18-HE17D7-4

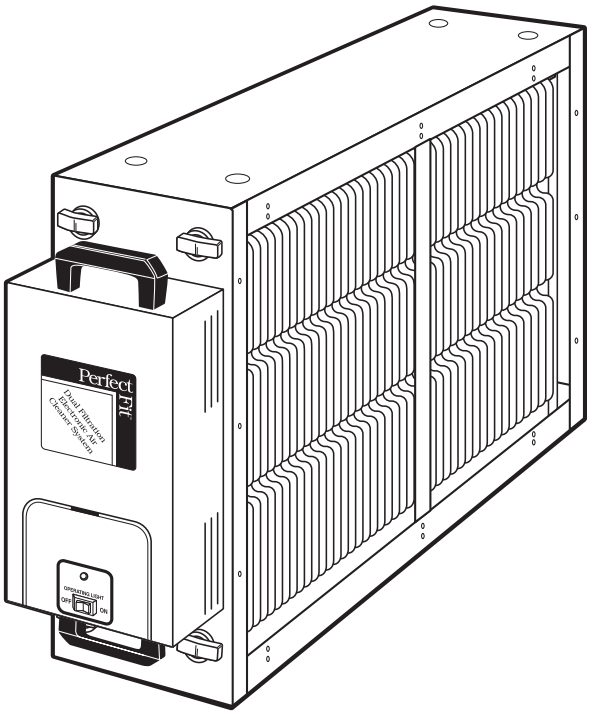
Installation Operation Maintenance

Electronic Air Cleaner

Furnace Only Models	*Air Handler Only Models*
TFE145A9FR0	**TFE215A1AH0, A9AH0**
TFE175A9FR0	**TFE235A1AH0, A9AH0**
TFE210A9FR0	**TFE260A1AH0, A9AH0**
TFE245A9FR0	

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

IMPORTANT — This Document is **customer property** and is to remain with this unit.
Please return to service information pack upon completion of work.



Contents

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

⚠ WARNING

This information is for use by individuals having adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

COMPONENTS OF THE AIR CLEANER

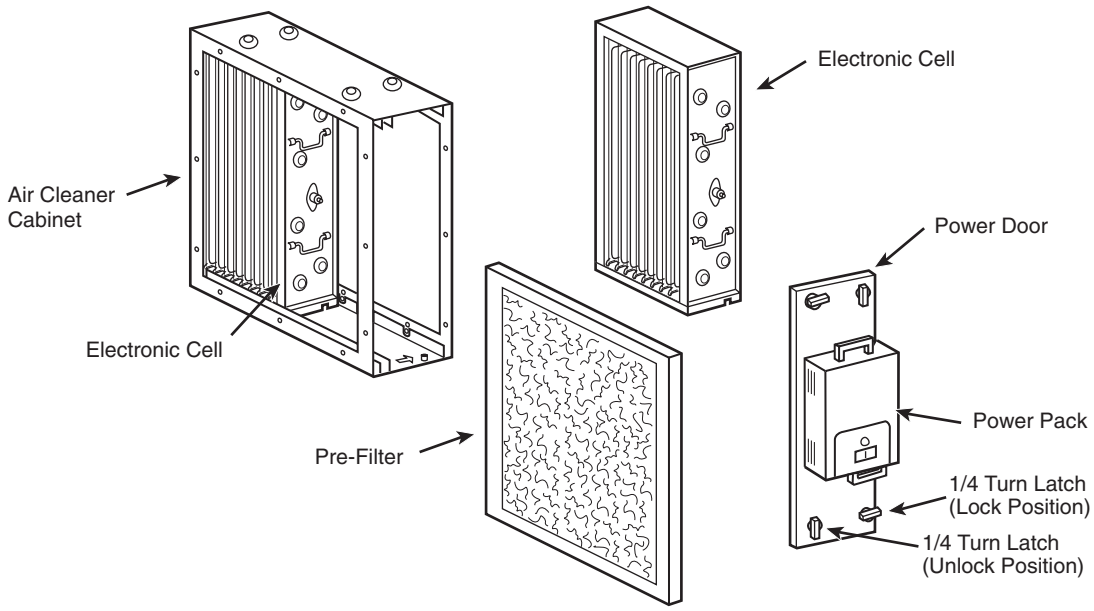


Figure 1. Electronic Air Cleaner Cabinet with 1" Pre-Filter

Cabinet - mounts between the furnace/air handler and return air duct work and houses the collecting cells and pre-filter.

Pre-filter - traps large particles such as hair and lint before they can enter the cell section.

Electronic Collecting Cell - performs the actual collecting of dust, dirt, and other impurities from the air. It contains the ionizing and collection sections.

Each cell must be installed with the ionizing wires on the entering air side. Each cell must be oriented with the handles and contact button toward the front.

Power Door - contains operating light, as well as the solid state power supply components that convert the supplied line voltage to the high-voltage, direct current required for the collecting cell. Also allows access to the electronic cells and pre-filter.

INSTALLATION

LOCATION

This air cleaner cabinet must be mounted in the return air duct on the entering air side of a central forced-air furnace/air handler. (See Figure 2 for example.)

Select a location that meets the following:

1. The face of the cell must be at a right angle to the air stream.
2. Allow a minimum of 28 inches clearance in front of the air cleaner to permit removal of cells and pre-filter.
3. Atomizing spray type humidifiers, when used, must be installed totally downstream away from the filter.

NOTE: Do not install the air filter in the discharge air stream of either the heating or cooling unit.

4. The air cleaner is designed for single-direction air flow. Install the air cleaner such that the arrow always points towards the furnace/air handler. (See Fig. 3.)
5. The pre-filter must be on the entering airstream side of the air cleaner cabinet (the same side as ionizing wires). The mounting flange on this side of the cabinet has the single row of holes for attaching ductwork.

NOTE:
On Upflow <u>furnace only</u> applications, the air cleaner may be installed on either side of the cabinet. See Figure 2. If necessary, turn the air cleaner cabinet upside down for proper air flow direction . This will reposition the pre-filter on the side away from the furnace. The cell guide key (see Figure 3) installed in the cabinet will allow the cells to be installed in only the proper direction. Air flow direction must agree with arrows embossed on the end of collecting cells and cabinet.

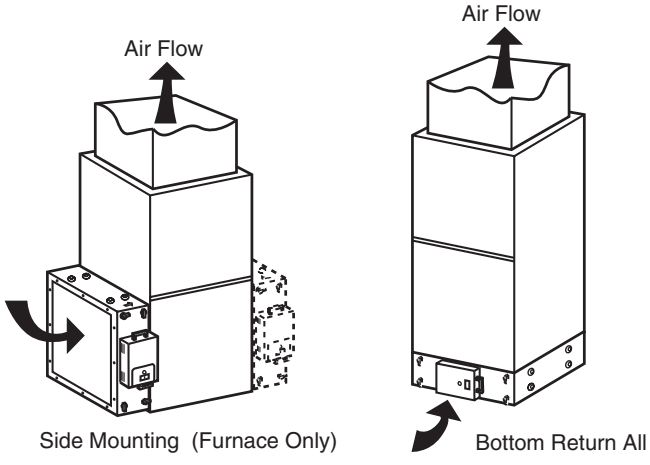


Figure 2. Mounting Location of Air Cleaner

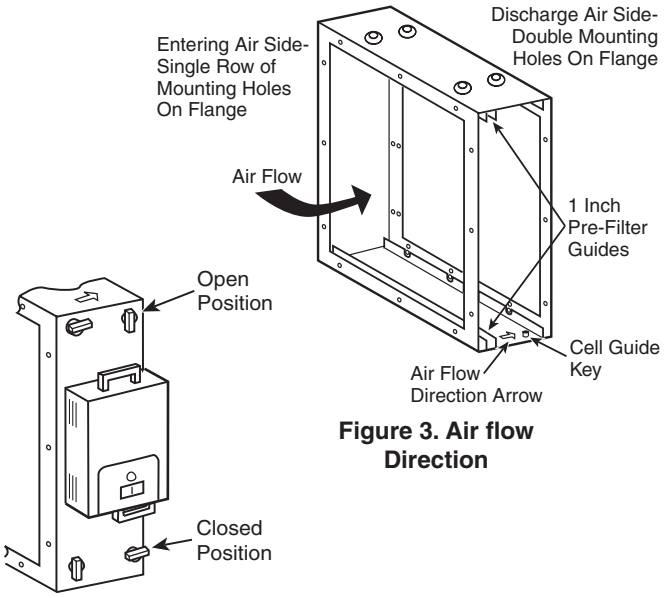


Figure 3. Air flow Direction

Figure 4. Power Door

SIDE MOUNT - (Upflow model furnace only) (14" and 17.5" Air Cleaner Cabinet Height)

NOTE: The 21" and 24 1/2" Air Cleaner Cabinet Heights require a transition between the air cleaner cabinet and furnace.

NOTE: Do not install the air cleaner cabinet on the side of an air handler.

1. Rotate the four quarter turn latches on the power door inward to remove the power door from the cabinet (see Fig. 4) and set it aside. Remove the collecting cells and pre-filter, and set aside until the cabinet is installed.
2. Lay the furnace on a protective pad on the floor with the surface on which the air cleaner cabinet will be installed in the up position.

NOTE: This allows maximum downward force to be exerted on the power drill when installing the attaching screws.

3. Align the rear of the air cleaner cabinet flush with the rear of the furnace. Align the bottom of the air cleaner cabinet1/4 inch above the bottom of the furnace. Mark the inside opening of the air cleaner cabinet using the inside edge of the mounting flange as a guide. Move the cabinet and cut the opening.

NOTE: Do NOT use the standard furnace indents for the opening. The opening for the air cleaner must be larger than the standard furnace opening.

4. Install the self-adhesive gasket material onto the flange of the discharge-air side of the air cleaner cabinet. This flange has double holes (see Fig. 5).

IMPORTANT: The gasket material provides a seal between the cabinet and the furnace. It should be placed toward the inside edge of the flange. The inner edge screw holes on the cabinet flange will be used to attach the air cleaner cabinet to the furnace.

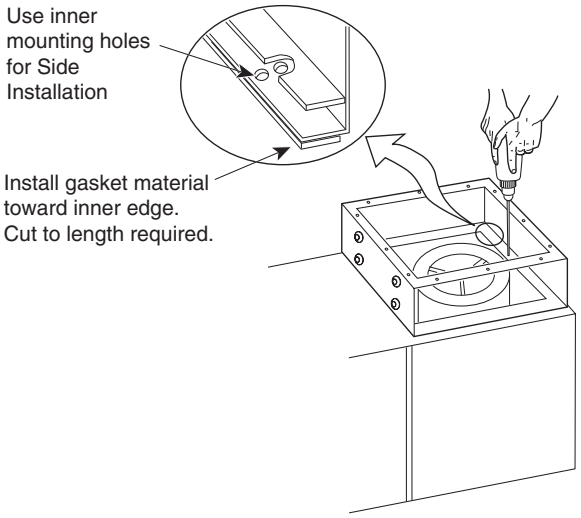


Figure 5. Side Installation Details

5. Position the air cleaner cabinet, with the gasket against the furnace, over the furnace cabinet opening cut previously in step 3.
6. Check that the front of the air cleaner cabinet is facing the front of the furnace.
7. Securely attach the air cleaner cabinet to the furnace using the heavy-duty self-tapping sheet metal screws provided.
8. Seal all joints in the return air system to prevent dust from entering the airstream.

NOTE: Do NOT use a silicon base sealant. This causes a coating on the ionizing wires that will decrease the efficiency of the Air Cleaner.

9. Reinstall the pre-filter, collecting cells and power door.

Bottom MOUNT - Furnaces or Air Handler

1. Rotate the four quarter turn latches on the power door inward to remove the power door from the cabinet and set it aside. Remove the collecting cells and pre-filter and set aside until the cabinet is installed.
2. Position the furnace/air handler on a protective pad on the floor with the bottom of the furnace/air handler in the up position (see Fig. 6).

NOTE: ***This allows maximum downward force to be exerted on the power drill when installing the attaching screws.***

3. Install the self-adhesive gasket material onto the flange of the discharge-air side of the air cleaner cabinet. This flange has double holes (see Fig. 8).

IMPORTANT: ***The gasket material will provide a seal between the cabinet and the bottom of the unit. It should be placed toward the outside edge of the flange. The outer edge screw holes on the cabinet flange must be used to attach the air cleaner.***

4. Position the air cleaner cabinet on the bottom of the unit with the gasket against the unit. Align the rear of the cabinet with the rear of the unit and the two sides of the cabinet with the sides of the unit. The front of the cabinet will NOT align flush with the front of the unit.

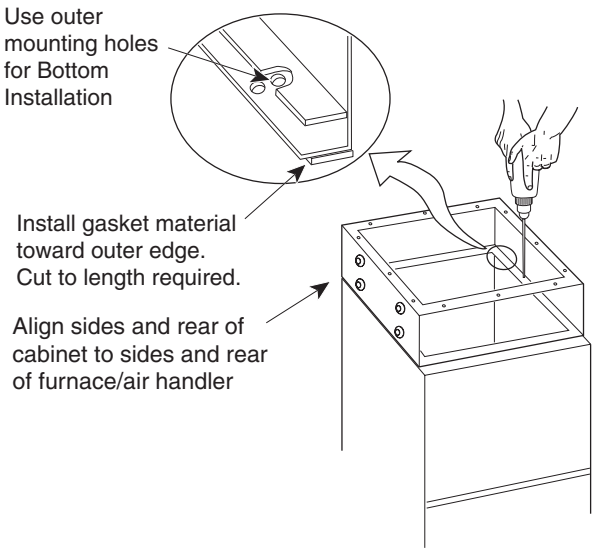


Figure 6. Bottom Installation Details

5. Check that the front of the air cleaner cabinet is facing the front of the unit.
6. Securely attach the air cleaner cabinet to the unit using the heavy-duty self-tapping sheet metal screws provided.

It is recommended that sheet metal turning vanes be installed inside an elbow on ductwork attached to the entering airstream side of the air cleaner. This improves the air distribution over the cells. (See Fig. 7.)

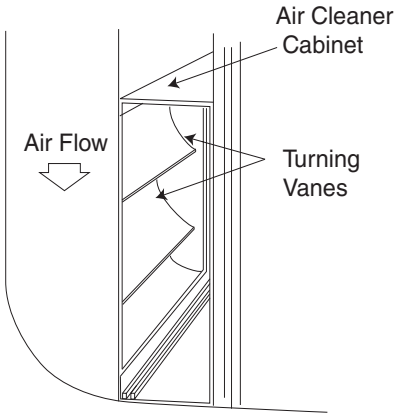


Figure 7. Turning Vanes

Use transition fittings where return air duct dimensions do not match the air cleaners opening dimensions. Gradual transitions are preferred for greatest efficiency. Four inches per linear foot (approximately 20° angle) should be allowed, space permitting.

7. Seal all joints in the return air system to prevent dust from entering the airstream.

NOTE: Do NOT use a silicon base sealant. This causes a coating on the ionizing wires that will decrease the efficiency of the Air Cleaner.

8. Reinstall the pre-filter, collecting cells and power door.

ELECTRICAL

The air cleaner unit has an air flow sensor installed. Therefore, control wiring is not required.

FURNACE & AIR HANDLER - 120 VAC models

These models require a 3 prong, grounded, 120 VAC outlet with a minimum circuit protection of 15 amps. A power cord is shipped with the air cleaner that matches the 120 VAC input to the air cleaner and the 3 prong, grounded 120 VAC outlet. Plug the power cord into the receptacle below the switch on the air cleaner power door and to power source outlet.

DO NOT REMOVE THE GROUNDING PIN FROM THE POWER CORD!

AIR HANDLER - 240 VAC models

These air cleaner models are designed to be connected to 240 VAC using the power cord and polarized connector adapter shipped with the air cleaner as follows:

1. Install the polarized connector end of the power cord, supplied with the electronic air cleaner, into the air handler through the front lower right electrical knock out using the attached strain relief connector. See Figure 8.
2. Plug the power cord into the receptacle below the switch on the air cleaner power door.
3. Connect the power cord polarized connector to the three wire plug on the polarized connector adapter.
4. Connect the six pin polarized connector on the adapter between the female polarized connector on the heater and the male polarized connector from the air handler control box. See Figure 8. The polarized connectors are keyed to aid in preventing incorrect assembly.

NOTE: If no accessory heater is installed, install the plug adapter between the polarized connector on the junction box and the polarized connector from the air handler control box.

5. Connect the green ground wire on the plug adapter to the air handler ground located on the left heater barrier between the heater and the cabinet. See Figure 8.

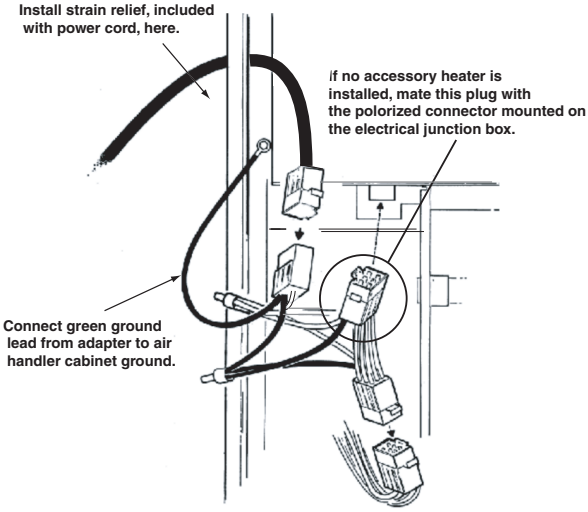


Figure 8

OZONE REDUCTION FEATURE

All electronic air cleaners produce a small quantity of ozone that is within established limits. Some customers may notice an odor especially at high altitudes, low air flow rates or temporarily after the installation of new cells (new cell ozone production will decrease after a few hours of operation).

The power pack has a three position jumper (located internally on the corner of the high voltage circuit panel) See Figure 9. The jumper will be in the "NORM" position from the factory. Moving the jumper to position "A" will somewhat limit the production of ozone by limiting maximum output power. Moving the jumper to position "B" will limit ozone & power even more. Please note that operating efficiency will also be reduced as ozone reduction is increased.

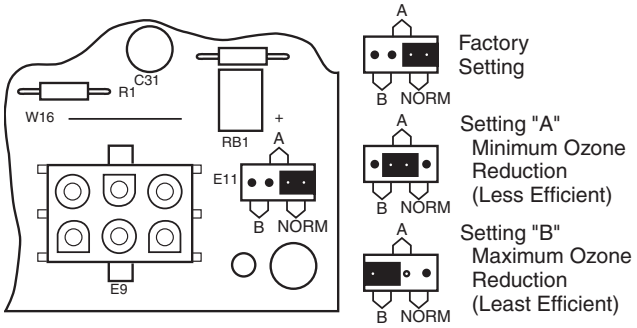


Figure 9. Ozone Reduction Jumper

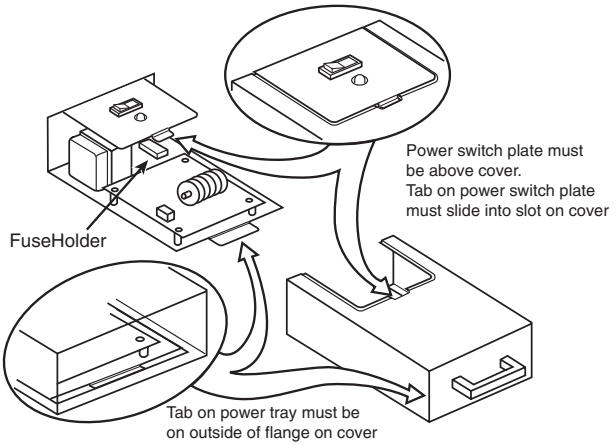


Figure 10. Assembling Power Tray and Cover

OPERATION

1. When the power switch is turned on, the green Operating light will be ON for about ten seconds whether the blower is on or not. This is the normal "warm-up" period for the air flow monitor.
2. With the blower running, the green light will be ON to indicate that the air cleaner is operating. An arcing or "snapping" sound may be heard. This will occur occasionally, however the unit is operating properly. Voltage on power pack contact and air cleaner cells (either ionizer or plates) should be 6100 to 6800 VDC (with ozone reduction jumper in NORMAL position).

NOTE: An occasional flicker of the green light accompanied by harmless sparking or snapping noise may occur. It is caused by trapping large dirt particles. If arcing is continuous, the cell should be washed or check for service problems.

3. When the blower stops, the green light will turn OFF. Voltage at power pack cell contact and air cleaner cells is removed.

MAINTENANCE

For maximum efficiency the air cleaner cells and pre-filter should be inspected and cleaned on a regular basis.

MAINTENANCE/REPLACEMENT SCHEDULE				
	Fan ON (Continuous)		Fan AUTO	
Conditions	Dusty	Normal	Dusty	Normal
Cleanable Pre-Filter	14-30 Days	30-60 Days	30-45 Days	45-90 Days
Collector Cells	1-2 Months	3 Months	3 Months	6 Months

The maintenance Schedule is dependent on the amount of air passing through the filter as well as the amount of dust (pollen, smoke, etc.) in the air. The above schedule shows estimated time periods and may be increased or decreased based on actual conditions. If the filter appears dirty, it is in the best interest of the heating and air conditioning equipment to change the filter.

CLEANING

1. Turn the air moving system "OFF"
2. Push the On-Off switch on the power door to the "OFF" position. Disconnect the power cord from the receptacle. Wait 15 seconds for the power pack and the collecting cells to discharge.

⚠ CAUTION

High voltage is present within the Air Cleaner for operation. Before removing the power door, wait at least 15 seconds to allow this voltage to be discharged.

3. Remove the power door from cabinet and set aside.
4. Remove the cells and pre-filter from cabinet. Using a solution of warm water and low sudsing detergent, soak cell(s) for 20 to 30 minutes.

NOTE: ***Ionizing wires may become coated causing loss of cleaning ability by the collecting cell. Using a pencil eraser, wipe each ionizing wire, exercising care to avoid damage to them. See Figure 11.***

6. Remove the cell(s) and pre-filter from solution and rinse thoroughly with clean water.
7. Allow cell(s) and pre-filter to drip dry for 15 to 20 minutes**.** The cell(s) may be tipped at a slight angle to expedite the drip-dry process.
8. Reinstall the cell(s) and pre-filter in the cabinet.
9. Replace the power door. Turn the blower on. After 30 minutes push On-Off switch on the power pack to the "ON' position.

A moderate amount of arcing or "snapping" may occur at this time, which will indicate that the cell(s) are still damp. If the noise is objectionable, push the On-Off switch to the "OFF" position and allow additional time for cell(s) to dry.

In some cases the green light will remain OFF during this initial activation of the air cleaner. This would indicate that the cell(s) are not completely dry. The green light should turn ON once the drying is complete.

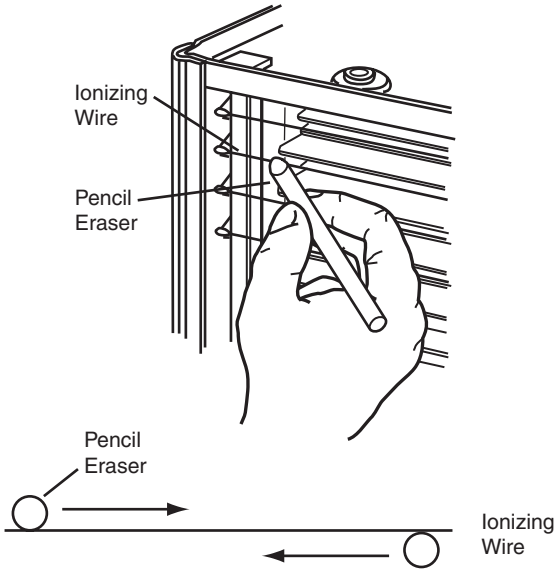


Figure 11. Cleaning Ionizing Wires

REPLACING AN IONIZING WIRE

If an ionizing wire should break, it can be replaced as follows:

1. Remove all pieces of broken wire. Make sure supports at each end are in good condition and not bent out of shape.
2. Hook the new wire onto the support at one end.
3. Hold your finger against the support at the other end Figure 12) and hold the ionizing wire between thumb and forefinger as shown or use needle nose pliers. Press on spring and on wire loop until it slips over the end of the support.
4. Make sure wire is securely anchored at each end.

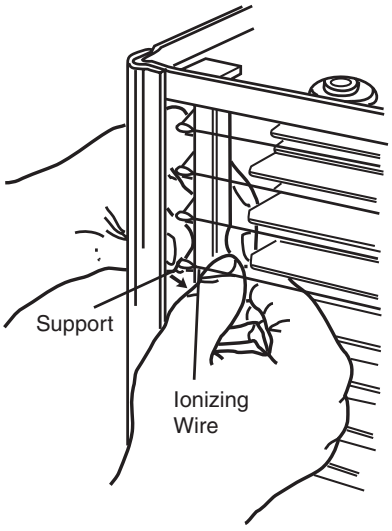


Figure 12. Replacing Ionizing Wire

FUSE REPLACEMENT

The fuse is located in the fuse holder inside the power pack next to the female power plug. See Figure 10.The fuse protects the power supply components against damaging electrical current. This fuse has a rating of 1 amp, 250 Volts.
To check or replace a fuse:
Disconnect the power cord from the door and remove the power door from the air cleaner.
On the inside of the door, remove four screws holding the power pack to the door and remove the power pack.
Separate the power tray from the cover.

NOTE: When reassembling the power tray and cover, ensurethat tray wiring is positioned to avoid interference

Check the fuse located next to the female power plug.
Replace the fuse if needed (1 amp, 250 volt fuse).
After servicing the fuse, reassemble the cover and power tray. When reassembling, be sure that power switch plate is on the outside of the cover and the tab on the power switch plate slides into the opening on the cover. Be sure also that tab on bottom of power tray is on the outside of the cover. See Figure 10.
Position power unit on door and reattach using four screws previously removed. Replace power cord.

CHECKOUT PROCEDURE

ON/OFF SWITCH "ON," OPERATING LIGHT "OFF."

All voltage measurements indicated can be made with a high voltage DC probe and a general purpose volt ohm meter, for example: Simpson 260 or equivalent.

For testing the power pack, the air flow monitor may be disconnected from the system, eliminating the need for air flow through the sensor tube.

1. Turn On/Off switch to the "OFF" position and remove the power pack from cabinet.
2. Check collecting cells for foreign object between plates, broken ionizing wires, cracked insulator, bowed or bent plates. Wash cells if required paying particular attention to cleaning all ionizing wires and the extended portions of the front frame.
3. Using the method described in the section "Cell Test," check the voltage of both collecting cells. The voltage should be 6100 to 6800 VDC. With the ozone reduction jumper in the NORMAL position, if the voltage is below 6100 VDC, disconnect collecting cells.
4. Check voltage at power pack cell contact. Open circuit voltage should be 6100 to 6800 VDC.
5. If voltage at cell contact is 6100 VDC or above, problem is in collecting cells. Recheck in accordance with Step #2.
6. If voltage at cell contact is below 6100 VDC, problem is in power pack. Turn off power and remove back panel from power pack.
7. Check all wiring points and connectors inside the power pack for tightness.

DC. POWER SUPPLY SPECIFICATIONS AND REPLACEMENT

The power supply is a Solid State, High Frequency AC to DC power source and is not designed for individual component part

TROUBLESHOOTING

SERVICE INDICATION	SERVICE CHECKS
• Blower ON • Green operating light OFF	1. Power is not being supplied to the air cleaner. A. Check that power switch is "ON " B. Check that the power cord is connected to the outlet and the power door. C. Check for voltage at air cleaner supply. If none, check fuse or circuit breaker at power input line. D. Check the fuse inside the power pack. NOTE: Air cleaner should not be wired to fan motor taps or furnace control.
• On/Off switch "ON" • Blower ON • Green operating light OFF	While observing the green operating light, push POWER switch to "OFF" position and wait 30 seconds. Return POWER switch to "ON" position. 1. If the green light momentarily flickers when power is turned "OFF" or "ON", check for shorted or wet cells. 2. If the green light illuminates for 10 to 20 seconds when power is turned "ON", then turnd "OFF": A. Check for obstruction in air flow sensor tube. B. Check for missing or improper media filter. C. Check for proper air flow or blower speed in return supply.
• Blower "ON" • Green operating light "ON"	1. Check media filter for obstructions or excessive dirt. Clean filter. 2. Replace power tray.
• Blower "ON" • Green operating light flickering (usually accompanied by a "snapping" sound)	Remove and check cells: 1. If dirty, clean cells thoroughly NOTE: Ionizing wires should be clean with no build-up on wires. 2. Check for foreign material lodged in cells. 3. Check for loose or broken ionizing wires. 4. Check for cracked or broken insulators.

replacement. All power supply components are mounted on a removable metal tray attached to the door. If a power supply fails, the complete power tray must be replaced as a unit.

Input voltage
Furnace or Air Handler Units
120 VAC, 60 Hz
Air Handler Units
208 /240 VAC, 60 Hz

H.V. Output
6100 - 6800 VDC

CELL TEST

1. Place collecting cell on a well insulated work bench with the cell contact button pointing upward.
2. Select a power pack that reads between 6100 and 6800 VDC at the cell contact in an open circuit mode with the ozone reduction jumper in NORMAL position.
3. Place the power pack on top of the collecting cell ensuring that there is proper contact between the cell contact and the power pack contact.4. Apply appropriate voltage to power pack. Turn On/Off switch "ON'
5. Measure voltage at collecting cell ionizer or cell plates. Voltage should be 6100 to 6800 VDC.
   A. If voltage is above 6100 VDC, test other cell (if applicable).
   B. If voltage is below 6100 VDC, check cell as prescribed in Checkout Procedure, Condition #1, Step #2.

NOTE: ***When replacing collecting cells in cabinet, ensure that the arrows on cells point in the same direction as the air flow through duct work. Cell contact buttons must point toward the power pack.***

AIR FLOW MONITOR TEST

NOTE: ***The air flow monitor is a true differential pressure sensor capable of operating in a completely sealed air handling system. It is designed to operate in a return air temperature range of 40° to 100°F. Operation outside this range will cause the limit circuitry to shut down the power supply until the return air temperature is within the operating range.***

When power is first applied and the circulating blower is off, the green operating light should come on for about 10 seconds, then go off. The operating light should then come on whenever the blower is operating.

POWER UNIT REMOVAL AND REPLACEMENT

To replace a faulty power tray or gain access to the ozone reduction jumper or fuse, observe the following procedure.
1. Disconnect power cord from the power door and remove power door from air cleaner.
2. On the inside of the door, remove four screws holding the power pack to the door and remove power pack.
3. Separate power tray and cover.
NOTE: When reassembling the power tray and cover, ensure that tray wiring is positioned to avoid interference
4. After servicing the ozone switch or fuse or after replacing a faulty power tray, reassemble the cover and power tray. When reassembling, be sure that power switch plate is on the outside of the cover and the tab on the power switch plate slides into the opening on the cover. Be sure also that tab on bottom of power tray is on the outside of the cover (see fig 13).
5. Position power unit on door and reattach using four screws previously removed. Replace power cord.

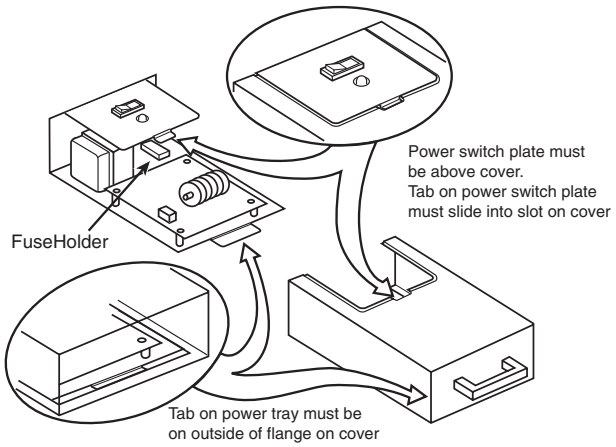


Figure 13. Assembling Power Tray and Cover

American Standard Inc.
6200 Troup Highway
Tyler, TX 75707

For more information contact your local dealer (distributor)