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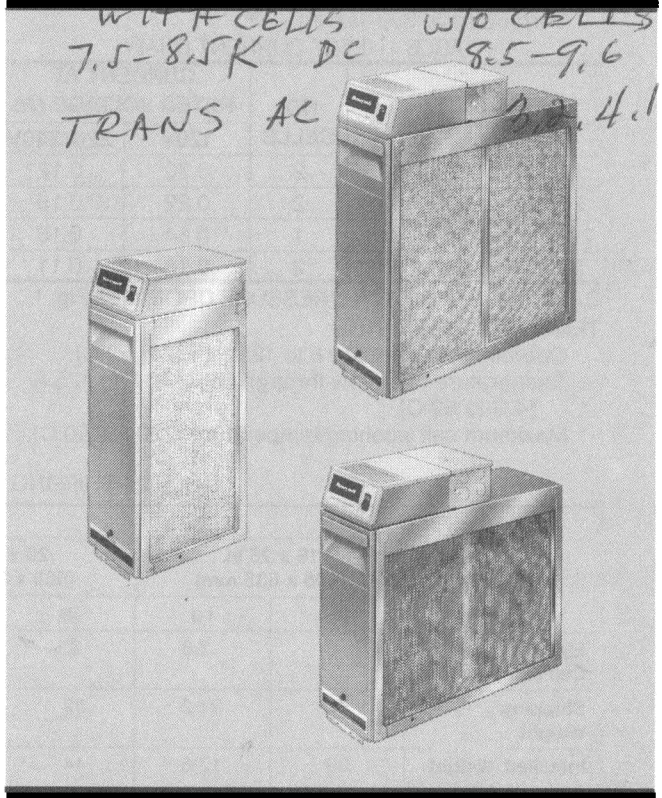
DUCT MOUNTED ELECTRONIC AIR CLEANER



F50E

THE F50 HIGH EFFICIENCY 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.

- ☐ Available in four sizes to fit most ducts; adapts to air flow from either side.
- ☐ Has one or two cells depending on cabinet size.
- ☐ Capacity varies from 1000 cfm [1700 m^3/hr] to 2000 cfm [3400 m^3/hr], depending on size.
- ☐ 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 retains peak efficiency over a wide range of cell dirt loading conditions.
- ☐ Pressure drop is approximately equal to that of a regular fiberglass filter.
- ☐ Electronic cells can be washed in most home dishwashers.
- ☐ Power supply and junction box are mounted on top of the air cleaner cabinet; remote mount kit is available for mounting power supply and junction box separately.
- ☐ Galvanized cabinet protects against rust.
- ☐ Light in on-off switch tells if air cleaner is powered and if high voltage is present.
- ☐ Automatic interlock switch disconnects power and discharges cell when door is opened.
- ☐ Test button checks system operation.
- ☐ Troubleshooting guide mounted inside power door.
- ☐ Permanent wash reminder schedule mounted on top of power supply box.

J.A.
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Form Number 68-0072

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: F50E Electronic Air Cleaner—includes cabinet, access door, solid state power supply, junction box, 1 or 2 electronic cells, and 1 or 2 protective screens.

ELECTRICAL RATINGS:

Voltage and frequency: Models available for 120V, 60 Hz and 220/240V, 50/60 Hz. Specify when ordering.

Power Consumption:

1 cell models—22 watts max.

2 cell models—33 watts max.

Current draw: See Table 1.

TABLE 1—F50E CURRENT DRAW.

F50E SIZE		NO. CELLS	CURRENT AT RATED VOLTAGE (A)	
in.	mm		120V	220/240V
16 x 25	406 x 635	2	0.20	0.12
20 x 25	508 x 635	2	0.22	0.15
20 x 12½	508 x 318	1	0.14	0.10
20 x 20	508 x 508	2	0.18	0.11

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. Should be mounted upstream of an atomizing humidifier. See Planning the Installation.

WEIGHT: See Table 2.

DIMENSIONS: See Figs. 2 and 3.

UNDERWRITERS LABORATORIES INC. LISTED: File No. E30954, Guide No. AGGZ.

CANADIAN STANDARDS ASSOCIATION CERTIFIED: File No. LR20633—L, Guide No. 2010.

ACCESSORIES:

S688A Sail Switch.

136377A Remote Mount Kit for power supply and junction box. Kit includes galvanized steel base (5 in. [127 mm] wide x 16½ in. [419 mm] long x 13/16 in. [21 mm] deep), prewired flexible conduit with connectors (10 ft. [3 m] long), knockout plug, and mounting hardware.

126850 Liquid Detergent (1 gal. bottle) for washing electronic cells.

199049A Wash Tub for washing electronic cells (5 x 12⅝ x 23 in. deep [127 x 321 x 584 mm]).

REPAIR PARTS: See Parts List, page 21.

TABLE 2—SHIPPING AND INSTALLATION WEIGHT.

	WEIGHT							
	16 x 25 in. (406 x 635 mm)		20 x 25 in. (508 x 635 mm)		20 x 12½ in. (508 x 318 mm)		20 x 20 in. (508 x 508 mm)	
	lb.	kg	lb.	kg.	lb.	kg.	lb.	kg
Electronic Cell (each)	8	3.6	9½	4.3	9½	4.3	7	3.2
Shipping Weight	47	21.2	52	23.4	30	13.5	43	19.4
Installed Weight (cells included)	39	17.6	44	19.8	26	11.9	35	15.8

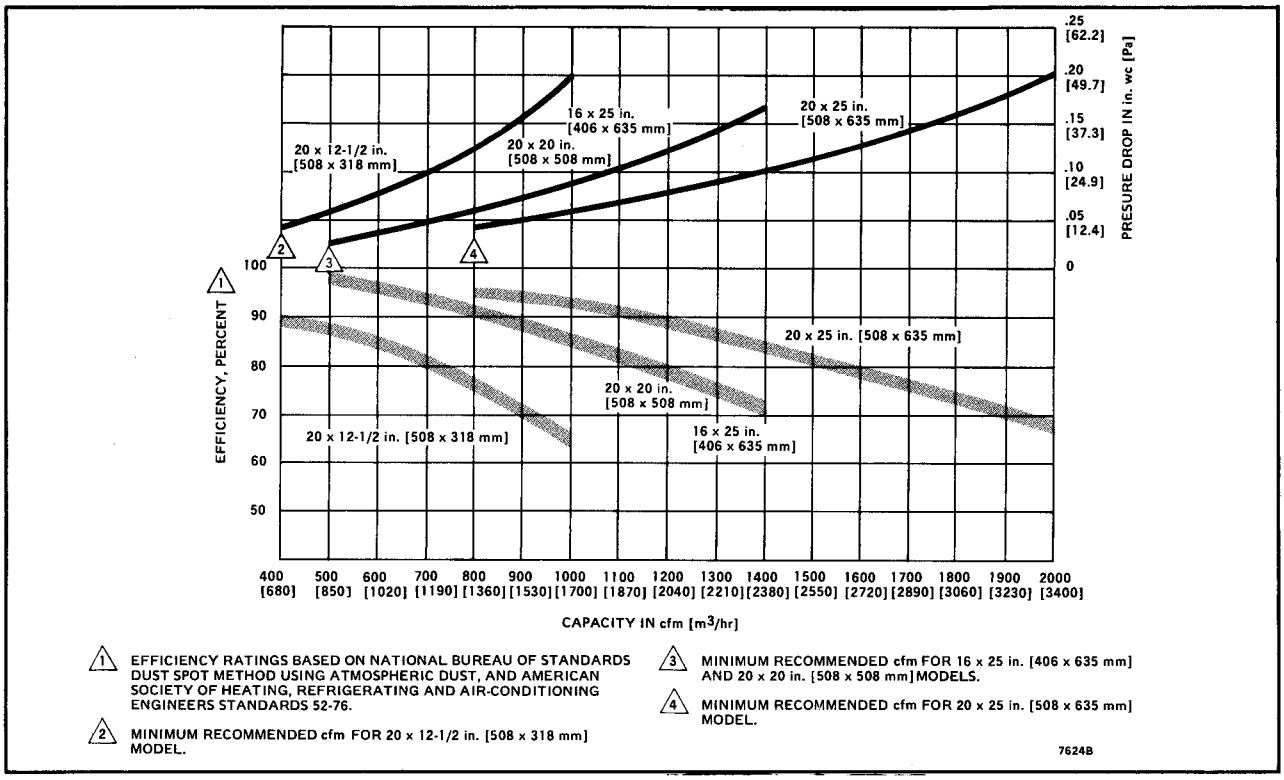
ORDERING INFORMATION

WHEN PURCHASING REPLACEMENT AND MODERNIZATION PRODUCTS FROM YOUR TRADELINE WHOLESALER OR YOUR DISTRIBUTOR, REFER TO THE TRADELINE CATALOG OR PRICE SHEETS FOR COMPLETE ORDERING NUMBER, OR SPECIFY—

1. **Order number.**
2. **Voltage and frequency.**
3. **Dimensions: 16 x 25, 20 x 25, 20 x 12½, or 20 x 20 in. [406 x 635, 508 x 635, 508 x 318, or 508 x 508 mm.].**
4. **Accessories, if desired.**

IF YOU HAVE ADDITIONAL QUESTIONS, NEED FURTHER INFORMATION, OR WOULD LIKE TO COMMENT ON OUR PRODUCTS OR SERVICES, PLEASE WRITE OR PHONE:

1. **YOUR LOCAL HONEYWELL RESIDENTIAL SALES OFFICE (CHECK WHITE PAGES OF YOUR PHONE DIRECTORY).**
2. **RESIDENTIAL DIVISION CUSTOMER SERVICE**
   HONEYWELL INC., 1885 DOUGLAS DRIVE NORTH
   MINNEAPOLIS, MINNESOTA 55422-4386 (612) 542-7500
   IN CANADA—HONEYWELL LIMITED/HONEYWELL LIMITEE, 740 ELLESMERE ROAD, SCARBOROUGH, ONTARIO M1P 2V9.
   INTERNATIONAL SALES AND SERVICE OFFICES IN ALL PRINCIPAL CITIES OF THE WORLD.

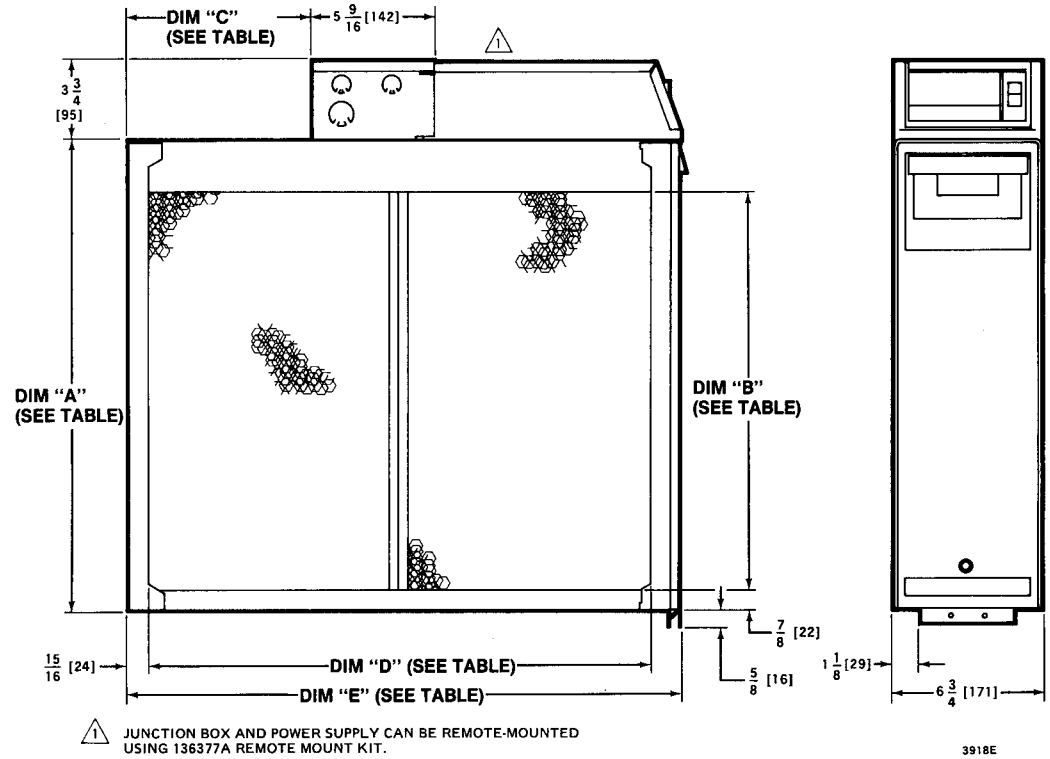


1. EFFICIENCY RATINGS BASED ON NATIONAL BUREAU OF STANDARDS DUST SPOT METHOD USING ATMOSPHERIC DUST, AND AMERICAN SOCIETY OF HEATING, REFRIGERATING AND AIR-CONDITIONING ENGINEERS STANDARDS 52-76.
2. MINIMUM RECOMMENDED cfm FOR 20 x 12-1/2 in. [508 x 318 mm] MODEL.
3. MINIMUM RECOMMENDED cfm FOR 16 x 25 in. [406 x 635 mm] AND 20 x 20 in. [508 x 508 mm] MODELS.
4. MINIMUM RECOMMENDED cfm FOR 20 x 25 in. [508 x 635 mm] MODEL.

7624B

FIG. 1—AIR CLEANER EFFICIENCY AND PRESSURE DROP AT VARIOUS AIRFLOW RATES.

UNIT SIZE	DIM "A"		DIM "B"		DIM "C"		DIM "D"		DIM "E"	
	IN.	MM	IN.	MM	IN.	MM	IN.	MM	IN.	MM
16 X 25 INCH [406 X 635 MM]	17-3/4	450	14-3/8	365	10-7/16	265	23-1/4	591	25-1/2	648
20 X 25 INCH [508 X 635 MM]	21-3/4	553	18-3/8	467	10-7/16	265	23-1/4	591	25-1/2	648
20 X 20 INCH [508 X 508 MM]	21-3/4	553	18-3/8	467	5-1/4	133	18	457	20-3/8	518



1. JUNCTION BOX AND POWER SUPPLY CAN BE REMOTE-MOUNTED USING 136377A REMOTE MOUNT KIT.

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FIG. 2—INSTALLATION DIMENSIONS IN in. [mm IN BRACKETS] OF 2-CELL ELECTRONIC AIR CLEANER.

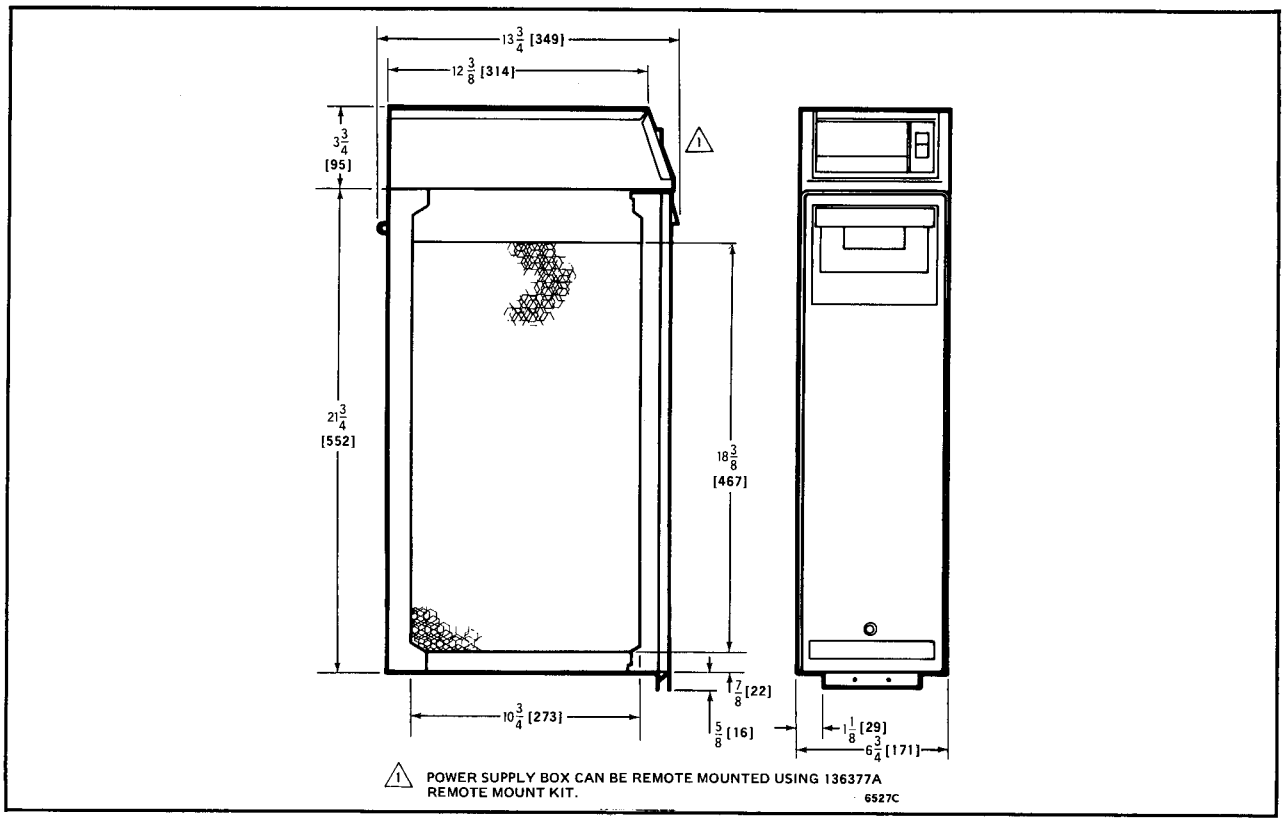


FIG. 3—INSTALLATION DIMENSIONS IN in. [mm IN BRACKETS] OF 1-CELL ELECTRONIC AIR CLEANER.

PLANNING THE INSTALLATION

APPLICATION

The F50 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 the S688 Sail Switch. An isolating fan relay or airflow switch is required if the system has a multispeed or modulating blower motor. See Wiring.

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 the electronic cells.
- With proper transitions, if the filter requires a different size duct than the air cleaner. Allow 20 degrees expansion per side, per fitting. See Fig. 13.

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.

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 protective screens and electronic cells. Allow enough room above the power supply so the power supply can be serviced while the unit is in operation.

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. Although the 2-cell model is shown in all but Fig. 12, mounting the 1-cell model is similar.

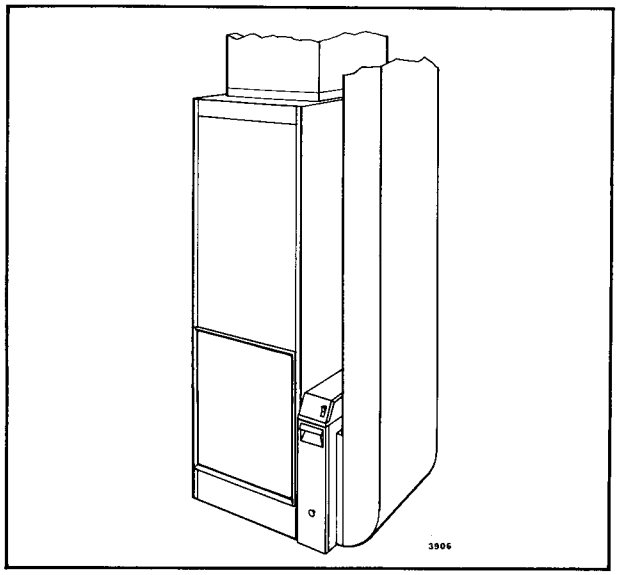


FIG. 4—HIGHBOY FURNACE. SIDE INSTALLATION. AIR CLEANER IS MOUNTED VERTICALLY WHERE RETURN ENTERS SIDE INLET OF FURNACE.

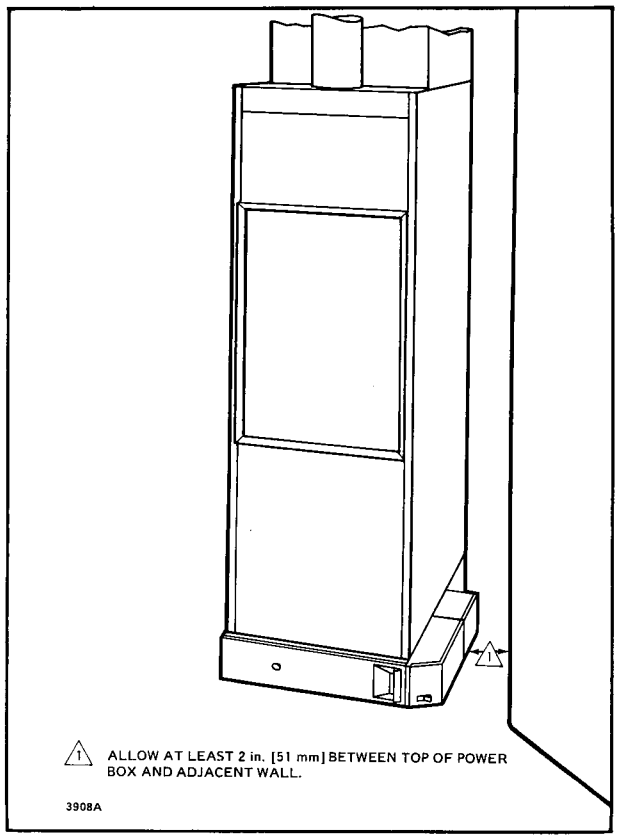


FIG. 5—HIGHBOY FURNACE. INSTALLATION BENEATH FURNACE (AIR CLEANER CABINET CAN EASILY SUPPORT WEIGHT OF FURNACE AND AIR CONDITIONER COIL). AIR CLEANER IS MOUNTED HORIZONTALLY WHERE RETURN ENTERS FROM BELOW.

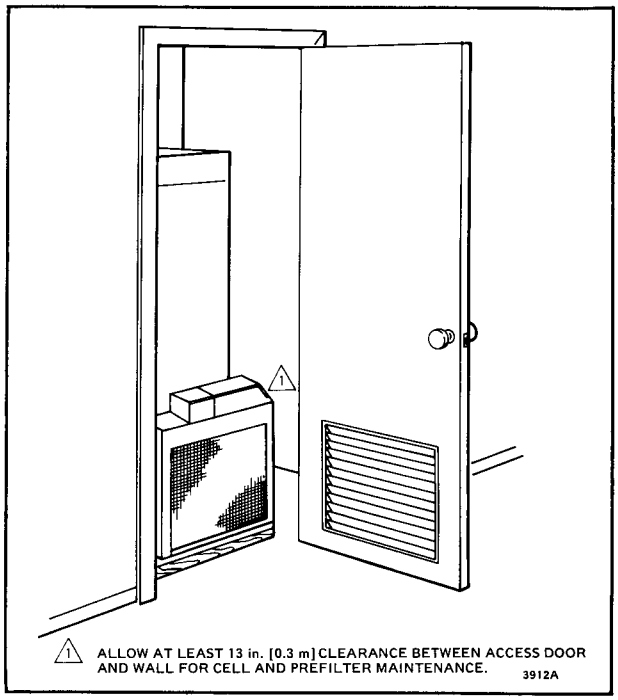
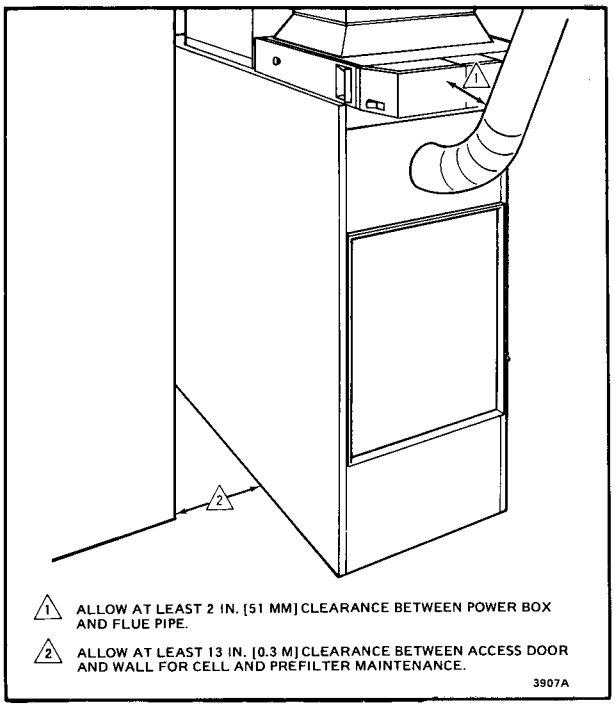


FIG. 6—HIGHBOY FURNACE. CLOSET INSTALLATION. AIR CLEANER IS MOUNTED VERTICALLY ON FURNACE BETWEEN FURNACE AND LOUVERED RETURN AIR OPENING IN CLOSET DOOR.



1 ALLOW AT LEAST 2 IN. [51 MM] CLEARANCE BETWEEN POWER BOX AND FLUE PIPE.

2 ALLOW AT LEAST 13 IN. [0.3 M] CLEARANCE BETWEEN ACCESS DOOR AND WALL FOR CELL AND PREFILTER MAINTENANCE.

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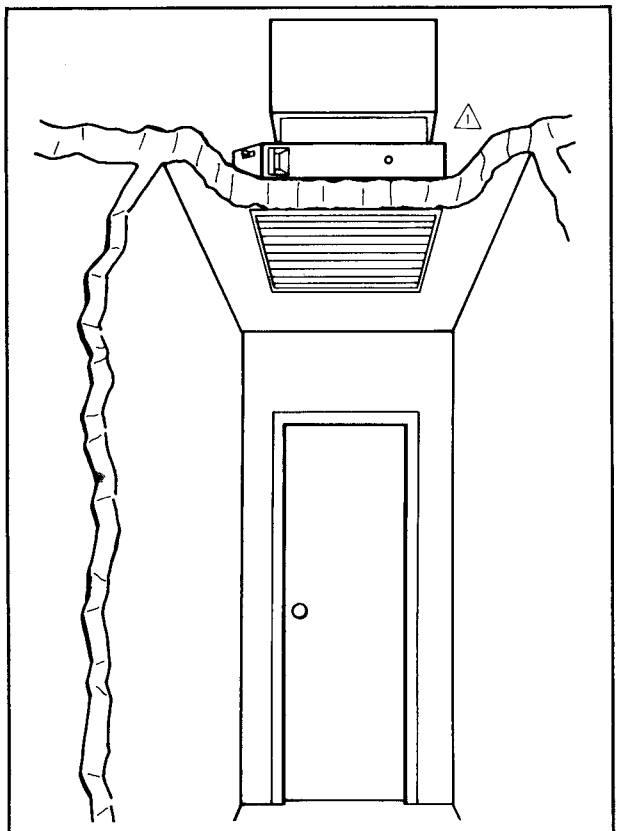
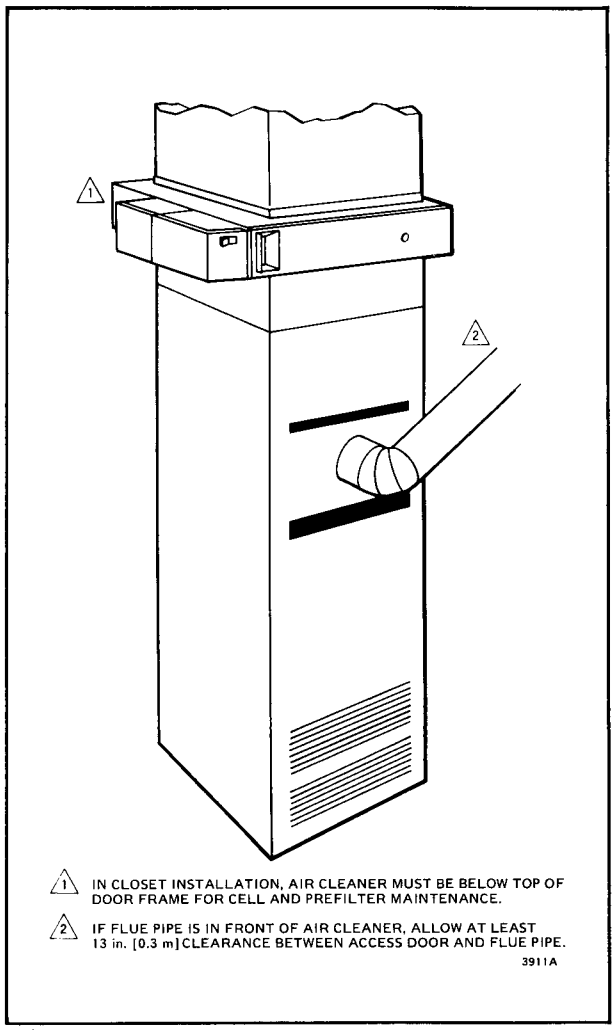
FIG. 7–LOWBOY FURNACE. AIR CLEANER IS MOUNTED HORIZONTALLY IN RETURN PLENUM JUST ABOVE FURNACE, OPPOSITE SUPPLY PLENUM.



1 ACCESS TO AIR CLEANER FROM ATTIC IS REQUIRED FOR CELL AND PREFILTER MAINTENANCE. CONSIDER USING F52 CEILING MOUNT AIR CLEANER.

3910A

FIG. 8–HORIZONTAL FURNACE. AIR CLEANER IS MOUNTED HORIZONTALLY ABOVE CEILING. UNLESS AIR CLEANER IS EASILY ACCESSIBLE FROM ATTIC, CONSIDER USING F52 CEILING MOUNT AIR CLEANER INSTEAD.



1 IN CLOSET INSTALLATION, AIR CLEANER MUST BE BELOW TOP OF DOOR FRAME FOR CELL AND PREFILTER MAINTENANCE.

2 IF FLUE PIPE IS IN FRONT OF AIR CLEANER, ALLOW AT LEAST 13 in. [0.3 m] CLEARANCE BETWEEN ACCESS DOOR AND FLUE PIPE.

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FIG. 9–COUNTERFLOW FURNACE. AIR CLEANER IS MOUNTED HORIZONTALLY IN RETURN DUCT OR PLENUM JUST ABOVE FURNACE.

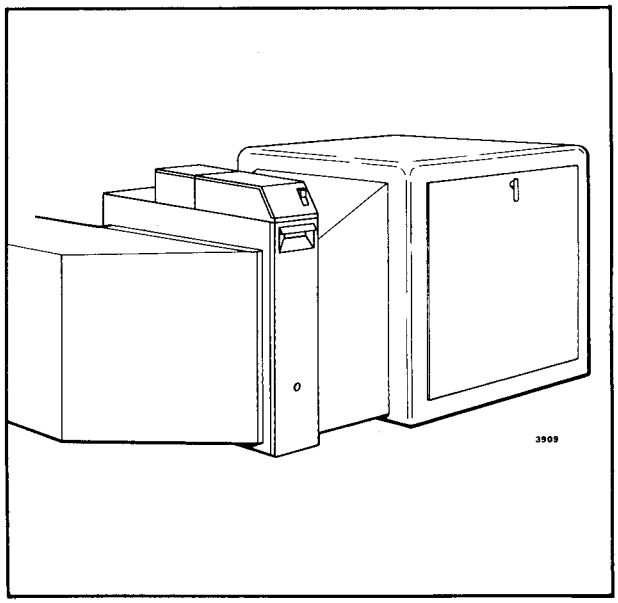

FIG. 10–HORIZONTAL FURNACE. AIR CLEANER IS MOUNTED VERTICALLY IN THE RETURN DUCT NEAR THE FURNACE. NOTE TRANSITION.

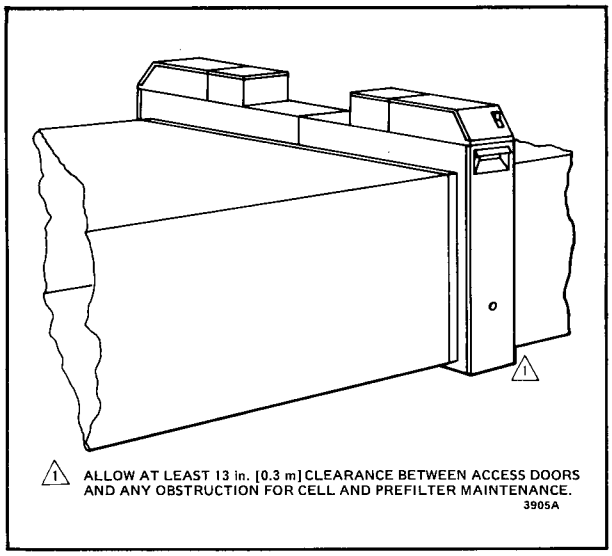

FIG. 11—HIGH CAPACITY SYSTEM. TWO OR MORE AIR CLEANERS CAN BE USED TOGETHER. AT LEAST 13 IN. [0.3 m] CLEARANCE IS REQUIRED BETWEEN ACCESS DOORS AND WALLS FOR CELL AND PREFILTER MAINTENANCE.

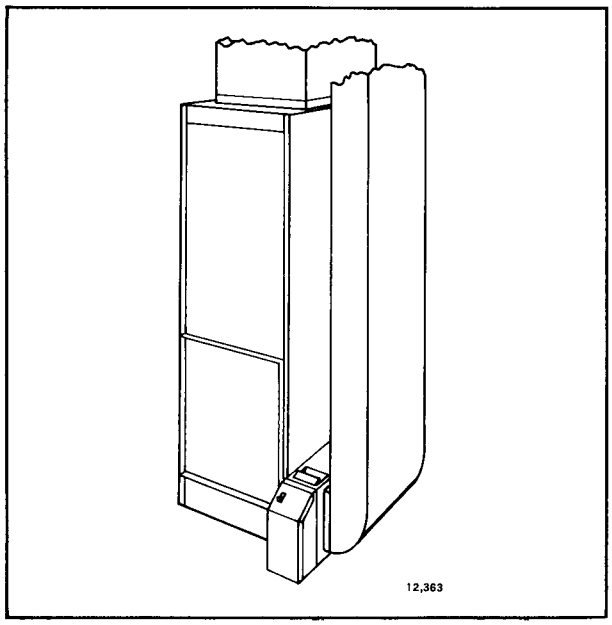

FIG. 12—ELECTRIC FURNACE OR HEAT PUMP. SINGLE CELL AIR CLEANER IS MOUNTED WITH ACCESS DOOR ON TOP.

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. 13.

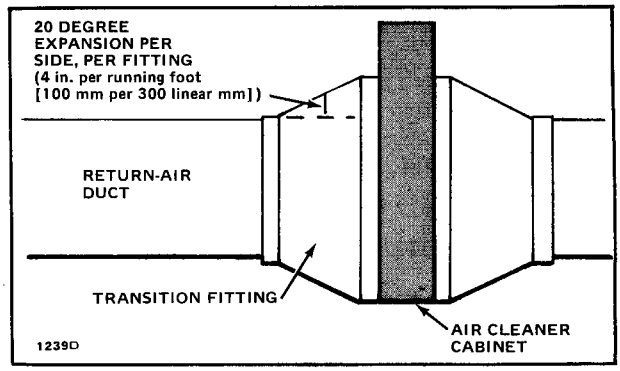

FIG. 13—CHANGE DUCT SIZE GRADUALLY TO MINIMIZE TURBULENCE.

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. 14.

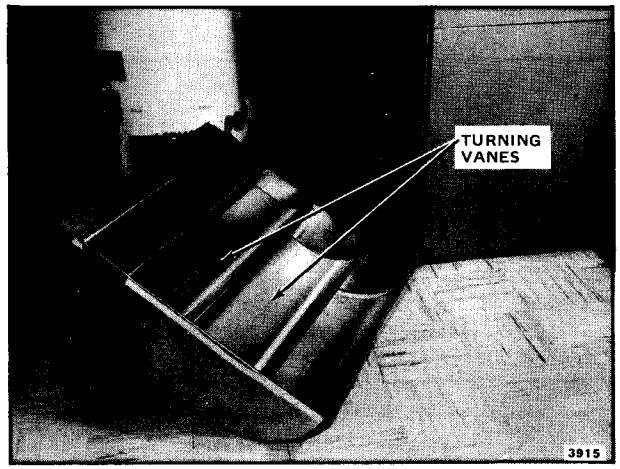

FIG. 14—TURNING VANES INSTALLED IN A BEND HELP DISTRIBUTE AIRFLOW EVENLY OVER THE FACE OF THE ELECTRONIC CELLS.

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. 15.

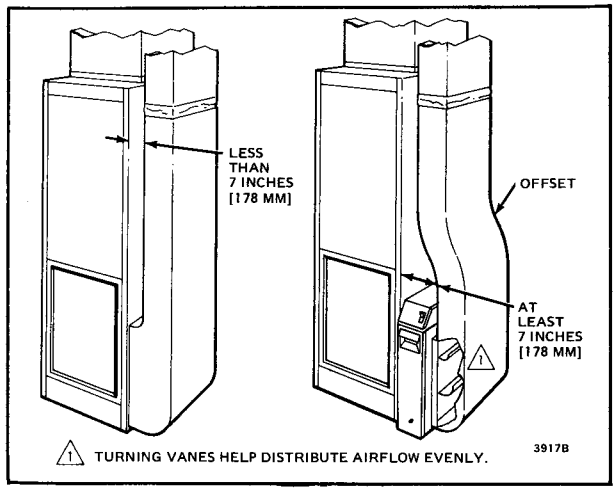

FIG. 15—TYPICAL USE OF DUCT OFFSET TO MAKE ROOM FOR ELECTRONIC AIR CLEANER.

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:

- Galvanized steel cabinet.
- Power supply with on-off switch and indicator light.
- Junction box (two cell models only).
- One or two electronic cells, depending on model.
- One or two protective screens, depending on model.
- Access door with test button.

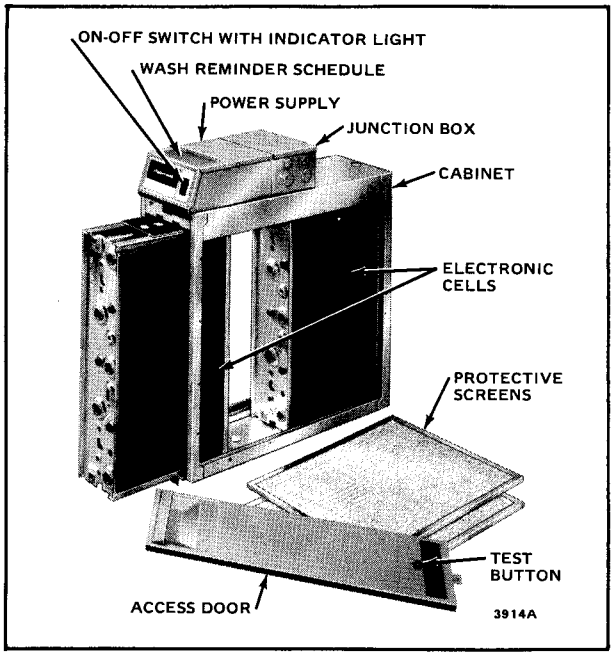

FIG. 16—COMPONENTS OF THE F50 AIR CLEANER.

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 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 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 cell(s) and protective screen(s), 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 11.*

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.

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 and Junction Box (Two Cell Model)

☐ Loosen the screws holding the power supply, lift it slightly to clear the screws, then pull it straight away from the junction box to remove. Set aside.
☐ Remove the cover from the junction box. Set aside.
☐ Disconnect the two leadwires from the quick connect terminals in the junction box. See Fig. 17.
☐ Remove the junction box from the cabinet.
☐ Remove the knockout on the side of the junction box and connect the end of the conduit assembly with the shorter leadwires.
☐ Install ground terminal in junction box. See Fig. 18.
☐ Connect the leadwires as shown in Fig. 18.
☐ Fasten the junction box to the base with the two screws removed earlier.
☐ Replace the junction box cover and secure with screw removed earlier.
☐ Plug the power supply into the junction box. Push it straight in to avoid bending the plug. Secure it with the two screws removed earlier. See Fig. 21.

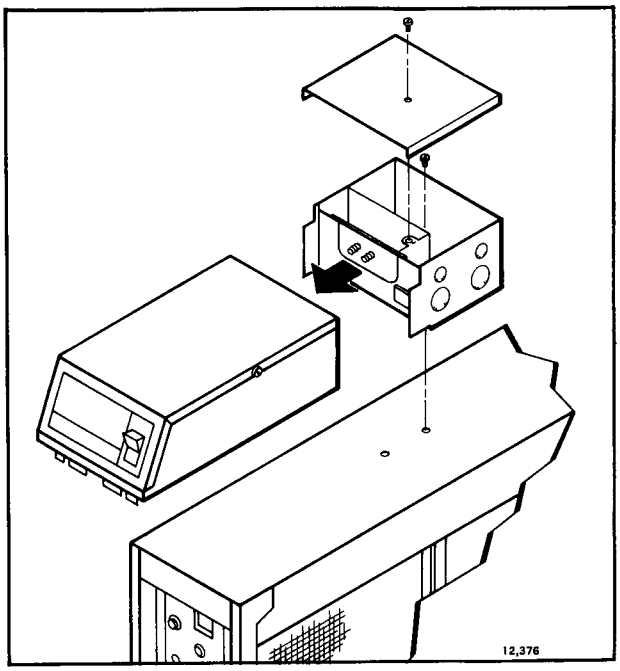

FIG. 17—*TWO CELL MODEL:* DISCONNECT THE WIRES AND REMOVE THE POWER BOX AND JUNCTION BOX.

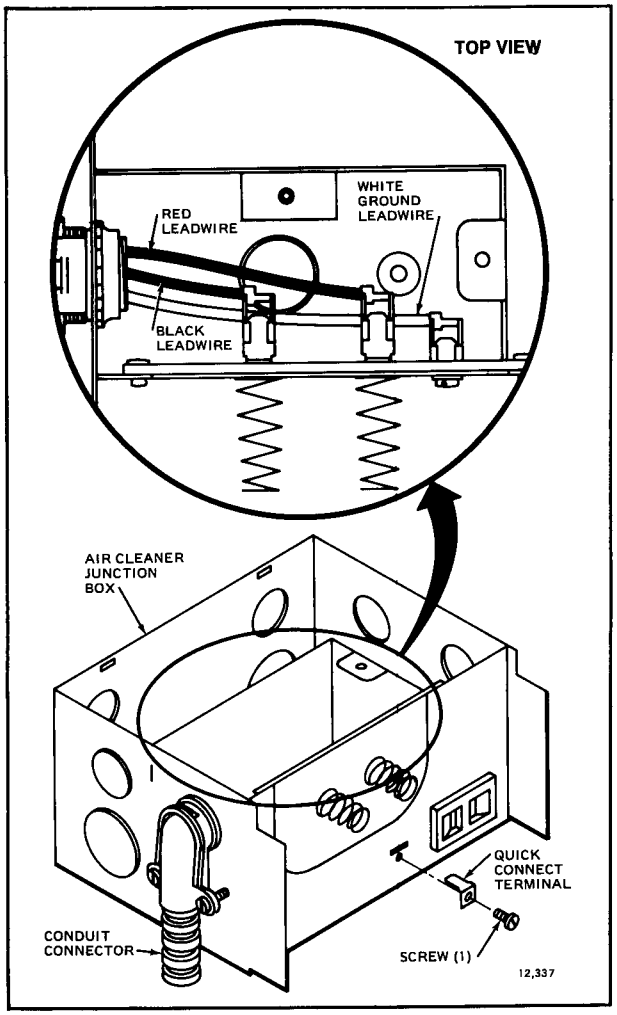

FIG. 18—*TWO CELL MODEL:* MAKE WIRING CONNECTIONS IN JUNCTION BOX.

Mount Power Box (One Cell Model)

☐ 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. 19.
☐ 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 ½ in. [12 mm] insulation and connect to the green ground terminal.
☐ Connect the red and black leadwires as shown in Fig. 20.
☐ Fasten the power supply box to the base with the two screws removed earlier. See Fig. 21.
☐ Replace the cover and secure with the screw removed earlier.

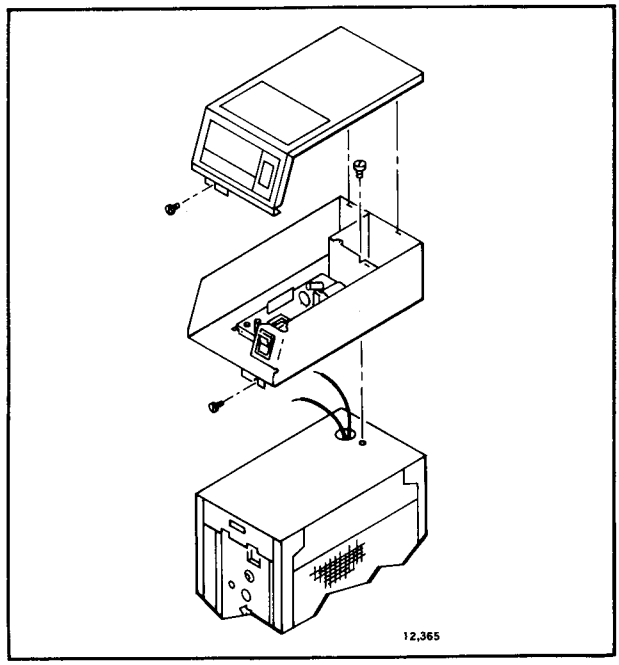

FIG. 19—*ONE CELL MODEL:* DISCONNECT THE WIRES AND REMOVE THE POWER BOX.

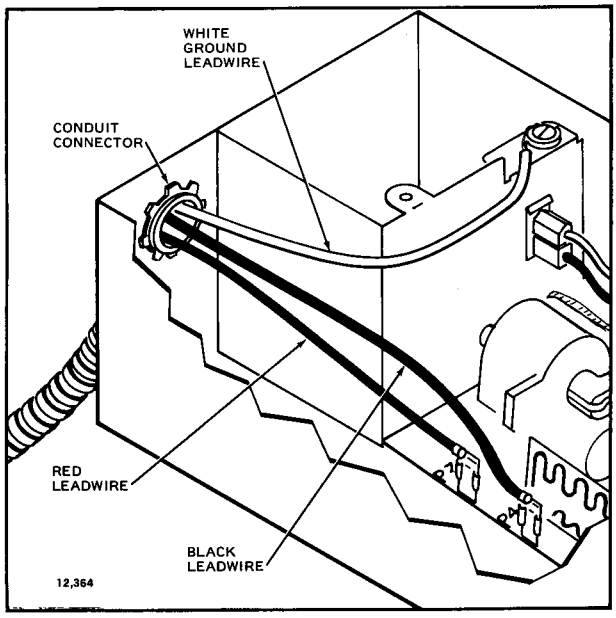

FIG. 20—*ONE CELL MODEL:* MAKE WIRING CONNECTIONS IN POWER BOX.

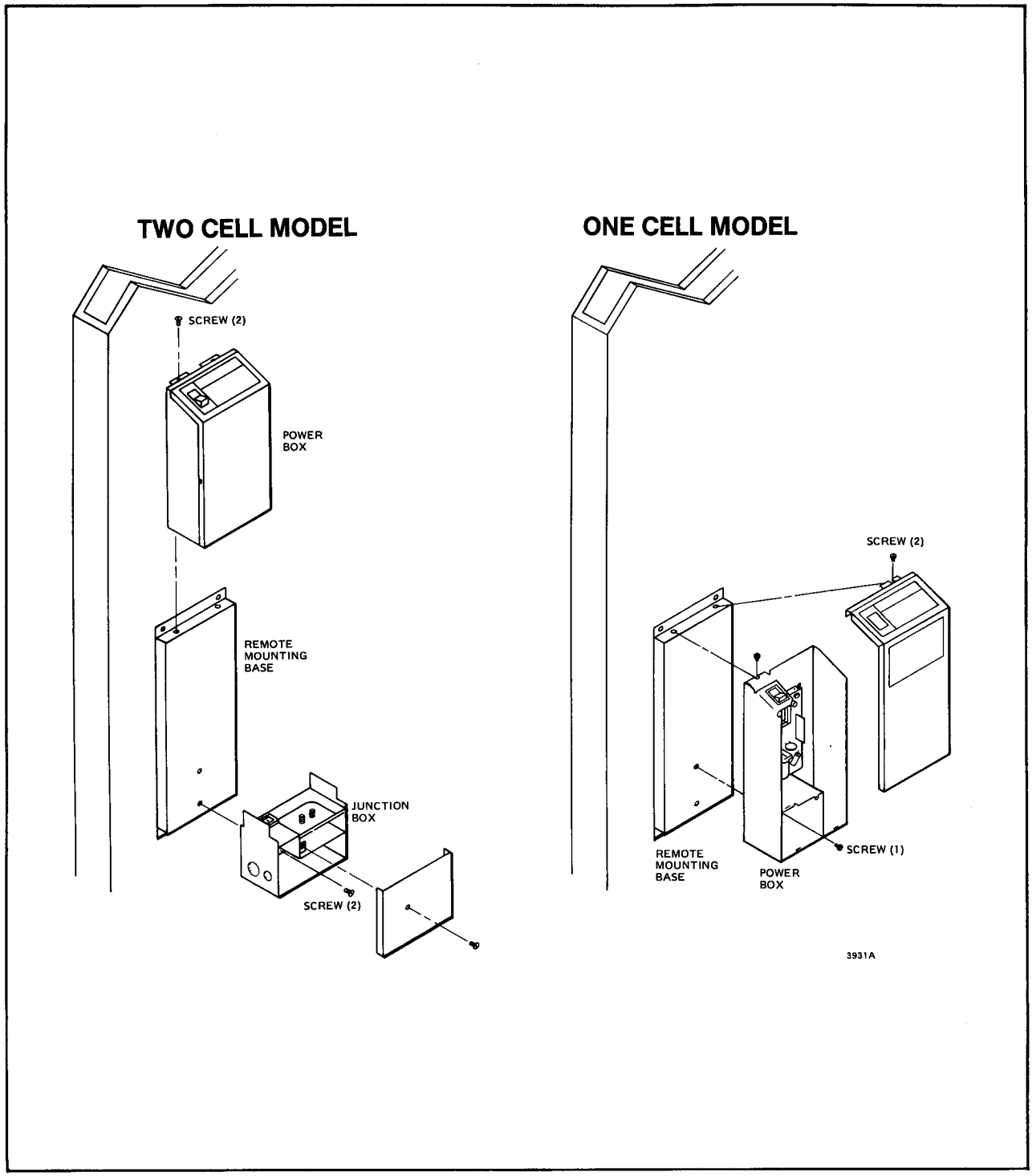

FIG. 21—MOUNT THE POWER BOX AND, WITH TWO-CELL MODELS THE JUNCTION BOX, ON THE REMOTE BASE.

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 remaining end of conduit assembly.

☐ Connect the black wire to the collector terminal and the red wire to the ionizer terminal. See Fig. 22.

☐ 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. 22.

☐ 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.

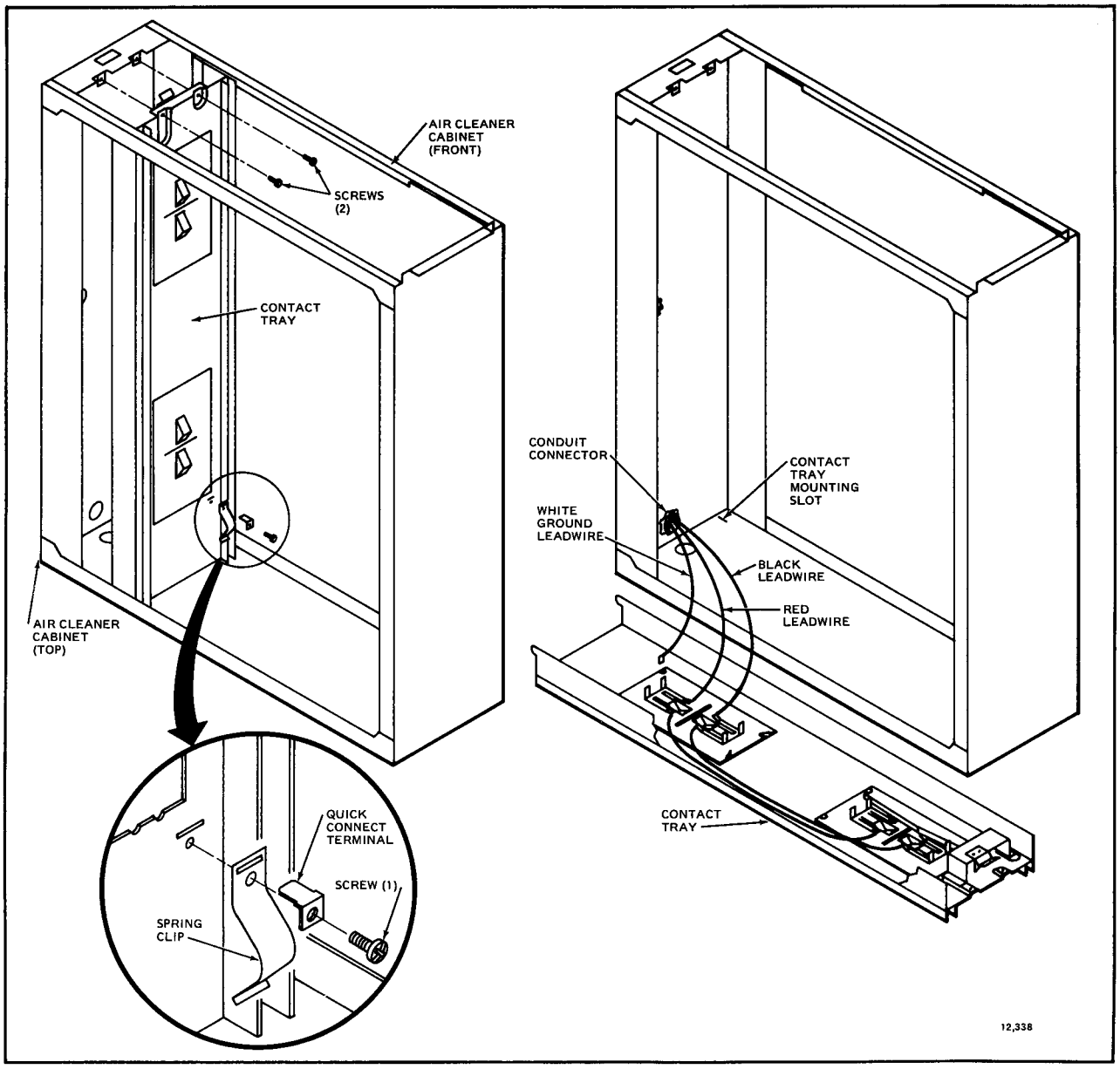

FIG. 22–INSTALL THE CONDUIT ON THE CABINET AND MAKE WIRING CONNECTIONS TO CONTACT TRAY.

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. 13.
☐ Place blocks under the cabinet so the unit is firmly supported and level. The ⅝ 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 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 Figure 23.

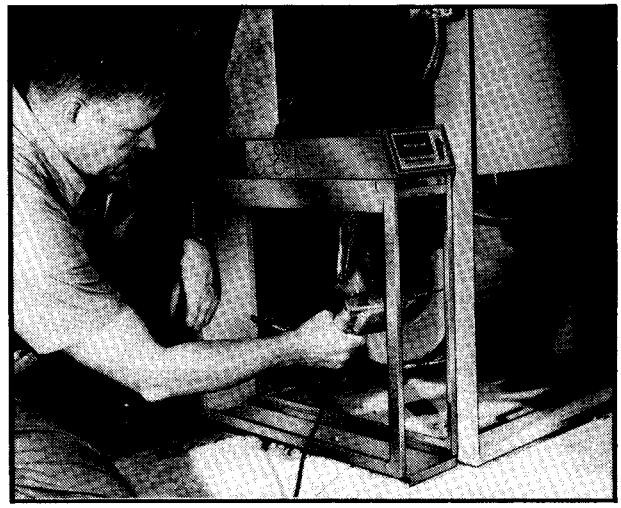

FIG. 23–FASTEN CABINET TO FURNACE.

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. 13.
☐ Fasten other side of cabinet to the elbow using sheet-metal screws, rivets, or slip joints as appropriate.

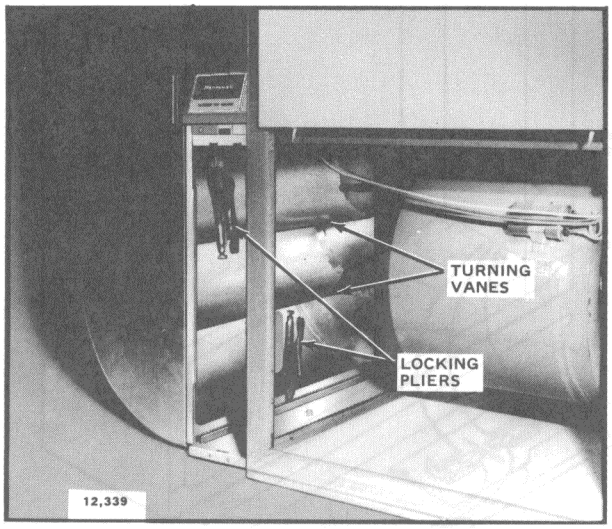

FIG. 24—CONNECT DUCTWORK TO AIR CLEANER. NOTE TURNING VANES. LOCKING PLIERS HOLD DUCT TO AIR CLEANER CABINET DURING INSTALLATION.

COMPLETE WIRING

CAUTION

Electric shock hazard.
Can cause personal injury.

1. The line voltage power source must match the voltage and frequency printed on the label inside the access door.
2. 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.
3. The air cleaner must be permanently connected to the power source. Do not use an extension cord.

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.

☐ 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.

1. If the system blower is driven by a single-speed, single-phase motor, wire the air cleaner into the fan circuit. See Fig. 25.
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. 26) or a dpdt fan relay (see Fig. 27). 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.

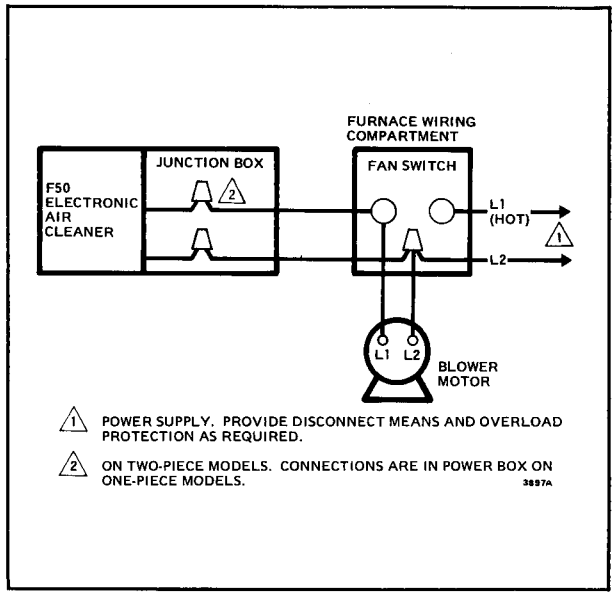

FIG. 25—*SINGLE SPEED BLOWER MOTOR.* AIR CLEANER IS CONTROLLED BY THE FAN SWITCH.

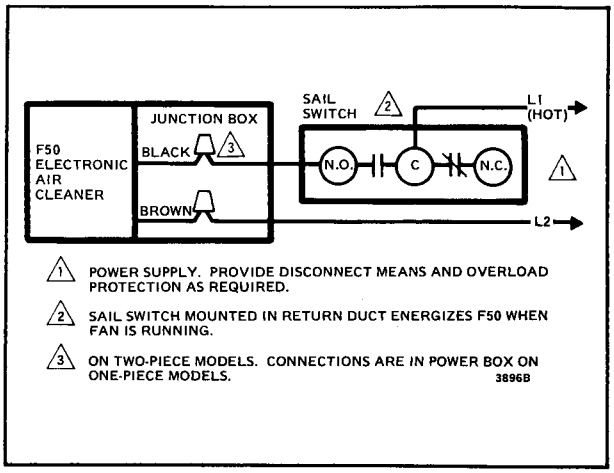

FIG. 26—*MULTISPEED OR MODULATING BLOWER MOTOR.* AIR CLEANER IS CONTROLLED BY A SAIL SWITCH.

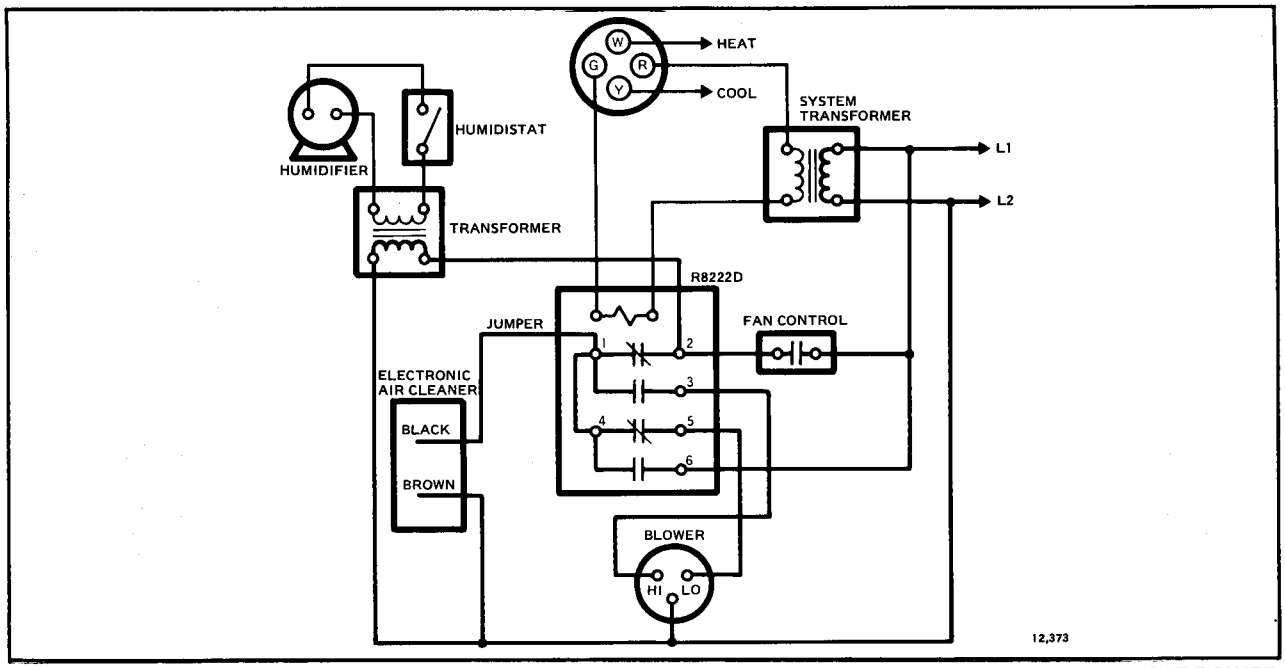

FIG. 27—*TWO SPEED BLOWER MOTOR.* AIR CLEANER IS CONTROLLED THROUGH A DPDT FAN RELAY. NOTE POWER HUMIDIFIER CONNECTIONS.

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 PROTECTIVE SCREEN GUIDE

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

FIG. 28—COMPLETE THE DUCT INSTALLATION.

FIG. 29—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.

☐ 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. 30.
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.

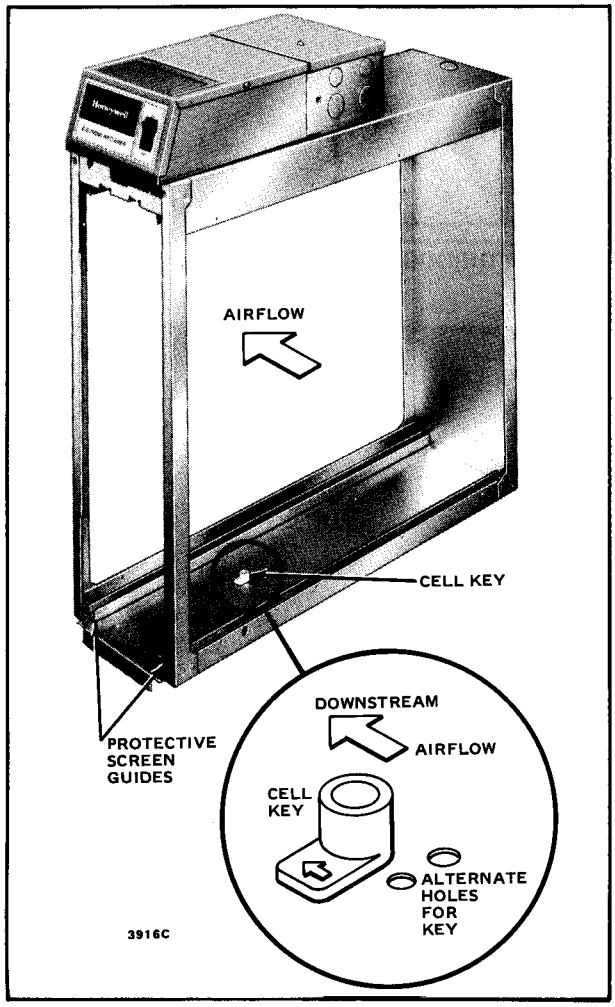

FIG. 30—POSITION OF CELL KEY DETERMINES ORIENTATION OF CELL. ARROW ON KEY MUST POINT DOWNSTREAM.

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. 31.
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.

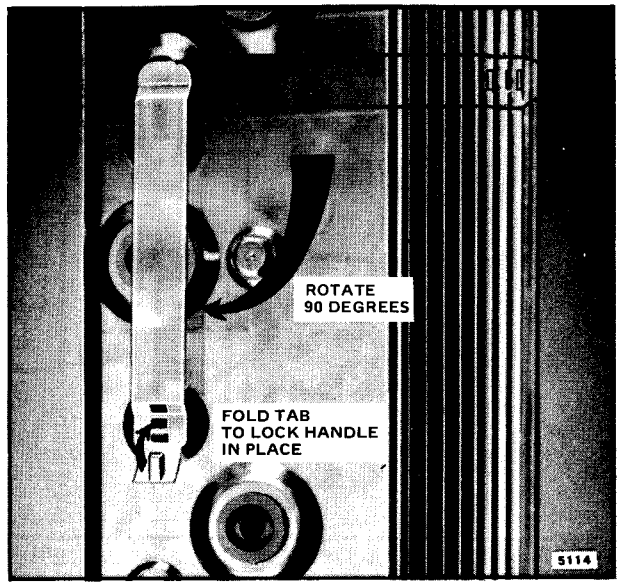

FIG. 31—INSTALL HANDLE ON END OF CELL THAT WILL BE CLOSEST TO ACCESS DOOR.

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 protective 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. 32. The door must be firmly in place or the air cleaner will not operate.

FIG. 32—CLOSE ACCESS DOOR TO COMPLETE AIR CLEANER INSTALLATION.

CHECKOUT

INSPECT THE INSTALLATION

Make sure:

- Turning vanes and transitions, if used, 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 cell contact plates touch the contacts in the tray.
- The airflow arrows on the electronic cells point downstream.
- The protective screens are on the upstream side of the cells.
- The cell handles face outward.
- The electronic cells and protective screens are clean and dry.
- The wiring connections inside the junction box or power box are properly made. See Figs. 25-27.

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.
2. Turn off the system blower. The indicator light should go off. The indicator light comes on to show that the air cleaner is energized and the high voltage power supply is working properly.
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 16.

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 PROTECTIVE SCREENS

Clean the electronic cells and protective 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 on top of 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 protective 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 protective 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 rinse 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 protective 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. A wash tub is available as Honeywell part number 199049A.
2. Dissolve about ¾ 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. A detergent formulated for washing electronic cells is available as Honeywell part number 126850.
3. After the detergent has completely dissolved, place the electronic cell(s) in the container and let them soak for 15-20 minutes. Then slosh them up and down a few times and remove.
4. Next, wash the protective 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 protective 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 Protective Screens

1. Inspect the cells for broken ionizer wires and bent collector plates. Repair as necessary.
2. Slide the protective 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 also 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 21 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. 33. 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.

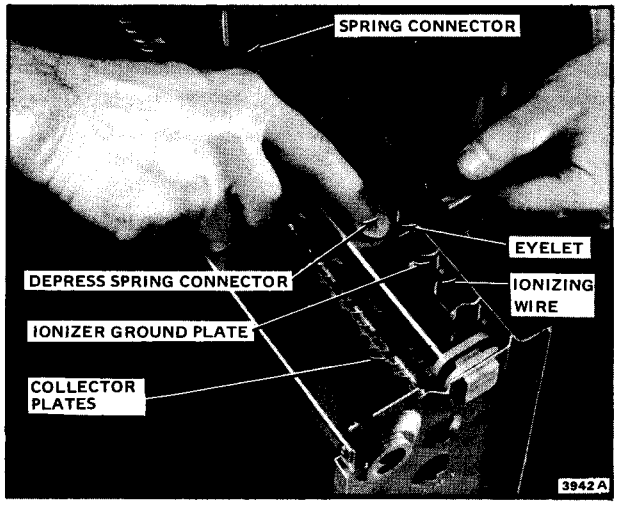

FIG. 33–INSTALL NEW IONIZING WIRE BY HOOKING EYELETS OVER SPRING CONNECTORS.

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 kV dc probe or equivalent meter.

TROUBLESHOOTING PROCEDURE

The "Electronic Air Cleaner Troubleshooting Chart," Fig. 36, 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. 37.

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

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 21, for order number.

To Access Power Supply (Two Cell Models)

1. Turn off power.
2. Remove the access door and loosen the two screws holding the power box. See Fig. 34.
3. Pull the power box straight toward you to pull the plug connector out of the receptacle in the junction box.
4. Take out the two screws holding the cover on. Remove the cover.
5. Replace the power box by resting it on the cabinet and pushing it straight toward the junction box. Do not bend the spring contacts sideways. The power plug must slide straight into the receptacle.
6. Replace the access door and restore power.

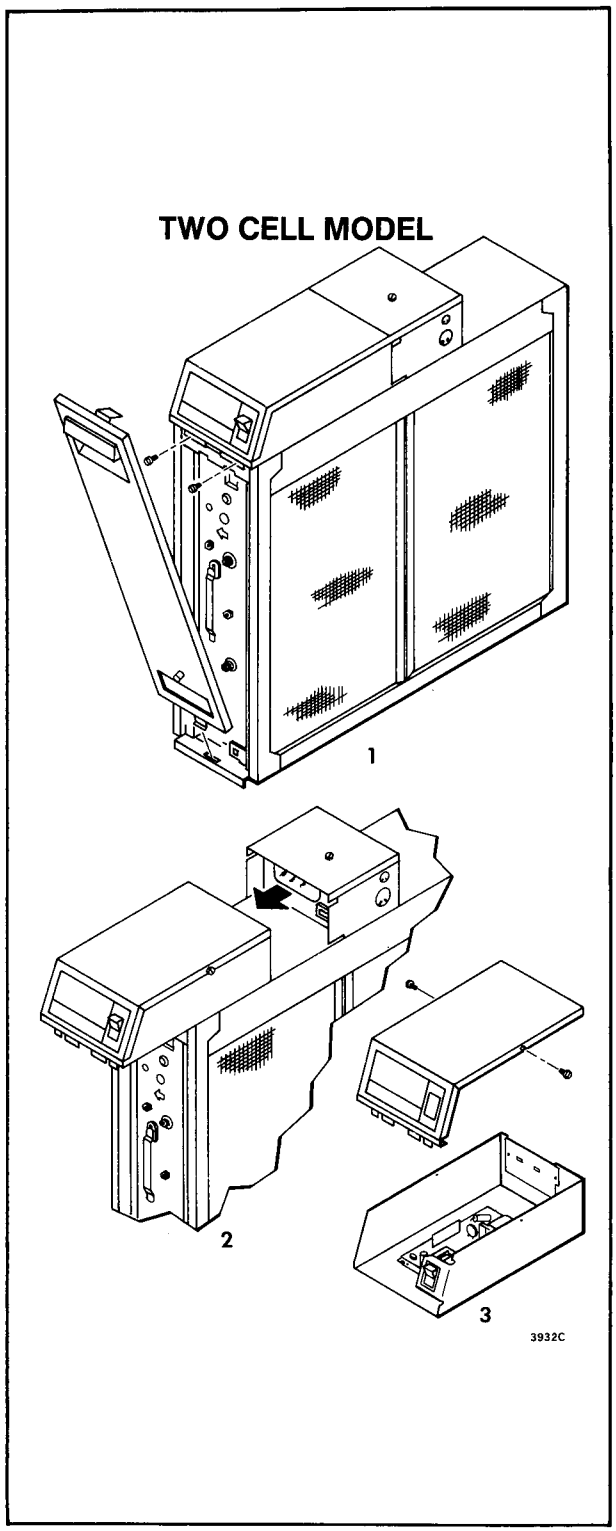

FIG. 34—YOU MUST REMOVE TWO-CELL MODEL POWER BOX FROM AIR CLEANER TO REMOVE COVER.

To Access Power Supply (One Cell Models)

1. Turn off power.
2. Remove access door.
3. Loosen the screw holding the cover on and remove the cover. See Fig. 35.
4. Replace the access door and restore power.

ONE CELL MODEL

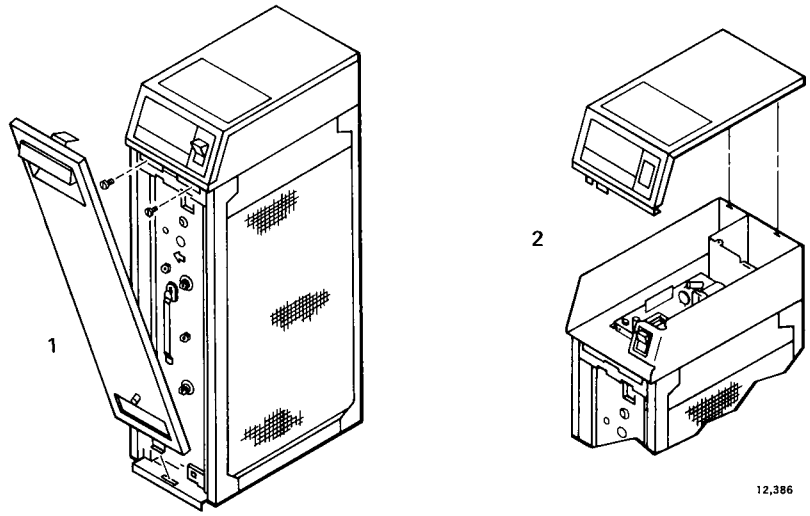

FIG. 35—POWER BOX COVER ON ONE-CELL MODEL IS SECURED BY A SINGLE SCREW.

TROUBLESHOOTING

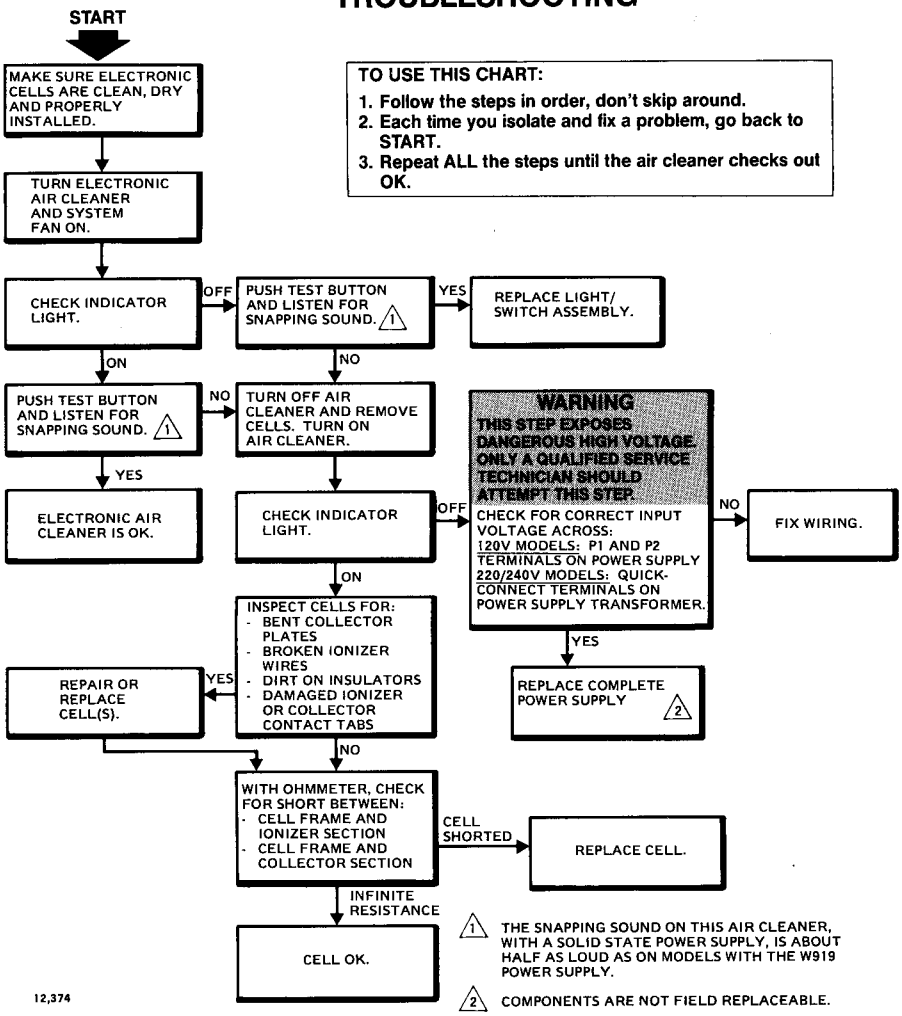

FIG. 36—ELECTRICAL TROUBLESHOOTING PROCEDURE.

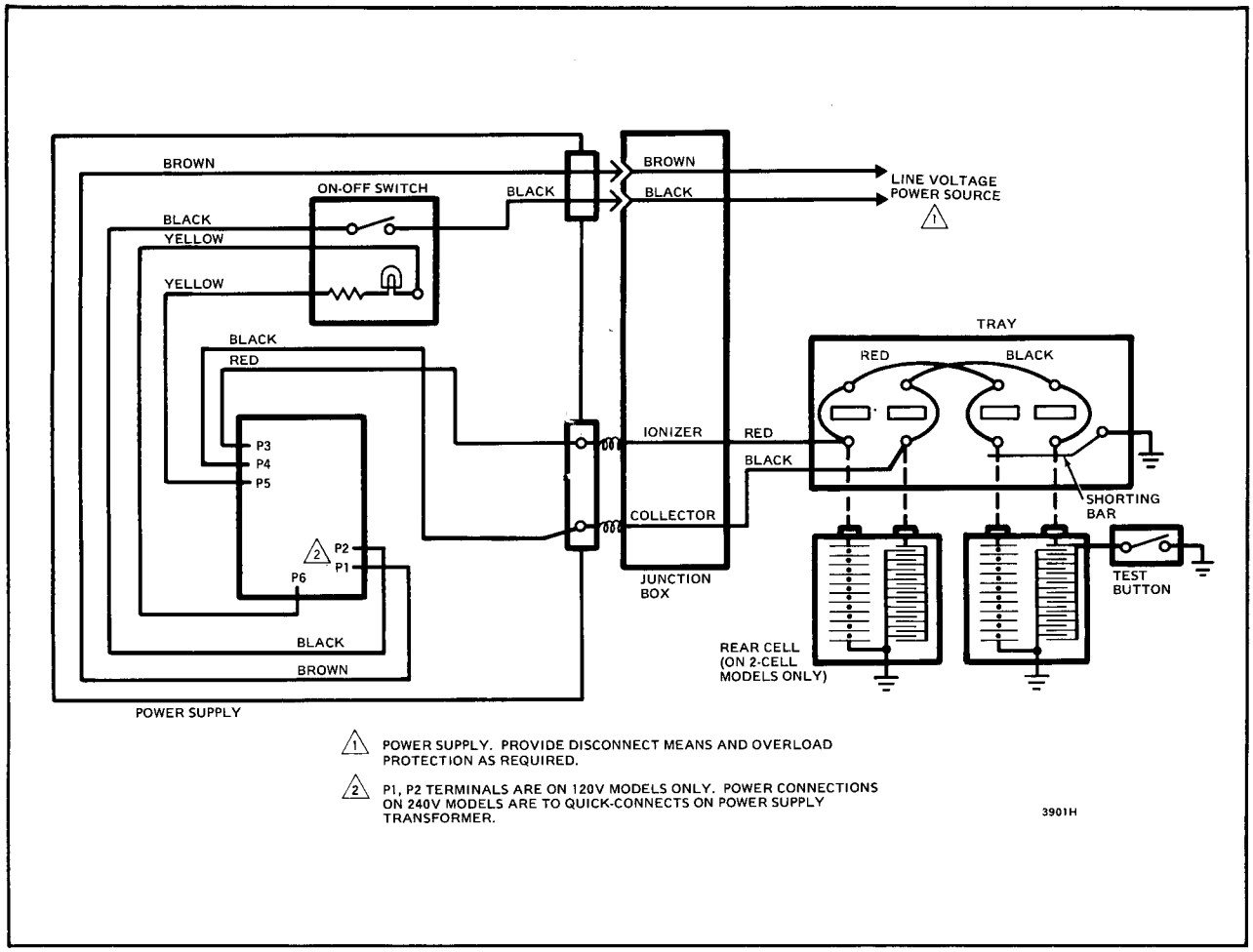

FIG. 37—ELECTRONIC AIR CLEANER INTERNAL SCHEMATIC.

FIG. 38—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 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 concentration should not exceed 0.050 PPM. As a comparison, the *outdoor* ozone level in major cities range 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 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 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. 34 or 35. Remember that the power box must first be removed on two-cell models.

d. Find the J2 jumper and clip it out. See Fig. 39.

e. Replace power supply cover and access door. Turn on power.

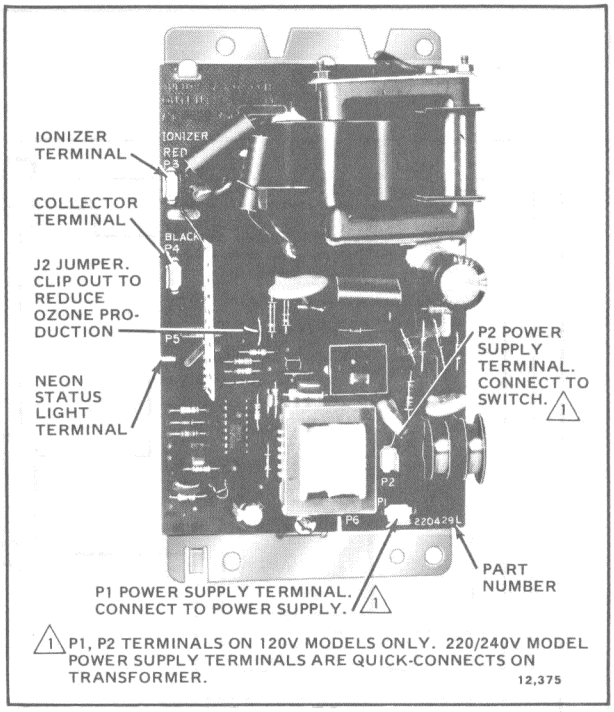

FIG. 39—CLIP OUT THE J2 JUMPER TO REDUCE OZONE PRODUCTION ABOUT 20-25 PERCENT.

PARTS LIST

DRAWING NUMBER	DESCRIPTION	PART NUMBER			
		16 x 25 IN. [406 x 635 MM]	20 x 25 IN. [508 x 635 MM]	20 x 12½ IN. [508 x 318 MM]	20 x 20 IN. [508 x 508 MM]
1	Access Door (includes 2 below)	136393AD	136392AD	136392AD	136392AD
2	Test Button Assembly	137980A	137980A	137980A	137908A
3	Electronic Cell	FC37A1130 (2)	FC37A1064 (2)	FC37A1064 (1)	FC37A1049 (2)
4	Cell Handle	137266 (2)	137266 (2)	137266 (1)	137266 (2)
5	Protective Screen	136388 (2)	136389 (2)	136389 (1)	199664 (2)
6	Cabinet	136403A	136402A	136402D	136402E
7	Cell Guide/Screen Channel	136390 (4)	136390 (4)	–	199660 (4)
	Cell Guide/Screen Channel (top)	–	–	191260 (2)	–
	Cell Guide/Screen Channel (bottom)	–	–	191259 (2)	–
8	Cell Key	136518	136518	136518	136518
9	Contact Panel Assembly (includes 10 through 13 below)	136399A	136399A	191263A	199661A
10	Contact Board	136383A (2)	136383A (2)	136383A (1)	136383A (2)
11	Shorting Arm	136387A	136387A	136387A	136387A
12	Shorting Arm Bracket	136382A	136382A	136382A	136382A
13	Shorting Arm Spring	136517	136517	136517	136517
14	Junction Box Assembly (includes 15 and 16 below–less cover)	136394B	136394B	Included in Power Box Assembly	136394B
15	Electrical Connector–Female	136364	136364	*	136364
16	Contact Board Assembly	136415A	136415A	–	136415A
17	Junction Box Cover	136386	136386	–	136386
18	Power Box Assembly (includes 19 through 24 below) 120 V, 60 Hz 220/240 V, 50/60 Hz	 136397K 136397M	 136397J 136397L	 197667R 197667S	 136397K 136397M
19	Case Only	136397	136397	197667	136397
20	Switch/Indicator Light	199840	199840	199840	199840
21	Contact Board Assembly	136414A	136414A	–	136414A
22	Electrical Connector–Male	136366	136366	197664C	136366
23	Power Box Cover	136396	136396	197166	136396
24	Power Supply 120 V, 60 Hz 220/240 V, 50/60 Hz	 220429BXA 220429GXA	 220429AXA 220429FXA	 220429QXB 220429HXB	 220429BXA 220429GXA
NOT ILLUSTRATED	Ionizing Wires (package of 5)	136434BA	136434AA	136434AA	136434AA
	Remote Mount Kit Includes: Remote Mount Base Conduit Assembly (10 ft. long) Cabinet Knockout Plug Mounting Screws (5) Quick Connect Terminal (2) Springleaf Contact (1) Liquid Detergent Wash Tub Terminal Board Replacement Kit	136377A 136377 136376A 136743 136375 111690 136529 126850 199049A 4074EHG	136377A 136377 136376A 136743 136375 111690 136529 126850 199049A 4074EHG	136377A 136377 136376A 136743 136375 111690 136529 126850 199049A 4074EHG	136377A 136377 136376A 136743 136375 111690 136529 126850 199049A 4074EHG

*197665A (120 V) or 197665B (220/240 V) Plug Assembly not shown.

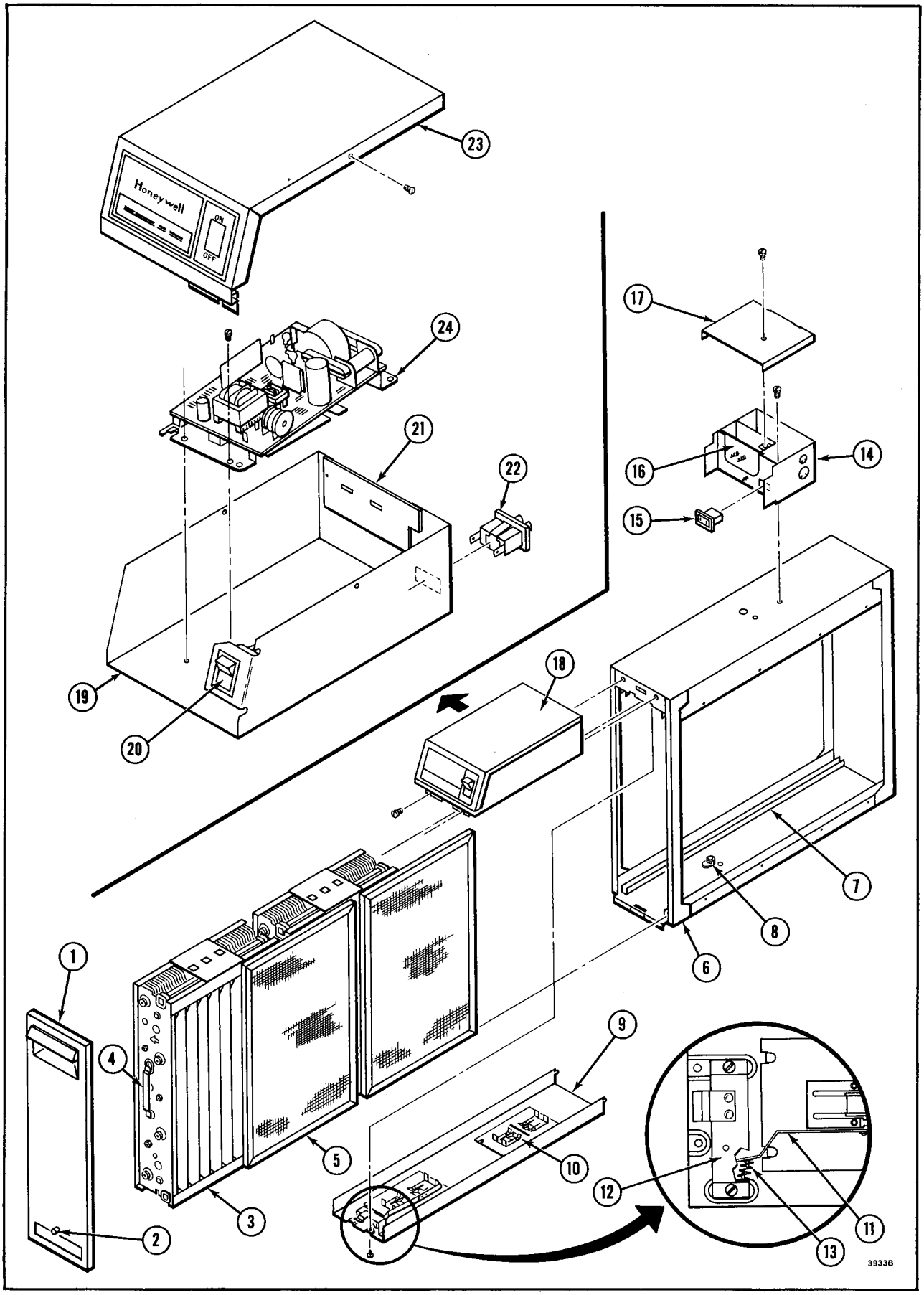

FIG. 40—COMPONENTS OF THE F50E ELECTRONIC AIR CLEANER (2-CELL MODEL SHOWN)

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