

F52F Return Grille Electronic Air Cleaner

PRODUCT DATA



FEATURES

- F52F models are available with one electronic cell and a rated capacity of 1000 cfm (1700 m³/hr), or two electronic cells and a rated capacity of 2000 cfm (3400 m³/hr).
- Electronic cell(s) can be washed in most automatic dishwashers.
- Solid state power supply is energized by an airflow switch; no interconnection to fan system is required.
- 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.
- Neon light shows that the air cleaner is operating.
- Automatic interlock switch disconnects the power when unit is opened.

APPLICATION

The F52F Return Grille Electronic Air Cleaner is wall or ceiling mounted in the main return air duct of a central forced air heating, cooling, or ventilation system. It captures a significant number of the airborne particles (0.3 microns and larger) from the air circulated through the cell(s).

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SPECIFICATIONS

IMPORTANT

The specifications given in this publication do not include normal manufacturing tolerances. Therefore, this unit may not exactly match the listed specifications. 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.

Models:

F52F Return Grille Electronic Air Cleaner (one-cell model for up to 1000 cfm [1700 m³/hr]). Includes solid state power supply with air cleaner monitor capability, one electronic cell, prefilter, door/grille and airflow switch.

F52F Return Grille Electronic Air Cleaner (two-cell model for up to 2000 cfm [3400 m³/hr]). Includes solid state power supply with air cleaner monitor capability, two electronic cells, prefilter, door/grille and airflow switch.

Electrical Ratings:

No. of Cells	System Size (in.)	Maximum Current (A)		Maximum Power (W)
		120V, 60 Hz	220/240V, 50/60 Hz	
1	20 x 12.5	0.4	0.2	22
2	20 x 25	0.4	0.2	36

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 Cell(s): 40°F to 125°F (4°C to 52°C).
 Maximum Cell Washing Temperature: 220°F (104°C).

Storage and Shipping (Entire Unit): minus 40°F to plus 140°F (minus 40°C to plus 60°C).

Mounting:

Recesses into duct opening on wall or ceiling. On wall installation, mount with hinge on bottom or either side (see Review Installation Requirements section). Not intended for floor installations.

Weight:

F52F Electronic Air Cleaner	1-Cell		2-Cell	
	lb	kg	lb	kg
Shipped	39.2	17.8	58.8	26.7
Installed	29.4	13.4	45.3	20.6
Cell(s)—included in above weights	9.5	4.3	9.5 ea	4.3 ea

Dimensions:

See Fig. 2 and 3.

Door/Grille Type:

Egg crate.

Cell Size:

12-1/2 x 20 in. (318 x 508 mm).

Underwriters Laboratories Inc. Listed:

File No. E30954, Guide No. AGGZ.

Canadian Standards Association Listed:

File No. LR19060-L.

Accessories and Replacement Parts:

See Fig. 23

ORDERING INFORMATION

When purchasing replacement and modernization products from your TRADELINE® wholesaler or distributor, refer to the TRADELINE® Catalog or price sheets for complete ordering number. 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 Environmental and Combustion Controls Sales Office (check white pages of your phone directory).
2. Honeywell Customer Care
1885 Douglas Drive North
Minneapolis, Minnesota 55422-4386
3. <http://customer.honeywell.com> or <http://customer.honeywell.ca>

International Sales and Service Offices in all principal cities of the world. Manufacturing in Belgium, Canada, China, Czech Republic, Germany, Hungary, Italy, Mexico, Netherlands, United Kingdom, and United States.

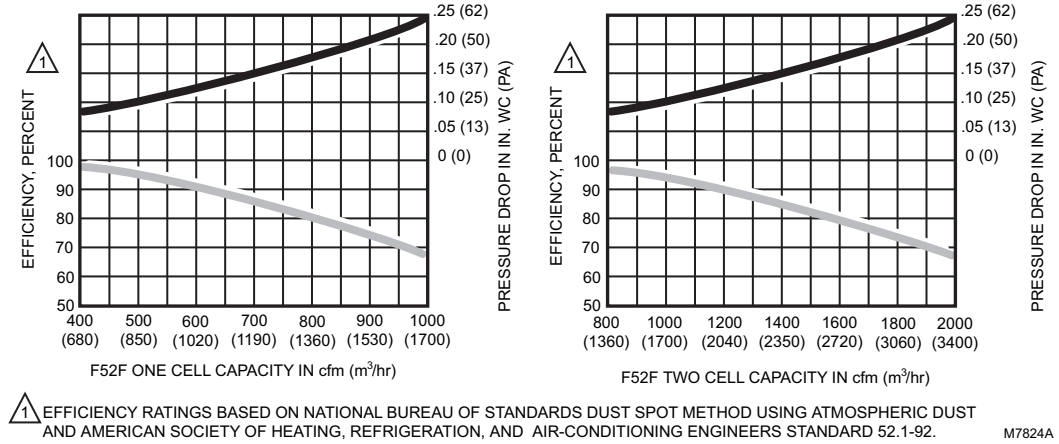


Fig. 1. Air cleaner efficiency and pressure drop at various airflow rates.

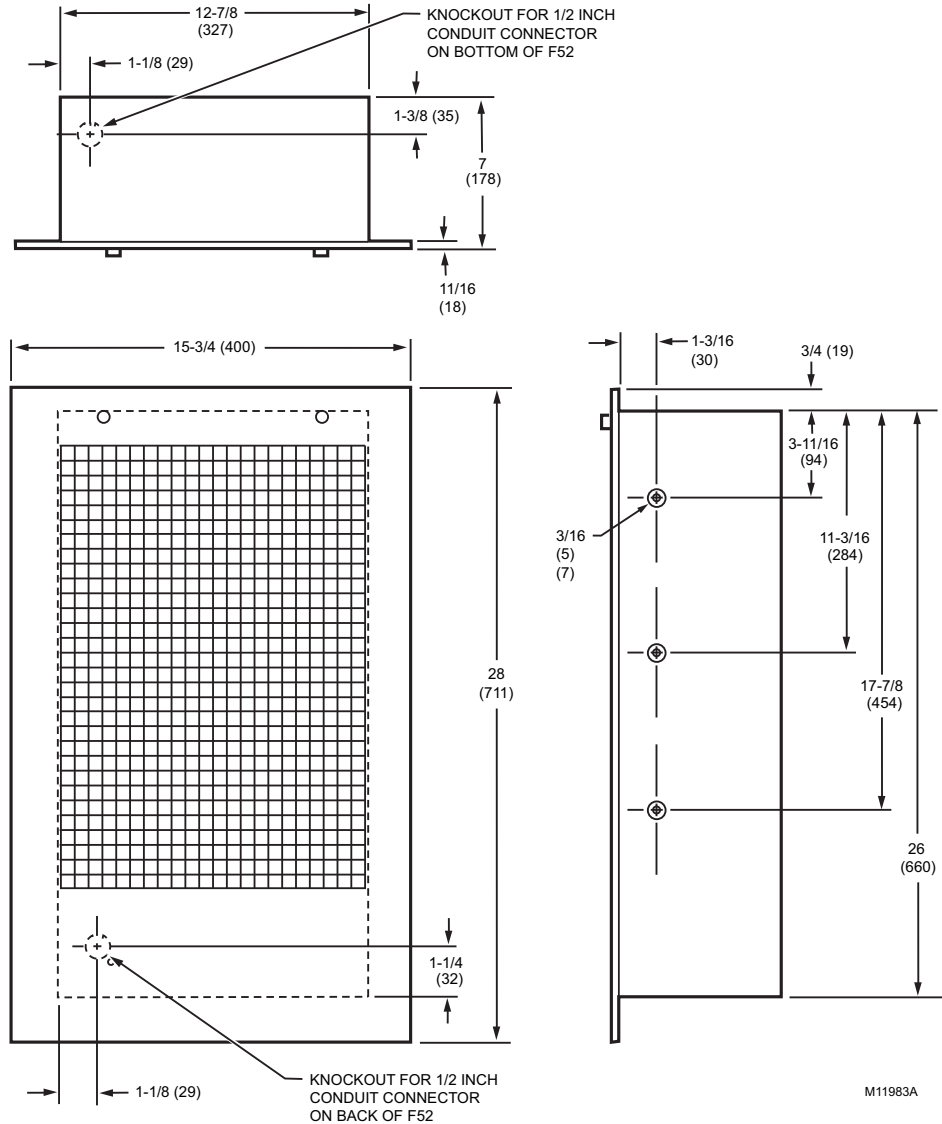


Fig. 2. Approximate installation dimensions in in. (mm) of one-cell F52F Electronic Air Cleaner.

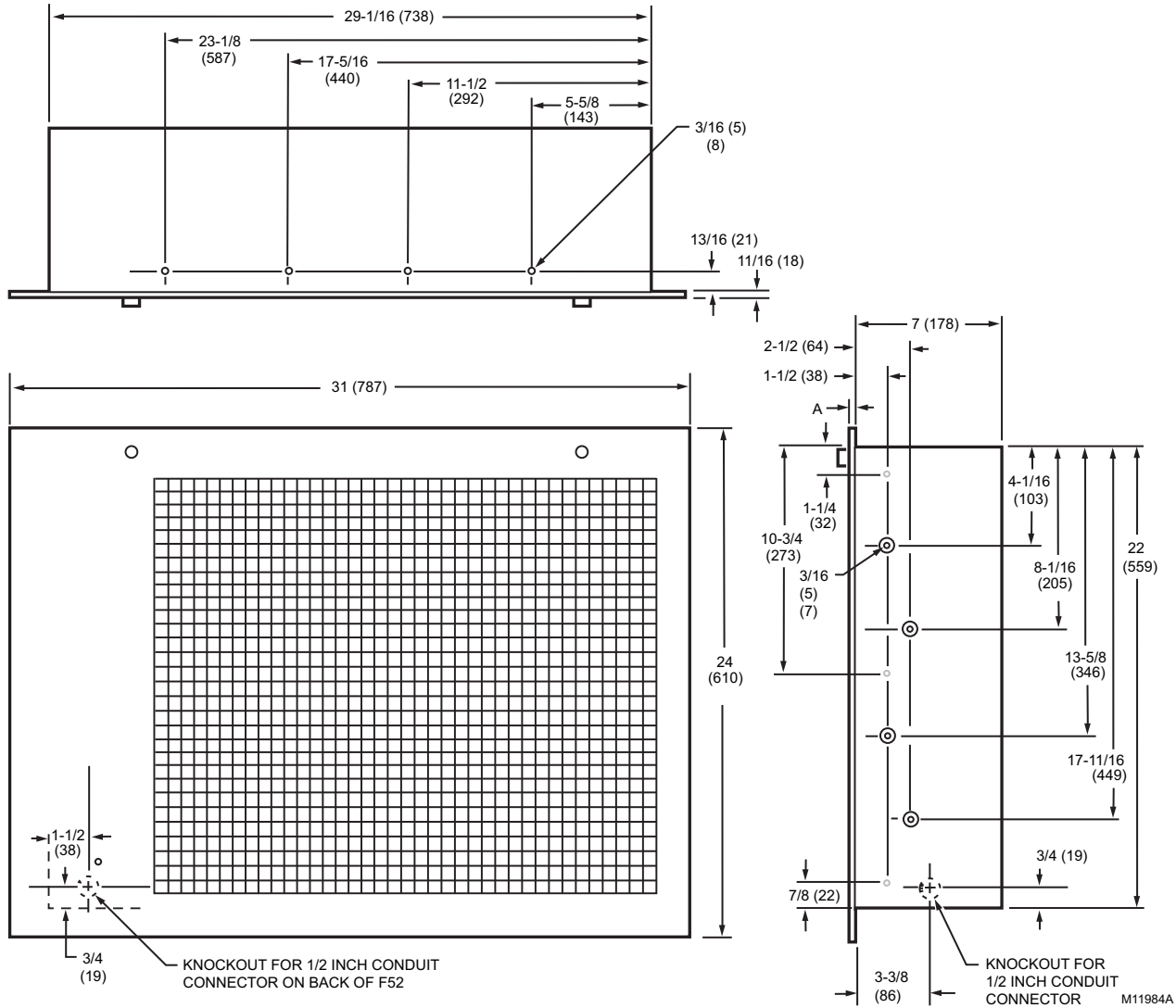


Fig. 3. Approximate installation dimensions in in. (mm) of two-cell F52F Electronic Air Cleaner.

PLANNING THE INSTALLATION

Application and Construction

The air cleaner should be installed in the occupied space return duct opening leading to a central air handling system. All of the air circulated by the system must pass through the electronic air cleaner.

The front door of the electronic air cleaner is hinged to provide access to the internal components. See Fig. 4.

The air cleaner has one or two electronic cell(s) that must be installed with the ionizer section (side with fine wires) facing the door.

The cell(s) is held in place by metal hooks and a quarter-turn latch.

A spring contact provides the electrical connection between the solid state power supply and the electronic cell(s). An interlock switch interrupts the line voltage to the power supply when the door is opened. A rocker-type ON-OFF switch allows the air cleaner to be turned off manually. An indicator light that is on shows that the air cleaner is energized and the power supply is producing high voltage.

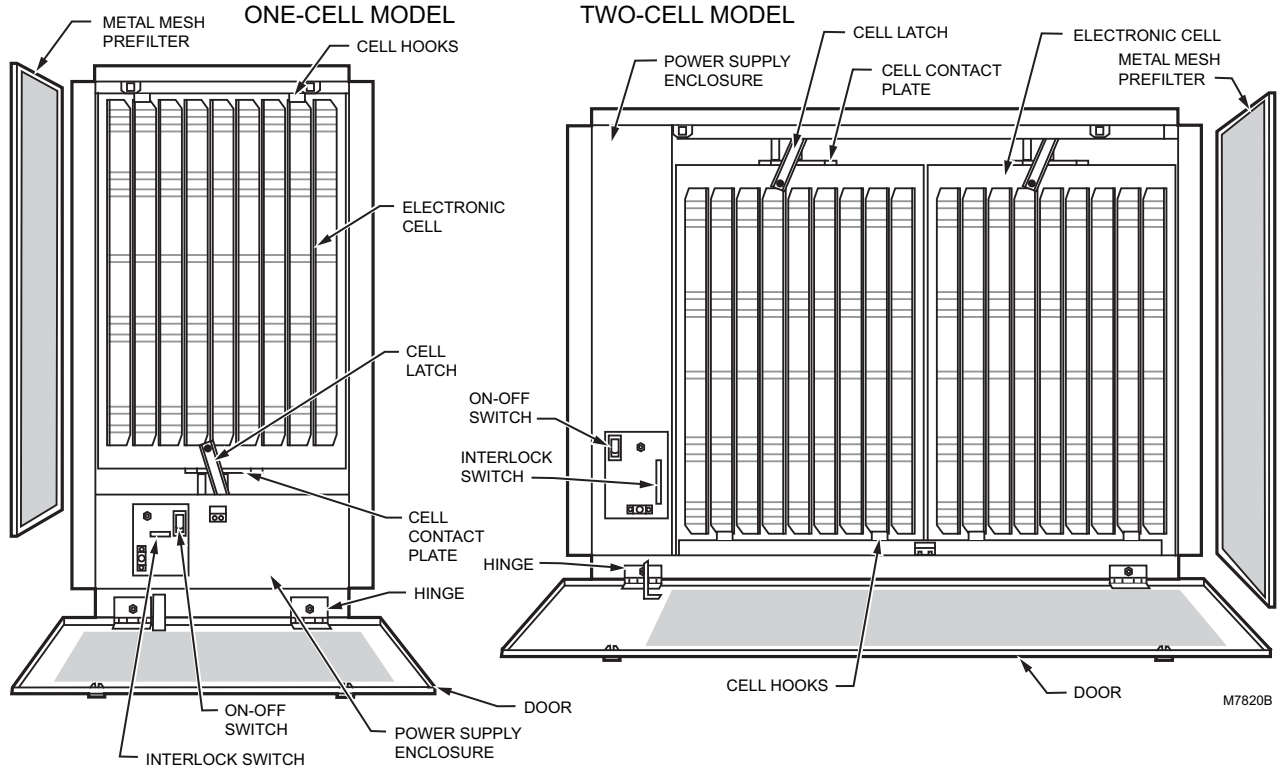


Fig. 4. Internal components of F52F Electronic Air Cleaner.

Review Installation Requirements

The air cleaner is installed in place of the main return grille so all the air circulated by the system passes through the air cleaner.

It can be installed in either a wall or ceiling, but not in the floor. See Fig. 5 through 7 for typical installations.

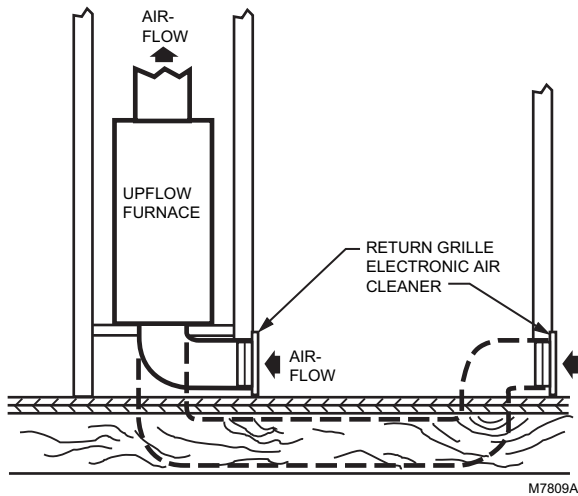


Fig. 5. Typical electronic air cleaner application on platform-mounted upflow furnace. (Dotted lines show optional ductwork.)

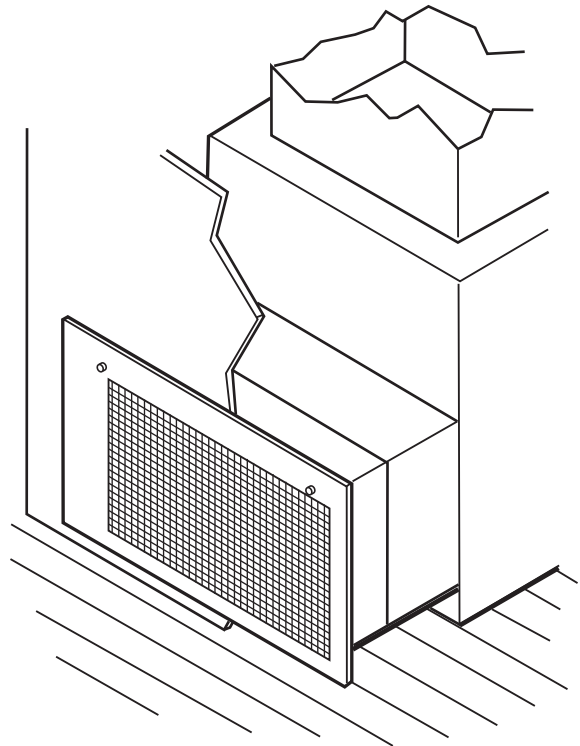


Fig. 6. Typical electronic air cleaner installation on an upflow furnace.

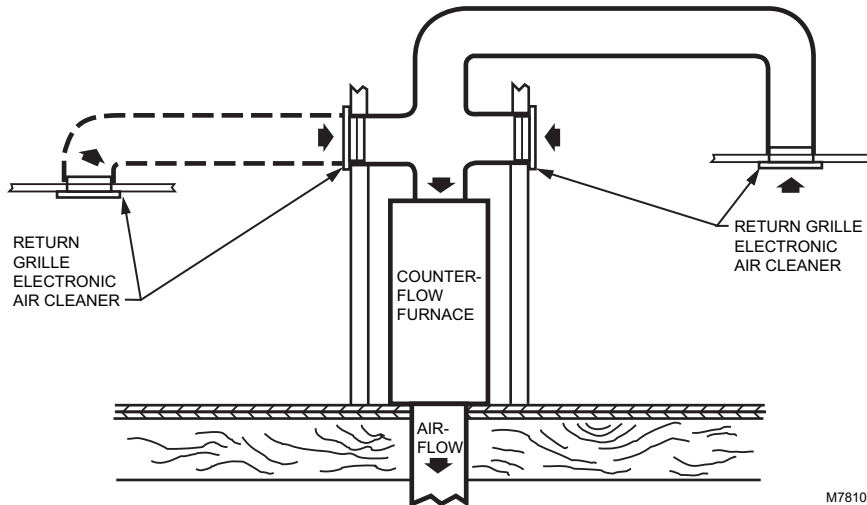


Fig. 7. Typical electronic air cleaner application on counterflow (downflow) furnace. (Dotted lines show optional ductwork.)

In a wall installation, mount the one-cell air cleaner with the door hinge on the bottom so the air cleaner fits between the two studs 16 in. (407 mm) on center. The two-cell air cleaner fits between two studs 24 in. (610 mm) on center when mounted with the hinge on either side or between three 16 in. studs, with center stud removed, when mounted with hinge on the bottom.

Do not install either unit with the hinge on the top because the cell(s) will be awkward to remove.

Determine Duct Design Requirements

The return duct should end at, or slightly behind, the finished wall surface. Do not use a standard register flange, or the door may not fit tightly against the wall.

Transitions

Transitions are needed when the duct is a different size than the air cleaner. Gradual transitions reduce air turbulence and increase efficiency. The transition should be 20 degrees or about 4 in. per running ft (100 mm per 300 linear mm) or less on each side of a transition fitting.

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 before installing air cleaner.

Unpack the Air Cleaner

1. Check that all components are included. The unit consists of:
 - Door assembly in separate box.
 - One metal mesh prefilter.
 - One or two electronic cell(s).
 - Literature package.
2. Lift out and set aside the door/grille assembly and the prefilter. Turn the cell latch (Fig. 4) toward the air cleaner cabinet and remove the electronic cell(s), lifting from the side nearest the latch. Set aside.
3. Remove the four screws holding the wiring compartment cover.
4. Remove the air cleaner cabinet from the carton.

Make Wall Opening

1. Size the wall opening to fit the air cleaner as closely as possible with the air cleaner door hinge on either side or bottom for the two-cell model, and on the bottom for the one-cell model. See Table 1 for dimensions.

Table 1. Installation Dimensions.

Model	Wall Stud Spacing		Unit Dimensions	
	in.	mm	in.	mm
1-cell	16	406	12-7/8 x 25-15/16	327 x 659
2-cell	24 or 32	610 or 813	29-1/16 x 22	738 x 559

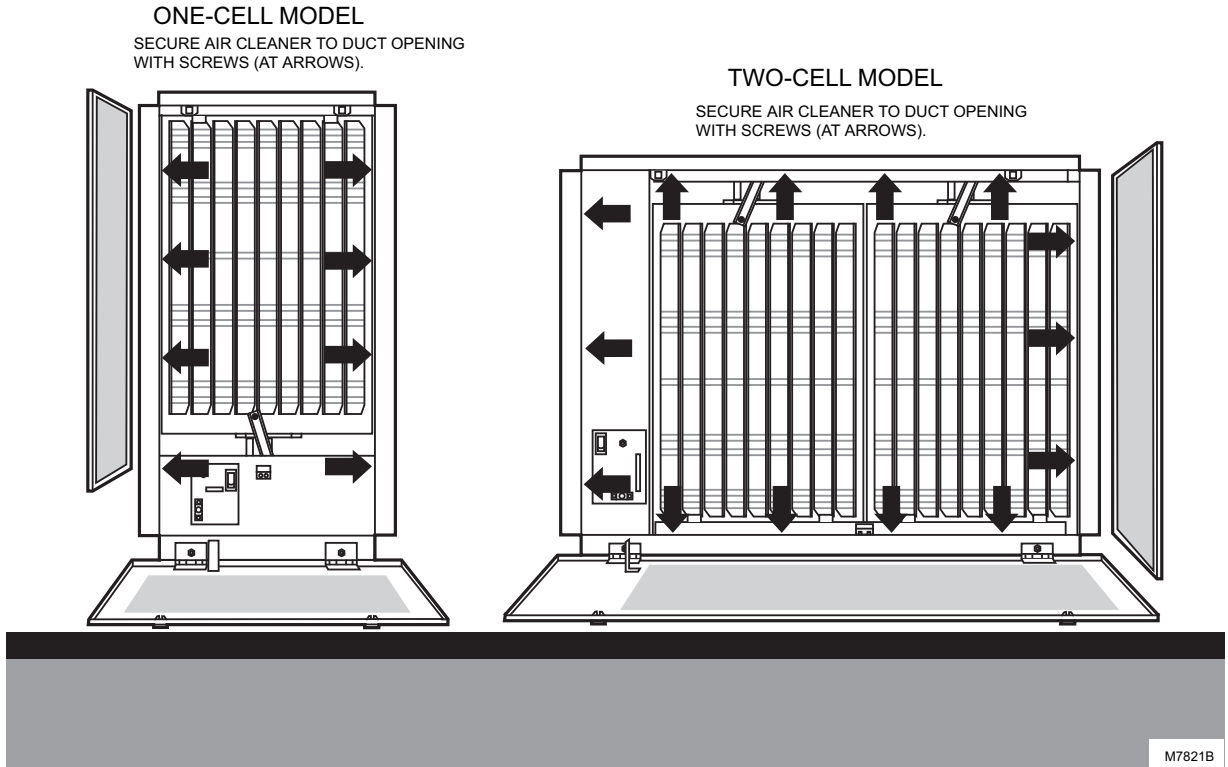


Fig. 8. Fasten air cleaner to duct with sheetmetal screws.

2. Frame the opening to provide adequate support for the air cleaner. The air cleaner must fit snugly in the opening; allow no more than 1/4 in. (6 mm) from the opening to each side of the cabinet.
3. Cover the framing and any unused portion of the wall opening with wallboard, plywood, or other material and finish to match the wall.

Mount Air Cleaner

1. Fit the air cleaner enclosure into the prepared duct opening so the flange on the air cleaner fits tightly against the finished wall surface. The posts on the flange should be on the side desired for the door hinge.
2. Tack the enclosure to the wall.
3. Fasten the air cleaner enclosure to the wall frame using sheet metal screws. See Fig. 8. Overtightening the screws can distort the enclosure and make it difficult to secure the door with the door latches.

Wiring



CAUTION

Electric Shock Hazard.
Can cause personal injury.

- The line voltage power source must match the voltage and frequency of the F52F.
 - The air cleaner must be permanently connected to the power source. Do not use an extension cord.
1. Disconnect power before beginning wiring to avoid electrical shock or equipment damage. All wiring must comply with applicable codes and ordinances. See Fig. 9.
 2. Connect the white lead from the air cleaner to the neutral side of the 120V supply. Use the solderless connector supplied.

3. Connect the black lead from the air cleaner to the line side of the 120V supply. Use the solderless connector supplied.
4. Connect the air cleaner ground terminal to ground.

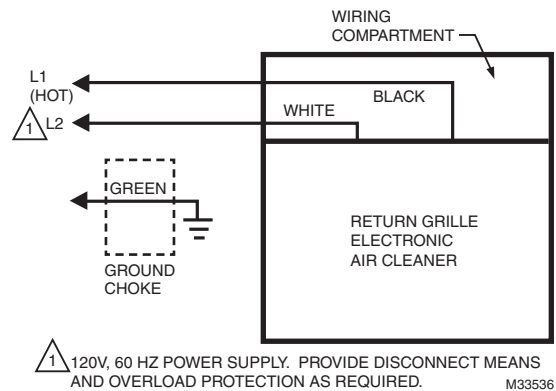


Fig. 9. Typical connections for air cleaner.

The solid state airflow switch turns the air cleaner on and off in response to airflow; the air cleaner need not be connected to the system fan.

NOTE: If power to the air cleaner is controlled by another switch, the AFS can be disabled by disconnecting the AFS plug, J3, and cutting the jumper R16 on the power supply. See Fig. 18.

Attach Cell Handle(s)

The plastic handle(s) taped to the packing material must be mounted on the electronic cell(s). The handle(s) can be mounted on either end; choose the end most convenient for inserting and removing the cell(s).

1. Hold the handle sideways and insert the solid tab on the back of the handle into the rectangular slot in the cell. Turn the handle 90 degrees clockwise to align the divided tab with the square hole. See Fig. 14.
2. Insert the divided tab into the square hole.
3. Fold up the tab and insert it into the slot to lock the handle in place. If necessary, press with a blunt instrument such as the end of a pliers.

Install Electronic Cell(s), Prefilter and Door/Grille

1. Hold the cell(s) by the handle(s) and fit the end of the cell(s) behind the metal hooks. See Fig. 15.
2. Swing the cell(s) into the frame and turn the cell latches to lock the cell(s) in place. See Fig. 16.

INSTALL HANDLE ON END OF CELL
CLOSEST TO ACCESS DOOR

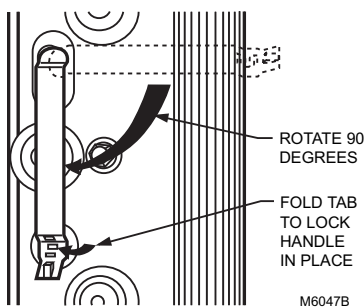


Fig. 10. Attach cell handle to end of cell.

3. Reinstall the prefilter by seating it into the rail. Rotate it into the air cleaner, and seat it on the opposite side.
4. Assemble the door/grille to the cabinet as follows:
 - a. Align the door/grille with the frame. Fit the holes in the door hinge over the mounting posts on the frame.
 - b. Start the hex nuts provided on the posts and tighten.
 - c. Close the door/grille and turn the thumb screws.
 - d. If alignment requires adjustment, loosen nuts, align and retighten.

IMPORTANT

For proper air cleaner operation, make sure:

- The contacts on the cell(s) meet the spring contacts on the frame.
- The arrow on the side of the cell points in the direction of airflow (toward the wall or ceiling).
- The ionizer wires face toward the door/grille.

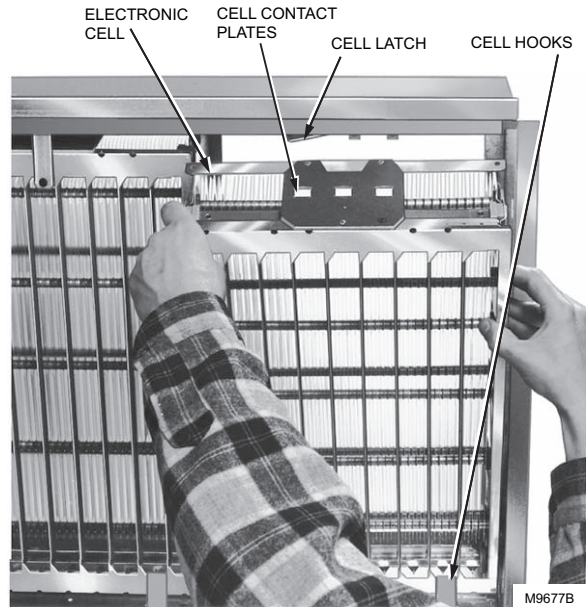


Fig. 11. Make sure hooks snap over edge of cell.

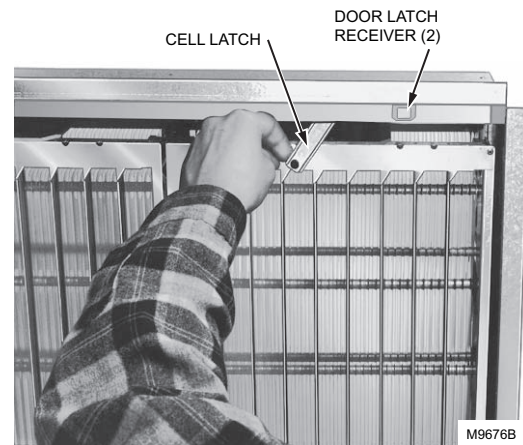


Fig. 12. Turn cell latch to lock in place.

Painting Air Cleaner

The air cleaner door/grille is painted white and needs no additional finishing. If another color is desired, remove the door/grille from the air cleaner and make sure it is clean before painting.

Replacing Door/Grille

The louvered and egg crate door/grilles are interchangeable on the F52F (see Parts List on page 18 for part numbers). To change from a louvered to an egg crate door/grille, turn the quarter-turn fasteners to the open position. Open the door/grille and remove the two hex nuts that fasten the door/grille to the air cleaner cabinet. Install the two tinnerman clips that are supplied with the egg crate door/grille on the door latch receivers (Fig. 16). Mount the new door/grille on the air cleaner cabinet with the two hex nuts previously removed. Close the door/grille and turn the thumb screws to engage the mating screws in the tinnerman clips.

CHECKOUT

Inspect the Installation Before Putting Electronic Air Cleaner into Operation

Make sure:

- The wiring connections in the power box are properly made with the proper connectors.
- The metal mesh prefilter is positioned properly.
- The airflow arrows on the cell(s) point away from the door/grille.
- The electronic cell(s), prefilter and door/grille are clean and dry.
- The contact is good between electronic cell and the power supply contacts.
- The W8600F (if used) wiring connections are properly made.

Check Air Cleaner Operation

With all components in place, turn on the air cleaner switch and close the door/grille. Energize the system fan and check that the neon light, visible through the air cleaner door/grille, lights. This indicates that the air cleaner is energized and the power supply is producing high voltage. If the light does not come on, refer to Electrical Troubleshooting section. When the fan is stopped, the indicator should go off.

SERVICE



CAUTION

Sharp Edges.

Can cause personal injury.

Handle the cell(s) carefully to avoid cuts from the sharp metal edges.

Cleaning the Electronic Cell(s) and Prefilter

Clean the electronic cell(s) and prefilter regularly every one to six months. Variables such as number of occupants, activities and smoking determine how often cleaning is required. Use the wash reminder schedule in the literature packet to help establish and maintain a regular cleaning schedule.

The cell(s) can be washed in most automatic dishwashers, by soaking in a tub or at a do-it-yourself coin operated car wash. The prefilter can be vacuumed, brushed, sprayed with a garden hose. Do not wash the prefilter in the dishwasher or car wash.

The heating or air conditioning system can be run while the cell(s) is being washed. Simply turn off the air cleaner switch.

Automatic Dishwasher



CAUTION

Burn Hazard.

Can cause personal injury.

Allow the cell(s) to cool in the dishwasher at the end of the wash cycle or wear protective gloves to avoid burns. Hot water can accumulate in the tubes that support the collector plates. Tip the cell(s) so these tubes can drain.

IMPORTANT

- *Check your dishwasher owner manual. Some manufacturers do not recommend washing electronic cells in their dishwashers.*
 - *If the dishwasher has upper and lower arms, position the cell(s) carefully to allow good water circulation.*
 - *Use care to avoid damaging or bending the cell plates when placing them in the dishwasher. If bent, arcing will result.*
 - *Very dirty cells, especially from tobacco or cooking smoke, can discolor the plastic parts and lining of the dishwasher. The 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 cell(s) 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, if provided on the dishwasher.

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 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, let the cell(s) cool completely before removing, or wear protective gloves when removing the cell(s). Remember that water may be trapped in the tubes that support the collector plates. Tip the cell(s) so these tubes can drain.
3. Wipe the ionizer wires and contact board on the end of the cell with a clean cloth.
4. Inspect the dishwasher. You can rerun the wash and/or rinse cycle with the dishwasher empty if you see dirt or residue from washing the cell(s). If dirt or residue seems excessive, wash the cell(s) more often or try a different detergent.
5. Inspect the cell(s) for bent plates; bend back to normal to prevent arcing.

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 cell(s) first, then the prefilter, to keep heavy lint from getting caught in the cell(s).

1. Use a container that is large enough, such as a laundry tub or trash container, to hold one or both cells. Sharp corners on the cell(s) can scratch the surfaces.
2. Dissolve about 3/4 cup of automatic dishwashing detergent per cell in enough hot water to cover the cell(s). 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 cell(s) in the container to soak for 15 to 20 minutes. Agitate up and down a few times, and then remove.
4. Next, wash the prefilter the same way. Empty and rinse the wash container.
5. Rinse the cell(s) and prefilter 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 water draining from the cell(s) and prefilter no longer feels slippery.
6. Wipe the ionizer wires and contact board on the end of the cell with a clean cloth.

Car Wash

Use the hand sprayer at a coin-operated car wash to wash the cell(s). Hold the nozzle at least 2 ft (0.6m) 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 cell(s). Rinse until the water draining from the cell(s) no longer feels slippery.

Reinstalling Cell(s) and Prefilter

1. Inspect the cell(s) for broken ionizer wires and bent collector plates. Repair as necessary.
2. Replace the cell(s) properly. The electrical contact board must face the power supply contacts. The airflow arrows on the cell(s) must point into the air duct. Secure with the latch.
3. Reinstall the prefilter. Turn on the air cleaner.
4. Close the door/grille and fasten it with the two door latches.
5. Turn on the system fan. If the cell(s) and prefilter are wet, you may hear arcing (snapping). If the arcing is annoying, simply turn off the air cleaner for two to three hours, or until cells are dry.

Cleaning the Door/Grille

The door/grille may require washing periodically, though not as frequently as the electronic cell(s) and prefilter. When it appears dirty, it can be vacuumed using the brush attachment on your vacuum cleaner, or disassembled and cleaned by agitating in a solution of mild detergent in warm water.

Replacing Ionizer Wire

Broken or bent ionizer wires can cause a short to ground, often resulting in visible arcing or sparking. Do not use the cell until the pieces of broken wire are removed. It can be used temporarily with one wire missing, but replace the wire as soon as possible. See Parts List section for order number.

Replacement wires are 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. 17. 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.

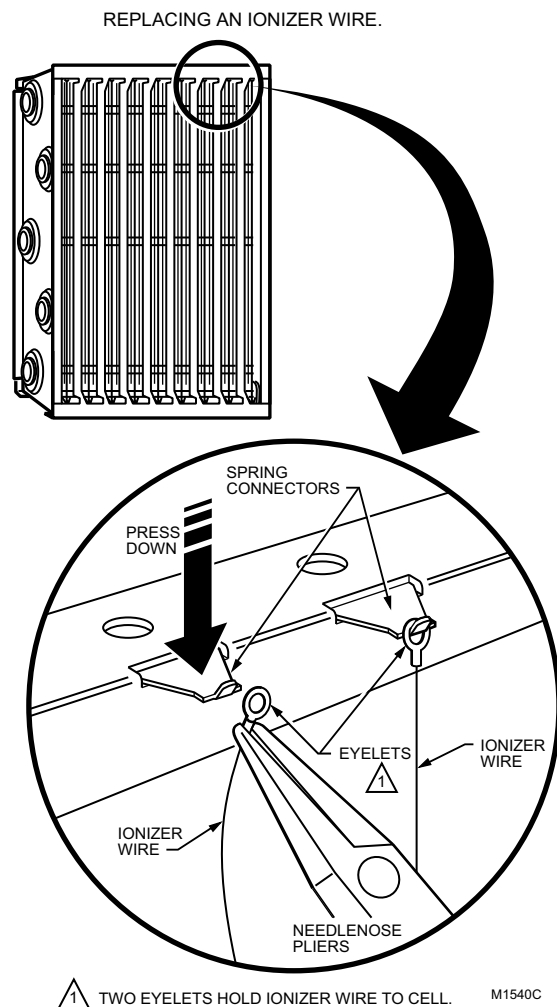


Fig. 13. Install new ionizer wire by hooking eyelets over spring connectors.

ELECTRICAL TROUBLESHOOTING

CAUTION
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.

IMPORTANT
The following instructions are for use by qualified personnel only.

Tools and Equipment

Troubleshooting the electronic air cleaner requires only a couple of tools:

- Needlenose pliers (for stringing ionizer wires).
- Ohmmeter with 25 kVdc probe (Fluke model 80K -40 H.V. or equivalent). See Fig. 21.

Troubleshooting Procedure

CAUTION
Electric Shock Hazard.
Can cause personal injury.

The Electronic Air Cleaner troubleshooting procedures, Fig. 18 and 19, 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 FAULT indicator (on air cleaners with W8600F). The solid state power supply assembly provided in this air cleaner has no field-serviceable components. If troubleshooting indicates a power supply assembly problem, replace the entire power supply assembly. See Parts List section for order number.

Neon Light

The neon light is visible through the door. It is powered by the high voltage portion of the power supply. When on, it indicates that the air cleaner is powered, the power supply is working properly and air is flowing in the system. The neon light will not be on if air is not flowing through the air cleaner.

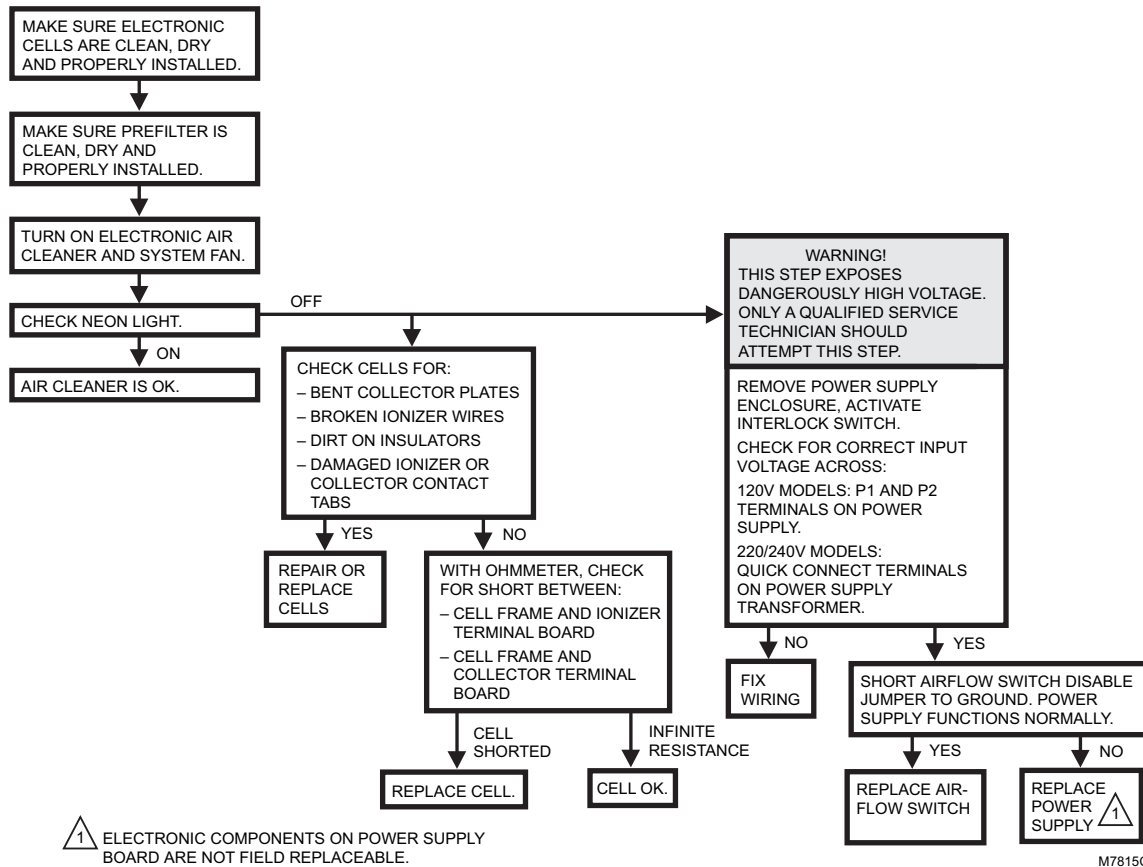


Fig. 14. Electrical troubleshooting procedure for F52F Electronic Air Cleaners without a W8600F.

F52F RETURN GRILLE ELECTRONIC AIR CLEANER

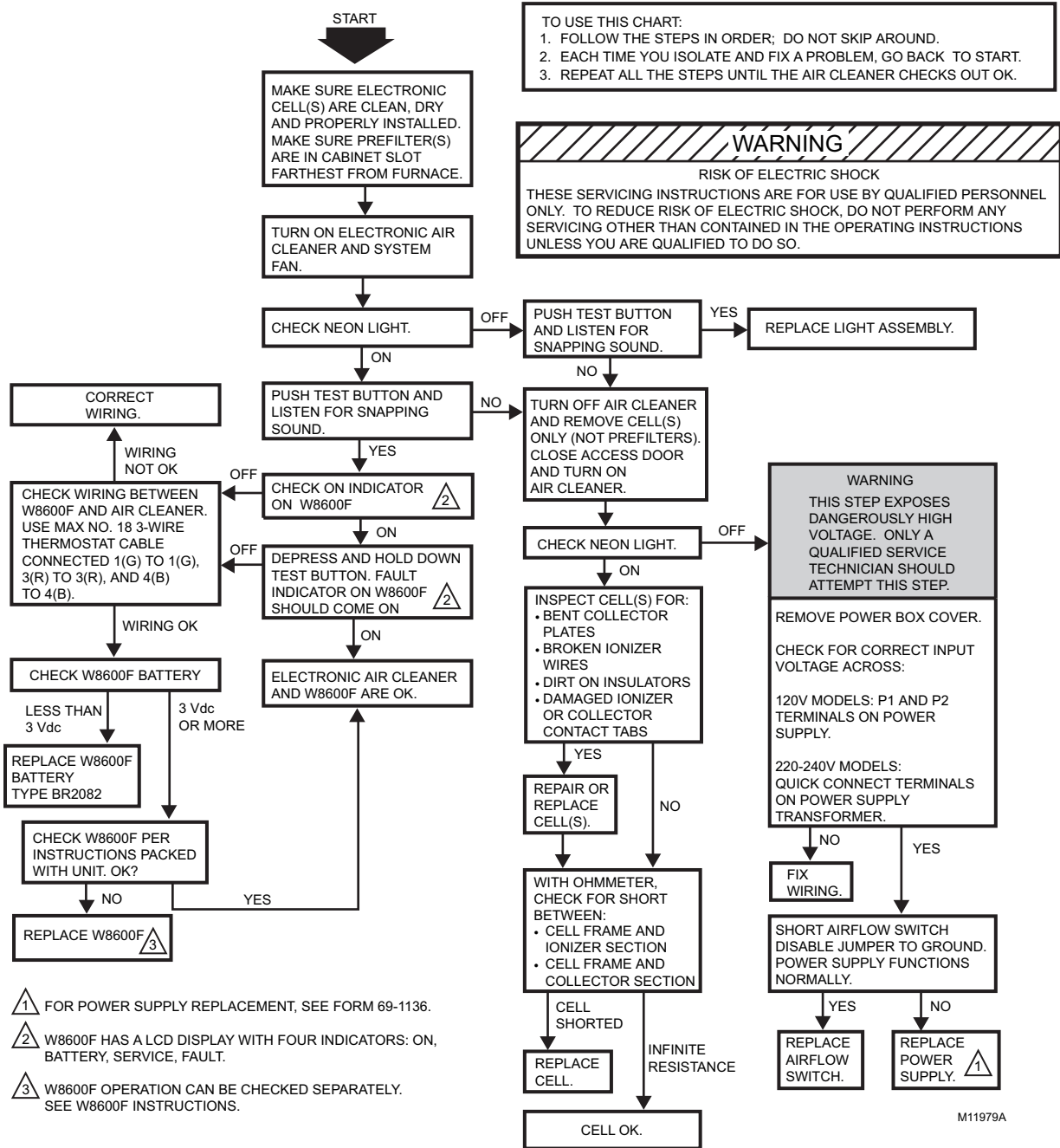


Fig. 15. Electrical troubleshooting procedure for F52F Electronic Air Cleaners with a W8600F.

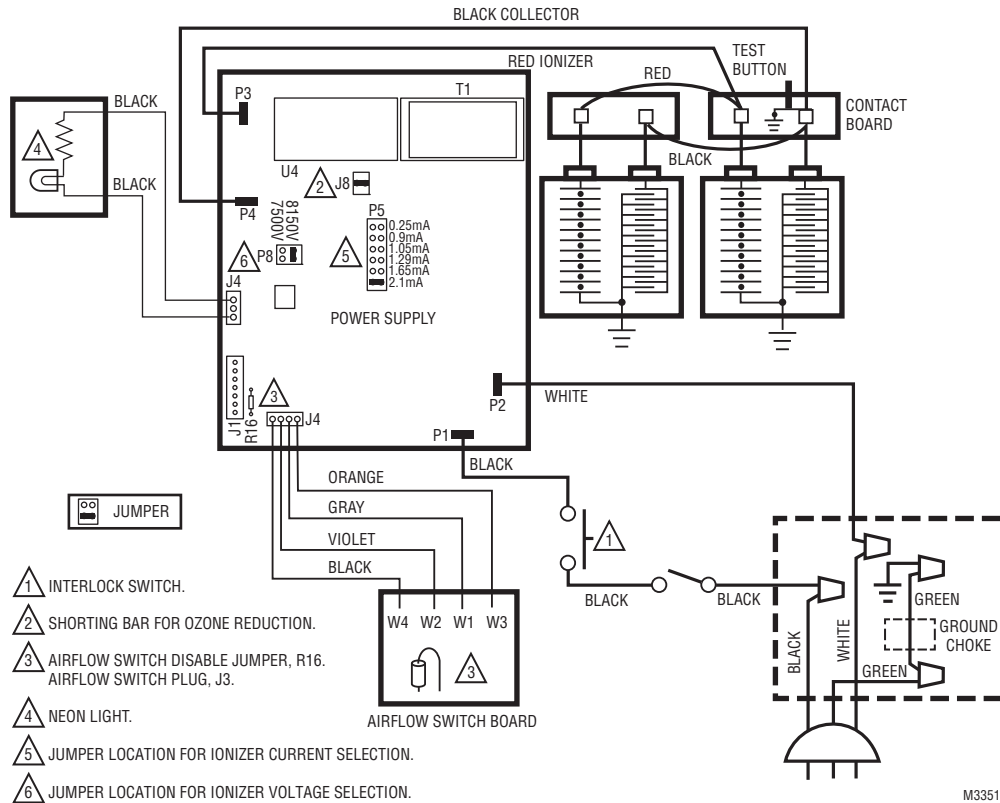


Fig. 16. Schematic for F52F.

Reducing Ozone Odor

CAUTION

Electric Shock Hazard.
Can cause personal injury.

Always disconnect power before working on power supply.

IMPORTANT

Only a trained service technician should perform the following procedure.

The electronic air cleaner generates a small amount of ozone in normal operation. During the first week or two of operation, the amount can 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 as 0.100 ppm.

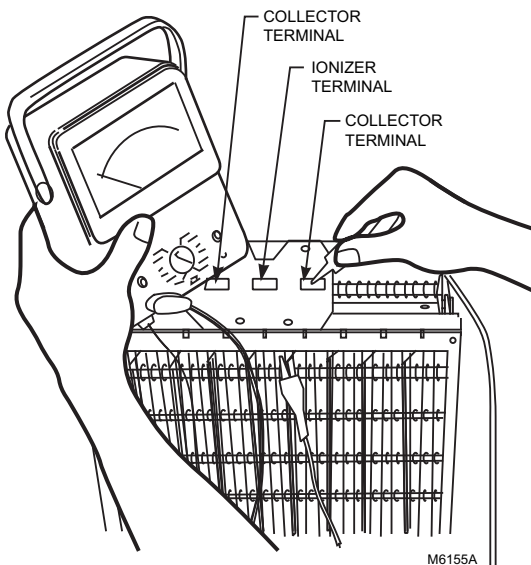


Fig. 17. Use an ohmmeter to check electronic cell(s) for short circuits.

However, if desired, the ozone generated by the air cleaner can be reduced by moving J8 on the power supply. This reduces ozone production about 20 to 25 percent and reduces efficiency about 7 to 10 percent, depending on actual airflow delivered by the furnace blower.

To Reduce Ozone Odor

1. Open the air cleaner door, turn off the power to the air cleaner, and remove the cell(s).
2. Remove the power supply enclosure.
3. Find J8 and move it. See Fig. 18.
4. Replace the power supply enclosure.
5. Replace the cell(s), turn on the power, and close the air cleaner door.

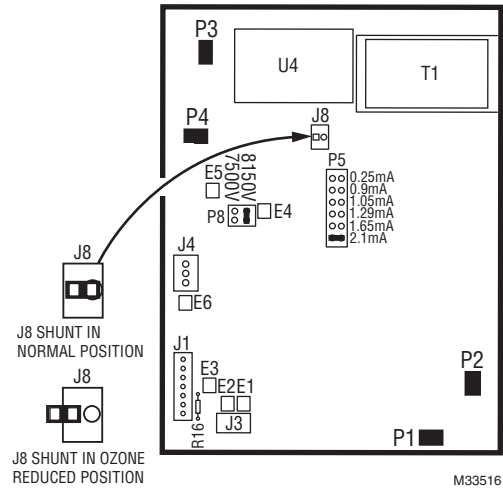
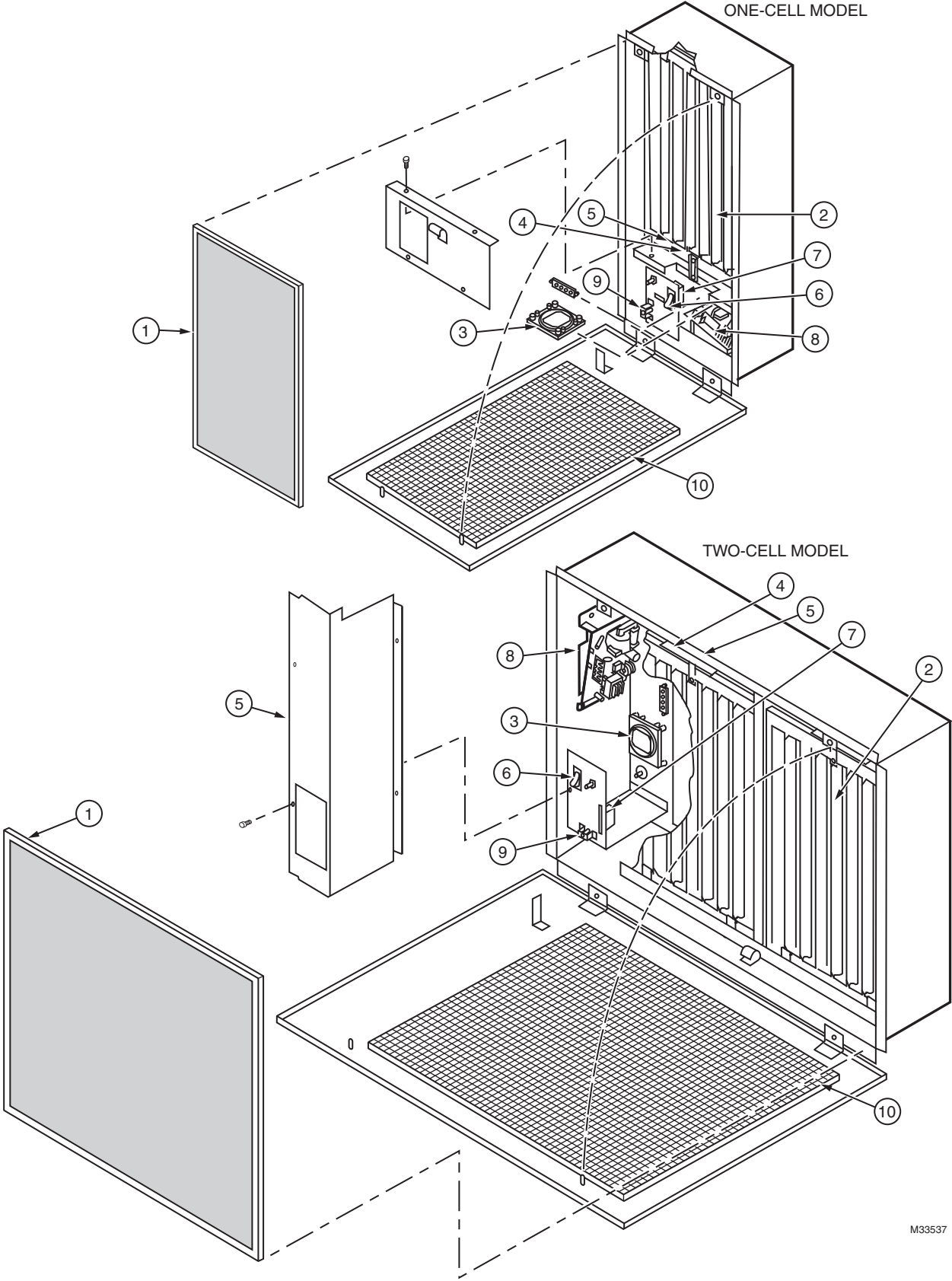


Fig. 18. Move J5 shunting bar to reduce ozone production about 20 to 25 percent.

EXPLODED VIEW



M33537

Fig. 19. F52F part numbers correspond with Parts List.

PARTS LIST

Item Number	Description	Part Number			
		120 Vac Model		220/240 Vac Model	
		1-Cell	2-Cell	1-Cell	2-Cell
1	Prefilter	208536	208537	208536	208537
2	Electronic Cell	FC37A1171	FC37A1171 (2)	FC37A1171	FC37A1171 (2)
3	Air Flow Switch	4074ETH	4074ETH	4074ETH	4074ETH
4	Cell Contact Board	4074EHG	4074EHG (2)	4074EHG	4074EHG (2)
5	Cabinet Contact Board	190912A	190912A (2)	190912A	190912A (2)
6	On/Off Switch	203321	203321	203321	203321
7	Interlock Switch	208543	208543	208544 (2)	208544 (2)
8	Power Supply	PS1201C00	PS1201C00	PS2401C00	PS2401C00
9	Neon Lamp Assembly	4074ETE	4074ETE	4074ETE	4074ETE

Parts and Accessories Not Illustrated

Description	Part Number	
	120 Vac Model	220/240 Vac Model
Cell Handle	137266	137266
Ionizer Wires (Must be ordered in multiples of 5.)	136434AA (9/cell)	136434AA (9/cell)

Automation and Control Solutions

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