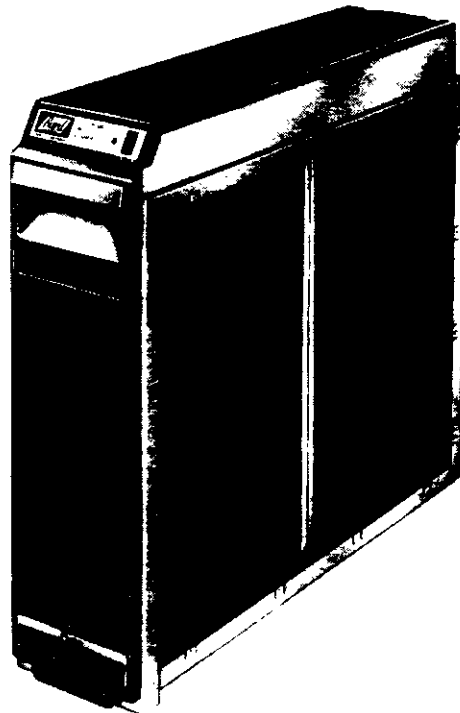




Heating & Cooling Products

EC14A AND EC20A ELECTRONIC AIR CLEANERS



**Installation and
Service Instructions
Bard Manufacturing Co.
Bryan, Ohio 43506**

General

The high efficiency Bard Electronic Air Cleaner is mounted in the return air duct of a forced air heating, cooling, or ventilating system. It removes airborne particles such as dust, soot, pollen, tobacco smoke and cooking smoke from the air circulated through it.

Features

- Available in two sizes to fit most ducts; adapts to air flow from either side.
- Capacity to 2000 cfm [3400 m³/hr].
- Up to 95 percent efficient (16 x 25 in. model at 500 cfm), measured by National Bureau of Standards Dust Spot Method using atmospheric dust, and American Society of Heating, Refrigerating, and Air Conditioning Engineers Standard 52-76.
- Solid state power supply is self-regulating and maintains peak efficiency during a wide range of cell dirt loading conditions.
- Pressure drop is approximately equal to that of a regular fiberglass filter.
- Optional W8600E Solid State Performance Indicator monitors air cleaner performance, reminds homeowner when a cell and prefilter wash is past due, and when to check the system.
- Electronic cells can be washed in most home dishwashers.
- Galvanized cabinet protects against rust.
- Neon light next to on-off switch tells if air cleaner is powered and if high voltage is present.
- Test button checks system operation.
- Troubleshooting guide mounted inside cell access door.
- Permanent wash reminder schedule included for mounting in convenient location.
- Prefilter screens protect cells from large dirt particles.

Specifications

MODEL: Bard Electronic Air Cleaner: Includes cabinet, access door, solid state power supply, two electronic cells and two prefilters.

ELECTRICAL RATINGS:

Voltage and Frequency: 120V, 60 Hz. Two cell, 120V, 60 Hz models can be converted in the field to 240V, 60 Hz or 220/240V, 50 Hz with the 203365A Conversion Kit.

Power Consumption: 36W maximum

Current Draw: 0.4A at 120V, 60 Hz and 0.2A at 240V, 60 Hz or 220/240V, 50 Hz.

Ionizer Voltage: 8150 Vdc.

Collector Voltage: 4075 Vdc.

CAPACITY, EFFICIENCY, PRESSURE DROP: See Fig. 1.

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 [140° C].

Storage and Shipping Ambient: Minus 40° F to plus 140° F [minus 40° C to plus 60° C].

MOUNTING: Mounts in the return air duct of a forced air heating, cooling, or ventilating system. Mount upstream from atomizing humidifier. See Planning the Installation section.

WEIGHT: See Table 1.

DIMENSIONS: See Fig. 2.

UNDERWRITERS LABORATORIES INC. LISTED: File No. E30954.

CANADIAN STANDARDS ASSOCIATION CERTIFIED: File No. LR95329-1.

ACCESSORIES:

203365A Conversion Kit for changing 120V, 60 Hz power supply to 240V, 60 Hz or 220/240, 50 Hz.

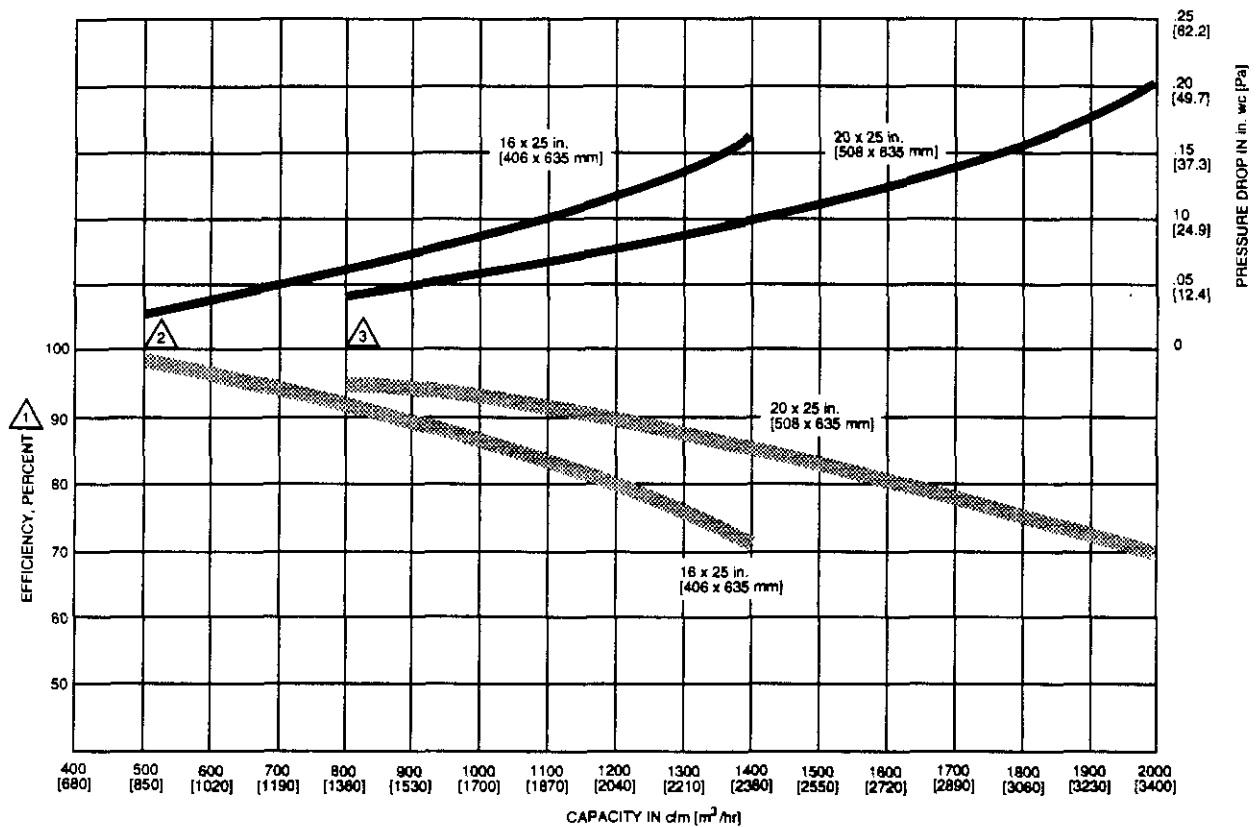
W8600E Solid State Performance Indicator (SSPI).

REPAIR PARTS: See Replacement Parts/Exploded View section.

TABLE 1—SHIPPING AND INSTALLATION WEIGHT.

	Weight			
	16 x 25 in. [406 x 635 mm]		20 x 25 in. [508 x 635 mm]	
	lb	kg	lb	kg
Electronic Cell (Each)	6	2.7	7 1/2	3.4
Shipping Weight	33	15.0	38	17.2
Installed Weight (Cells Included)	28	12.7	33	15.0

Fig. 1—Air cleaner efficiency and pressure drop at various airflow rates.

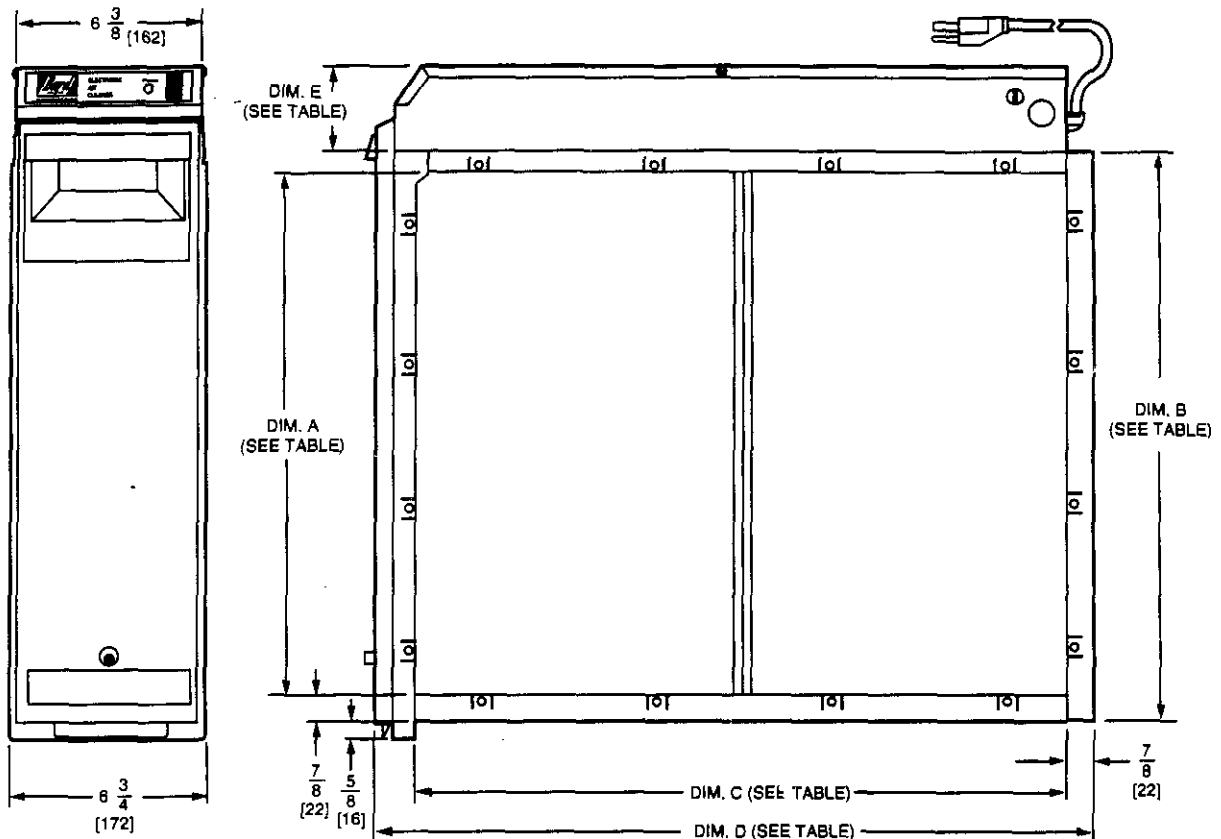


1 EFFICIENCY RATINGS BASED ON NATIONAL BUREAU OF STANDARDS INITIAL DUST SPOT METHOD USING ATMOSPHERIC DUST, AND AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS STANDARDS 52-76.

2 MINIMUM RECOMMENDED cfm FOR 16 x 25 in. [406 x 635 mm].
3 MINIMUM RECOMMENDED cfm FOR 20 x 25 in. [508 x 635 mm] MODEL.

M6700

Fig. 2—Installation dimensions of electronic air cleaner in in. [mm].



AIR CLEANER SIZE		DIM. A		DIM. B		DIM. C		DIM. D		DIM. E	
IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM
16 X 25	406 X 635	14 7/16	367	16 3/16	411	23 1/4	591	25 1/2	648	2 3/4	70
20 X 25	508 X 635	18 7/16	468	20 3/16	513	23 1/4	591	25 1/2	648	2 3/4	70

M5710

Planning the Installation

APPLICATION

The electronic air cleaner is used in a forced air heating, cooling, or ventilating system. It removes airborne particles such as dust, soot, pollen, tobacco smoke and cooking smoke from the air circulated through it. All models have an internal air flow switch to operate the electronic air cleaner when the system blower is on.

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.

IMPORTANT: 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 from the evaporator coil. The air cleaner will help keep the coil clean, reducing maintenance.

Applications with a Humidifier

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

1. Mount it as far as possible upstream from the air cleaner.
2. Install a standard disposable furnace filter between the humidifier and the air cleaner to trap water droplets and hard water salts.
3. Frequently clean the air cleaner to prevent a hard water salt buildup.

NOTE: The volume of water that passes through an atomizing humidifier can overload the air cleaner, resulting in hard water salts being deposited as dust in the living space.

Applications with an Activated Carbon Filter

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

- Downstream from the air cleaner. This means 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 cell. If necessary, use a disposable furnace filter between the carbon filter and the electronic cell.
- With proper transitions, if the activated carbon filter requires a differently sized duct than the air cleaner. Allow 20 degrees expansion per side, per fitting.

NOTE: Bard does not offer carbon filters. Refer to an activated carbon filter manufacturer for sizing and application.

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 upstream from the air cleaner by:

- Making sure the outdoor intake is far enough upstream from 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 upstream from the air cleaner to force thorough air mixing.
- Installing a preheater when 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. Hot water or steam coils should be protected by a freeze-up control.

Optional W8600E

The electronic air cleaner terminal board is recessed slightly so it or the wires will not interfere with installation. The entire power supply box can be unplugged and removed to provide access to the terminals. The W8600E Indicator can be mounted in the living area or in the furnace room. It should be located in a location convenient for observing the LEDs.

CHOOSE ELECTRONIC AIR CLEANER 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 and electronic cell. Allow enough room above the power supply so it can be serviced without removing pipes, ducts, or other heating system components.

The air cleaner *must* be installed where the temperature will not exceed 40° F to 125° F [4° C to 52° C].

CHOOSE MOUNTING POSITION



WARNING

**HEAVY EQUIPMENT.
 CAN CAUSE INJURY OR
 EQUIPMENT DAMAGE.**

Do not mount the air cleaner with the access door facing down. If the access door faces down, the latch may not hold, and the cell and prefilter can fall unexpectedly. Also, nothing holds the cell and prefilter in place when the access door is opened.

The air cleaner can be mounted in any position except with the access door facing down. Following is a list of air cleaner mounting positions for a variety of furnace installations.

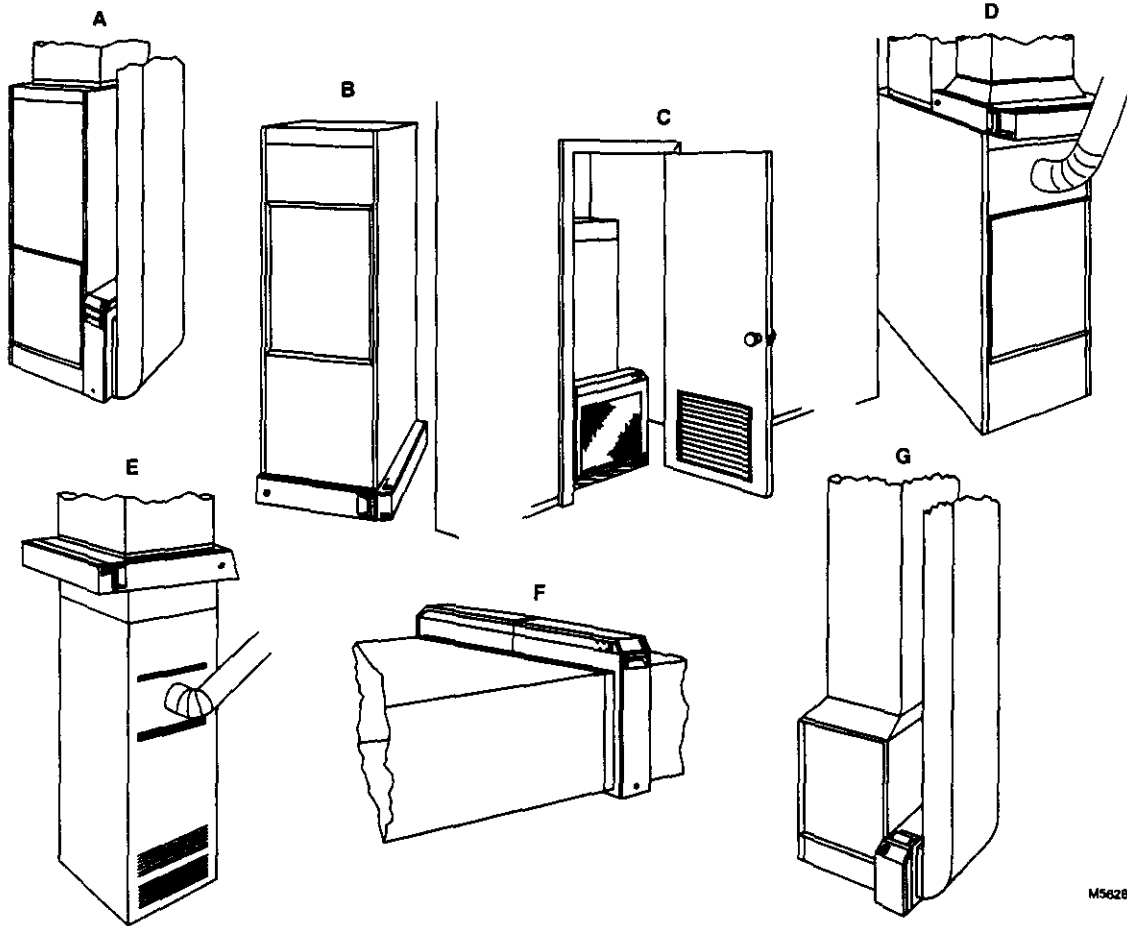
NOTE: At least 13 in. [330 mm] clearance is required between the access door and any obstructions for cell and prefilter maintenance.

- *Upflow "Highboy" furnace:* Side installation; air cleaner is mounted vertically where return enters side inlet of furnace. See Fig. 3A.
- *Upflow "Highboy" furnace:* Installation beneath furnace (air cleaner cabinet can easily support weight of furnace and air conditioner coil). Air cleaner is mounted horizontally where return enters from below. See Fig. 3B.
- *Upflow "Highboy" furnace:* Closet installation. Air cleaner is mounted vertically on furnace between furnace and louvered return air opening in closet door. See Fig. 3C.
- *"Lowboy" furnace:* Air cleaner is mounted horizontally in return plenum just above furnace, opposite of supply plenum. See Fig. 3D.

- *Downflow "Counterflow" furnace:* Air cleaner is mounted horizontally in return duct or plenum just above furnace. See Fig. 3E.
- *High capacity system:* Two or more air cleaners can be used together. See Fig. 3F.

— *Electric furnace or heat pump:* Single cell air cleaner is mounted with access door on top. See Fig. 3G.

Fig. 3—Mounting positions with variety of furnace installations.



M5626

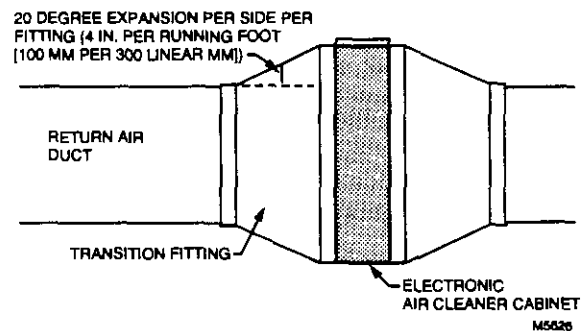
DETERMINE DUCT DESIGN REQUIREMENTS

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

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 no more than 20 degrees or about 4 in. per running foot [100 mm per 300 linear mm] on each side of a transition fitting. See Fig. 4.

Fig. 4—Change duct size gradually to minimize turbulence.



M5626

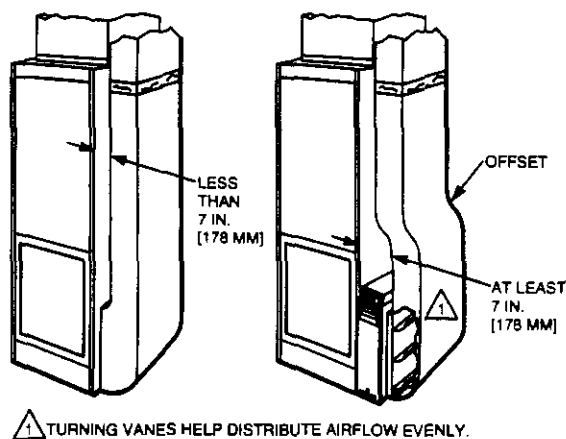
Turning Vanes

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. See Fig. 5.

Offsets

If the duct connection to the furnace in a side installation allows less than 7 in. [178 mm] for mounting the air cleaner cabinet, add an offset to the elbow. See Fig. 5.

Fig. 5—Typical use of duct offset to allow space for electronic air cleaner.



M5627

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.

**WARNING**

**ELECTRIC SHOCK HAZARD.
CAN CAUSE ELECTRICAL SHOCK OR
EQUIPMENT DAMAGE.**

Do *not* connect to power before installation is complete.

UNPACK ELECTRONIC AIR CLEANER

- Check that all components are included. The electronic air cleaner is shipped assembled. The unit consists of a galvanized steel cabinet, power supply with on-off switch and neon light, one or two electronic cells and prefilters, access door with test button, and homeowner literature package.
- Order W8600E (optional), mounting hardware and installation literature separately.

CLEAN BLOWER COMPARTMENT

- Remove and discard the existing furnace filter.
- Thoroughly clean the blower compartment.

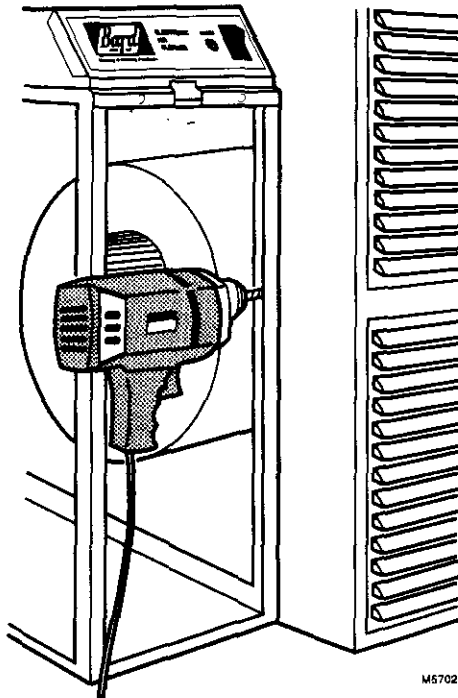
- If possible, power vacuum the ductwork to remove accumulated dust in an existing home, or construction dirt in a new home. The electronic air cleaner cannot remove dust that has settled in the blower compartment and distribution ducts.
- Check the edges of the furnace fan blades for dirt buildup and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

FASTEN CABINET TO FURNACE

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

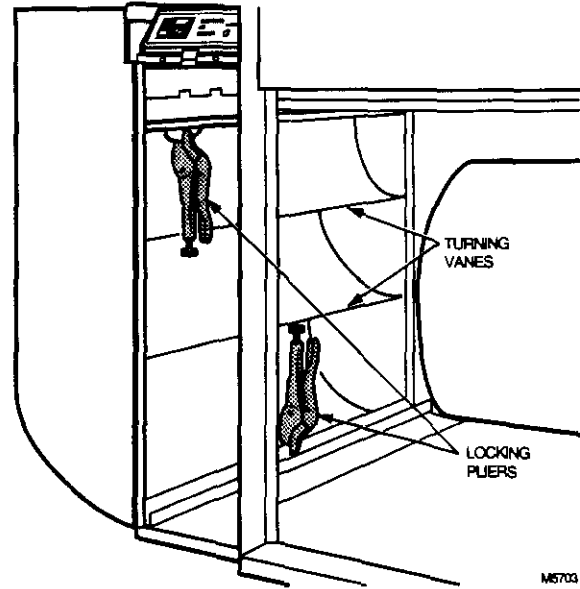
- Remove and set aside the access door, electronic cells and prefilters.
- Align the cabinet with the return air opening.
- Create opening in furnace to match air cleaner cabinet opening.
- Install a transition when the furnace and air cleaner openings are different sizes. See Fig. 4.
- Place blocks 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.
- 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 sheet metal screws or rivets, or use slip joints. See Fig. 6.

Fig. 6—Fasten cabinet to furnace.



M5702

Fig. 7—Connect ductwork to air cleaner. Note turning vanes. Locking pliers hold duct to air cleaner cabinet during installation.



M5703

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 when the opening in the air cleaner cabinet and the duct are different sizes. See Fig. 4.
□ Fasten the other side of the cabinet to the elbow using sheet metal screws, rivets, or slip joints as appropriate. When drilling holes, use locking pliers to help hold the unit in place during drilling. See Fig. 7.

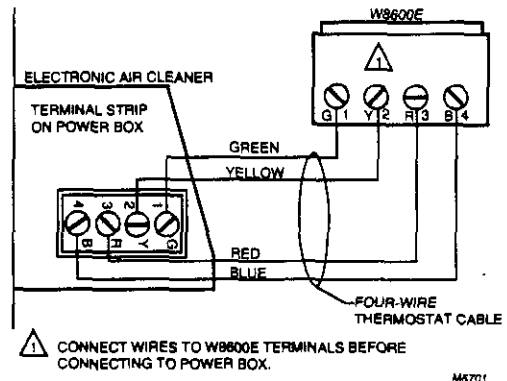
INSTALL OPTIONAL W8600E SOLID STATE PERFORMANCE INDICATOR

Choose a location for the W8600E. The indicator is designed to mount next to your thermostat or in any convenient visible area (such as utility room) where it can be seen as it monitors the air cleaner performance. It shares no electrical connections with the thermostat. To install the W8600E, see Fig. 8 and refer to the Installations Instructions, form 69-0410, included with the indicator.

W8600E Location

The styling of the W8600E is designed to blend with the T8600 Family of Microelectronic Chronotherm® Thermostats. A special mounting template is included in the bag assembly for mounting next to the T8600. The W8600E Indicator can also be mounted in any other convenient location in the living area or in the furnace room. It shares no electrical connections with the thermostat.

Fig. 8—Schematic for wiring W8600E to F58F.



M5701

Make certain the location is convenient to observe the LEDs.

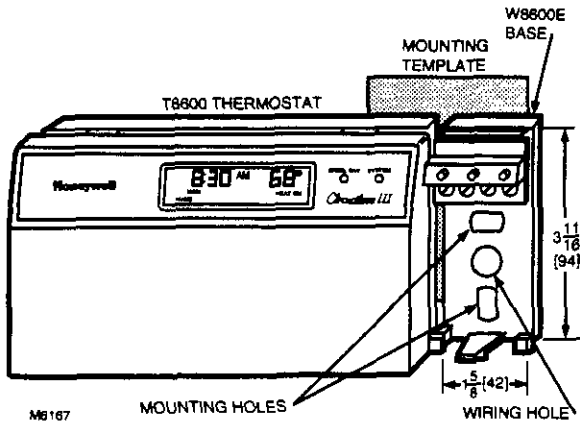
Mounting W8600E

The following mounting instructions assume that the W8600E will be mounted next to a T8600 Thermostat. When installing the wall panel in another location, modify the procedure to fit the installation.

- Remove the cover from the W8600E.
- Hold the mounting template (included in the W8600E Bag Assembly) next to the T8600. See Fig. 9.
- Hold the base for the W8600E next to the template and mark holes for screw anchors and access hole for 4-wire thermostat cable from the terminal strip on the power box to the W8600E Base.

- Remove the W8600E Base and drill the holes. Install the anchors and screws so the base is mounted firmly on the wall at the correct distance from the T8600.

Fig. 9—Mounting W8600E Indicator next to T8600 Thermostat, dimensions in in. [mm].



Wiring W8600E

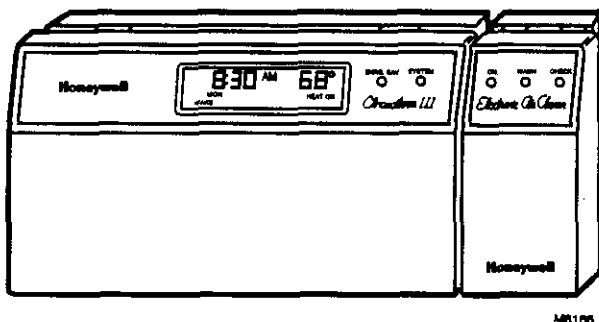
IMPORTANT: Run wires separately from any other current-carrying wires.

- All wiring must comply with local codes and ordinances.
- Run 4-wire thermostat cable (up to 18 gauge), independent of any other current-carrying wires, from the W8600E base to the terminal strip on the power box of the electronic air cleaner.
- Strip 1/4 in. of insulation from the ends of the wires and connect them (1 to 1, 2 to 2, 3 to 3, 4 to 4) as shown in Fig. 8.

IMPORTANT: Attach wires to W8600E terminals before attaching to power box terminal strip.

- Install the W8600E cover and visually check the installation as shown in Fig. 10.

Fig. 10—Completed installation of T8600 with W8600E.



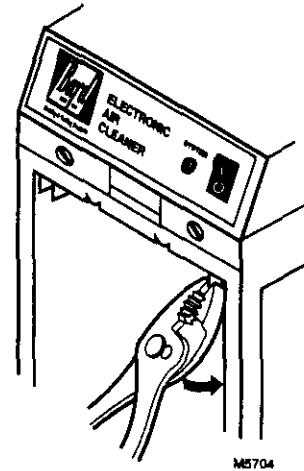
SEAL JOINTS

- 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 GUIDE

- Crimp the end of the downstream (closest to the furnace) prefilter guide to prevent incorrect prefilter installation following cleaning. See Fig. 11.

Fig. 11—Crimping prefilter guide.



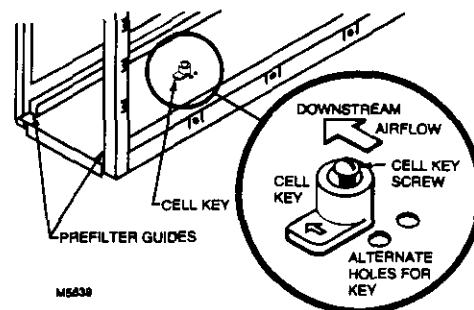
POSITION CELL KEY

The electronic cell 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 cell to be inserted in only one direction. As long as the arrow molded into the plastic key points in the same direction as the airflow, the ionizer will always be on the upstream side.

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

- Remove the electronic cell.
- Remove the screw holding the cell key in place. See Fig. 12.

Fig. 12—Position of cell key determines orientation of cell (arrow on key must point downstream).



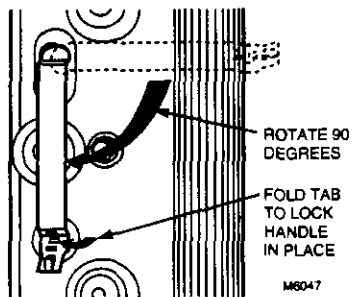
3. Turn the key around and place it over the opposite holes. The tab on the bottom fits into the larger hole, and the screw fits into the smaller hole. Make sure the arrow on the key points in the direction of the air flow (downstream).
4. Tighten the screw into the new hole.
5. Insert the electronic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

ATTACH CELL HANDLES

The cell handles are attached to the packing insert inside the access door. They must be installed on the end of the cell closest to the access door. To install:

1. Orient the cell as it will be when installed. The gray contact board 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 align the divided tab with the square hole. See Fig. 13.

Fig. 13—Install handle on end of cell closest to access door.



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

REASSEMBLE AIR CLEANER

- Insert the electronic cell with the gray contact board up and the airflow arrow pointing downstream. If the cell does not slide easily into the cabinet, check the orientation of the cell key.
- Insert the prefilter on the upstream side of the cabinet in the guide provided.

- Replace the access door. Insert the tab on the bottom of the door into the slot in the cabinet, then swing it closed and press into place. The door must be firmly in place or the air cleaner will not operate.

COMPLETE WIRING



WARNING

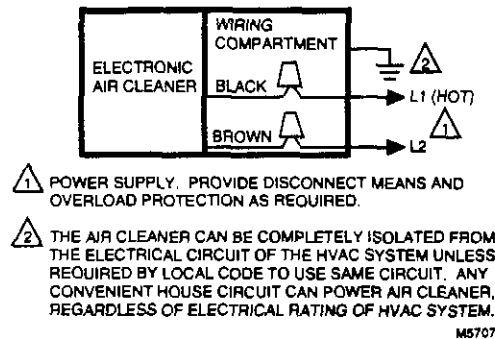
**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY.**
Do not use an extension cord.

- All wiring must comply with local codes and ordinances.
- The line voltage power source must match the voltage and frequency printed on the label inside the access door.
- Plug the electronic air cleaner directly into the correct voltage and frequency outlet. See Fig. 14 for internal schematic. The air cleaner will operate properly with any fan when wired with conduit or plugged in.

NOTE: To reduce the risk of electric shock, this product has a grounding type plug that has a third (grounding) pin. This plug will only fit into a grounding type power outlet. If the plug does not fit into the outlet, contact a qualified electrician to install the proper outlet. Do not change the plug in any way.

- Alternately, the electronic air cleaner can be wired with conduit.
 1. Open access door.
 2. Remove and retain the two screws from the front of the power box and the two screws from the sides of the power box. See Fig. 15.
 3. In the power box, remove and retain two wire nuts that connect the line cord leads to the power box wiring.
 4. Remove the power cord green lead from the green grounding screw on the wiring compartment barrier.
 5. Remove the power cord and the strain relief.
 6. Install plug (provided with packing material inside access door) in the hole left by the power cord.
 7. Attach conduit through a power box side knockout.
 8. Wire the air cleaner directly to line voltage using wire nuts. See Fig. 16. Secure ground connection to the green ground screw on the wiring compartment barrier.
 9. Replace power supply cover and access door.

Fig. 16—Conduit connection for electronic air cleaner.



Operation

Large particles (lint, hair) are caught by the prefilter. As the dirty air passes through the intense high voltage electric field surrounding the ionizer wires, all particles are given an electrical charge. The air then moves through the collector part of the cell where alternate parallel plates are charged positively and negatively, creating a uniform

electrostatic field. The charged particles are attracted to and collect on the plates having the opposite electrical charge. The air leaving the air cleaner has fewer particles. Each time the air circulates through the electronic air cleaner, more particles are removed.

Checkout

INSPECT THE INSTALLATION

Make sure:

- Turning vanes and transitions, as needed, are properly installed.
- Sheet metal joints between air cleaner and furnace are sealed.
- All sheet metal connections are complete.
- Original furnace filter has been removed and the blower compartment cleaned.
- If an atomizing humidifier is installed upstream from the air cleaner, a disposable furnace filter is installed between the humidifier and the air cleaner.
- Outside air, if used, is mixed with return air or heated, as necessary, before it can reach the air cleaner.
- The airflow arrows on the electronic cells point downstream.
- The prefilters are on the upstream side of the cells.
- The cell handles face outward.
- The electronic cells and prefilters are clean and dry.
- The W8600E (if included) wiring connections are properly made.

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 neon light next to the on-off switch is on. If a W8600E is part of the installation, also check the wall panel and make sure the ON LED is lit. The W8600E CHECK LED will come on if there is a problem with the high voltage power supply.
2. Turn off the system blower. The neon light should go off after a few seconds. The neon light shows that the air cleaner is energized and the high voltage power supply is working properly.
3. Turn on the system blower. With the air cleaner energized, push the test button. A snapping sound indicates that the collector voltage is present on the cell. The W8600E CHECK LED will come on when the test button is held down.
4. With a multispeed blower, repeat steps 1-3 for each fan speed.
5. If operation is not as described, refer to the Troubleshooting section.

Service



CAUTION

SHARP EDGES. CAN CAUSE PERSONAL INJURY.

Carefully handle the cells or wear protective gloves to avoid cuts from the sharp metal edges.

CLEANING THE CELLS AND PREFILTERS

To assure optimum performance from the air cleaner, the cells and prefilters must be cleaned regularly—every one to six months. Washing frequency will vary depending on the number of family members, pets, activities (such as cooking or woodshop) and smoking habits. Use the wash reminder schedule provided with the air cleaner to help establish and maintain a regular cleaning schedule. Mount the wash reminder schedule in a convenient location.

If the air cleaner has a W8600E indicator, the WASH LED will light to indicate that a cell and prefilter washing is past due. When the WASH LED comes on, it means that the cells are loaded with dirt to the point that air cleaning efficiency is diminished and the cells and prefilters need to be washed as soon as possible. But by using the wash reminder schedule, regular washing can be established so that the cells are clean enough so the WASH LED does not come on.

If you find that the WASH LED is coming on more frequently than the established schedule, there may be a buildup of residue on the ionizer wires. If the collector plates on the cells look clean, try wiping the ionizer wires with a clean cloth instead of washing the entire cell.

Also consider whether some activity in the home has changed, causing the cells to become dirty faster. Have the windows been open more often? Has someone been smoking more often? Has someone taken up woodworking or some other hobby that creates dust?

NOTE: To let the heating or air conditioning system operate normally while the cells are being washed, simply turn off the air cleaner switch.

Vacuum the prefilter or brush, or soak it in a tub. Do *not* wash the prefilter in the dishwasher or car wash.

Automatic Dishwasher



CAUTION

BURN HAZARD. CAN CAUSE PERSONAL INJURY.

Allow the cells to cool completely in the dishwasher at the end of the wash cycle or wear protective gloves to avoid burns. Hot water can accumulate in the tubes supporting the collector plates. Tip the cells so these tubes will drain.

IMPORTANT:

- Check the dishwasher owner's manual. Some manufacturers do not recommend washing electronic cells in their dishwashers.
- If the dishwasher has upper and lower arms, position the cells carefully to allow good water circulation.
- Be careful to avoid damaging the cells when placing them in the dishwasher. Broken ionizer wires or bent collector plates are not covered under the warranty.
- Very dirty cells, especially from tobacco or cooking smoke, can discolor the plastic parts and the lining of some dishwashers. 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. Do not block water flow to the upper arm.

HINT: Lay a few large water glasses between the *spikes* on the lower rack, and rest the cells on them so the *spikes* do not damage the aluminum collector blades.

2. Using regular dishwashing detergent, allow the dishwasher to run through the complete wash and rinse cycle. **Do not use the dry cycle.** To avoid burns, let the cells cool completely before removing, or wear protective gloves when removing the cells. Remember that water can be trapped inside the cells. Tip the cells so these tubes can drain.

3. Wipe the ionizer wires and contact board on the end of the cell using thumb and forefinger with a small, damp cloth.

4. Inspect the dishwasher. Rerun the wash and/or rinse cycle with the dishwasher empty when there is dirt or residue from washing the cells. If dirt or residue seems excessive, wash the cells more often or try a different detergent.

Washing the Cells in a Container



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 prefilters, to keep heavy prefilter lint from getting caught in the cells.

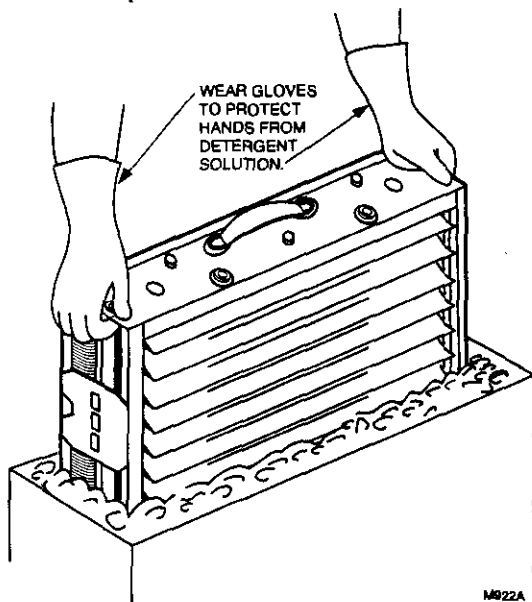
1. Use a large enough container, such as a laundry tub or trash container, to hold one or both cells.

NOTE: Sharp corners on the cells can scratch the surface of a bathtub.

2. Dissolve about 3/4 cup of automatic dishwasher detergent per cell in enough hot water to cover the cells. If the detergent does not dissolve readily, or forms a scum on the water, try another brand, or use softened water.

3. After the detergent has completely dissolved, place the cells in the container and let them soak for 15 to 20 minutes. Agitate them up and down a few times, and remove. See Fig. 17.

Fig. 17—Washing cells in container.



4. Next, wash the prefilters the same way. Empty and rinse the wash container.

5. Rinse the cells and prefilters with a hard spray of very hot water; *rinse the tub clean*, then fill the tub with clean hot water and soak for 5 to 15 minutes. Rinse until the water draining from the cells and prefilters no longer feels slippery.

6. Soak cells and prefilters in a final clear water rinse for 10 minutes.

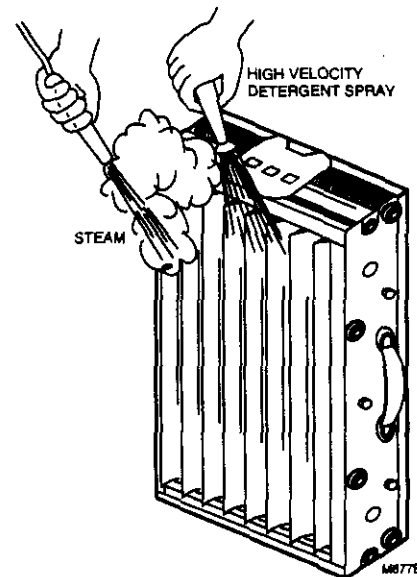
7. Wipe the ionizer wires and contact board on the end of the cell using your thumb and forefinger with a small, damp cloth.

Washing the Cells at Car Wash

Use the hand sprayer at a coin-operated do-it-yourself car wash to clean the cells. Hold the nozzle at least two feet away from the unit to avoid damage (such as broken

ionizer wires or bent collector plates) from the high pressure stream of water. See Fig. 18. Follow the same sequence of wash and rinse as recommended for cars. However, do not wax the cells. Be sure to rinse until the water draining from the cells no longer feels slippery.

Fig. 18—Washing cells at car wash.



Reinstall the Cells and Prefilters

1. Inspect the cells for broken ionizer wires and bent collector plates. Repair as necessary or take to an Authorized Air Cleaner Repair Station.

2. Slide the prefilters into the upstream prefilter guides.

3. Slide in the air cleaner cells 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 prefilters are wet, the neon light may not come on and you may hear arcing. If the arcing is annoying, simply turn off the air cleaner for two to three hours or until the cells are dry.

If the air cleaner has a Solid State Performance Indicator, the **CHECK LED** may come on when the cells and prefilters are wet. Again, if the **CHECK LED** is annoying, simply turn off the air cleaner for two to three hours or until the cells and prefilters are dry.

REPLACING IONIZER WIRES

Broken or bent ionizer wires can cause an electrical short to ground, often resulting in visible arcing or sparking. Do not use cells until broken wires are removed. Cells can be used temporarily with one wire missing, but replace the wire as soon as possible.

Replacement wires are supplied cut to length with eyelets on both ends for easy installation. Order part no. 136434AA. To install:

1. Hook the eyelet on one end of the wire over the spring connector on one end of the cell. See Fig. 19. 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.

3. Check the cell for short circuits using an ohmmeter. Check the resistance between the frame of the cell and both the ionizer and the collector contacts. In each case, the resistance should be infinite. See Fig. 20

MODIFICATION TO REDUCE OZONE ODOR



WARNING

**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY.**

Always disconnect power and open the access door 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 and Health and Welfare Canada recommend that indoor ozone concentration should not exceed 0.050 ppm. As a comparison, the *outdoor* ozone level in major cities is sometimes as high 0.100 ppm.

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 from the air cleaner. Make sure particles from the air filter cannot fall into the air cleaner.



WARNING

**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY.**

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 to 25 percent and reduce efficiency about 7 to 10 percent, depending on actual air-flow delivered by the furnace blower.

- a. Unplug or disconnect power to the air cleaner.
- b. Open the access door.
- c. Remove the power box cover. See Fig. 21.
- d. Find the J2 jumper on the power supply and clip it out. See Fig. 22. Make sure the leads are separated and cannot touch.
- e. Replace the power supply cover and access the door. Turn on the power.
- f. Repeat the checkout procedure before leaving the job.

Fig. 19—Replacing an ionizer wire.

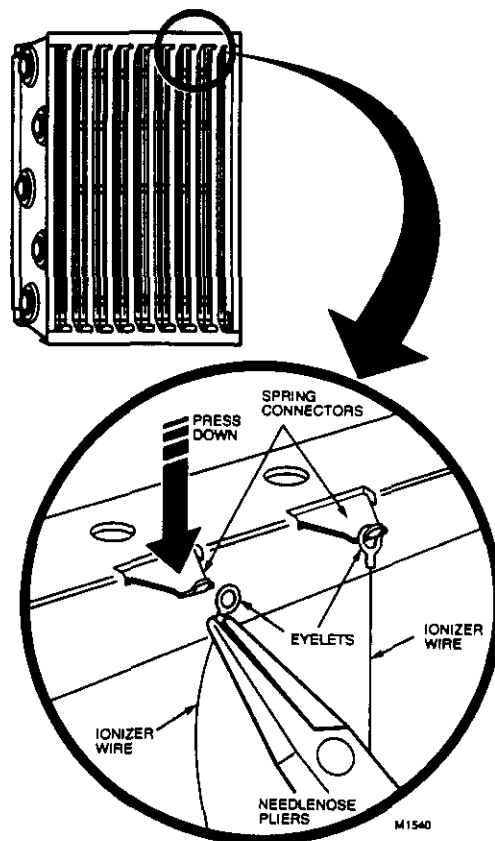


Fig. 20—Use ohmmeter to check electronic cells for short circuits.

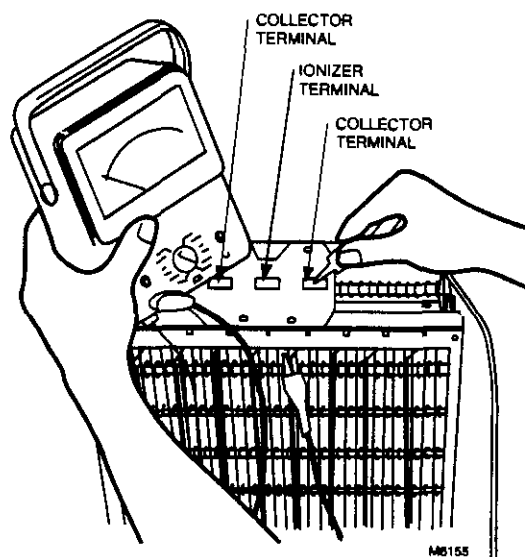
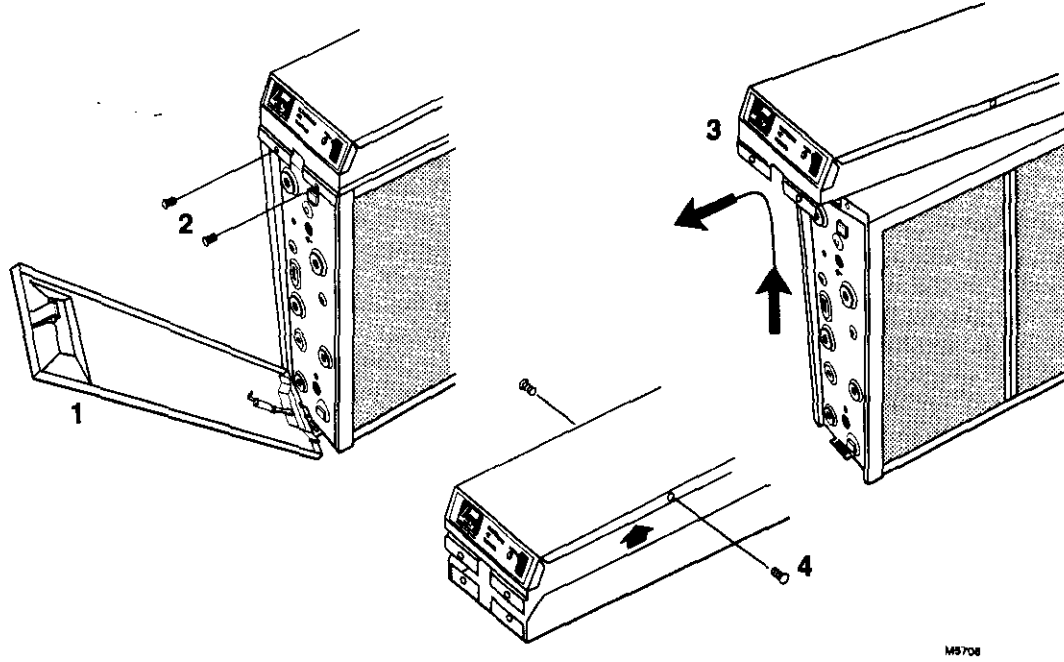
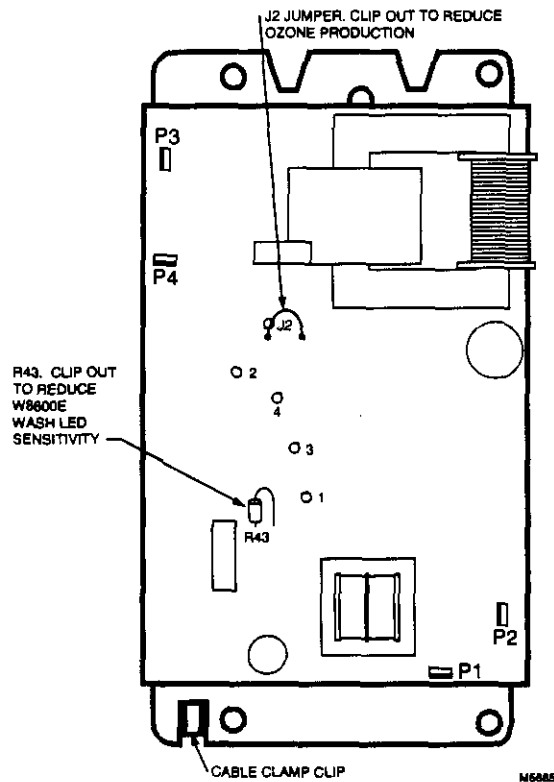


Fig. 21—Remove power box from air cleaner and remove the cover.



M5706

Fig. 22—Clip out J2 jumper to reduce ozone production about 20 to 25 percent.



M6885

MODIFICATION TO REDUCE W8600E WASH LED SENSITIVITY



WARNING

**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY.**

Always disconnect power and open the access door before opening the power supply cover.

The W8600E WASH LED is triggered by a reduction in ionizing current in the collection cells. The ionizing current is reduced when the cell ionizer wires are coated with resistive dust. In some applications, such as when the filtering load is light, the ionizer wires can become coated when the collector section is clean. The sensitivity to trigger the WASH LED can be reduced so the time between cell washings is increased.



WARNING

**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY.**

Only a trained service technician should perform the following procedure:

To reduce the WASH LED sensitivity:

1. Unplug or disconnect power to the air cleaner.
2. Open the access door.
3. Remove the power box cover. See Fig. 21.
4. Find the R43 resistor on the power supply and clip it out. See Fig. 22. Make sure the leads are separated and cannot touch.
5. Replace the power supply cover and access the door. Turn on the power.
6. Repeat the checkout procedure before leaving the job.

Electrical Troubleshooting



WARNING

**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY OR
EQUIPMENT DAMAGE.**

The following procedures expose hazardous live parts. Disconnect from power between checks and proceed carefully. The instructions are for use by only qualified personnel.

TOOLS AND EQUIPMENT

Troubleshooting the electronic air cleaner requires:

- Needle nose pliers for stringing ionizer wires and inserting edge connectors.
- Test meter.

NEON LIGHT (On Power Box)

The neon light is powered through the power supply and is on when the power supply output voltage is normal.

TEST BUTTON

When pushed, the *test button* shorts from collector voltage to ground. The resulting arcing sound indicates that high voltage is being supplied to the collector. The solid state power supply controls current flow to the collector. On air cleaners with a W8600E, the CHECK LED will come on when the *test button* is held down.

CHECK LED (Air Cleaners with W8600E)

The CHECK LED is on the W8600E. It lights to indicate the following problems: excessive dirt loading (beyond that required to activate the WASH LED), partial shorting of the collector, continuous ionizer or collector arcing, power supply failure, excessive ionizer current, or any condition causing a major reduction in high voltage.

POWER BOX



WARNING

**ELECTRIC SHOCK HAZARD.
CAN CAUSE PERSONAL INJURY.**

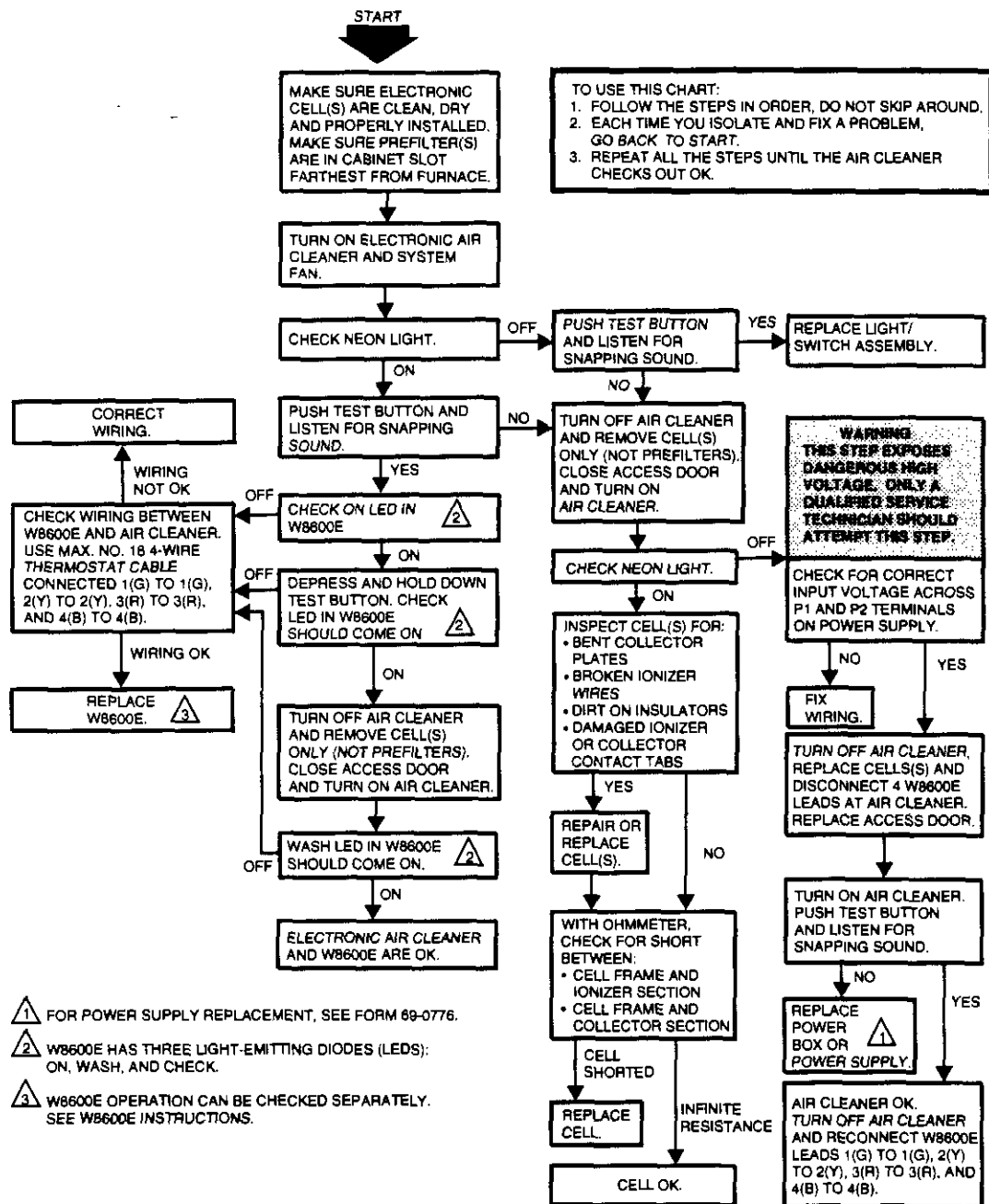
Always turn off power and remove access door before removing power supply or its cover.

The solid state power supply within the power supply box can be replaced. When troubleshooting indicates a power supply or solid state performance indicator problem, replace the entire power box or replace the power supply within the box. See Installation Instructions, form 69-0400. See Fig. 21 for power box removal.

TROUBLESHOOTING PROCEDURE

The electronic air cleaner troubleshooting charts show how to quickly isolate a problem in the air cleaner. Although a meter is needed for some steps, the primary diagnostic tools are the *neon light* and the *test button*. See Fig. 23.

Fig. 23—Troubleshooting air cleaners with solid-state performance indicator.



M5609A

Replacement Parts/Exploded View

No.	Description	Nominal Return Air Opening	
		16 x 25 in. [406 x 635 mm]	20 x 25 in. [508 x 635 mm]
1	Access Door includes #2	203306AD (1)	203305AD (1)
2	Test Button Assembly	137980A (1)	137980A (1)
3	Electronic Cell	FC37A1130 (2)	FC37A1064 (2)
4	Cell Handle	137266 (2)	137266 (2)
5	Prefilter	136388 (2)	136389 (2)
6	Cell Key	136518 (1)	136518 (1)
7	Power Box Assembly Includes #8-#20, 120 V, 60 Hz	203314L (1)	203314K (1)
8	Switch	203321 (1)	203321 (1)
9	Power Box Cover and Label	203318C (1)	203318CS (1)
10	Power Supply, 120 V, 60 Hz	203101B (1)	203101A (1)
11	Interlock Bracket and Switch	4074ETG (1)	4074ETG (1)
12	W8600 Terminal Strip	200546C (1)	200546C (1)
13	Terminal Board Assembly Front	203329B (1)	203329B (1)
14	Terminal Board Assembly Rear	203329A (1)	203329A (1)
15	Barrier Plate	203331 (1)	203331 (1)
16	Strain Relief	203852 (1)	203852 (1)
17	Line Cord	4074ETD (1)	4074ETD (1)
18	Hole Plug	203847 (1)	203847 (1)
19	Neon Assembly	4074ETE (1)	4074ETE (1)
20	Airflow Switch	4074ETH (1)	4074ETH (1)
21	FC37A Bag Assy for cell repair Contains 2 Connector Clips, 1 Terminal Board and Instruction Sheet	4074EHG	4074EHG

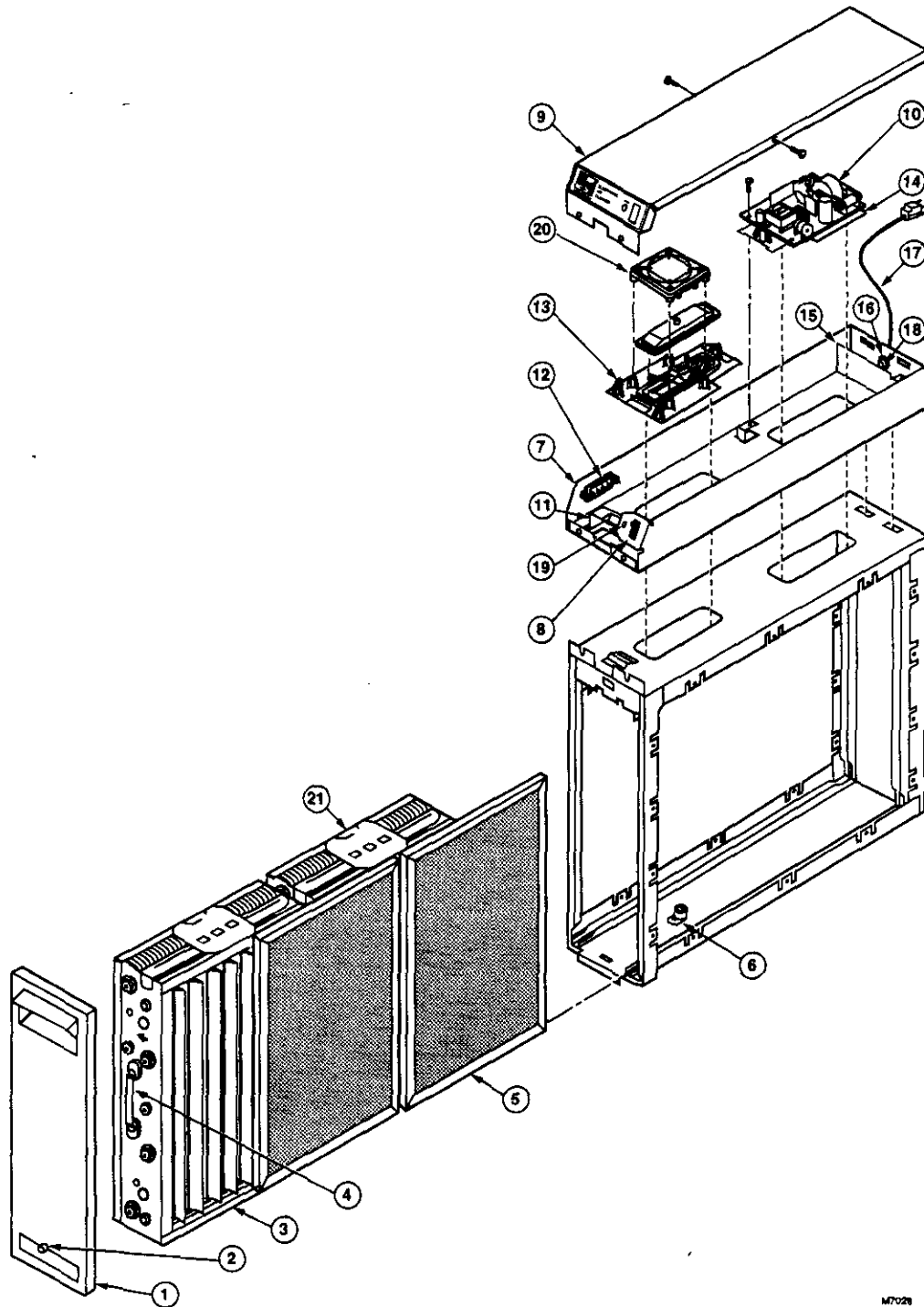
(#) = Qty Required Per Unit

Parts and Accessories Not Illustrated

Description	Nominal Return Air Opening	
	16 x 25 in. [406 x 635 mm]	20 x 25 in. [508 x 635 mm]
Ionizer Wires (multiples of 5)	136434BA	136434AA
Mounting Screws	136375 (6)	136375 (6)
2-Stage EAC Cell for F50 with Collector Clip	FC37A1247 (2)	FC37A1239 (2)

(#) = Qty Required Per Unit

Fig. 24—Components of the electronic air cleaner (2-cell model shown).



M7028

