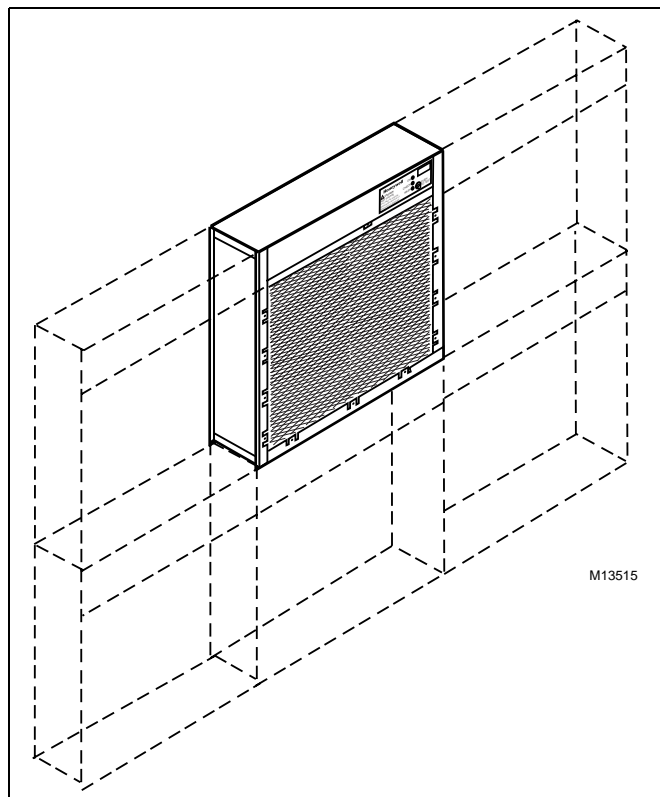


## F58G Commercial Duct Mounted Electronic Air Cleaner

### PRODUCT DATA



### FEATURES

- Capacity to 2000 cfm (3400 m<sup>3</sup>/hr) per unit.
- Multiple units may be interconnected to form an array of air cleaners.
- Solid-state power supply is self-regulating and maintains peak efficiency during a wide range of cell dirt-loading conditions.
- Indicator lights signal proper operation and fault conditions.
- May be connected to a building management system.
- Relay closure occurs when fault occurs or when cells need cleaning
- Galvanized cabinet protects against rust.
- Test button checks system operation.
- Pre-filter screen protects cells from large dirt particles.

### APPLICATION

The high-efficiency F58G Commercial Electronic Air Cleaner is mounted to the return air plenum of a forced-air heating, cooling, or ventilating system. It captures a significant amount of airborne particles 0.3 micron and larger from the air circulated through it.

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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. 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:**

F58G1008 Commercial Electronic Air Cleaner: Includes cabinet, solid state power supply, two electronic cells and pre-filter, ON and CHECK indication and building management system interface.

F58G1016 Commercial Electronic Air Cleaner: Includes cabinet, solid state power supply, two electronic cells and pre-filter, ON, CHECK, and WASH indication and building management system interface.

### **Electrical Ratings:**

Voltage and Frequency: 220/240V, 50 Hz.

Power Consumption: 36W maximum.

Current Draw: 0.2A at 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: -40°F to +140°F (-40°C to +60°C).

### **Mounting:**

Mounts into the return air plenum of a forced air heating cooling, or ventilating system. See Planning the Installation section.

### **Weight:**

Electronic Cell (each): 9-3/16 lb (4.2 kg).

Shipping Weight: 42 lb (19.1 kg).

Installed Weight (Cells Included): 37 lb (16.8 kg).

**Dimensions:** See Fig. 2.

### **Accessories:**

202614 Carbon Filter.

13643AA Ionizer Wires (quantity 5).

**Repair Parts:** See Parts List section.

## ORDERING INFORMATION

When purchasing Commercial Air Cleaners or replacement parts, contact your Honeywell Commercial Air Cleaner Distributor (check white pages of your phone directory).

If you have additional questions, need further information, or would like to comment on our products or services, please write or phone:

Home and Building Control Customer Response Center

Commercial Air Products

Honeywell Inc., 1885 Douglas Drive North

Minneapolis, Minnesota 55422-4386 (800) 345-6770, ext. 788.

In Canada—Honeywell Limited/Honeywell Limitée, 155 Gordon Baker Road, North York, Ontario M2H 3N7.

International Sales and Service Offices in all principal cities of the world. Manufacturing in Australia, Canada, Finland, France, Germany, Japan, Mexico, Netherlands, Spain, Taiwan, United Kingdom, U.S.A.

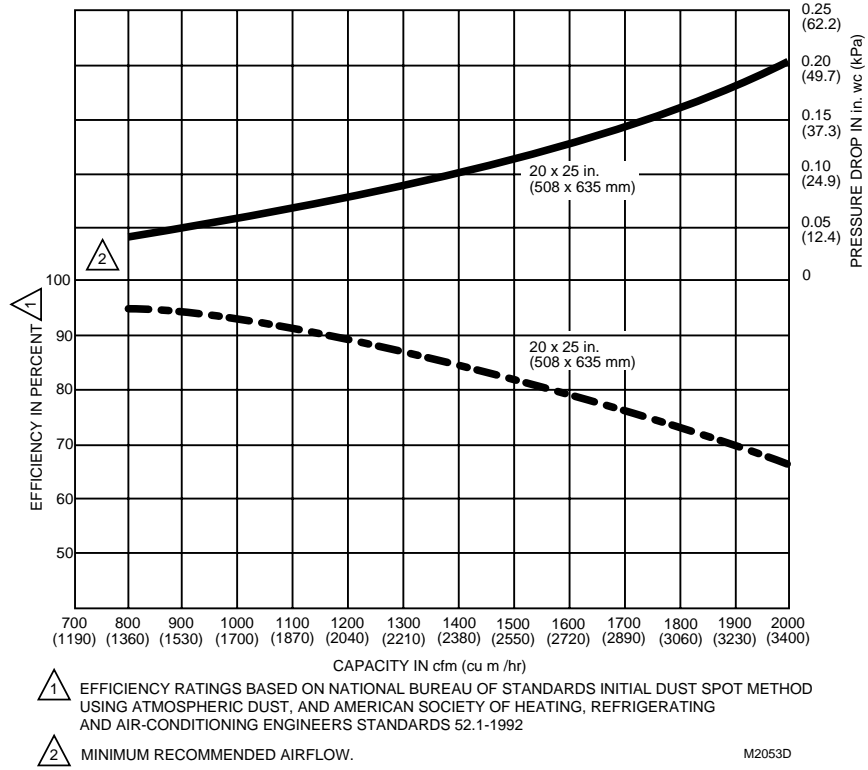


Fig. 1. Air cleaner efficiency and pressure drop at various airflow rates.

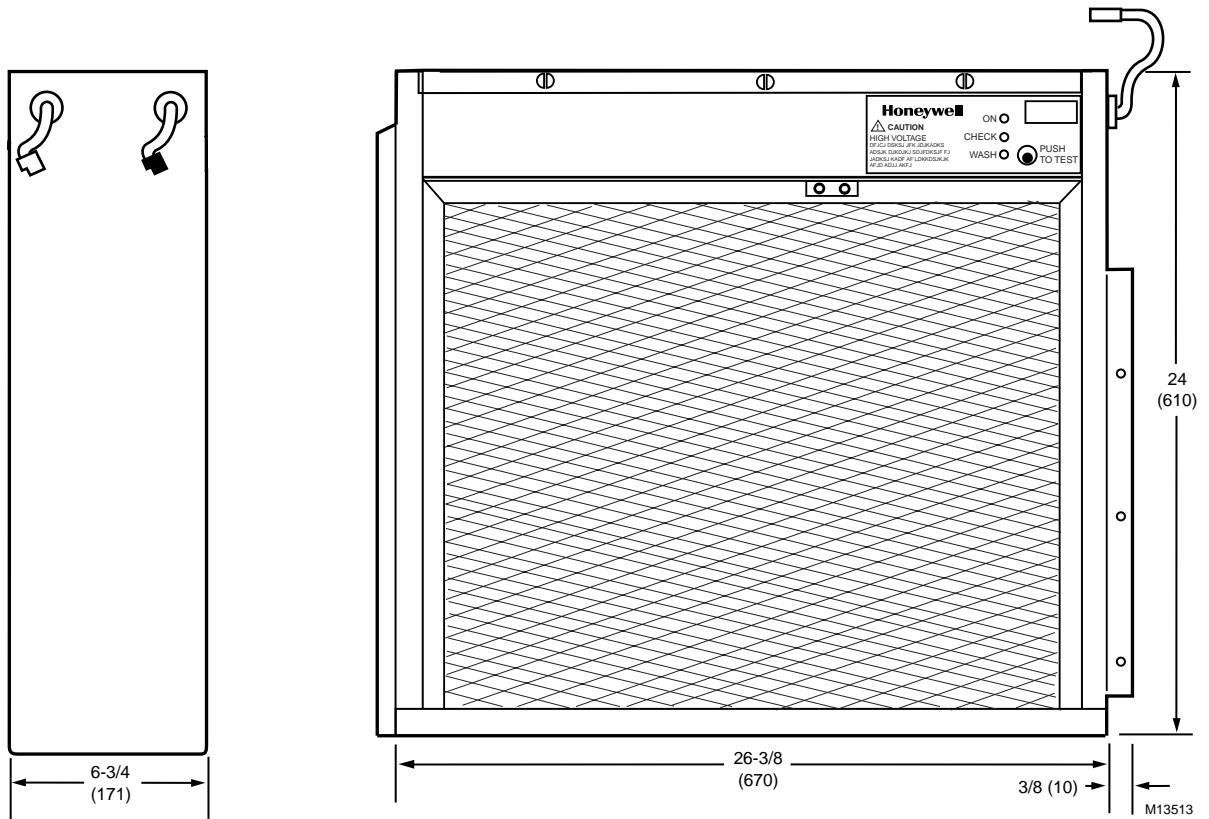


Fig. 2. Installation dimensions of electronic air cleaner in in. (mm).

## PLANNING THE INSTALLATION

### Application

The F58G is used in a forced air heating, cooling, or ventilating system. It removes airborne particles from the air circulated through it. It provides a relay contact that can be connected to a building management system to provide remote status indication. It is recommended that only one unit with WASH indication be installed in each array of units.

#### IMPORTANT

*Do not mount air cleaner 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 array, gradual transitions are recommended.

### 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 are thoroughly mixed.
- Adding baffles upstream from the air cleaner to force thorough air mixing.
- Installing a preheater if large amounts of outdoor air are used. (Control the preheater with a thermostat. Protect the hot water or steam coils with a freeze-up control.)

### Choosing Mounting Position

#### WARNING

**Heavy Equipment Hazard.**

**Can cause injury or equipment damage.**

Mount the air cleaner with the power supply on top. Do not mount the air cleaner with the pre-filter facing down; the latches may not hold and the cell and pre-filter can fall unexpectedly.

Multiple electronic air cleaner installations are needed for many commercial systems. F58G air cleaners can be mounted side-to-side, and stacked in rows. Carefully plan the number of air cleaners and positions before beginning installation. To visualize the installation plan, temporarily arrange the desired number of air cleaners on the floor. Consider the total dimensions, clearance, and accessibility of all air cleaners before selecting a location.

### Constructing F58G Array

The F58G side flanges are designed so a row of units can be easily constructed with up to six units per row. Units should be attached using eight no. 8X 1/4-in. sheet metal screws on each side panel.

Before attaching the adjacent units, plug the wiring connectors together. In addition, multiple rows of units can be stacked to build an array to the size required for the application. Attach upper rows to the rows beneath using four no. 8 x 1/4-in. sheet metal screws per unit in the holes provided.

### Constructing Array Support Structure

#### WARNING

**Construction Collapse Hazard.**

**Can cause personal injury or equipment damage.** Provide adequate structural support to prevent array collapse.

Support each unit with external structural elements across both top and bottom and add cross supports, as needed.

Provide adequate array support to prevent collapse:

- Provide minimum of external structural support across the top and bottom of each unit.
- Provide cross supports, as needed.

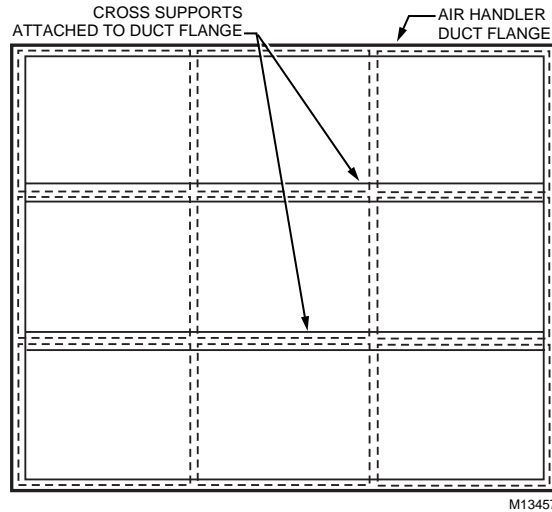


Fig. 3. Array support structure.

### Determining Duct Design Requirements

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

Use transitions when the duct opening is a different size than the air cleaner array. Gradual transitions reduce air turbulence and increase efficiency. See Fig. 4. Limit the duct change to no more than 20 degrees or four inches per linear foot (one meter per three linear meters).

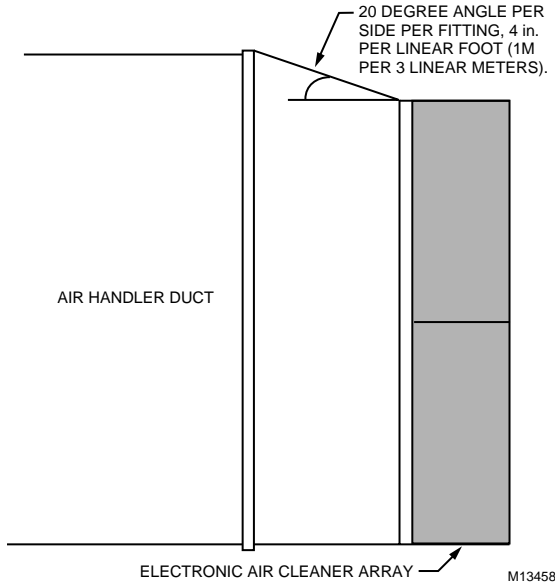


Fig. 4. Changing duct size gradually to minimize turbulence.

## 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.

### Unpacking Electronic Air Cleaner

The electronic air cleaner is shipped assembled. Check that all components are included:

- Galvanized steel cabinet with integral power supply.
- Two electronic cells.
- Pre-filter.
- Two cell handles.
- Literature package.

### Fastening Cabinet to Air Handler Duct Flange

- Remove and set aside the pre-filter and electronic cells.
- Assemble the array of air cleaner units in the required size according to the Constructing F58G Array section.
- Install a transition to the air handler duct if the opening is different than the opening of the air cleaner array (see Fig. 4).
- Move the completed array into place against the air handler duct flange.
- Attach the air cleaner cabinets securely using no. 8 sheet metal screws or rivets.

### Attaching Cell Handles

The cell handle can be installed on either side of the cell:

1. Hold the handle while inserting 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. 5.

#### INSTALL HANDLE ON END OF CELL CLOSEST TO ACCESS DOOR

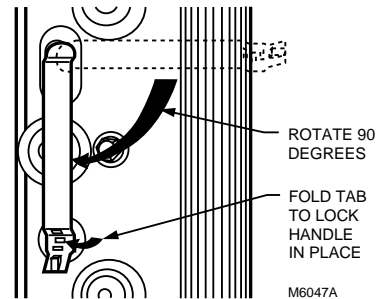


Fig. 5. Installing cell handle.

2. Insert the divided tab into the square hole.
3. 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.

### Reassembling Air Cleaner

- Insert the electronic cell with the contact board up and the air flow arrow pointing downstream.
- Tilt the cell toward you and insert the bottom of the cell first.
- Rotate the top of the cell back into position under the spring contacts.
- If the cell does not seat properly, check the orientation of the airflow arrow on the cell.
- Assemble the pre-filter to the front of the unit by first inserting the lower portion of the pre-filter into the slot at the bottom of the cabinet.
- Rotate the pre-filter back into position. When properly installed, the actuator on the pre-filter is inserted into the wiring tray of the air cleaner.
- Rotate the latch to secure the pre-filter in place.

## WIRING

### **⚠ WARNING**

**Electric Shock Hazard.  
Can cause personal injury.**

Be sure line voltage power source is the same as the voltage and frequency listed on the air cleaner label.

- Assure all wiring complies with local codes and ordinances.
- Wire the electronic air cleaner directly to the correct voltage and frequency electrical source. See Fig. 6.
- Install extension box, with cover, for all external plugs and wiring connections.

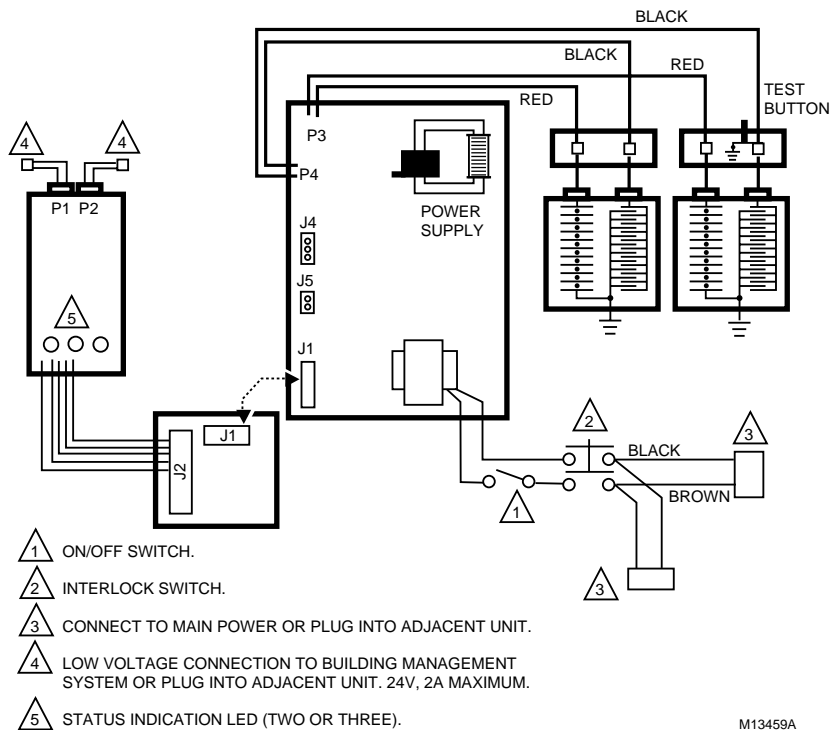
#### Power Connections:

1. Decide which end of the installed array is most accessible for wiring.
2. Cut off the plastic connector for each row of air cleaners on the end selected.

3. Install a 2 in. x 4 in. extension box (for example, Steel City part number 53171) to the end of each row of air cleaners using the holes provided.
4. Connect power and ground leads to each row of air cleaners.
5. Install cover (Steel City part number 52-C-1) on each box.
6. Install box and cover over power connector on opposite end of each row.

#### Connection to Building Management System:

1. Decide which end of the installed array is most accessible for wiring.
2. Cut off the plastic connector for each row of air cleaners on the end selected.
3. Install a 2 in. x 4 in. extension box to the end of each row of air cleaners (Steel City part number 59361).
4. Connect each row in parallel to the building management system.
5. Install cover on each box (Steel City part number 58-C-1).



**Fig. 6. Internal schematic for F58G Electronic Air Cleaner.**

## OPERATION

Large particles (lint and hair) are caught in the pre-filter. 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 that have the opposite electrical charge. The air leaving the air cleaner has fewer particles. Each time the air circulates through the F58, more particles are removed.

## CHECKOUT

### Inspecting Installation

Make sure:

- Sheet metal joints between air cleaner and duct are sealed.
- All sheet metal connections are complete.
- Outside air, if used, is mixed with return air or heated, as necessary, before it can reach the air cleaner.
- Airflow arrows on the electronic cell point downstream.
- Electronic cell and pre-filter are clean and dry.

## Checking Air Cleaner Operation

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

1. ON indicator is lit. CHECK indicator comes on if there is a problem with the high voltage power supply.
2. With the air cleaner energized, push the Test button. A snapping sound indicates that the collector voltage is present on the cell. CHECK indicator comes on when the Test button is held down.
3. If operation is not as described, refer to the Troubleshooting section.

## SERVICE



### CAUTION

**Sharp Edges.**

**Can cause personal injury.**

Wear protective gloves to prevent cuts from sharp metal edges.

## Cleaning Cells and Pre-filters

To assure optimum performance from the air cleaner, the cells and pre-filters must be cleaned regularly, every one to six months. WASH indicator on some models lights to indicate it is time to wash the pre-filters and cells.

### IMPORTANT

*Do not wash the pre-filter in an automatic dishwasher. Vacuum or brush the pre-filter or soak it in a tub.*

## Cleaning Cells in Automatic Dishwasher



### CAUTION

**Burn Hazard.**

**Can cause personal injury.**

Hot water can accumulate in tubes supporting collector plates; tip cells to drain water from tubes.

Allow cells to cool completely in dishwasher at end of wash cycle or wear protective gloves to avoid burns.

### IMPORTANT

- Check your dishwasher Owner's Guide. Some manufacturers do not recommend washing electronic cells in their dishwasher.
- If your 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 included in the Warranty.
- Very dirty cells can discolor the plastic parts and lining of some dishwashers. This discoloration is not harmful. To minimize it, wash the cells more frequently or try a different brand of dishwasher detergent.
- Do not allow the dishwasher to run through the dry cycle. This bakes on any contaminants not removed during the wash cycle and reduces air cleaner efficiency.

To clean cells in dishwasher:

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 may be accumulated inside the cells. Tip the cells so the tubes can drain.
3. Wipe the ionizer wires and contact board on the end of the cell using your thumb and forefinger with a small, damp cloth.
4. Inspect the dishwasher. Rerun the wash and/or rinse cycle with the dishwasher empty if 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 Cells in Container



### CAUTION

**Hazardous Chemical.**

**Can cause personal injury.**

Do not splash the detergent solution in eyes.

Wear rubber gloves to avoid prolonged contact with detergent on skin.

Keep detergent and solution out of reach of children.

NOTE: Always wash cells first before pre-filters to keep heavy pre-filter lint from getting caught in cells.

1. Use large enough container to hold one or both cells.
2. Dissolve about 3/4 cup of automatic dishwasher detergent per cell in enough hot water to cover the cells. If detergent does not dissolve readily, or forms scum on the water, try another brand, or use softened water.
3. After detergent is completely dissolved, place cells in container and let soak for approximately 15 minutes. Agitate up and down a few times and remove. See Fig. 7.

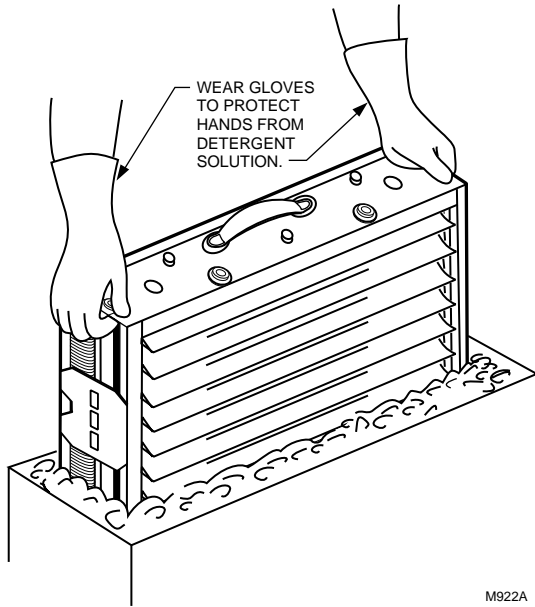


Fig. 7. Washing cells in container.

4. Wash the pre-filters following step 3. Empty and rinse the wash container.
5. Rinse the cells and pre-filters 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 pre-filters no longer feels slippery.
6. Soak cells and pre-filters in a final clear water rinse for ten 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.

**Reinstalling Cells and Pre-filters**

- Insert the electronic cell with the contact board up and the air flow arrow pointing downstream.
- Tilt the cell toward you and insert the bottom of the cell first.
- Rotate the top of the cell back into position under the spring contacts.
- If the cell does not seat properly, check the orientation of the airflow arrow on the cell.
- Assemble the pre-filter to the front of the unit by first inserting the lower portion of the pre-filter into the slot at the bottom of the cabinet.
- Rotate the pre-filter back into position. When properly installed, the actuator on the pre-filter is inserted into the wiring tray of the air cleaner.
- Rotate the latch to secure the pre-filter in place.

The CHECK indicator may activate when the cells and pre-filters are wet. To disable the CHECK indication, simply turn off the air cleaner for two to three hours or until the cells and pre-filters 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. To install:

1. Hook eyelet on one end of wire over spring connector on one end of cell. See Fig. 8. Be careful to avoid damaging spring connector or another cell part.
2. Hold opposite eyelet with needlenose pliers and stretch wire the length of the cell. Depress the opposite spring connector and hook the eyelet over it. See Fig. 8
3. Check the cell for short circuits using an ohmmeter. Check the resistance between cell frame and both the ionizer and the collector contacts. Verify the resistance is infinite for each. See Fig. 9

REPLACING AN IONIZER WIRE.

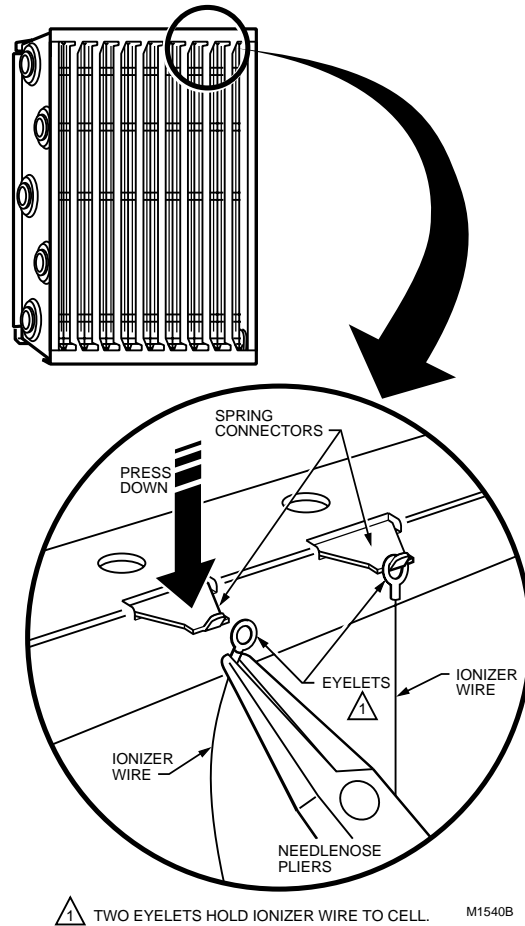


Fig. 8. Replacing ionizer wire.



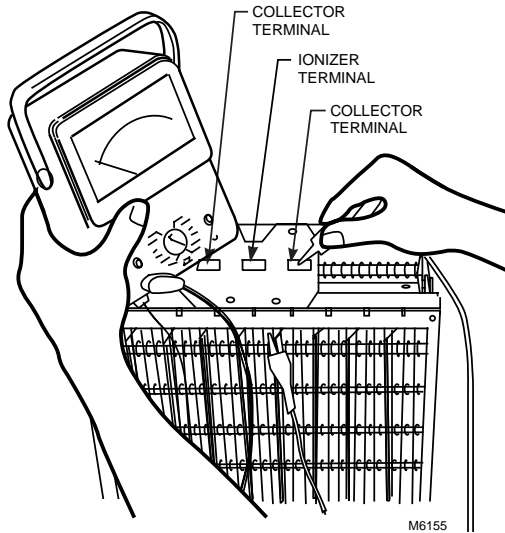


Fig. 9. Using ohmmeter to check electronic cells for short circuits.

### Reducing Ozone Odor Modification

#### **⚠ WARNING**

**Electric Shock Hazard.**  
**Can cause personal injury.**  
 Disconnect power 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 quickly dulls these edges.

The average person can detect the odor of ozone in concentrations as low as 0.0003 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 US 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 over 0.100 ppm. To reduce the ozone generated by the air cleaner:

1. Install 202614 Carbon Filters (sold separately).
  - a. Turn the air cleaner power switch to the OFF position.
  - b. Remove the pre-filter and two electronic cells.
  - c. Install carbon filters in the rear of the air cleaner cabinet. First insert the bottom of the carbon filter into the rear channel; then rotate the top of the carbon filter back to snap it into place under the upper clip.
  - d. Replace electronic cells and pre-filter.

#### **⚠ WARNING**

**Electric Shock Hazard.**  
**Can cause personal injury.**  
 Only a trained service technician should perform the following procedure.

2. Ozone production may be reduced by about 20 to 25 percent by moving the J5 Jumper on the power supply. Particle collection efficiency can also be reduced by about seven to ten percent.
  - a. Disconnect power to the air cleaner.
  - b. Remove the pre-filter and two electronic cells.
  - c. Remove three screws from the power supply tray along the top of the air cleaner.
  - d. Lower the front edge of the power supply tray to expose the power supply.
  - e. Locate the J5 shorting bar on the power supply. See Fig. 10. Remove the shorting bar and reinstall on only one pin. Ozone will be reduced and the shorting bar will be available for reinstallation, if needed.
  - f. Raise the front edge of the power supply tray and reinstall the three screws.
  - g. Replace electronic cells and pre-filter.
  - h. Turn on the power and repeat the Check Air Cleaner Operation procedure in the Checkout section.

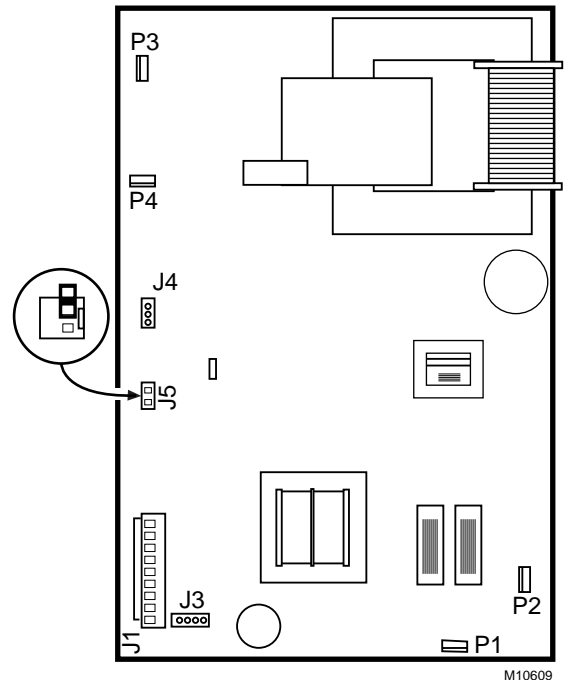


Fig. 10. Moving J5 shorting bar to reduce ozone production about 20 to 25 percent.

### ELECTRICAL TROUBLESHOOTING

#### **⚠ WARNING**

**Electric Shock Hazard.**  
**Can cause personal injury or equipment damage.**  
 The following procedures expose hazardous live parts and are for use only by qualified personnel. Disconnect power between checks and proceed carefully.

## Tools and Equipment

Troubleshooting the electronic air cleaner requires:

- Needlenose pliers for stringing ionizer wires and inserting edge connectors.
- Ohmmeter.

## 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. The CHECK indicator activates when the Test button is held down.

## CHECK Indicator

The CHECK indicator activates to indicate the following problems:

- Excessive dirt loading.
- Partial shorting of collector.
- Continuous ionizer or collector arcing.
- Power supply failure.

- Excessive ionizer current.
- Any condition causing a major reduction in high voltage.

## Power Supply

### ⚠ WARNING

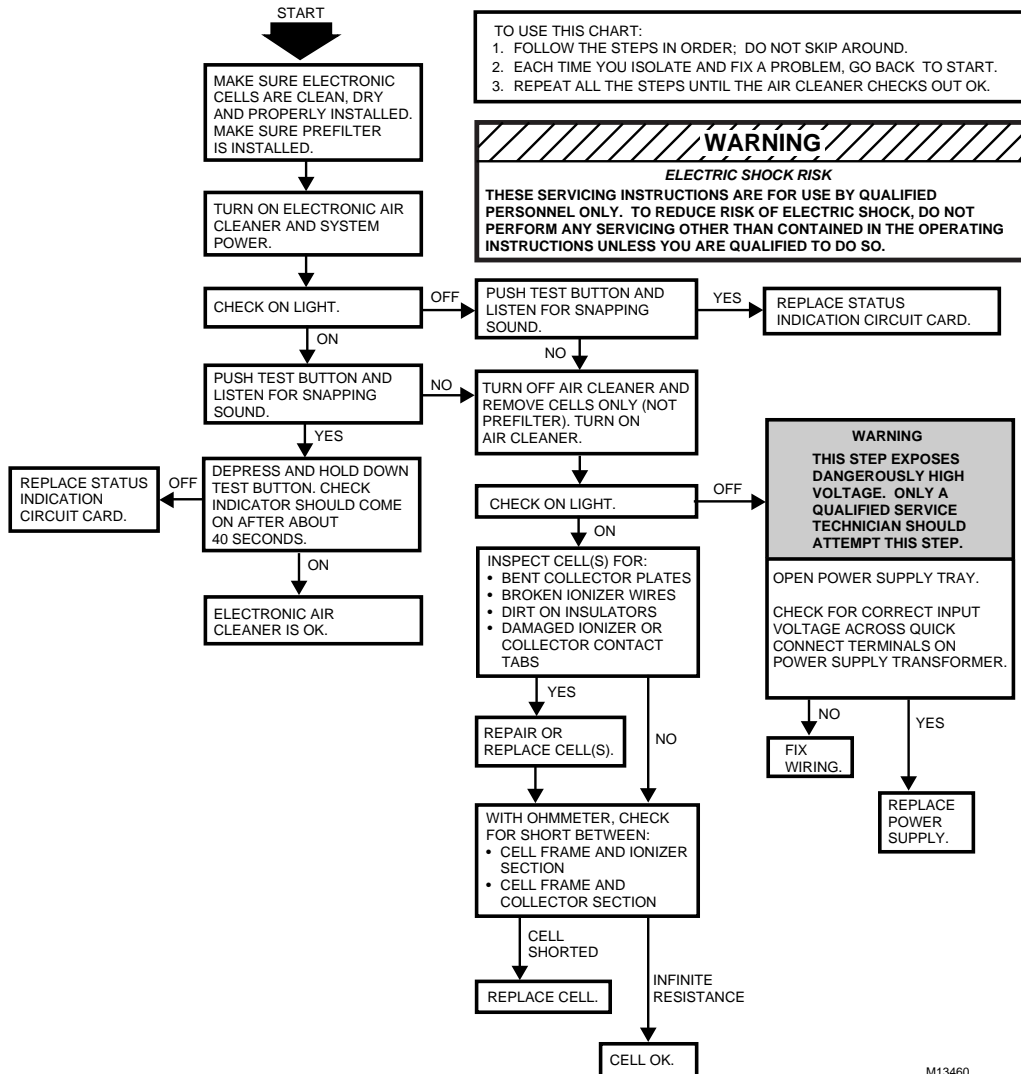
**Electric Shock Hazard.**  
**Can cause personal injury.**

Turn off power before accessing the power supply.

The solid state power supply can be replaced when troubleshooting indicates a problem.

## Troubleshooting Procedure

The electronic air cleaner troubleshooting diagram shows how to quickly isolate a problem in the air cleaner. Although an ohmmeter is needed in some steps, the primary diagnostic tools are the status indicators and the Test button. See Fig. 11.



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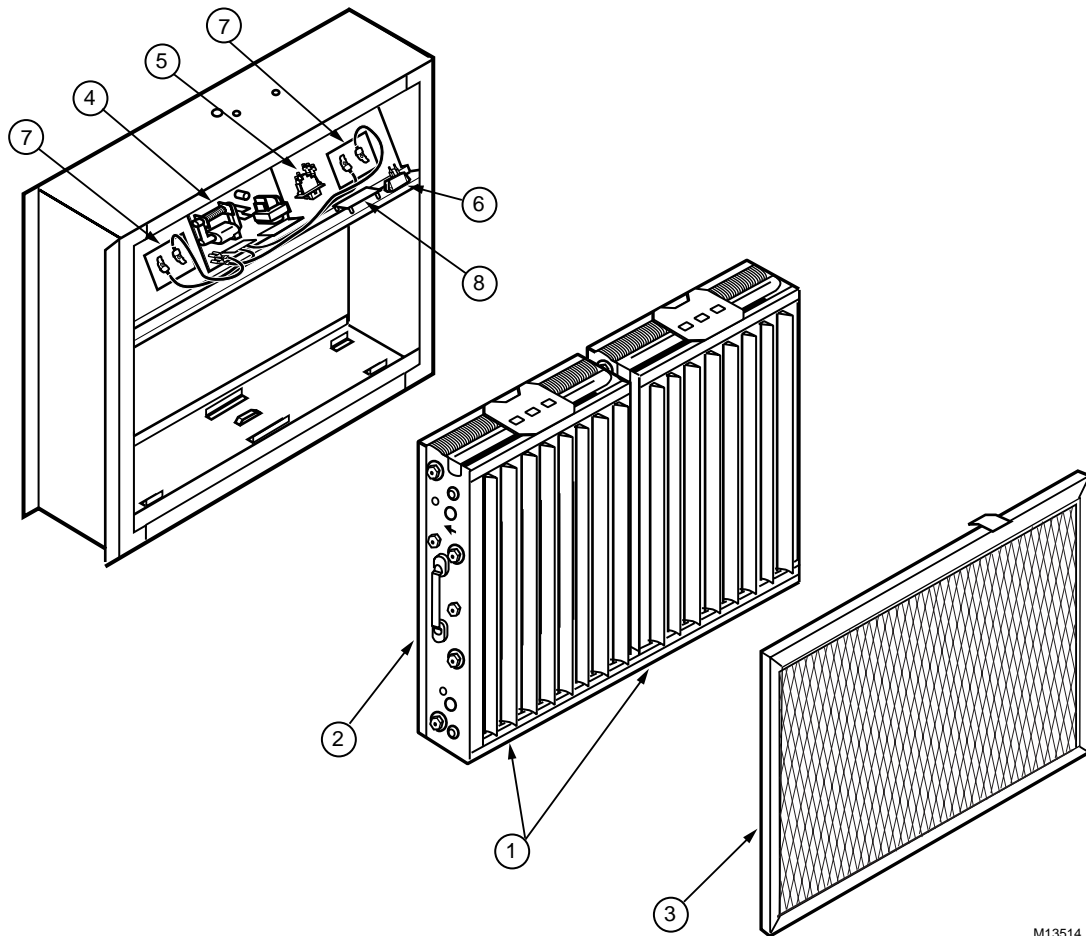
Fig. 11. Troubleshooting the F58G.

# PARTS LIST (TABLE 1)

See Fig. 12 for diagram.

Table 1. F58G Parts List.

Fig. 12 Reference No.	Description	Part Number
1	Electronic Cell	FC37A1064 (2)
2	Cell Handle	137266 (2)
3	Prefilter Assembly	32003891-001
4	Power Supply, 220/240 Vac, 50/60 Hz	208416AG
5	Interlock Switch	196277
6	Power Switch	203321
7	Contact Board Assembly	32003893-001 (2)
8	Building Management Interface Circuit Board with ON and CHECK functions with ON, CHECK, and WASH functions	32003890-001 32003890-002
<b>Optional Accessories (not shown)</b>		
	Ionizer Wires (Quantity 5)	136434AA
	Carbon Filter	202614



M13514

Fig. 12. F58G Electronic Air Cleaner components.

**Home and Building Control**

Honeywell Inc.  
Honeywell Plaza  
P.O. Box 524  
Minneapolis, MN 55408-0524

**Honeywell Latin American Region**

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Sunrise FL 33325

**Home and Building Control**

Honeywell Limited-Honeywell Limitée  
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North York, Ontario  
M2H 3N7

**Honeywell Europe S.A.**

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1140 Brussels  
Belgium

**Honeywell Asia Pacific Inc.**

Room 3213-3225  
Sun Hung Kai Centre  
No. 30 Harbour Road  
Wanchai  
Hong Kong

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**Honeywell**