

Installation, Start-Up, and Operating Instructions

NOTE: Read the entire instruction manual before starting the installation.

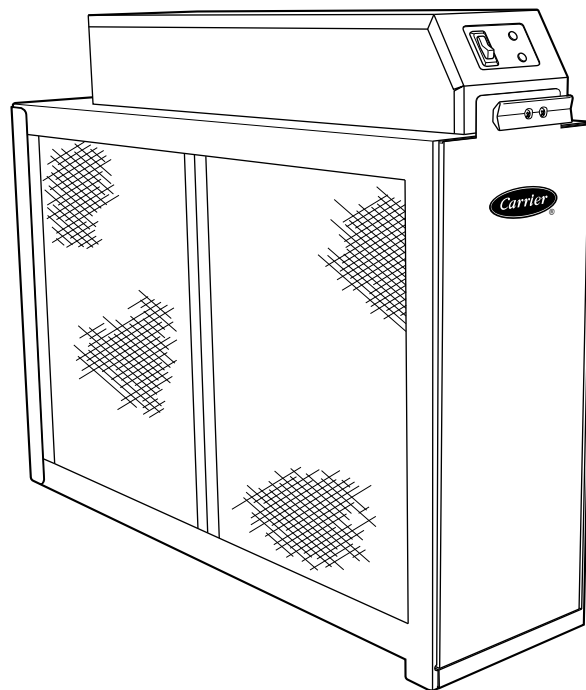
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SAFETY CONSIDERATIONS


Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electrical shock or other conditions which may cause personal injury or property damage. Consult a qualified installer, service agency, or your distributor or branch for information or assistance. The qualified installer or agency must use factory authorized kits or accessories when modifying this product. Refer to the individual instructions packaged with the kits or accessories when installing.

Follow all safety codes. Wear safety glasses and work gloves. Use quenching cloth for brazing operations. Have fire extinguisher available. Read these instructions thoroughly and follow all warning or cautions attached to the unit. Consult local building codes and National Electrical Code (NEC) for special requirements.



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Fig. 1—AIRA Electronic Air Cleaner

It is important to recognize safety information. This is the safety-alert symbol . When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

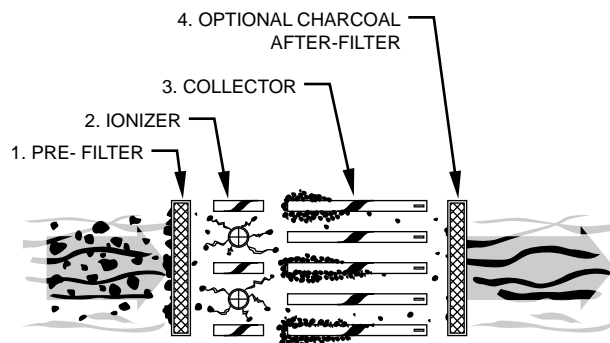
Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. DANGER identifies the most serious hazards which **will** result in severe personal injury or death. WARNING signifies hazards which **could** result in personal injury or death. CAUTION is used to identify unsafe practices which **would** result in personal injury or product and property damage.

INTRODUCTION

The AIRA is a duct mounted electronic air cleaner available in 1200, 1400, and 2000 CFM models. (See Fig. 1.)

Designed to remove airborne particles down to 0.01 microns in size, the AIRA effectively removes such particles as dust, dirt, smoke, pollen, virus, spores, bacteria, and mold from indoor air.

Air movement through unit is provided by heating, air conditioning, or ventilating system blower. As dirty air enters air cleaner, air passes through a metal mesh prefilter. (See Fig. 2.) Prefilters prevents lint, pet hair, and other large particles from entering air cleaner by impingement. It is important that these filters be in place to prevent excessive dirt loading of air cleaner collector cells. These filters extend time between maintenance of air cleaner collector cells. This allows the collector cells to provide clean air for a longer period between washing.



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Fig. 2—Airflow through Unit

Table 1—Component Information

MODEL	AIRAAXCC0012	AIRAAXCC0014	AIRAAXCC0020
Electrical Input	120v, 60 Hz, single phase	120v, 60 Hz, single phase	120v, 60 Hz, single phase
Dimensions H X W X D	20-1/2 X 5-1/4 X 25	20-1/2 X 7-1/4 X 25	24-1/2 x 7-1/4 x 25
Air Flow Range	*350 — 1200 CFM	*350 — 1400 CFM	*600 — 2000 CFM
Max Pressure Drop	0.07-in. wg @ 1200 CFM	0.11-in. wg @ 1400 CFM	0.14-in. wg @ 2000 CFM
Cell Weight	6 lb each	10 lb each	12 lb each
Unit Weight	32 lb	41 lb	46 lb
Power Consumption	40 watts maximum	40 watts maximum	48 watts maximum
Electrical Output	2.5 MA @ 6200 VDC	2.5 MA @ 6200 VDC	3.2 MA @ 6200 VDC

*Using electronic air cleaner outside specified airflow range is not recommended.

Prefiltered air then passes through a 2-stage electric cleaner. In the first stage, all airborne particles, even submicron size, are electrically charged (positive) as they pass through the ionizer. The ionizer field is setup by a corona discharge emanating from fine, tightly strung wires suspended between 2 adjacent flat plates. In the second stage, charged particles pass into an intense electrical field established between alternately charged and grounded parallel plates. Here positively charged particles are attracted to ground plates and are deposited out of the air stream.

Air Cleaner Construction

The air cleaner is easy to install, operate, and maintain. Its basic components are:

1. **CABINET** — mounts to existing ductwork; houses the collecting cells and prefilters.
2. **COLLECTING CELLS** — collect dust, dirt, and other particles in the air. They contain ionizing and collecting sections as described above. Cells must be installed with ionizing wires on air intake side. A spring contact is located on top of each cell and must be in position to make contact with contact board assemblies on bottom of power supply. (See Fig. 3.)
3. **PREFILTERS** — trap large particles before they enter collector cells.
4. **POWER SUPPLY ASSEMBLY** — contains indicating lights, solid state power supply, contact boards, and electrical controls including ON/OFF switch and safety interlock switch. It also includes a wiring compartment located at rear of the power supply assembly.

PLANNING AN INSTALLATION

Step 1—Application

This air cleaner is intended to be used in return-air duct of a forced air heating, cooling, and ventilating system.

The air cleaner should be installed in system so that all system air is circulated through the air cleaner. The air cleaner will only remove airborne contaminants delivered to it. Maximum performance is obtained when system blower is set for continuous operation.

⚠ CAUTION

Never use air cleaner to collect grease or other flammable contaminants.

Step 2—Installation Requirements

The required location for the air cleaner is in the return-air next to the blower compartment. In this location, the blower motor and cooling coils will be kept clean.

⚠ CAUTION

Do not install the air cleaner in the discharge duct.

Before installing the air cleaner consider the application. (See Fig. 9 to 14.) If a transition is required refer to section entitled "Transitions." The unit must be readily accessible for periodic inspection and cleaning of prefilters and electronic cells to maintain maximum efficiency and trouble-free operation.

Step 3—Air Conditioning

The air cleaner should be installed upstream of cooling coil. This will keep coil clean and reduce air conditioning coil maintenance. Improved cooling efficiency is the result which directly affects energy costs. If air cleaner is downstream of cooling coil, condensation will form on cooled collector plates when air conditioner cycles. This will allow water droplets to form on collector plates and cause nuisance arcing. Arcing will reduce air cleaner efficiency and reduce life of high-voltage power supply.

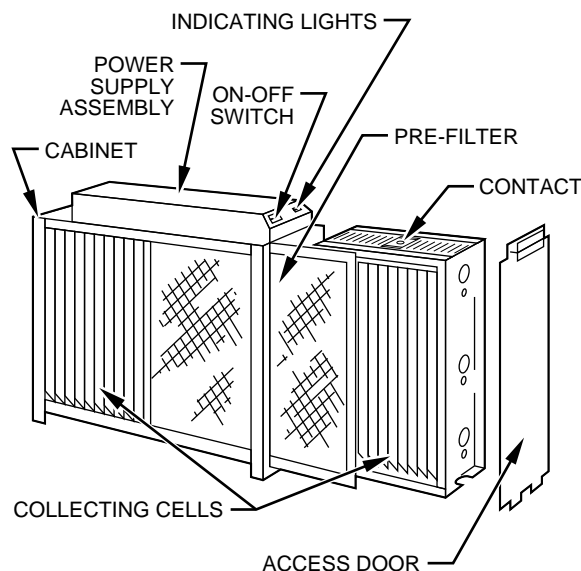


Fig. 3—View of Major Components

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Step 4—Humidifiers

An evaporative humidifier can be mounted upstream of air cleaner. It is best to install atomizing humidifier downstream of air cleaner because hard water salt deposits and water droplets may damage air cleaner. If an atomizing humidifier must be mounted upstream of air cleaner:

1. Mount it as far upstream as possible. (Recommend at least 6 ft.)
2. Install standard disposable furnace filter between humidifier and air cleaner to trap water droplets and hard water salts. Select location that is accessible for inspection and replacement.
3. Clean air cleaner more frequently to prevent hard water salt buildup.

Step 5—Outdoor Air

When outdoor air is added to return air duct, sufficient heat should be added to maintain return air temperature at 40°F (4°C) minimum. Lower temperatures can cause ionizer wire failure.

Step 6—Sheet Metal Installation

The electronic air cleaner is adaptable to all new and existing residential forced-air furnace and cooling systems.

Step 7—Transitions

If air duct does not fit air cleaner cabinet opening, gradual transitions are recommended to reduce air turbulence through air cleaner and maximize efficiency. Not more than 20° (about 4 in. per running ft) of expansion should be used on each side of transition fitting. (See Fig. 4.)

Step 8—Turning Vanes

If air cleaner is installed adjacent to a 90° duct elbow, add turning vanes inside duct to improve air distribution across face of air cleaner. (See Fig. 5.)

Step 9—Select Location

Remember to select a location that is readily accessible for periodic inspection and cleaning. Allow a minimum of 18-in. clearance in front of access panel and 12-in. clearance above power rack cover plate for component removal and service space. For complete dimensions required refer to Fig. 6.

Step 10—Direction of Airflow Through Air Cleaner

NOTE: Air cleaner is set up for left-to-right airflow when facing access door. For right-to-left airflow remove prefilters and cells from cabinet.

1. A plastic positioning spacer is located inside bottom of cabinet and secured to cabinet using No. 6-32 round head Phillips drive thread cutting screw (See Fig. 7.) to index installation of cells in proper position with respect to airflow.
2. Remove screw and reposition spacer in alternate hole at bottom of cabinet.
3. Replace screw to insure plastic spacer is not accidentally knocked out of place during normal maintenance. It must be installed in hole provided closest to air leaving side of cabinet.
4. Seal unused hole with duct tape.
5. Turn cells around, replace in cabinet, and replace prefilters on air entering side. **Directional arrows on cell end plates must point in direction of airflow.**

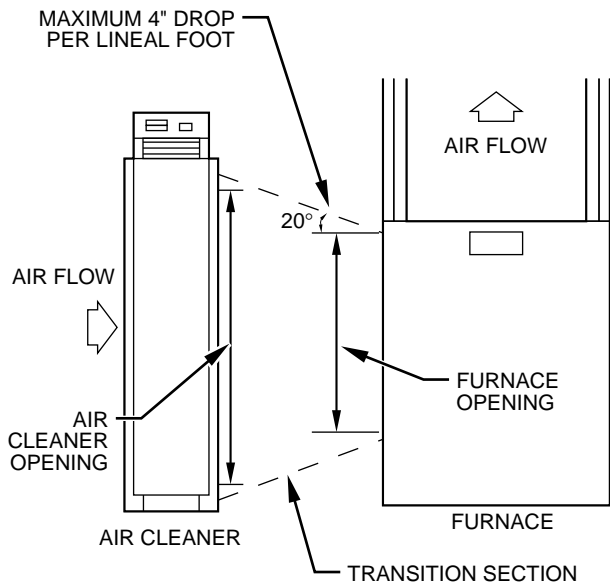
⚠ CAUTION

Only a trained, experienced service person should install this electronic air cleaner. The power supply should be removed before installation. To remove the power supply, remove the 2 screws (See Fig. 8.) in the top front of the cabinet. Remember to keep this hardware for reinstallation of the power supply when the air cleaner installation is complete. A thorough check of the unit installation should be completed before unit operation.

INSTALLATION

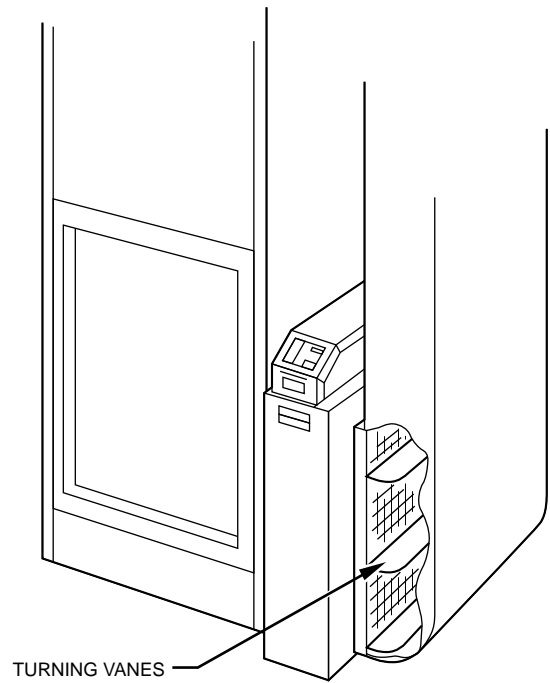
Step 1—Orientation

Air cleaner can be in any position, except with access door facing down. See Fig. 9-14 for proper air cleaner mounting with variety of furnace installations.



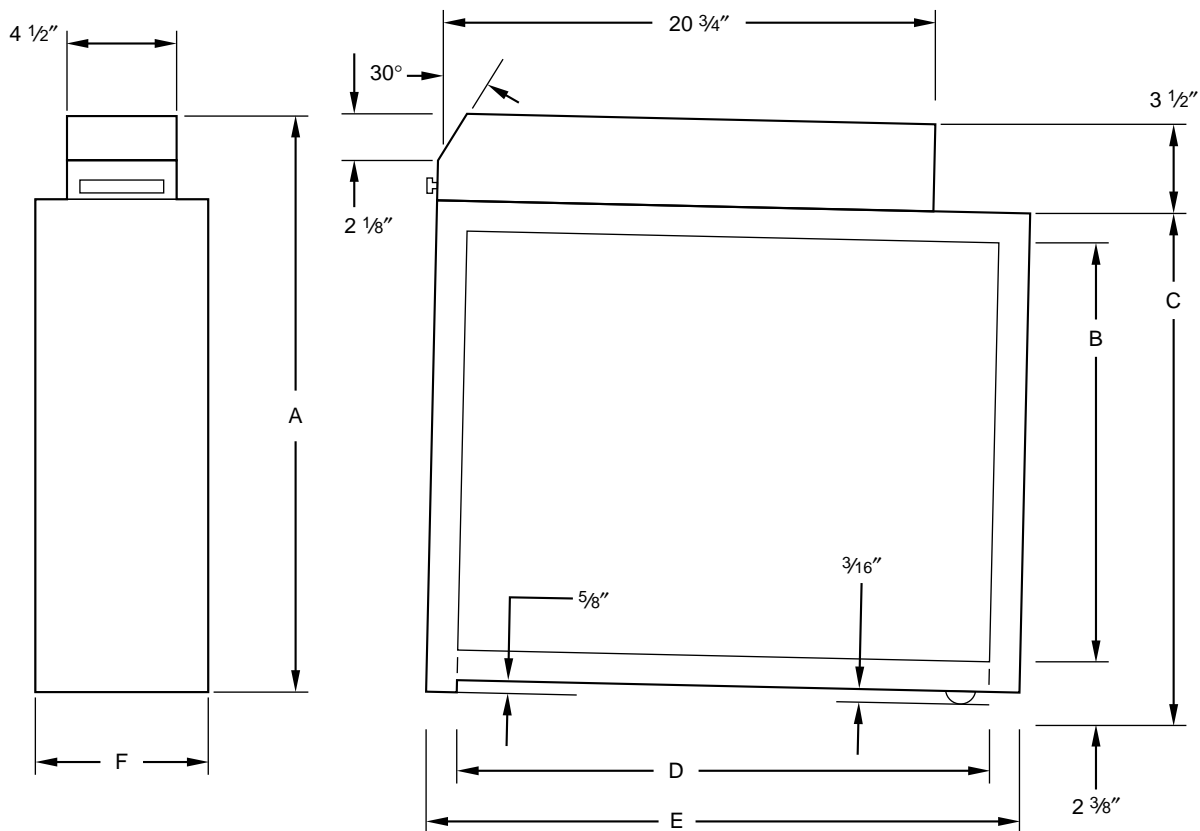
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Fig. 4—Transition Fitting Installation



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Fig. 5—Turning Vanes Installation

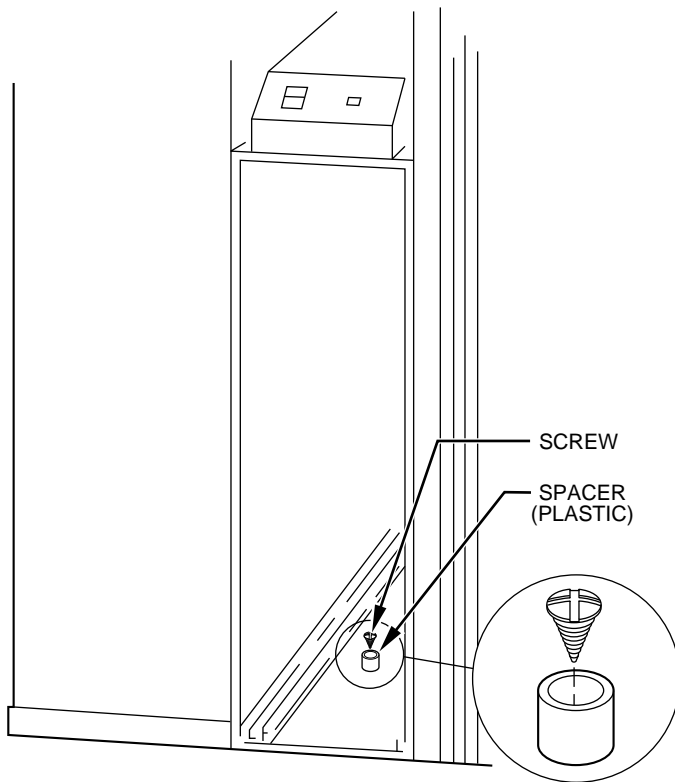


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Dimensions (In.)

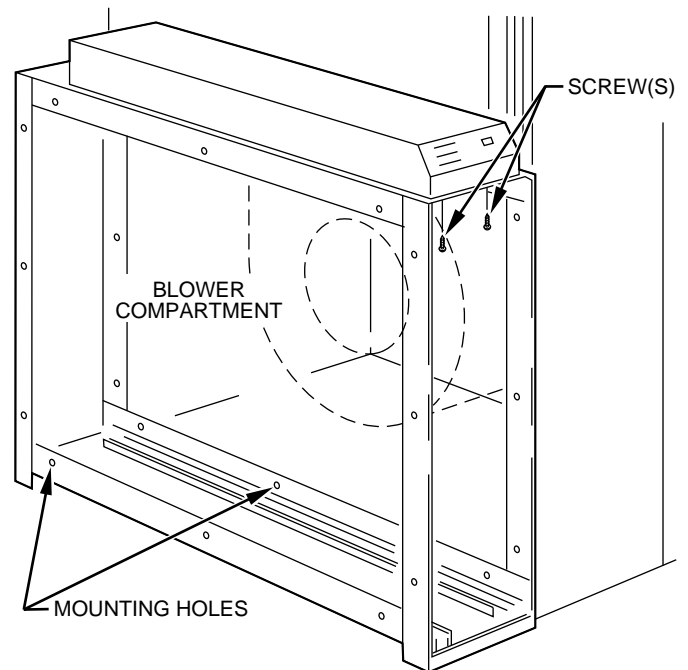
MODEL	A	B	C	D	E	F
AIRAAXCC0012	20-1/2	13-7/8	16-1/4	22-1/2	25	5-1/4
AIRAAXCC0014	20-1/2	13-7/8	16-1/4	22-1/2	25	7-1/4
AIRAAXCC0020	24-1/2	17-7/8	20-1/4	22-1/2	25	7-1/4

Fig. 6—Dimensional Drawing



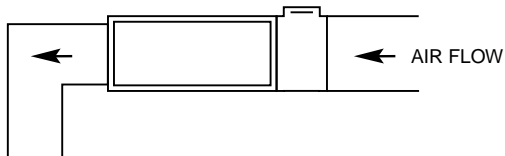
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Fig. 7—Plastic Positioning Spacer and Screw for Right-to-Left Airflow Installation



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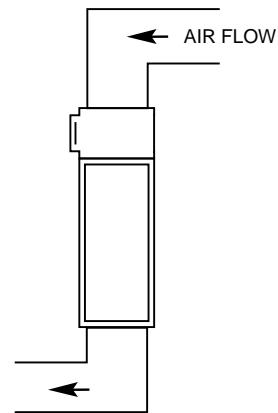
Fig. 8—Installation on Upflow Furnace



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Mounted vertically in horizontal duct or return plenum just before inlet to furnace.

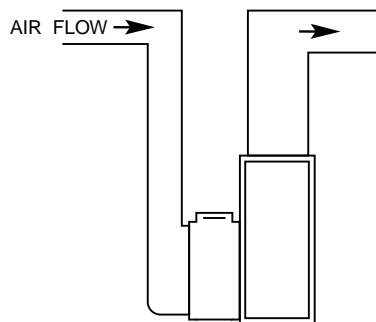
Fig. 9—Horizontal Furnace



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Mounted horizontally in return duct or plenum just above furnace.

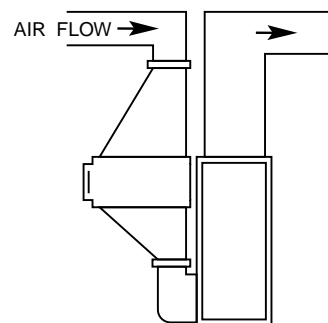
Fig. 10—Downflow Furnace



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Side installation. Cleaner is mounted vertically, where return air enters side inlet of furnace.

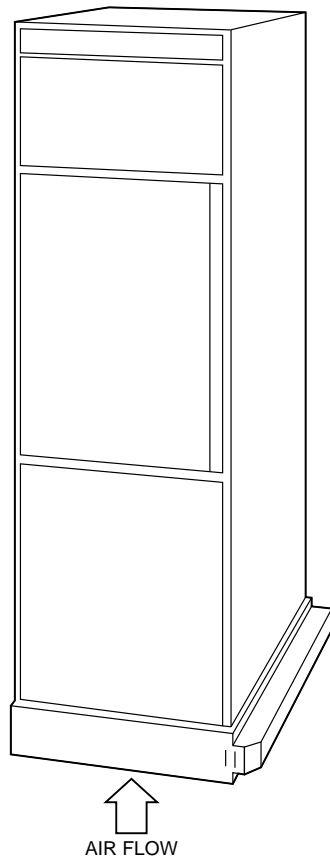
Fig. 11—Side Installation on Upflow Furnace (012, 014 models)



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NOTE: If there is less than 7-in. for mounting air cleaner between duct and furnace, move return-air drop.

Fig. 12—Offset Installation



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Installation beneath furnace. Cleaner mounts horizontally, where return air enters from below. Raise furnace by installing suitable wood structure and install air cleaner.

Fig. 13—Bottom Installation on Upflow Furnace

⚠ CAUTION

Cabinets will support a maximum weight of 400 lb when installed beneath a vertical furnace or air-handling unit. When setting furnace on cabinet, do not drop it into place. Position furnace correctly on cabinet to prevent a corner from slipping down and damaging cabinet.

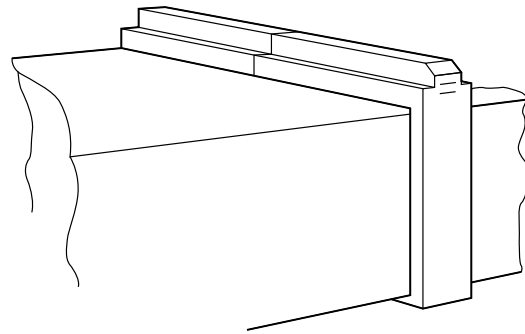
Prior to installing this product:

1. Read rules and instructions carefully for safe operation. Failure to follow them could damage product or cause hazardous condition.
2. Check ratings given on product to make sure it is suitable for your application.

Step 2—Details

1. Remove existing furnace filter and discard.
2. Air cleaner cannot remove existing dirt from blower and ducts. Clean area thoroughly before you begin.
3. Install supplied foam tape on side of air cleaner casing that comes in contact with the furnace.
4. Remove unit access panel, and slide prefilters and ionizing-collecting cells out of cabinet. Place them safely aside with warranty registration card. Remove any cardboard pieces before proceeding.

NOTE: The following is a typical installation of an air cleaner on an upflow furnace. (See Fig. 8 and 11.) You may have to alter the installation to fit your application.



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Mounted vertically in return duct as close to furnace as possible.

Fig. 14—Horizontal Furnace

5. Locate cabinet in cold air return duct so that all of return air flows through unit. (See Fig. 8.) If furnace and air cleaner openings are different, use a transition. (See Fig. 4.)
6. Mounting holes are provided for duct work attachment. (See Fig. 8.) The 0.140-in. holes are sized for No. 8 sheet metal screws, or 1/8-in. rivets. If adjoining ductwork is flanged, install screws so that screw heads are inside cabinet. This will prevent damage to prefilters and optional charcoal after-filter during removal and installation after cleaning.
7. After unit has been secured, seal seams air tight with duct tape or caulking.
In applications with minimum airflow, it is helpful to seal any openings on power pack assembly or cabinet.
8. Refer to "Direction of Airflow."
9. Re-install power supply on top of cabinet.
10. Install prefilters and ionizer-collector cells.
11. Re-install cabinet front panel door assembly.

Step 3—Typical Mounting Positions

Air cleaner can be mounted in any position, except with the access door facing down.

Seal all joints in return air system with duct tape between furnace and air cleaner to prevent dust from entering clean airstream and to assure proper operation of electronic airflow sensor.

Step 4—Electrical Installation

All wiring must comply with applicable local and national codes.

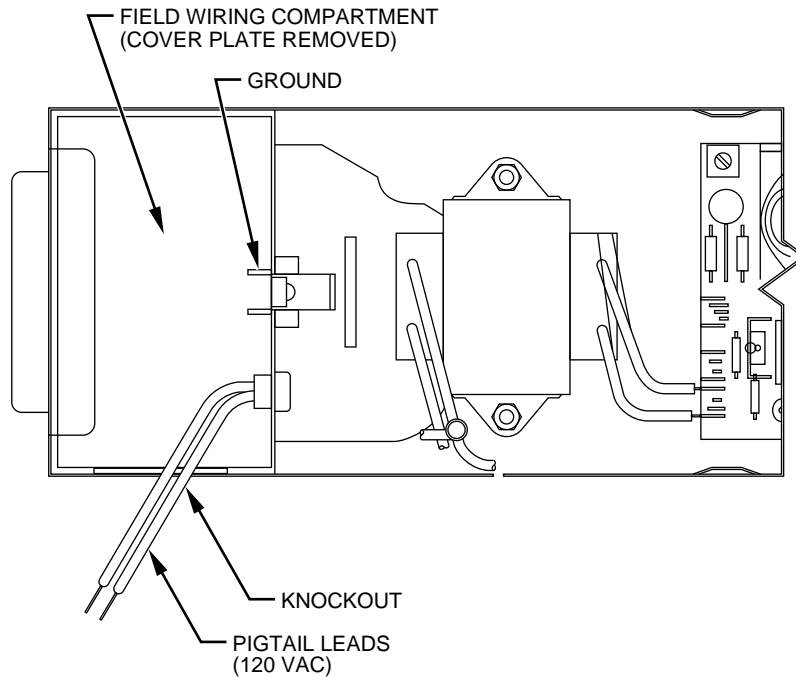


Fig. 15—Electrical Installation

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⚠ CAUTION

Be sure all incoming power is OFF before beginning any procedures.

⚠ CAUTION

The following instructions are for use by qualified personnel only.

⚠ WARNING

The following procedures will expose electrical components. Disconnect power between checks and proceed carefully. Electrical shock can cause injury or death.

The air cleaner is powered by providing 120v, 60 Hz, 1-phase electrical service to pigtail leads at field wiring compartment (with knock-out holes) located at rear of power pack assembly. (See Fig. 15.)

1. Turn air cleaner off using ON/OFF rocker switch located on front panel.
2. Remove power supply cover plate by removing front door and 2 screws holding assembly to top of air cleaner. (See Fig. 8.)
3. Make wiring connections inside junction box area (field wiring compartment). Remove knock-out and use conduit or other approved methods to supply input power. Connect ground wire to clip.
4. Replace power supply cover plate and secure with screws removed from step 2.
5. Replace door on front of air cleaner.
6. Air cleaner will operate when door is in place, ON/OFF rocker switch is in "ON" position, and input voltage is present in junction box. The following should be completed to supply input power to air cleaner.

Step 5—Furnace Application

It is recommended to use EAC-1 and EAC-2 terminals when provided by furnace circuit board. These outputs will provide 120 VAC whenever blower motor is energized.

Furnace circuit boards without EAC-1 and EAC-2 terminals must use alternate methods to supply 120 VAC to air cleaner (via sail switch, isolation relay, or optional electronic airflow sensor). Air cleaner should only operate when blower motor is running.

⚠ CAUTION

This unit cannot be powered directly from blower motor leads. Voltages can exceed 190 VAC (120-v motors). This can double with 240-v fan coil motor.

Step 6—Fan Coil Application

If EAC-1 and EAC-2 terminals are provided by fan coil circuit board, refer to fan coil data to determine voltage output. Most fan coils do not provide 120v at these terminals. Alternate methods may be needed to convert fan coil supply voltage to 120 VAC input for air cleaner. A 240-VAC to 120-VAC step-down transformer (40 VA) will be needed in most application. Sail switch, isolation relay, or optional electronic airflow sensor may also be applied when needed.

⚠ CAUTION

Do not wire directly to multiple speed blower motor. Wiring to multiple speed blower will damage power supply and void warranty.

SYSTEM CHECKOUT

ADJUST THERMOSTAT SO THAT SYSTEM BLOWER IS "OFF." After installing unit, switch ON/OFF rocker switch to "ON" position. **A bright red segment of rocker switch should be visible.**

Adjust thermostat so system blower is "ON."

1. Both input indicating light (green) and output voltage light (red) should now be on.
2. Check to assure that both lights go out when the cell access panel is removed, when rocker switch is switched to "OFF" position, and when system blower is not running.

MAINTENANCE

CAUTION

Sharp edges. Handle the cells carefully to avoid cuts from the sharp metal edges.

Step 1—Washing Cells and Prefilters

Regular washing is necessary to insure proper performance. A thorough washing every 2 months will be adequate for most installations. More frequent washing (once a month) may be necessary on some installations (new homes for example) where there is new carpet, plaster dust, or there is above normal cigarette smoke. (See Fig. 16.)

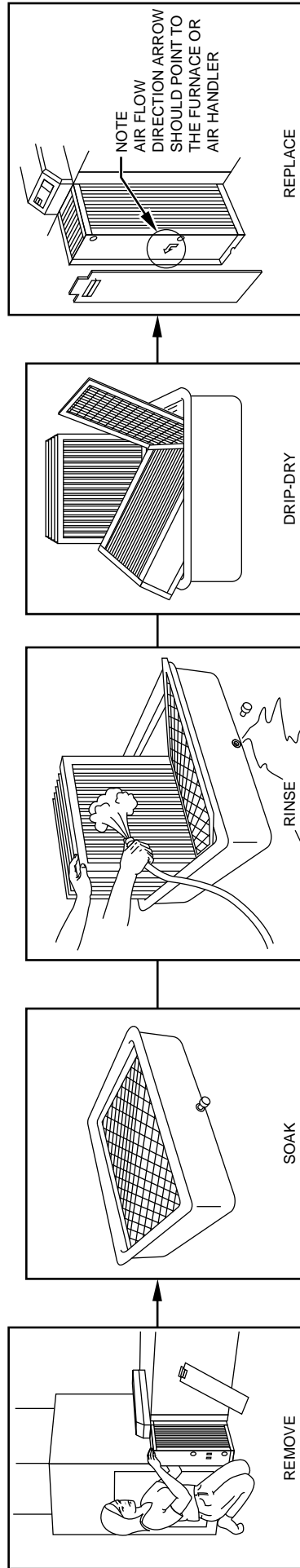
1. Remove cells and prefilters.
 - a. Push air cleaner ON/OFF rocker switch to "OFF." Wait 15 sec. Open access door.
 - b. Carefully remove cells and prefilters, and set aside.
 - c. Avoid damage to cell plates and ionizing wires.
2. Wash in tub.
 - a. Place enough hot water in utility tub to cover cell. Electronic Air Cleaner concentrate solution (Part No. P902-2001) is recommended. (Solution is available from your dealer through the Replacement Components Division.) As an alternative, 2 to 4 oz of automatic dishwasher detergent (not laundry detergent) can be used.

- b. Allow cell to soak for 30 minutes. Agitate cell up and down in solution until it appears clean, then remove.
 - c. Repeat with second cell.
 - d. Agitate prefilters up and down in solution until they appear clean.
 - e. With hose, rinse cells and prefilters. Hose should be held about 10 in. from cell plates and at slight angle for better cleaning results. Cell frame should be thoroughly rinsed along edges to dislodge any trapped lint or dirt. Carefully wipe damp cloth or sandpaper (not emery cloth) along ionizing wires.
 - f. Stand cells and prefilters up to drain. Let dry 2 hr.

NOTE: We do not recommend washing electronic air cleaner cells in the dishwasher.

Not only can collector plates and ionizing wires be easily damaged, but dirt from cells and prefilters can permanently stain plastic dishwasher linings.

3. Replace cell and prefilters.
 - a. Replace prefilters and cells in cabinet. Check that arrow on cells points in same direction as air flows through duct. (If you have to force it past the positioning screw on bottom, it is probably in a wrong position.)
 - b. Reposition access door (engage tips on lower edge of door into slots in cabinet). Carefully close door.
 - c. Turn air cleaner switch to "ON."



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Fig. 16—Maintenance Procedures

TROUBLESHOOTING

⚠ CAUTION

Procedures in this section should be performed only by qualified service personnel.

⚠ WARNING

The following procedures will expose energized electrical components. Disconnect power between checks and proceed carefully. Electrical shock can cause injury or death.

Step 1—Recommended Service Tools

- Screwdriver, 8-in. common with insulated handle (plastic).
- Screwdrivers Phillips No. 1 and 2 with plastic insulated handles.
- Needle-nose pliers
- Fluke No. 8021B multimeter or equivalent
- Fluke No. 80K-40 high-voltage probe or equivalent.

Step 2—Indication of Electrical Trouble

Air cleaner is equipped with input power LED light (green) and output voltage LED light (red) for indicating proper unit operation.

When unit is in normal operation, system blower running, access door in place, control switch in the "ON" position, and indicating lights go out, there is an electrical problem.

If green light goes out there is a problem in the primary circuit. If red light goes out the problem is a shorted secondary. Although failure of indicating lights should not be overlooked, this condition is unusual and rather remote.

Step 3—Electrical Troubles and Their Conditions

⚠ CAUTION

Exercise the usual precautions when working with high voltage.

⚠ WARNING

When the circuit has been de-energized, always discharge any residual current in the secondary with an insulated handle screwdriver. Electrical shock can cause injury or death.

⚠ WARNING

Always ground power supply and ionizing-collecting cell when bench testing. Electrical shock can cause injury or death.

PRIMARY CIRCUIT

Normal operation — For normal operation of electronic air cleaner, system blower should be running and air cleaner switch should be "ON."

If there is supply line voltage at the service connections and no input voltage to power supply (green light out), outage can be located by checking operation of safety switch and interconnecting wiring with multimeter. Refer to Circuit Diagram, Fig. 17 to check operation of switches.

Follow these steps:

1. Assure that circuit breaker controlling air cleaner is in "ON" position. Main fuse not open.
2. Set multimeter for reading AC voltage at a 200-v full scale for 120-v units.
3. Connect 1 lead of multimeter to load side of interlock switch. Connect other lead to common (white) lead at a convenient place in power supply assembly. Depress switch and measure

voltage. If there is no voltage reading, switch is defective and should be replaced.

4. With white lead still connected as in step 3, connect multimeter test lead to loadside of the ON/OFF switch. ON/OFF switch shall be in "ON" position. Actuate interlock switch and measure voltage. If there is no voltage reading, ON/OFF switch is defective and should be replaced.

SECONDARY CIRCUIT

1. Ionizing-Collecting Cell

Cell is electrically energized through a contact terminal located at top center of cell. Ionizing wires and every other collector plate are electrically charged while each interleaving plate is grounded.

If space between charged and grounded plates is bridged with conductive or semi-conductive material, a short circuit develops. The bridging or short may be caused by damaged plates or foreign material lodged between or on plates.

Since cell is periodically removed from unit to wash away collected dirt, it is susceptible to physical damage. Also, cell contains ionizing wires which, due to their function, have to be designed with minimal structural support and are susceptible to breakage. However, trouble related to a shorted collector cell is readily shown by output indicating light and can be quickly isolated by the following procedure:

If red performance light dims or goes out during normal operation, a short may exist in one or both collector cells.

To determine if a short exists in 1 or both of the collector cells, turn electronic air cleaner "OFF" and remove both electronic cells from cabinet. Close door and re-power unit. If red performance light comes on, an electrical short exists in 1 or both of the electronic cells. Replace cells in unit, 1 at a time, to determine which cell is shorted.

Most troubles in the cell can be visually detected and corrected. (See Table 2.)

NOTE: Ionizer collector cells are not designed for field repair. Ionizing wires and insulators can be field replaced. It is not recommended to attempt to replace other cell components, such as collector plates, end plates, ionizer supports.

2. Ionizing Wire Replacement

Ionizing wire breakage is minimal because of the constant tension design and fixed location of ionizing wire supports. If necessary to replace a broken wire follow these instructions.

Wires are supplied in coiled spring configuration, with clinch nut on each end of wire.

Wire replacement requires pair of needle-nose pliers. Exercise caution in removing any broken wires in collector cell. This will prevent accidental shorting of cell and reduce need for further maintenance.

Use the following procedure when replacing ionizing wire.

⚠ CAUTION

Handle with care as parts are sharp.

- a. Carefully remove all remains of broken wire.
- b. Grip new wire at each end with your thumb and index finger. While stretching wire to approximately 6 in. allow 1 end of wire to uncoil between your thumb and index finger.
- c. Place 1 end of wire in slot in stainless steel support on collector cell from front of cell. This support is partially covered by cell brace in front of support.

LEGEND

1. Interlock Switch
2. On-Off Rocker Switch
3. 50VA Stepdown Transformer
Class-2 24VAC Output
4. High Frequency Oscillator and
High Voltage Power Supply Board
5. Output LED (Red)
6. Input LED (Green)
7. Ionizer-Collector Cells
8. Cell to Power Supply Contact
9. Jumper Wire (remove to install
optional Air Flow Sensor Kit)

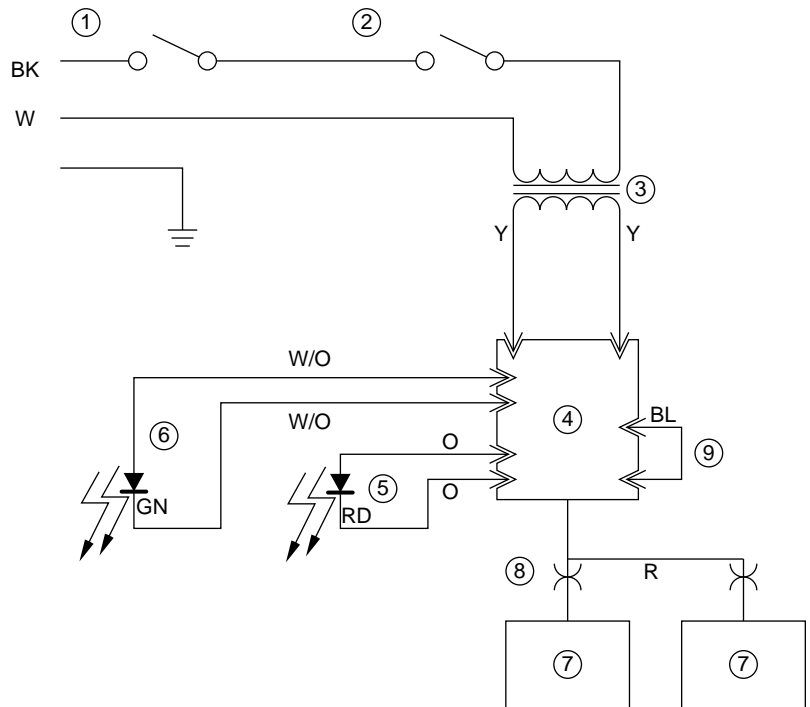


Fig. 17—Circuit Diagram

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Table 2—Cell Checkout Procedure

CAUSES	CORRECTIONS
Loose ionizing wire(s)	Replace loose wire(s)
Excessively dirty cell	Clean as outlined in Maintenance Section
Damaged (bent) plates	Straighten or replace collector cell
Improper ground This is a spring located on cabinet assembly	Check ground
Large pieces of foreign matter lodged between plates	Remove
Very dirty insulators	Clean
Broken ionizing wires	Remove all pieces of broken wires Replace broken wire(s)
Excessively bent or misaligned components due to mishandling	Straighten bent plates or replace collector cells
Externally broken or cracked insulators	Replace insulator

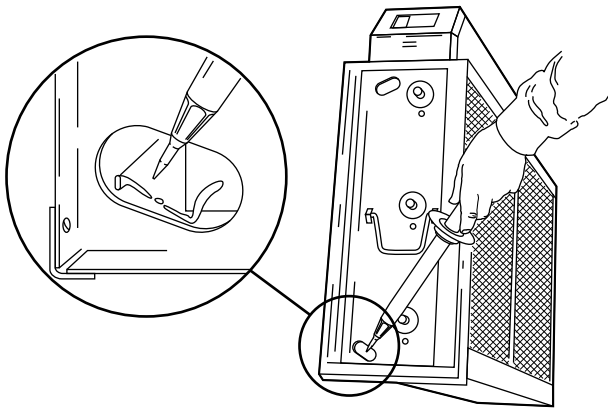
- d. Grip other end of ionizing wire with needle-nose pliers and insert terminated end of wire into slot of support bar of opposite end of collector cell.
- e. Wire should be tight enough to be self supporting and remain suspended between 2 support slots in support bar.

POWER SUPPLY

If output light remains out with cells removed, the trouble is in the power supply. Specific problems in power supply assembly can be isolated by using a multimeter and high-voltage probe to check for proper output voltages.

To properly check power supply, follow these steps.

1. Remove power supply access cover.
2. Make sure control switch is on and input voltage is 120v, 60 Hz.
3. Set multimeter to read AC voltage. Use 200-v full scale setting. With test leads attached to multimeter, touch 2 transformer output lead junctions to printed circuit board and read meter.
4. If there is no output voltage from 24-v transformer, replace 24-v transformer and power supply board.
5. If there is proper output voltage from 24-v transformer, replace power supply board.



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Fig. 18—High Voltage Check of Ionizer Wire Support Bar

NOTE: Air cleaner is designed for easy wiring and installation; attaching 2 leads to nearest 120-v power source to put unit into operation. Electronic air cleaner cannot be wired into motor leads. On multiple speed blower taps, voltages can exceed 190 VAC (120-volt motors). This kind of input voltage will damage both power supply and void the warranty.

ADDITIONAL CHECKOUT PROCEDURES

The following instructions are for use by qualified service personnel only:

⚠ WARNING

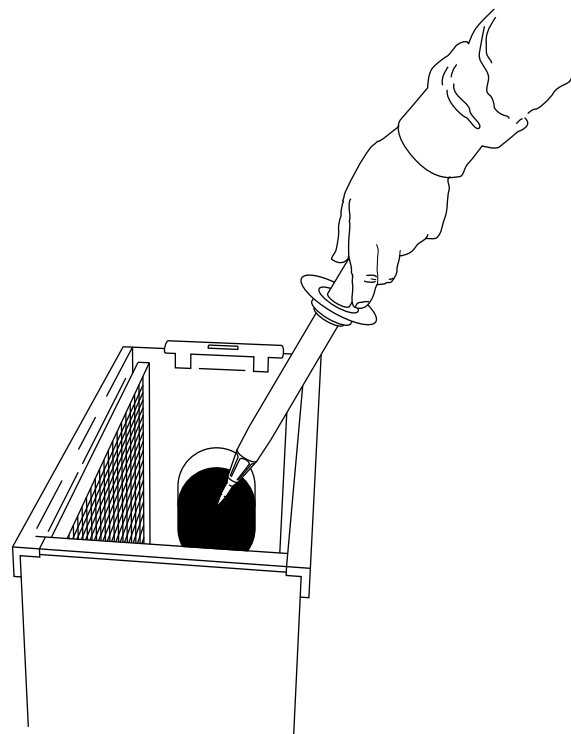
The following procedures will expose energized electrical components. Disconnect power between checks and proceed carefully. Electrical shock can cause injury or death.

The secondary circuit can also be checked for proper output voltages using multimeter and high-voltage probe. To check for proper operation, follow these steps:

1. Remove power supply access cover.
2. Make sure control switch is on and input voltage is as specified.
3. Make connections from high-voltage probe to multimeter in accordance with owner's manual. Meter should be set for reading DC voltage on 20-v full scale. Check control board assembly prior to checking cells for damage or carbon patch.

NOTE: The cell contact should be visually checked for corrosion, excessive dirt build up, and electrical arc tracking (carbon path from stainless steel spring to grounded metal).

4. Remove cell access door. Attach high-voltage ground lead from high-voltage probe to cabinet. While depressing safety switch lever, touch ionizer wire support bar with end of high-voltage probe. (See Fig. 18.) Meter should read 6.2 kVDC \pm 0.2 kVDC.
5. If no voltage is measured, remove cell and check second cell. Meter should read 6.2 kVDC \pm 0.2 kVDC.



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Fig. 19—High Voltage Check of Contact Board Assembly

6. If proper voltage is measured, the first cell is shorted. (Refer to Table 2.)
7. If no voltage is present, remove the second cell. Install first cell and measure voltage as described above. If voltage is present, the second cell, which is now out of cabinet, is shorted. (Refer to Table 2 for cell checkout procedure.)
8. If no voltage is present, remove both cells and measure power supply output. While depressing safety switch, touch end of high-voltage probe to either front or rear contact board assembly. (See Fig. 19.) Meter should read 6.2 kVDC or higher.
9. If no voltage is measured, check power supply as outlined in power supply section.
10. Set multimeter for reading AC voltage at 200-v full scale. With test leads attached to multimeter, touch 2 transformer output lead junctions to printed circuit board and read meter.
11. If there is no output voltage from 24-v transformer, replace 24-v transformer and power supply.
12. If there is proper output voltage from 24-v transformer, replace power supply.

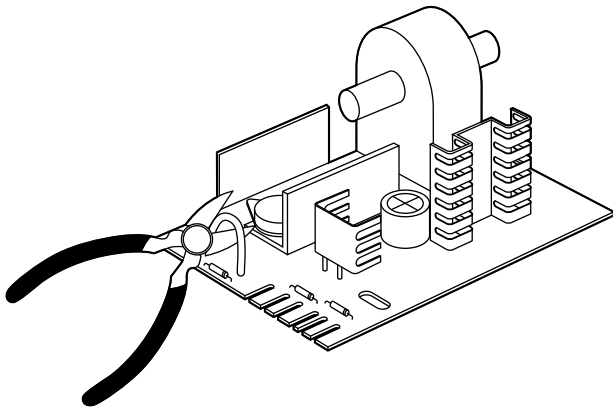
OTHER FACTS YOU SHOULD KNOW

Step 1—White Dust

Occasionally "white dust" might be noticed in bedrooms or newly furnished rooms. This is mainly composed of lint which, because of its weight, settles before it reaches your unit. This dust is not mixed with airborne dirt, therefore, it is clean and has no staining or soiling properties. It will lessen as excess lint works out of fabrics.

Step 2—Ozone

Under normal operating conditions all electrostatic air cleaners produce minute quantities of ozone as an incidental by-product, as do televisions and other electrical appliances. Design of this unit has been tested and is far below published permissible limits. The



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Fig. 20—Wiring for High Altitude Operation

level of detection (when it is noticed) varies from individual to individual, some being more sensitive to ozone.

Usually a new unit will produce more ozone than 1 that has been in operation for several weeks. This is due to the normal amount of sharp corners or manufacturing burrs on the ionizing-collecting cell. The voltage working on these areas, however, tends to round them off and the problem is self-correcting.

An ionizing-collecting cell that has been damaged, where the designed spacing between electrically charged and ground components has been decreased, may also produce an abnormal amount of ozone.

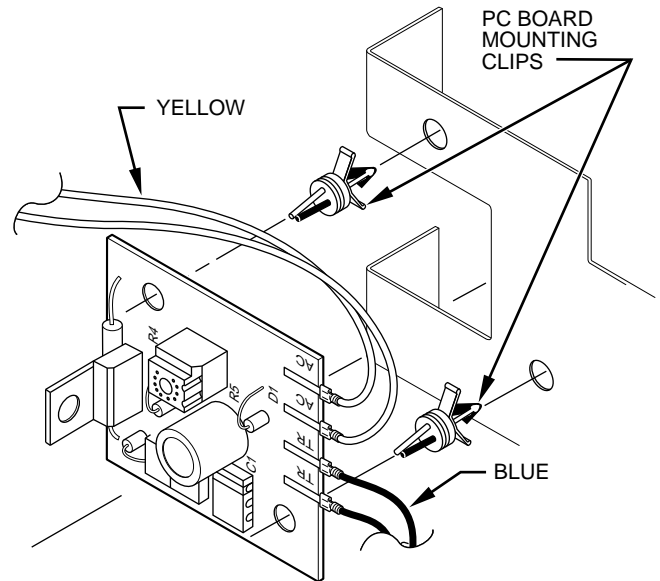
Step 3—High Altitude Operation

Because air is less dense at higher altitudes, there is a possibility of nuisance arcing. To reduce this annoyance, refer to the following note. Cutting of red jumper wire will reduce voltage and eliminate arcing. The red jumper wire must be cut in installations of over 5,000 ft elevations. (See Fig. 20.)

NOTE: There is a red jumper wire on the power supply printed circuit board, cutting this jumper will reduce output voltage by 6.0 to 8.0% and reduce ozone level.

If there appears to be excess ozone, check for:

- Damaged (bent) plates — Straighten or replace collector cell.
- Loose ionizing wires — Replace.
- Dirty cell — Clean.
- Loose high voltage connections — Repair or replace.
- Radio and/or television interference — This trouble is not common, but when it occurs it is usually due to either



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Fig. 21—Airflow Sensor Kit Installation

continuous high voltage "leak or discharge," or due to the absence of a good common electrical ground. Refer to conditions listed under "Crackling and Snapping" in Fig. 23.

Step 4—Airflow Sensor (optional)

An optional electronic airflow sensor kit is available (Part No. KEAAC0101AAA) if air cleaner cannot be wired directly to the EAC-1 or EAC-2 terminals. Location of airflow sensor is shown in Fig. 21.

NOTE: Be extremely careful not to cover airflow sensor orifice when sealing air cleaner and duct work. This hole is located on right hand side (when facing unit) of power supply assembly. The hole is 3/16-in. diameter and is located approximately 3 in. from front and 1 in. from bottom of power supply assembly.

If air cleaner is installed in crawl spaces or attics that are dusty and dirty, sensor on airflow switch over a period of time will be covered with dirt and become inoperative because airflow over thermistor is unable to cool it. The result is air cleaner will not energize. In these applications, periodically cleaning the sensor through side of power supply assembly with a cotton swab dipped in rubbing alcohol will restore it to full operational use.

On continuous blower applications, after servicing air cleaner, cleaning cells, or power outages by utility company, airflow sensor must be reset. This reset requires that air handler in furnace/air conditioner be stopped for minimum of 2 minutes to allow airflow sensor to reset. To stop air handler, turn off the fan at the thermostat. Reset thermostat to heating/cooling as required.

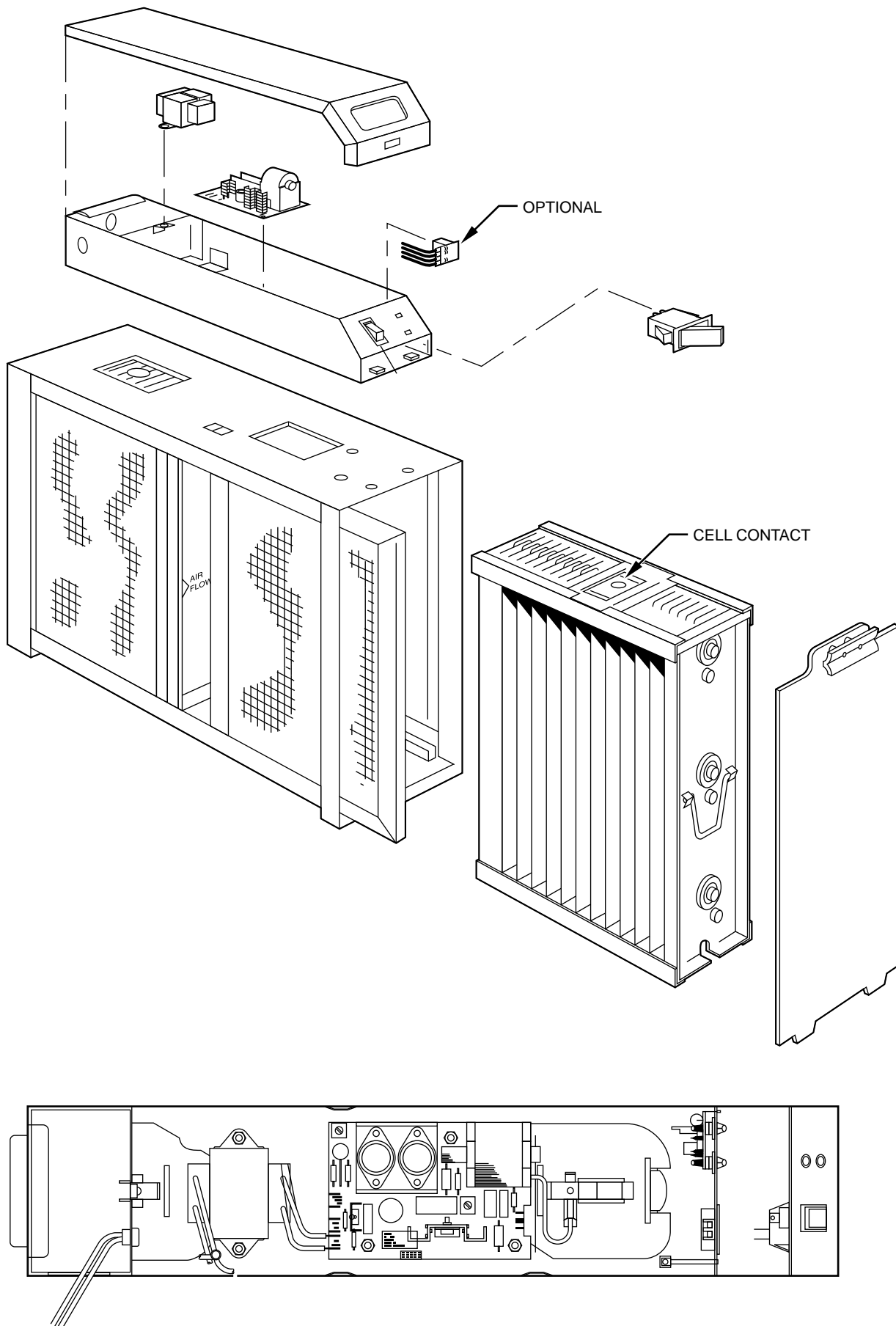


Fig. 22—View of Major Components

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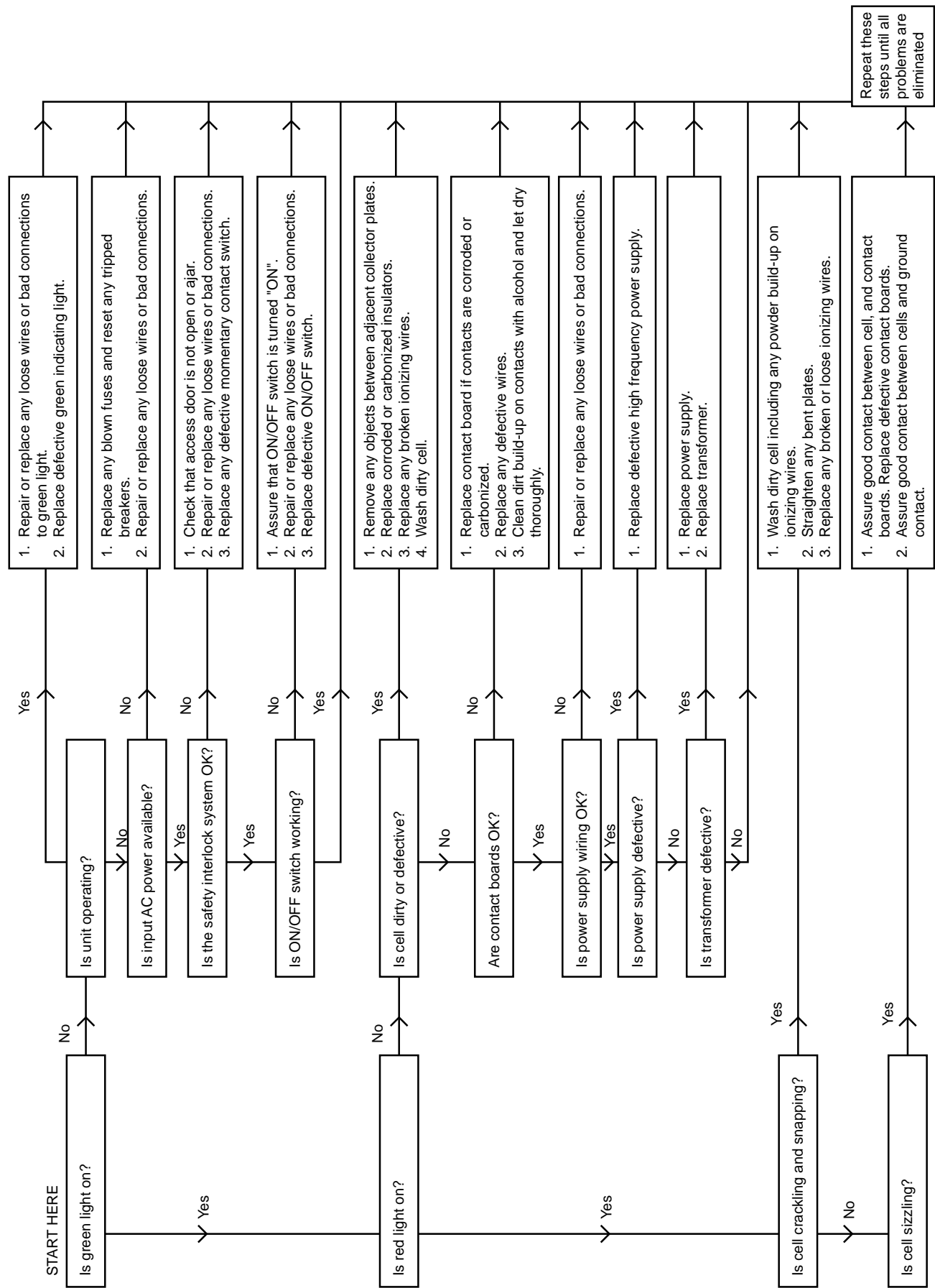


Fig. 23—Troubleshooting the Duct Mount Electronic Air Cleaner

SERVICE TRAINING

Packaged Service Training programs are an excellent way to increase your knowledge of the equipment discussed in this manual, including:

- Unit Familiarization
- Maintenance
- Installation Overview
- Operating Sequence

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