- Remove the power supply box from the cabinet.
- Remove the knockout on the side of the power box and connect the end of the conduit assembly with the shorter leadwires.
- Snip off the quick-connect from the white ground lead, strip about 1/2 in. [12 mm] insulation and connect to the green ground terminal.
- Connect the red and black leadwires as shown in Fig. 16.
- Fasten the power supply box to the base with the two screws removed earlier. See Fig. 17.
- Replace the cover and secure with the screw removed earlier.

Connect Cable To Air Cleaner Cabinet

- Remove the screws holding the front of the contact tray in place and lower the contact tray. Remove and discard the two loose wires attached to the ionizer and collector terminals.
- Remove desired knockout from the top or back of the air cleaner cabinet and install end of conduit assembly with high voltage leadwire ends.
- Connect the black wire to the collector terminal and the red wire to the ionizer terminal. See Fig. 18.
- Mount one of the quick-connect ground terminals and the leaf spring supplied in the kit on the contact tray and connect the white wire to it. See Fig. 18.
- Replace the contact tray and secure with the two screws removed earlier. Be careful not to pinch the wires between the cabinet and tray.
- Plug the hole in the top of the cabinet with the metal plug provided.

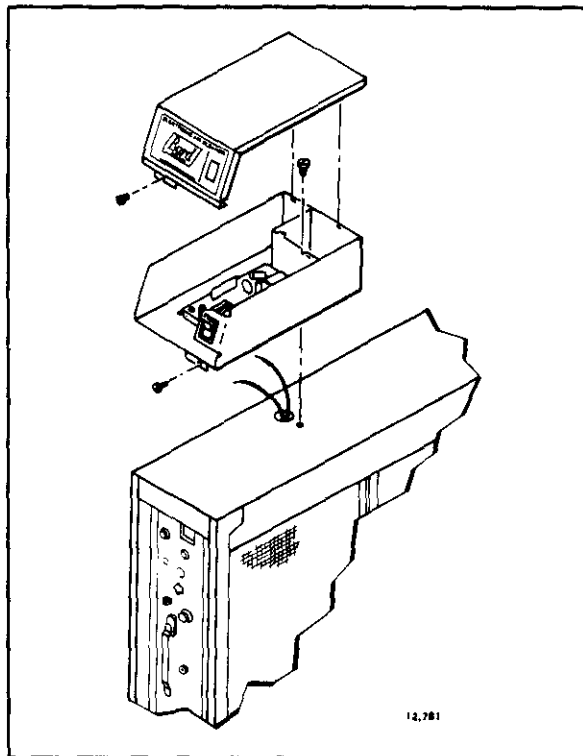


FIG. 15—DISCONNECT THE WIRES AND REMOVE THE POWER BOX.

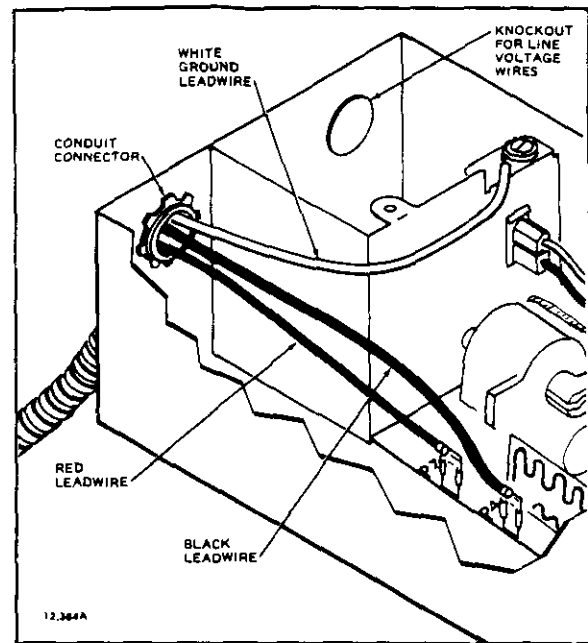


FIG. 16—MAKE WIRING CONNECTIONS IN POWER BOX.

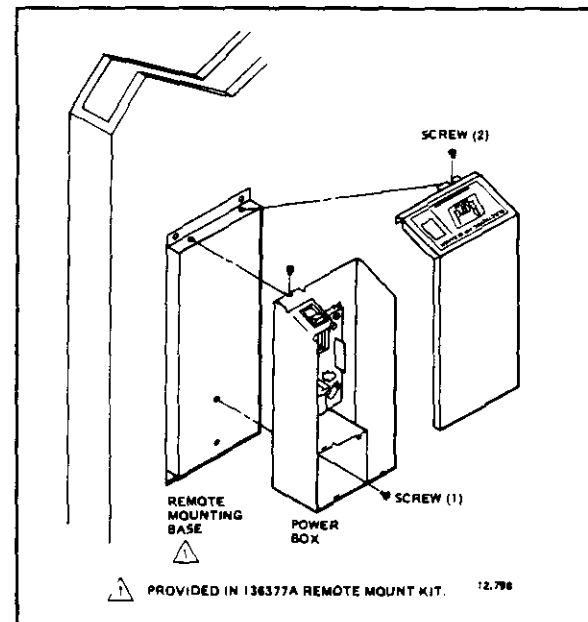


FIG. 17—MOUNT THE POWER BOX ON THE REMOTE-BASE.

FASTEN THE CABINET TO THE FURNACE

NOTE: This procedure shows a side installation on a typical highboy furnace. You may need to alter the procedure to fit your application.

- Line the cabinet up with the return air opening.
- Install a transition if the furnace and air cleaner openings are different sizes. See Fig. 12.
- Place blocks under the cabinet so the unit is firmly supported and level. The 5/8 in. [16 mm] mounting foot on the cabinet hinge plate provides the minimum clearance required for the access door hinge.

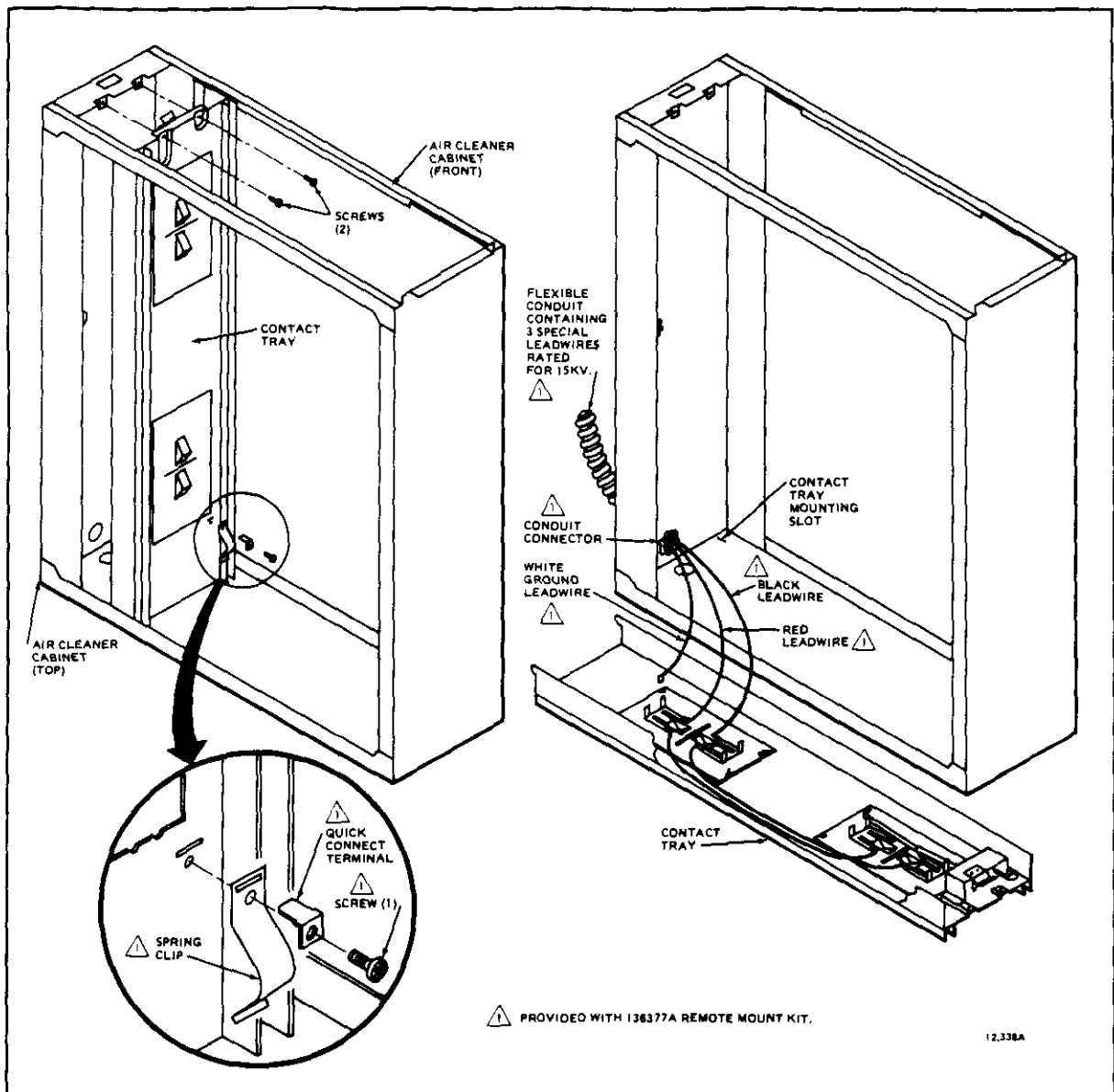


FIG. 18—INSTALL THE CONDUIT ON THE CABINET AND MAKE WIRING CONNECTIONS TO CONTACT TRAY.

Attach the cabinet securely to the furnace. The unit can be attached directly, as shown, or a starting collar can first be fitted in the furnace opening. Either drill holes and fasten with sheetmetal screws or rivets or use slip joints. If you will be drilling holes, locking pliers will help to hold the unit in place during drilling. See Fig. 20.

INSTALL TURNING VANES

Mount turning vanes inside the elbow or angle fitting that is directly against the air cleaner cabinet.

FASTEN CABINET TO DUCTWORK

Install a transition if the opening in the air cleaner cabinet and the duct are different sizes. See Fig. 12.
 Fasten other side of cabinet to the elbow using sheetmetal screws, rivets, or slip joints as appropriate.

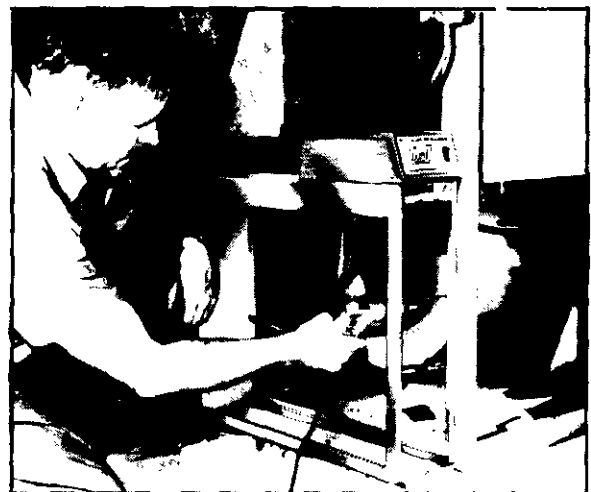


FIG. 19—FASTEN CABINET TO FURNACE.

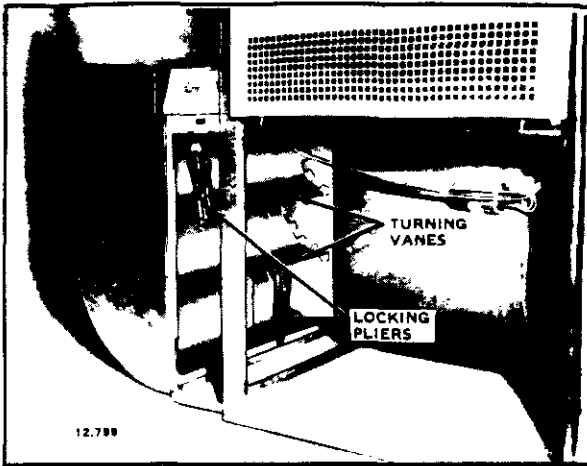


FIG. 20—CONNECT DUCTWORK TO AIR CLEANER. NOTE TURNING VANES. LOCKING PLIERS HOLD DUCT TO AIR CLEANER CABINET DURING INSTALLATION.

IMPORTANT
 In a multispeed blower application, isolate the air cleaner with a dpdt fan relay or sail switch. Otherwise the air cleaner will overheat and burn out.

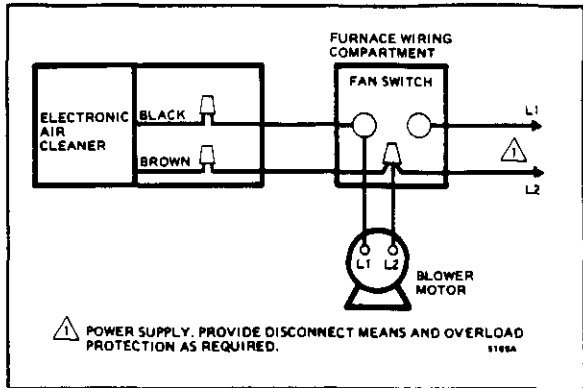


FIG. 21—SINGLE SPEED BLOWER MOTOR. AIR CLEANER IS CONTROLLED BY THE FAN SWITCH AND/OR THE FAN RELAY.

COMPLETE WIRING

CAUTION
 Electric shock hazard.
 Can cause personal injury.

- The line voltage power source must match the voltage and frequency printed on the label inside the access door.
- Opening the access door disconnects high voltage power and discharges the cell. Always turn the air cleaner off and open the access door before touching any internal components.
- The air cleaner must be permanently connected to the power source. Do not use an extension cord.

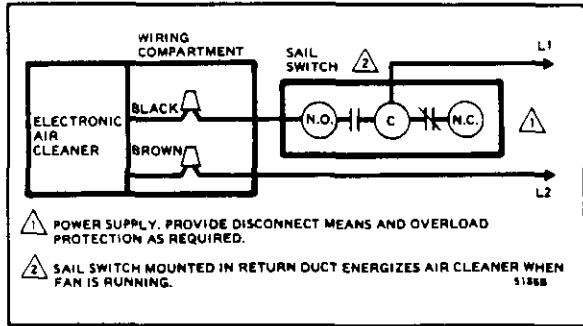


FIG. 22—MULTISPEED OR MODULATING BLOWER MOTOR. AIR CLEANER IS CONTROLLED BY A SAIL SWITCH.

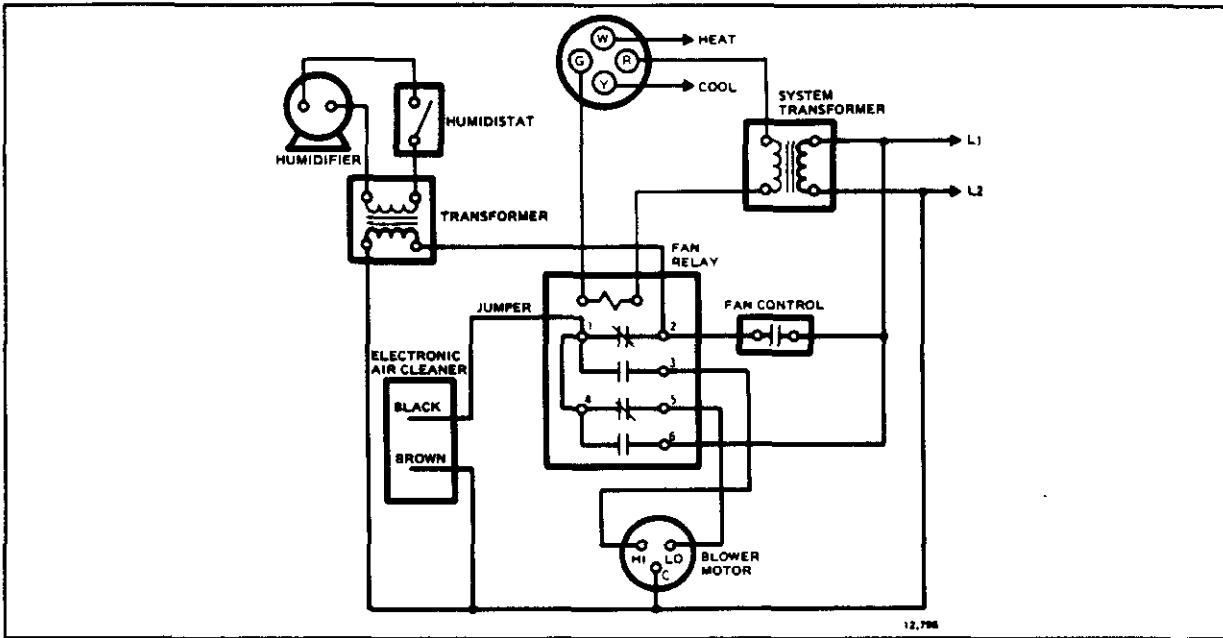


FIG. 23—TWO SPEED BLOWER MOTOR. AIR CLEANER IS CONTROLLED THROUGH A DPDT FAN RELAY. NOTE POWER HUMIDIFIER CONNECTIONS.

- Disconnect power source before beginning wiring to avoid electrical shock or equipment damage. All wiring must comply with local codes and ordinances.
- Wire the air cleaner to run only when the system blower is running. This can be done one of two ways:
 1. If the system blower is driven by a single-speed, single-phase motor, wire the air cleaner into the fan circuit. See Fig. 21.
 2. If the system blower is driven by a 3-phase, variable speed or a 2-speed motor, the air cleaner must be isolated from the blower motor. Use a sail switch mounted in the return air duct (see Fig. 22) or a dpdt fan relay (see Fig. 23). Connecting the air cleaner in parallel with one speed of a multispeed motor can create an auto-transformer effect. If connected with the high speed, voltage supplied to the air cleaner at low speed will be too low, and the air cleaner may not operate at all. If connected with the low speed, voltage to the air cleaner at high speed will be too high and the air cleaner will burn out.

CONNECT DUCTWORK

- Connect the vertical duct section to the elbow. If the vertical drop of the duct is less than 7 in. [178 mm] from the side of the furnace, shorten the horizontal trunk or attach an offset fitting to the elbow.
- When ductwork is properly lined up, connect vertical duct to horizontal trunk.

SEAL JOINTS

- Seal all joints in the return air system between the air cleaner and the furnace to prevent dust from entering the clean airstream.

DISABLE UNUSED PREFILTER SCREEN GUIDE

- Crimp the end of the downstream (closest to furnace) prefilter screen guide to prevent incorrect screen installation following cleaning.



FIG. 24—COMPLETE THE DUCT INSTALLATION.



FIG. 25—CRIMP END OF UNUSED PROTECTIVE SCREEN GUIDE.

POSITION CELL KEY

- The electronic cells must always be installed so the ionizer section is on the upstream side. A factory-installed cell key on the bottom of the cabinet allows the cells to be inserted in only one direction. As long as the arrow molded into the plastic key points the same direction as the airflow, the ionizer will always be on the upstream side.

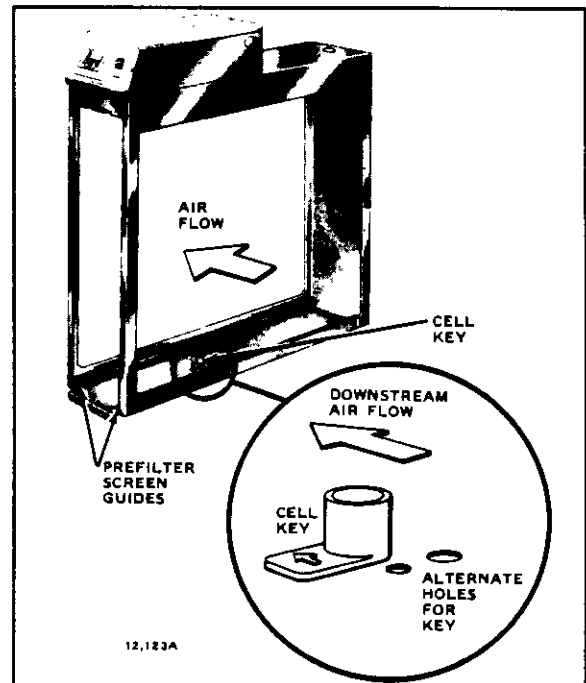


FIG. 26—POSITION OF CELL KEY DETERMINES ORIENTATION OF CELL. ARROW ON KEY MUST POINT DOWNSTREAM.

If the position of the key must be reversed, proceed as follows:

1. Remove both electronic cells.
2. Loosen the screw holding the cell key in place. See Fig. 26.
3. Turn the key around and place it over the opposite holes. The tab on the bottom fits into the larger hole, and the screw into the smaller. Make sure the arrow on the key points in the direction of air flow (downstream).
4. Tighten the screw.
5. Insert the electronic cells. The ionizer section will now be on the air-entering (upstream) side of the cabinet.

ATTACH CELL HANDLES

The cell handles are included in the packet of literature. They must be installed on the end of the cells that will be closest to the access door. To install:

1. Orient the cells as they will be when installed. The contacts must be up and the airflow arrow stamped into the cell must point downstream.
2. Hold the handle sideways and insert the solid tab on the back of the handle into the slot in the cell. Turn the handle 90 degrees clockwise to line up the divided tab with the square hole. See Fig. 27.



FIG. 27—INSTALL HANDLE ON END OF CELL THAT WILL BE CLOSEST TO ACCESS DOOR.

3. Insert the divided tab into the square hole.
4. Fold up the wedge and insert into divided tab to lock handle in place. If necessary, press with a blunt instrument like the end of a pliers.

REASSEMBLE AIR CLEANER

- Insert the electronic cells with the contacts up and the airflow arrow pointing downstream. If the cells don't slide easily into the cabinet, check the orientation of the cell key.
- Insert the prefilter screens on the upstream side of the cabinet in the screen guides provided.
- Replace the access door. Insert the tab on the bottom of the door into the slot in the cabinet, then swing closed and press into place. See Fig. 28. The door must be firmly in place or the air cleaner will not operate.



FIG. 28—CLOSE ACCESS DOOR TO COMPLETE AIR CLEANER INSTALLATION.

CHECKOUT

INSPECT THE INSTALLATION

Make sure:

- Turning vanes and transitions, as needed, are properly installed.
- Sheetmetal joints between air cleaner and furnace are sealed.
- All sheetmetal connections are complete.
- Original furnace filter has been removed and the blower compartment cleaned.
- If an atomizing humidifier is installed upstream of the air cleaner, that a disposable furnace filter is installed between the humidifier and the air cleaner.
- If the furnace has a multispeed or modulating blower that an interlock (sail switch or dpdt relay) provides electrical isolation.
- Outside air, if used, is mixed with return air or heated as necessary before it can reach the air cleaner.
- The high voltage contacts on the cell touch the spring

- contacts in the contact tray.
- The airflow arrows on the electronic cells point downstream.
 - The prefilter screens are on the upstream side of the cells.
 - The cell handles face outward.
 - The electronic cells and prefilter screens are clean and dry.
 - The wiring connections inside the power box are properly made. See Figs. 21-23.

CHECK AIR CLEANER OPERATION

With all components in place, turn on the air cleaner switch and energize the system blower. Check the following points of operation:

1. The indicator light in the on-off switch should be on. The indicator light comes on to show that the air cleaner is energized and the high voltage power supply is working properly.
2. Turn off the system blower. The indicator light should go off.
3. Turn the system blower back on. With the air cleaner energized, push the test button. A snapping sound indicates that collector voltage is available.
4. With a multispeed blower, repeat steps 1-3 for each fan speed.
5. With a meter, check the ionizer voltage between P3 (red lead) and ground, and the collector voltage between P4 (black lead) and ground. The correct voltages are printed on the label inside the access door.
6. If operation is not as described, refer to Electrical Troubleshooting, page 14.

SERVICE

CAUTION

Sharp edges.
Can cause personal injury.
Handle the cells carefully to avoid cuts from the sharp metal edges.

CLEANING THE ELECTRONIC CELLS AND PREFILTER SCREENS

Clean the electronic cells and prefilter screens regularly—every one to six months. Variables such as number of family members, pets, activities and whether anyone smokes indoors will determine how often cleaning is required. Use the wash reminder schedule included with the air cleaner to help establish and maintain a regular cleaning schedule.

The cells can be washed in many home dishwashers, by soaking in a tub or at a do-it-yourself, coin operated car wash. The prefilter screens can be vacuumed, brushed, sprayed with a garden hose, or washed with the electronic cells.

Automatic Dishwasher

CAUTION

Burn hazard.
Can cause personal injury.
Allow the cells to cool in the dishwasher at the end of the wash cycle or wear protective gloves to avoid burns. Hot water may accumulate in the tubes supporting the collector plates. Tip the cells so these tubes will drain.

IMPORTANT

- Check your dishwasher owner manual. Some manufacturers do not recommend washing electronic cells in their dishwasher.
- If the dishwasher has upper and lower arms, position the cells carefully to allow good water circulation.
- Use care to avoid damaging the cells when placing them in the dishwasher.
- Very dirty cells, especially from tobacco or cooking smoke, may discolor the plastic parts of the dishwasher. This discoloration is not harmful. To minimize it, wash the cells more frequently or try a different brand of detergent.
- Do not allow the dishwasher to run through the dry cycle. This will "bake on" any contaminants not removed during the wash cycle and reduce air cleaner efficiency.

1. Put the cells on the lower rack of the dishwasher with the airflow arrow pointing up. It may be necessary to remove the upper rack. Don't block water flow to the upper arm, if provided on your dishwasher.
2. If you are washing the prefilter screens with the cells, place them where they won't block the water from the electronic cells.
3. Using the detergent that works best for normal dishwashing, allow the dishwasher to run through the complete wash and rise cycle. Do not use the dry cycle. To avoid burns, wear protective gloves when removing the cells, or let them cool first. Remember that water may be trapped in the tubes supporting the collector plates. Tip the cells so these tubes can drain.

4. Inspect the dishwasher. You may wish to rerun the wash and/or rinse cycle with the dishwasher empty if you see dirt or residue from washing the cells. If dirt or residue seems excessive, wash the cells more often or try a different detergent.

Soaking

CAUTION

Hazardous chemical.
Can cause personal injury.
Do not splash the detergent solution in eyes. Wear rubber gloves to avoid prolonged detergent contact with skin. Keep detergent and solution out of reach of children.

NOTE: Always wash the cells first, then the prefilter screens to keep lint from getting caught in the cells.

1. Use a container large enough to hold one or both cells, such as a laundry tub or trash container.
2. Dissolve about 3/4 cup of detergent per cell in enough hot water to cover the cells. If the detergent doesn't dissolve readily, or forms a scum on the water, try another brand.
3. After the detergent has completely dissolved, place the electronic cells in the container and let them soak for 15-20 minutes. Then agitate them up and down a few times and remove.
4. Next, wash the prefilter screens the same way. Empty and rinse the wash container.
5. Rinse the cells and screens with a hard spray, then fill the tub with clean hot water and soak for 5 to 15 minutes. Rinse until water draining from the cells and screens no longer feels slippery.

Car Wash

Use the hand sprayer at a coin-operated car wash to wash the cells and prefilter screens. Hold the nozzle at least 2 ft. away from the unit to avoid damage from the high pressure stream of water. Follow the same sequence of wash and rinse as recommended for cars. However, do not wax the cells or the screens. Rinse until the water draining from the cells and screens no longer feels slippery.

Reinstall The Cells And Prefilter Screens

1. Inspect the cells for broken ionizer wires and bent

collector plates. Repair as necessary.

2. Slide the prefilter screens into the upstream screen channels.
3. Slide the air cleaner cells in so the air flow arrow points downstream and the handles face outward.
4. Firmly close the access door.
5. Turn on the air cleaner. If the cells and screens are wet, the indicator light may not come on and you may hear arcing. If the arcing is annoying, simply turn the air cleaner off for 2-3 hours or until it is dry.

IONIZING WIRE REPLACEMENT

Broken or bent ionizing wires can cause a short to ground, often resulting in visible arcing or sparking. Any short in the ionizer section will cause the indicator light to go out. The cell should not be used until the pieces of broken wire are removed. It can be used temporarily with one wire missing, although the wire should be replaced as soon as possible. See the Parts List, page 18 for order number.

Replacement wires come cut to length with eyelets on both ends for easy installation. To install:

1. Hook the eyelet on one end of the wire over the spring connector on one end of the cell. See Fig. 29. Be careful to avoid damaging the spring connector or other parts of the cell.
2. Hold the opposite eyelet with a needlenose pliers and stretch the wire the length of the cell. Depress the opposite spring connector and hook the eyelet over it.

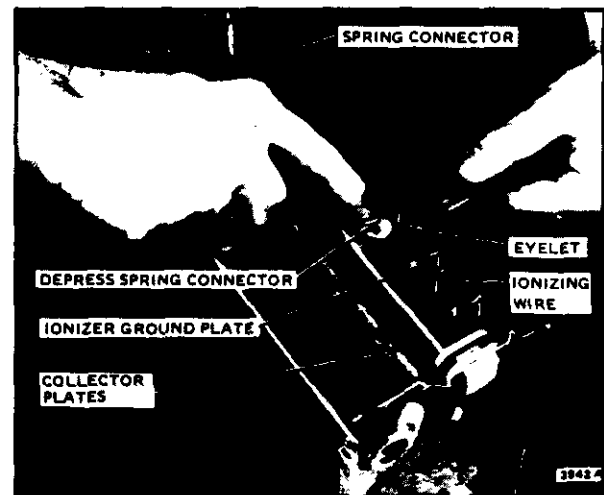


FIG. 29—INSTALL NEW IONIZING WIRE BY HOOKING EYELETS OVER SPRING CONNECTORS.

ELECTRICAL TROUBLESHOOTING

WARNING

Electric shock hazard.
Can cause personal injury or equipment damage.
The following procedures expose hazardous live parts. Disconnect power supply between checks and proceed carefully.

CAUTION

The following instructions are for use by qualified personnel only.

TOOLS AND EQUIPMENT

Troubleshooting the electronic air cleaner requires only a few tools.

- Needlenose pliers—for stringing ionizing wires.

- **Test Meter**—Honeywell W869 Electronic Air Cleaner Test Meter, Simpson 260 with 25 kVdc probe or equivalent meter.

current flow to the collector, so the arcing sound is only about half as loud as the sound on air cleaners with W919-style power supplies.

TROUBLESHOOTING PROCEDURE

The "Electronic Air Cleaner Troubleshooting Procedure", Fig. 31, shows how to quickly isolate a problem in the air cleaner. Although a meter is needed for some steps, your primary diagnostic tools are the INDICATOR LIGHT and the TEST BUTTON.

Indicator Light

The INDICATOR LIGHT is in the on-off switch. It is powered through the power supply and is ON when the power supply is working properly. See internal schematic, Fig. 34.

Test Button

The TEST BUTTON is near the bottom of the access door. When pushed, it shorts from a hot collector plate to ground. See internal schematic, Fig. 34. The resulting arcing sound indicates that high voltage is being supplied to the collector. The solid state power supply controls

Power Supply

CAUTION

Electric shock hazard.

Can cause personal injury.

Always turn off power and remove access door before removing power box or its cover.

The solid state power supply provided in this air cleaner has no field-serviceable components. If troubleshooting indicates a power supply problem, replace the entire power supply. See Parts List, page 18 for order number.

To Access Power Supply

1. Turn off power.
2. Remove access door.
3. Loosen the screw holding the cover on and remove the cover. See Fig. 30.
4. Replace the access door and restore power.

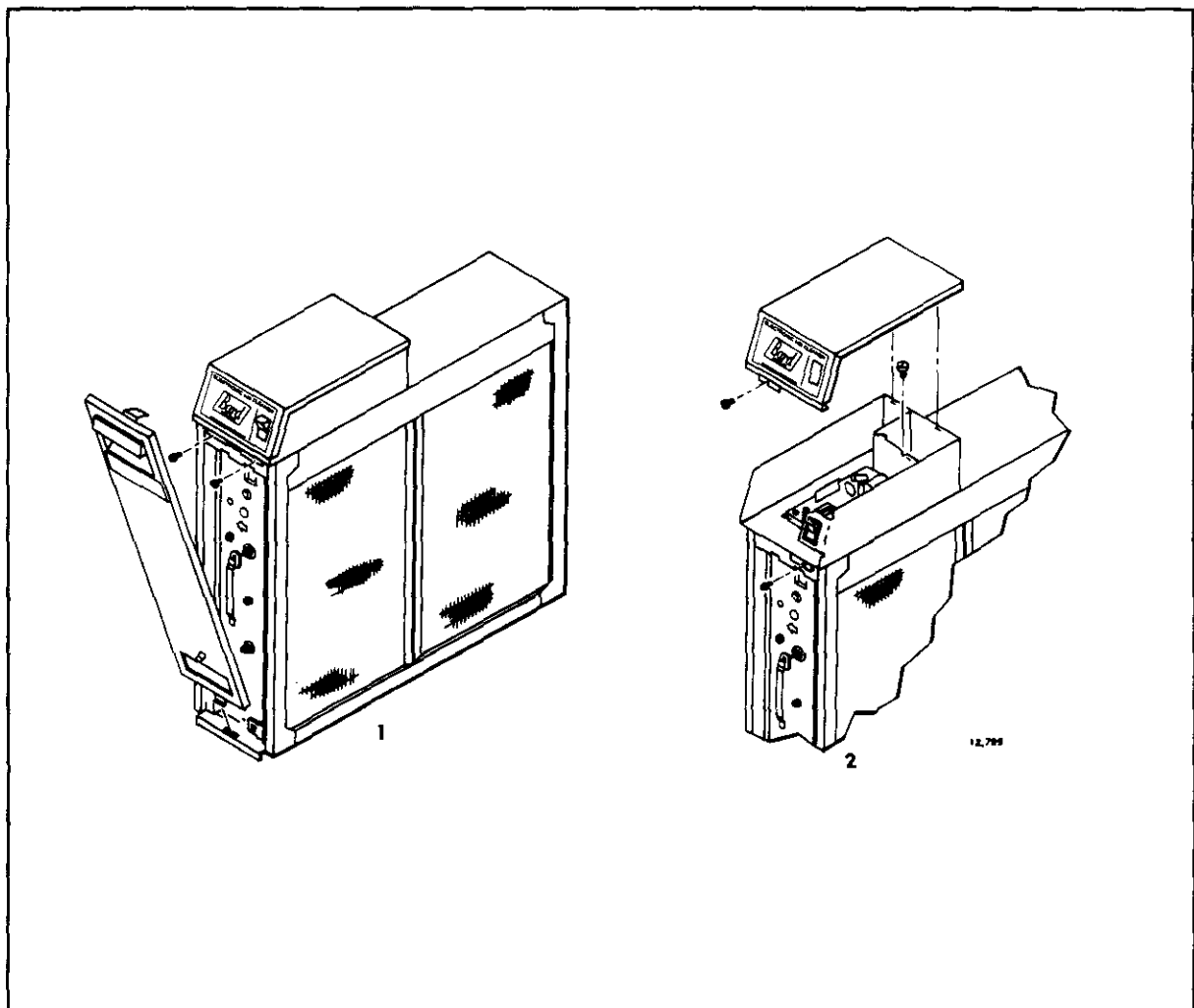
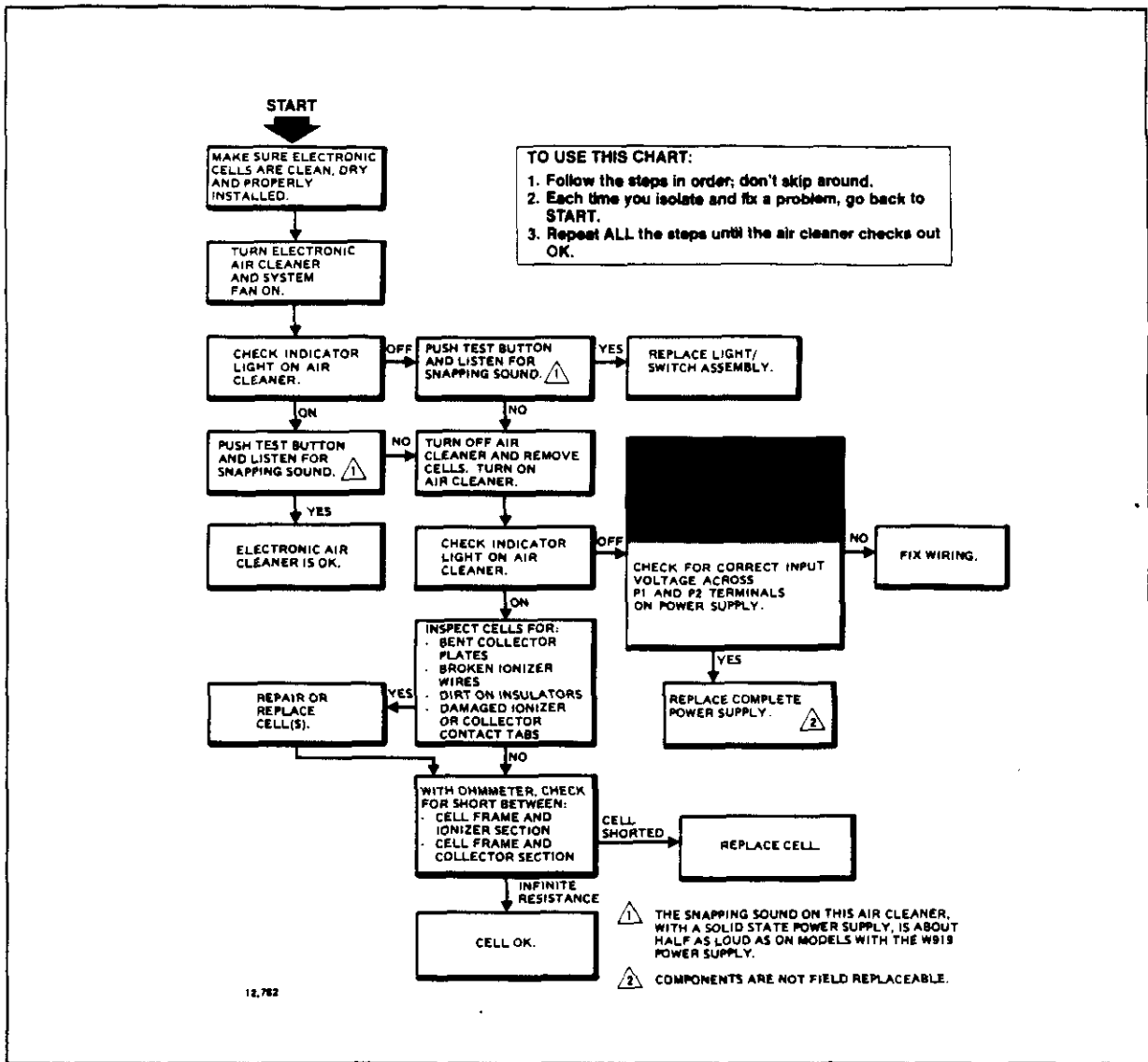


FIG. 30—POWER BOX COVER IS SECURED BY A SINGLE SCREW.



⚠ THE SNAPPING SOUND ON THIS AIR CLEANER, WITH A SOLID STATE POWER SUPPLY, IS ABOUT HALF AS LOUD AS ON MODELS WITH THE W919 POWER SUPPLY.

⚠ COMPONENTS ARE NOT FIELD REPLACEABLE.

FIG. 31—ELECTRICAL TROUBLESHOOTING PROCEDURE FOR ELECTRONIC AIR CLEANERS.



FIG. 32—USE AN OHMMETER TO CHECK THE ELECTRONIC CELLS FOR SHORT CIRCUITS.

REDUCING OZONE ODOR

CAUTION

Electric shock hazard.

Can cause personal injury.

Always disconnect power and open the access door to discharge the high voltage power supply before opening the power supply cover.

The electronic air cleaner generates a small amount of ozone in normal operation. During the first week or two of operation the amount may be higher because of sharp edges on some of the new high voltage metal parts. Normal use dulls these edges in a short time.

The average person can detect the odor of ozone in concentrations as low as 0.003 to 0.010 parts per million (PPM). The electronic air cleaner contributes 0.005 to 0.010 PPM of ozone to the indoor air. The U.S. Food and Drug Administration recommends that indoor ozone con-

centration should not exceed 0.050 PPM. As a comparison, the outdoor ozone level in major cities ranges from 0.020 PPM to 0.040 PPM and even higher. However, if desired, the ozone generated by the air cleaner can be reduced in one of two ways:

1. Install an activated carbon filter downstream of the air cleaner. Make sure particles from the air filter cannot fall into the air cleaner.

CAUTION

Only a trained service technician should perform the following procedure.

2. Clip out the J2 jumper on the power supply. This will reduce ozone production about 20-25 percent, and reduce efficiency about 7-10 percent.

- a. Turn off power to the air cleaner.
- b. Open the access door to discharge the high voltage power supply.
- c. If power supply is remote mounted, make sure access door is open. Remove the power box cover. See Fig. 30.
- d. Find the J2 jumper and clip it out. See Fig. 33.
- e. Replace power supply cover and access door. Turn on power.

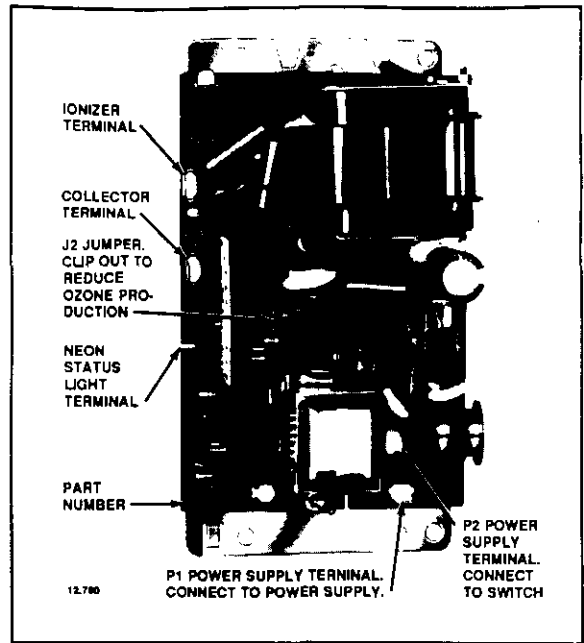


FIG. 33—CLIP OUT THE J2 JUMPER TO REDUCE OZONE PRODUCTION ABOUT 20-25 PERCENT.

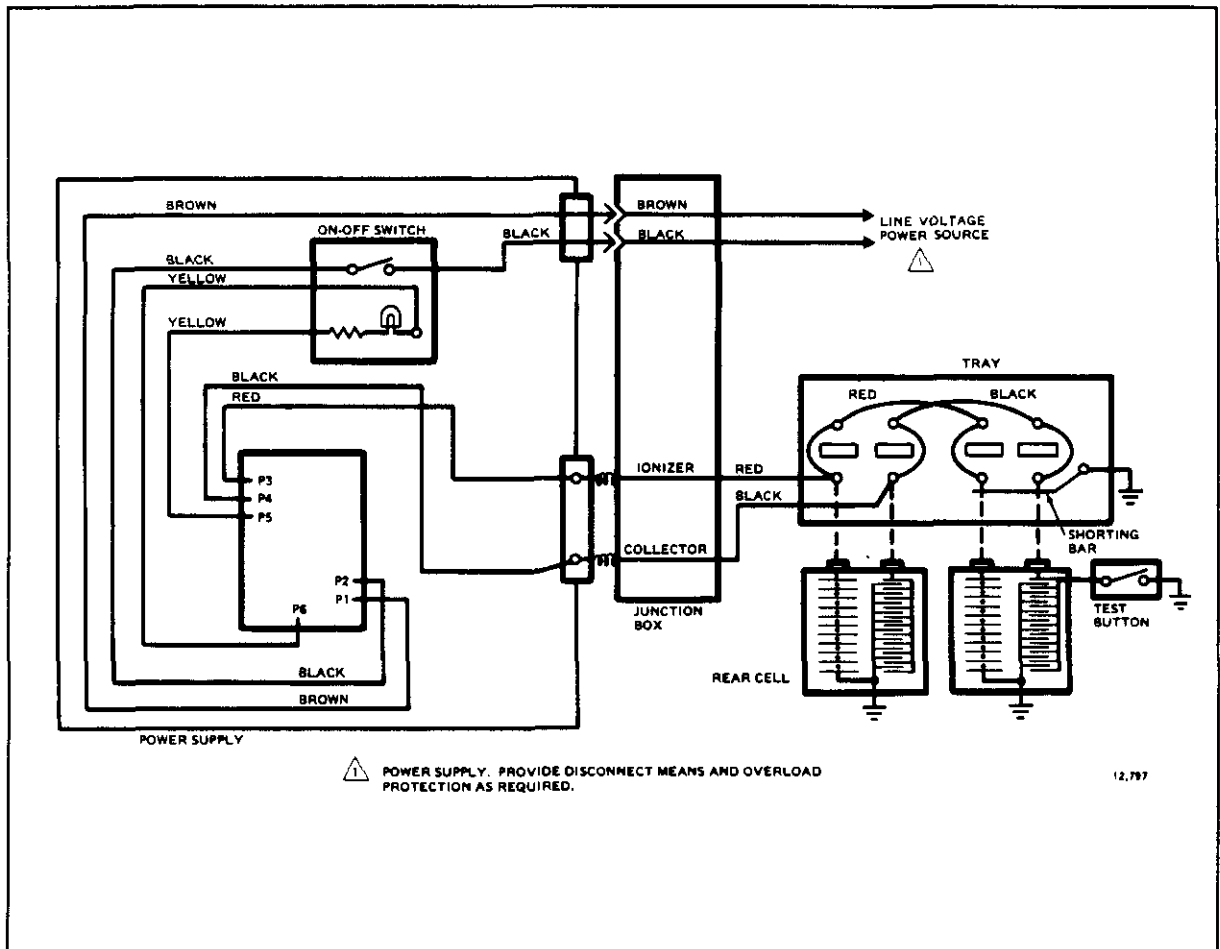


FIG. 34—ELECTRONIC AIR CLEANER INTERNAL SCHEMATIC.

PARTS LIST

DRAWING NUMBER (See Fig. 35)	DESCRIPTION	PART NUMBER	
		16 x 25 in. [406 x 635 mm]	20 x 25 in. [508 x 635 mm]
1	Access Door (includes 2 below)	136393AE	136392AE
2	Test Button Assembly	137980A	137980A
3	Electronic Cell (2)	FC37A1130	FC37A1064
4	Call Handle (2)	137266	137266
5	Protective Screen (2)	136388	136389
6	Cabinet	136403A	136402C
7	Cell Guide/Screen Channel (4)	136390	136390
8	Cell Key	136518	136518
9	Contact Panel Assembly (includes 10 through 12 below)	136399A	136399A
10	Contact Board (2)	136383A	136383A
11	Shorting Arm	136387A	136387A
12	Shorting Arm Bracket	136382A	136382A
13	Shorting Arm Spring	136517	136517
14	Power Box Assembly (includes 15 through 17 below)	197667W	197667V
15	Switch/Indicator Light	199840	199840
16	Power Supply	220429P	220429N
17	Power Box Cover	200121	200121

PARTS NOT ILLUSTRATED:

Ionizing Wires (package of 5)* —136434AA for 20 in. [508 mm] model.
 —136434BA for 16 in. [406 mm] model.

Remote Mount Repair Kit
 Conduit Assembly, Part No. 136376A
 Cabinet Plug, Part No. 136734

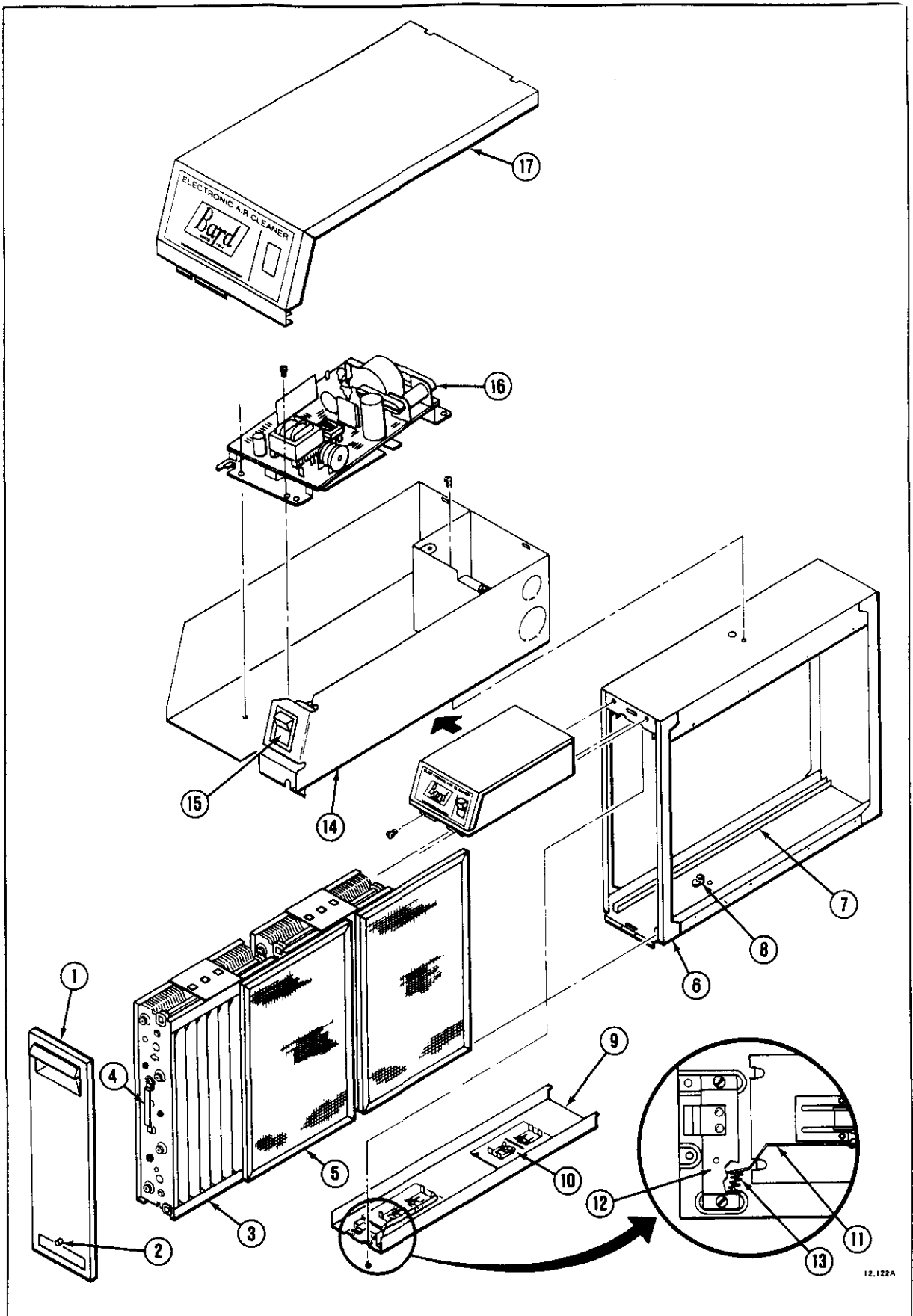


FIG. 35—COMPONENTS OF THE ELECTRONIC AIR CLEANER.

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